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CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

4.1. Introduction

Elementary school teachers' preparation in Ghana is based on the BTE curriculum designed and started in 2014 by the Institute of Education, UCC. This curriculum has three major components viz., the curriculum objectives, curriculum contents, and the modes of its transactions. The objectives of the BTE curriculum, 2014 are to;

- i. produce generalist teachers capable of teaching all subjects at the primary and Junior High School (JHS) levels.
- ii. produce specialist teachers capable of teaching specific subjects such as Mathematics, Science and Technical at the JHS level, French at both Primary and JHS levels and Early Childhood Education.
- iii. produce teachers who have a clear grasp of intended outcomes of their teaching activities, who are skilled in monitoring, diagnosing and appropriately providing equal opportunity to all pupils.
- iv. promote a close working relationship between Colleges of Education and local schools through the "Out" component of the programme

The present study is undertaken to critically examine all the three aspects from the perspectives of its relevance today and suggest measures to plug those components and subcomponents irrelevant and bring suitable changes to make a vibrant teacher education program to make its education meaningful and relevant to its future citizens. Therefore, the present chapter presents data that were collected, analyzed and interpreted in three different sections. The section-I is about the relevance of the BTE curriculum objectives, section-II about appropriate of the BTE curriculum contents (semester wise) including methods used for teaching the courses and assessment of learning outcomes, and section-III about the relevance of extra-curricular and co-curricular activities. Also, suggestions in each section have been presented for modification.

SECTION-I: RELEVANCE OF THE BTE CURRICULUM OBJECTIVES

BTE curriculum in Ghana got approved by the Institute of Education, University of Cape Coast (UCC) in 2014. After six years of its implementation, it is very essential to critically analyse as to the adequacy and relevance of the same to meet the need and aspiration of the Ghanaian people. To meet this objective, data from selected experts and practitioners and student-teachers were collected about the relevance of these objectives and have been analysed. The details can be seen below.

4.1.1 Relevance of Curriculum Objective-I: Preparation of Generalist Teachers

The BTE curriculum objective-I seeks to prepare generalist teachers capable of teaching all subjects at the primary and Junior High School (J.H.S.) levels. In this perspective, it can be seen from table-1 that the majority (63.5 per cent) of the experts (Directors of Education, BTE principals, tutors) judged that the curriculum objective-I was irrelevant in terms of preparing student-teachers as per the needs of the society. On further enquiry, the experts have revealed that as experienced by them, the generalist teachers were lacking in-depth knowledge of the subjects taught by them and they could not do justice to teach in Mathematics, Integrated Science, Music and Dance and Creative Arts. As we can logically say that lack of subject knowledge would render basic school teachers incompetent for teaching different school subjects. As generalist teachers would be assigned to a specific classroom and be responsible for teaching all the subjects, experts observed that the students in those classes were not exposed to different expertise and achieve a satisfactory level of understanding of the subjects. The details of the data about the relevance of curriculum objective-I are presented in the table-4.1.

Table 4.1: Experts' Judgments on BTE Curriculum Objective-I

Sr. No.	Response	Regional Director of Education (N=10)	BTE College Principal (N=10)	BTE College Tutor (N=120)	Total (N=140)
1	Relevant	3 (30%)	3 (30%)	29 (24.1%)	35 (25%)
2	Uncertain	2 (20%)	1 (10%)	13 (10.8%)	16 (14.2)
3	Irrelevant	5 (50%)	6 (60%)	78 (65%)	89 (63.5)
Total		10	10	120	N/A

To ascertain the situation, the researcher also observed lessons taught by alumni (generalist) in basic schools. Two lessons per subject (totalling 22) in almost all the school subjects were observed to find out the extent to which the BTE curriculum is fulfilling this objective-I (see details in appendix A-1). Although the researcher was not having an observation schedule, it was ensured that the following themes were taken care of in the observation;

1. Lesson plan preparation
2. Presentation
3. Knowledge of the subject matter and pedagogy
4. Classroom management techniques
5. Response from the students
6. Evaluation of learning outcomes

The collected data were coded into frequencies and percentages as per the emerged themes from the data. The details of the analysis are presented in table-4.2.

Table-4.2: Frequencies & Percentages of Lesson taught by Generalist Basic School Teachers (Theme wise)

Sr. No	Themes generated from observed lessons	Frequency (N=22)	Percentage
1	Lesson plan preparation	18	81.8
2	Presentation	10	45.4
3	Mastery of the subject matter	9	40.9
4	Classroom management techniques	11	50
5	Students' active participation	12	54.5
6	Evaluation of learning outcomes	17	77.2

The observation of twenty-two lessons by the researcher as presented in table-4.2 above reveals that the percentage is low with regard of mastery of subject matter (40.9 per cent), presentation of lesson (45.4 per cent), classroom management techniques (50 per cent) and level of students' participation (54.5 per cent). But the percentages were high in two themes viz., lesson plan preparation (81.8 per cent), and evaluation of learning outcomes (77.2 per cent). It can therefore be said that the curriculum objective-I was not achieving its expected outcomes. Therefore, the following points can be derived from the above presentations.

- a. Objective -1 of BTE is irrelevant as per experts' opinion
- b. Lesson presentations were not implemented properly
- c. Teachers were not having subject mastery and enough pedagogical knowledge
- d. Teachers did not demonstrate competencies in classroom management skills

It can, therefore, be concluded that the objective one of BTE curriculum is not proper and needs to be relooked into.

4.1.1.1 Modification of the BTE Curriculum Objective-I

It was found that the Objective-I i.e., to prepare generalist teacher was not proper for the BTE curriculum as it was found irrelevant. It, therefore, shall be dropped/redrafted/modified to have a sound BTE curriculum. The objective is the basic one that was addressed by the curriculum experts in Ghana. As per the judgments given by the experts on the BTE curriculum, data were collected by using an open-ended questionnaire in the form of suggestions and analysed by codifying them as per the themes and classified them further into categories and tabulated them. Further, descriptive statistics viz., frequencies and percentages were used to analyse the collected data. And as per the judgments given by the experts on the curriculum objective-I, through the open-ended questionnaire, the relevant suggestions are presented in the table-4.3 below.

Table-4.3: Modifications as suggested by Experts for change of BTE Curriculum Objective-I

Sr. No	Suggestions	Regional Directors of Education	Principals of BTE Colleges	Tutors of BTE Colleges	Total Percentage
1	Teachers shall be able to manage classroom	1 (10%)	5 (50%)	-	6 (4.2)
2	Specialists teachers who can teach with competency shall be produced	2 (20%)	1 (10%)	49 (40.8%)	52 (37.1)
3	Produce specialist teachers who can create a learning environment	1 (10%)	-	17 (14.1%)	18 (12.8)

It can be seen from table-4.3 that the suggestion that the majority of the experts (37.1 per cent) suggested that specialist teachers shall be produced who can teach with competency. This was because the specialist teachers were having knowledge of subject matter and practical skills capable of teaching in every level of the basic school. Also, other suggestions such as specialist teachers who can create a learning environment and Teachers shall be able to manage a classroom are essential as far as a reframing of BTE curriculum objective-1 is concerned. Since the alumni were not demonstrating competencies in classroom management skills as revealed in the previous paragraph, it is these suggestions that will equip student-teachers with competencies in managing classrooms and making classroom possible for children with or without learning disability learn together to achieve targets. As per the experts' suggestions about adequacy and relevance of BTE curriculum objective-I and the observations of classroom teaching, and needed modification of the objective, it can be concluded that to produce specialist teachers for each level of basic school' may be considered for modification. But the experts further revealed that curriculum objective-I was irrelevant in terms of preparing generalist teachers for basic schools so, it can be modified to produce generalist teachers for only primary schools. This implies that the BTE curriculum shall have two sections of the teacher preparation program; 1) Generalist teachers for the primary schools and 2) Specialist teachers for teaching at the JHS level.

4.1.2 The Relevance of Curriculum Objective-II: Produce Specialist Teachers for Specific Subjects

The curriculum objective-II seeks to produce specialist subject teachers capable of teaching specific subjects such as Mathematics, Science and Technical at the Junior High School (JHS) level, French at both primary and JHS levels and early childhood education. In this regard, it can be seen from table-4.4 that majority (70.7 per cent) of the experts opined that curriculum objective-II was relevant in terms of preparing student-teachers who opt to study elective courses. As it is presented in the preceding chapter (one), in the third and fourth semesters of the BTE curriculum, electives courses are presented for specialization by student-teachers. These courses include Literature in English, Ghanaian language, Creative Arts and Technology, Catering, Sewing, Music and Dance and Physical Education. Also, it was revealed that these courses were in the basic school curriculum (except Music and Dance and Physical

Education). This suggests that the student-teachers would acquire a strong grounding of subject knowledge and skills to achieve targets in their areas of specialization.

Table 4.4: Experts' Judgments of Relevance of BTE Curriculum Objective-II

Sr. No	Response	Director (N=10)	Principal (N=10)	Tutor (N=120)	Total (N=140)
1	Relevant	8 (80%)	7 (70%)	84 (70%)	99 (70.7%)
2	Uncertain	-	-	4 (3.3%)	4 (2.8%)
3	Irrelevant	2 (20%)	3 (30%)	32 (26.6%)	37 (26.4%)
Total		10	10	120	140 (100%)

To ascertain the phenomenon in school, the researcher observed ten lessons taught by alumni (specialist) in basic schools. The lessons observed were in all the electives subjects to find out the extent to which the BTE curriculum has achieved its objective-II (see details in appendix A-2). Although the researcher was not having an observation scheduled, it was ensured that the following themes were covered;

1. Lesson plan preparation
2. Presentation
3. Knowledge of the subject matter and pedagogy
4. Classroom management techniques
5. Response from the students
6. Evaluation of learning outcomes

The collected data were coded into frequencies and percentages as per the emerged themes. The details of the analysis are presented in table-4.5.

Table 4.5: Frequencies & Percentages of Lesson taught by Specialist Basic School Teachers (Theme-wise)

Sr. No	Themes generated from observed lessons	Frequency (N=10)	Percentage
1	Lesson plan preparation	9	90
2	Presentation	8	80
3	Mastery of the subject matter	8	80
4	Classroom management techniques	6	60
5	Response from the students	6	60
6	Evaluation of learning outcomes	7	70

It can be seen from table-4.5 that the percentages in almost all the themes are high. This suggests that the alumni have acquired a strong grounding in their specialized subjects to be effective in the classroom. In a study conducted by Swars, et al (2018) to study “the preparation experiences of elementary mathematics specialists” found that such teachers demonstrated knowledge of the subject matter and confidence in the teaching of elementary mathematics. As this is a foreign study conducted in the south-eastern USA and arriving at a similar finding, it is convincing that specialists are effective in their classroom teaching. Therefore it is commendable to reaffirm that specialist teacher should be prepared and ensured that they are posted to teach at the JHS.

4.1.2.1 Needed Modification in the Objective II of the BTE Curriculum

The foregoing judgments given by the experts about the curriculum objective-II showed that specialist teachers were capable of teaching specific subjects such as Mathematics, Science, and Vocational Skills (Catering) at the JHS level. Though the curriculum objective-II appeared relevant, some experts felt the need of modification in certain aspects. Suggestions were collected through the questionnaire by the researcher and the data collected were analysed by using frequencies and percentages. The details of suggestions emerged have been presented in the table-4.6 below.

Table 4.6: Modifications as Suggested by Experts for change of BTE Curriculum Objective-II

Sr. No.	Suggestions	Regional Directors of Education	Principals of BTE Colleges	Tutors of BTE Colleges	Total
1	To produce innovative teachers with critical thinking skills	2 (20%)	6 (60%)	61 (50.8%)	69 (49.2%)
2	To produce teachers capable of linking research to teaching in the basic schools	-	2 (20%)	17 (14.1%)	19 (13.5%)

It can be seen from table-4.6 that majority of the experts (49.2 per cent) suggested that the BTE curriculum objective-II should be modified to produce innovative teachers with critical thinking skills. The experts felt that this calibre of teachers will be

capable of stimulating creative thinking skills in students and providing learning opportunities for children from diverse socio-economic backgrounds to learn with joy. Also, some of the experts (13.5 per cent) suggested that this curriculum objective should be modified to produce teachers capable of linking research to teaching in basic schools. This suggests that academic knowledge and research skills are essential for helping student-teachers to conduct research in solving immediate problems in schools, prove theories and make significant contributions for developing knowledge in their fields of study.

In consideration of the foregoing suggestions for modifications, it can be said that the curriculum objective-II may be retained to prepare specialist teachers for JHS with little modification. It can be stated as “produce specialist teachers for JHS level to be innovative and capable of carrying out their teaching-learning by linking to research and innovations in their subjects”.

4.1.3. Relevance of Curriculum Objective-III: Produce Teachers with Monitoring and Diagnosing Skills

The BTE curriculum objective-III sought to produce teachers who have a clear grasp of intended outcomes of their teaching activities, who are skilled in monitoring, diagnosing and appropriately providing equal opportunity to all pupils. The data collected from 120 experts about its relevance and adequacy were analysed and presented in table-4.7.

Table 4.7: Experts’ Judgment on the Relevance of BTE Curriculum Objective-III

Sr. No.	Response	Director (N=10)	Principal (N=10)	Tutor (N=120)	Total (N=140)
1	Relevant	7 (70%)	8 (80%)	85 (70.8%)	100 (71.4%)
2	Uncertain	1 (10%)	-	-	1 (0.7%)
3	Irrelevant	2 (20%)	2 (20%)	35 (29.1%)	39 (27.8%)
Total		10	10	120	140 (100%)

It can be seen from table-4.7 that majority of the experts (71.4 per cent), judge that the curriculum objective-III was relevant for preparing student-teachers for basic schools. But this finding contradicts what the researcher observed from the field. Observation

of lessons taught by alumni of BTE revealed certain drawbacks. Some emerging themes in this regard include 1) knowledge of the subject matter, 2) response from student-teachers, 3) classroom management technique, and 4) Evaluation of learning outcomes (see details in Appendix-A1). The disparities between the data gathered by observation of lessons and experts' judgement might be due to their experiences with the student-teachers but not the alumni who have already been employed by the Ghana Education Service. Therefore, it can be said that the modification of BTE curriculum objective-III is critical to prepare effective teachers.

4.1.3.1 Modification of BTE Curriculum Objective-III

With a view of the above judgments given by the experts, it can be said that the curriculum objective-III is relevant for producing student-teachers for basic schools. In this consideration, the experts did not respond to the questionnaire item that sought to collect data for suggestions. Nevertheless, observation of lessons taught by alumni revealed certain drawbacks in themes like students' response, evaluation of learning outcomes, and classroom management (see details in Appendix A1 & A2). This suggests some weakness in the curriculum objective-III which may be modified. It may be modified to produce skilful teachers who can realize the instructional objectives by guiding, monitoring, and evaluating students and ensure equity in class.

4.1.4. Relevance of Curriculum Objective-IV: Promote College-Local Schools

Relationship

Curriculum objective-IV aims to promote a close working relationship between colleges of education and local schools through the out-component of the curriculum. In this regard, it can be seen from table-4.8 that majority of experts (79.2 per cent) judge the curriculum objective-IV was relevant for preparing student-teachers as per the needs of the society. In this phenomenon, there might have been an interplay of certain factors viz., out-campus teaching practice (see details in Appendix-A). Provision is made for final year student-teachers to embark on teaching practice in co-operating schools for 16 weeks. Here, they are having the liberty to explore the communities by visiting historical and geographical places of interest such as; shrines, mosques, churches, palaces, waterfalls, mountains, and other tourist sites for educational purposes. By doing so, they are promoting a close working relationship between colleges of education and local schools. It can be said here that this

phenomenon is obvious in the teacher preparation curriculum. Therefore, the BTE curriculum objective-IV by itself cannot be objective and have to be relooked. The details of the analysis are presented in table-4.8 below.

Table 4.8: Experts’ Judgment on the Relevance of BTE Curriculum

Objective-IV

Sr. No.	Response	Director (N=10)	Principal (N=10)	Tutor (N=120)	Total
1	Relevant	8 (80%)	10 (100%)	93 (77.5%)	111 (79.2%)
2	Uncertain	-	-	-	-
3	Irrelevant	2 (20%)	-	27 (22.5%)	29 (20.7)
Total		10	10	120	140 (100%)

4.1.4.1 Understanding the Relevance of Curriculum Objective-IV

The above judgments given by the experts and the group discussions revealed that the curriculum objective-IV was relevant for preparing student-teachers for basic schools. Based on the judgments, it can be said that the curriculum objective-IV promotes a close working relationship between colleges of education and local schools through the “Out” component of the curriculum. To design effective teachers education curriculum, the role of communities cannot be overlooked (Kalkan, 2016). This suggests that a close working relationship between communities and the BTE institution should be established. The relationship has to be mutually interrelated whereupon learning environment can be created to facilitate practice teaching inschools. Therefore, the BTE curriculum objective-IV by itself cannot be objective and have to be relooked.

4.1.5 Conclusion

Stating curricula objectives is a crucial stage of developing a curriculum. This stage provides a clear understanding for the developer, the teacher and the learner about what should be taught and learnt. Taba (1960) feels that curriculum objectives should be clear, specific and feasible to produce a result within a given period. Looking closely at the BTE curriculum objectives, it is stated in multi-faceted consideration. This situation is much prominent in objectives-I and objectives-II respectively. The objective-I seeks to prepare generalist teachers capable of teaching all subjects at the

primary and J.H.S. levels whereas the objectives-II seeks to prepare specialist teachers capable of teaching specific subjects such as Mathematics, Science, and Technical at the JHS level, French at both primary and JHS levels and Early Childhood Education.

Concerning the curriculum objectives-I, it was revealed that basic school teachers could not teach all the school subjects. This makes it impossible to achieve its aim making it irrelevant. A similar finding was made by (Sirek and Sefton, 2018; Hyndman, 2017; and Collins, 2016). This is to say curriculum objective-I should be relooked by making it to produce generalist teachers capable of teaching specifically at the primary schools.

The data regarding the curriculum objectives-II revealed that it is relevant as per the needs of the society. To ensure effective teaching and learning of all the subjects at basic schools, the researcher feels this objective may be modified to prepare specialist teachers for JHS only. Also, another objective may be created from this objective to prepare specialist teachers for French in basic schools. Since there is a separate curriculum for preparing teachers for Early Childhood Education in Ghana, it is therefore irrelevant for incorporating that component in the curriculum.

Though the experts judged that the curriculum objective-III and IV were relevant, the researcher believes some modifications are warranted to improve them. In the researcher's view, the objective-III may be modified to produce teachers who are skilled in diagnosing learning disabilities and capable of using feedbacks for further teaching. This is to ensure that student-teachers receive training capable of using a variety of teaching methods in helping students with diverse learning needs to study in an inclusive classroom. Also, the objective-IV by itself cannot be a curriculum objective and should be changed. This is because promoting a close working relationship between Colleges of Education and local schools through the "Out" component is an obvious phenomenon that encourages collaboration between the BTE colleges and communities to prepare teachers as per the needs of the society.

**SECTION II: APPROPRIATENESS OF THE BTE CURRICULUM
CONTENTS AND MODES OF TRANSACTIONS**

4.2 Introduction

In the scenario of basic teacher preparation in Ghana, where schools teachers are required to acquire content knowledge and pedagogy skills, training is given on school subjects. To evaluate the contents of the BTE curriculum, it is important to classify the courses under three categories as presented in table-4.9.

Table 4.9: List of BTE Courses in three Categories

Educational and Contemporary Studies	Curriculum and Pedagogic Studies	Value Added Courses for All-round Development••
1. Principles and Practice of Education	10. English language	20. Vocational Skills (Arts Related)
2. Educating Individuals with Special Needs	11. Mathematics	21. HIV/AIDS Education
3. Principles and Methods of Teaching in Basic School	12. Integrated Science	22. Religious and Moral Education
4. Trends in Education and School Management	13. Environmental and Social Studies	23. Music and Dance
5. Introduction to Guidance and Counseling	14. Introduction to ICT	24. Physical Education
6. Assessment in basic schools	15. Ghanaian Language and Culture	25. Vocational Skills (Sewing)
7. Research Methodology in Education	16. Methods of Teaching Basic Mathematics	26. Vocational Skills (Catering)
8. Teaching practice•	17. Methods of Teaching Social Studies	27. Literature in English
9. Project Work	18. English Language (Methodology)	
	19. Agricultural Science••	

Note: • (lessons observations in schools, on-campus and out-program), •• (These are compulsory courses in first and second semesters but optional in third and fourth semesters)

To judge the appropriateness of the curriculum contents, the researcher collected data from the subject tutors, basic school teachers and final year student-teachers by using

questionnaires, observations and group discussions. The data which were collected through questionnaires were subjected to descriptive statistics by using frequencies and percentages while the data through observations and focus group discussions were juxtaposed and presented as per emerging themes. The appropriateness of the contents was based on the highest percentage with the highest number of respondents' judgment. The details of the analysis of the various courses semester wise are presented as follows.

4.3. First-Semester Course

Student-teachers studied seven mandatory courses in the first semester of the BTE curriculum. The courses and their respective course codes with credits are presented in table-4.10 below.

Table 4.10: Course Title, Course Code & Credit Hour of First -Semesters Courses

Sr. No.	Course Code	Course Title	Credit Hour
1	FDC 111	English Language Studies	2
2	FDC 112	Mathematics	2
3	FDC 113	Ghanaian Language and Culture	1
4	FDC 114	Integrated Science	2
5	FDC 119	Religious and Moral Education	1
6	FDC 118	Environmental and Social Studies	1
7	FVA 111	Pre-Vocational Skills (Art related)	1
8	EPS 111	Principles and Practice of Education	2
Total	Credit hours		12

Source: Institute of Education, UCC (2014)

4.3.1 English Language Studies

The course code of the first semester the English Language Studies is FDC 111 which is designed for two credit hours. To judge the appropriateness of the contents, needed data were collected from ten randomly selected English Language tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones (North, West, East & Central). They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the

course in BTE colleges, assessment of learning outcomes and provide suggestions for modification. The objectives of this course are the student-teachers will be able;

- i. To use the productive (encoding) and receptive (decoding) skills in their communicative activities,
- ii. To organize and render ideas clearly and coherently,
- iii. To identify, describe and use the major and minor word classes in communication,
- iv. To give coherent narration and description of events and personalities, and
- v. To read passages and extract/interpret relevant information from them.

The objectives presented above provide a focus to direct learning activities of FDC 111. In this regard, it can be seen from table-4.11 that majority (90 per cent) of tutors judged that the objectives are relevant for determining learning experiences to develop the confidence of student-teachers in learning the English language. Also, the majority (70 per cent) of tutors revealed that the objectives are adequate with the purpose of aligning the course contents. Here, it can be said that the objectives have emphasized what is expected of the students to learn. Based on this, the tutors can develop vibrant learning experiences for the student-teachers. The details of the analysis of collected data about the course objectives and appropriateness of the contents are presented in table-4.11.

**Table 4.11: Appropriateness and Relevance of Contents and Objectives of
FDC 111**

Sr. no.	Items	<u>Judgment</u>		
		- Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	7 (70%)	-	3 (30%)
2	The course objectives determine learning experiences to develop the confidence of student-teachers in learning the English language	9 (90%)	1 (10%)	-
3	Develop fluidity in communication skills	7 (70%)	-	3 (30%)
4	Develop reading and comprehension skills of student-teachers	6 (60%)	1 (10%)	3 (30%)
5	Develop writing skills with an emphasis on good paragraph development in different types of essays	6 (60%)	2 (20%)	2 (20%)
6	Acquire knowledge and understanding of major and minor word classes in English	5 (50%)	2 (20%)	3 (30%)
7	Significance of two credit hours to the course duration	2 (20%)	-	8 (80%)
8	Significance of the reading list	6 (60%)	-	4 (40%)

It can further be seen from table-4.11 that the contents of FDC 111 include areas such as grammar, speech work, writing and reading. Here, appropriate content areas have a higher percentage of judgments from the tutors. The percentage-wise judgment shows that majority of the tutors (70 per cent) judged the contents were appropriate in terms of developing fluidity in communication skills of student-teachers, Sixty per cent of the tutors judged student-teachers have developed their writing skills with emphasis on good paragraph development in different types of essays whereas fifty per cent of tutors feel student-teachers have gained knowledge and understanding of major and minor word classes in English. In their views, the student-teachers were capable of

organizing, rendering ideas consistently and able to communicate clearly as per the cognitive level of the basic school students.

To find out the competencies of alumni teaching the English language at a basic level, two lessons taught by them were observed (see the details in appendix A-1). It was observed that most of the teachers planned lessons properly, demonstrated subject knowledge and confidence in achieving instructional objectives. This justifies the extents to which the contents of FDC 111 have equipped the alumni in devising strategies and experience to be effective in the classroom.

The researcher further collected judgments from final year student-teachers about the contents of FDC 111 through group discussion (see details in appendix D). Though the researcher was not having any tool for recording observation, it was ensured that the following themes were observed and noted;

1. The interest of the student-teachers
2. Strengths and weakness of the contents

The points that emerged from the group discussion are presented as follows;

- a. The contents of FDC 111 were appropriate for meeting the interest of the prospective basic school teachers. This is because the contents cover the essential aspects of the English Language such as Grammar, essay writing, and comprehension.
- b. Most of the areas covered in this course are connected to the basic school English Language syllabus. Therefore, the content knowledge gained here would provide an adequate subject matter in achieving instructional objectives.
- c. The contents did not feature a method of teaching the English language. This implies that content weightage between conceptual understanding and pedagogy is imbalance and must be reconsidered to prepare effective teachers.

The points emanated from the group discussion show that FDC 111 contents covered essential learning experiences meant to develop the interest of the student- teachers. These learning experiences include writing, speaking, and reading skills which are useful in the daily discourse of prospective teachers. This suggests the student-teachers were appropriately trained on grammar, speech work, essay writing, reading and literature equipping them with knowledge of the subject matter to be

effective at the basic school. This finding contradicts the finding of Adjei (2015) that linguistic skill among the majority of the basic school teachers was below average. This result was arrived because the study was conducted in three BTE colleges selected from one region out of the ten geographical regions of Ghana. Therefore, it is inappropriate to generalize this study since the English language curriculum which is operating in the BTE colleges has been found appropriate for equipping student- teachers with knowledge of grammar, speech work, essay writing, reading and literature. However, it was revealed that the contents were not culturally appropriate while the methodology of teaching the English language was not given its due weightage. This indicates that the contents were not appropriately featured with the culture and traditions of the Ghanaian people and also not equipping the student- teacher with adequate pedagogy at this level.

4.3.1.1 Teaching Methods used by BTE Tutors for teaching FDC 111

To judge the teaching methods used by the BTE tutors in teaching FDC 111, the BTE English language tutors were asked to tick mark teaching methods in a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.12.

Table 4.12: Appropriateness & Relevance of Teaching Methods used in Teaching FDC 111

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Sometime	Rarely	Not at all
1	Discussion	7 (70%)	-	-	-	-
2	Collaboration	-	-	-	6 (60%)	-
3	Demonstration	5 (50%)	-	-	-	-
4	Mentoring	-	-	-	-	5 (50%)
5	Role play	-	-	-	-	6 (60%)
6	Lecture	-	-	3 (30%)	-	-
7	Project	-	-	-	-	5 (50%)
8	Debate	-	4 (40%)	-	-	-
9	Brainstorming	10 (100%)	-	-	-	-
10	Grammar Translation	10 (100%)	-	-	-	-
11	Story telling	8 (80%)	-	-	-	-

It can be seen from the table-4.12 that most frequently, the BTE tutors used teaching methods such as Brainstorming (100 per cent), Grammar Translation (100 per cent), Storytelling (80 per cent), and Discussion (70 per cent) to teach the course in the classroom. In essence, these teaching methods as presented above comprised principles and strategies to enable student-teachers' learning of FDC 111. So, it can be said that these teaching methods are appropriate for preparing student-teachers to achieve targets as matured learners.

4.3.1.2 Assessment of learning outcomes in FDC 111

Assessment of learning outcomes of every student-teacher was mandatory in FDC 111. The BTE English language tutors revealed that both formative assessment and summative assessments were used in FDC 111. Also, assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment. The details of the assessments of learning outcomes of student-teachers are presented in the next subsection.

4.3.1.2.1 Modality for Conducting Formative Assessment in FDC 111

Further interaction with the BTE tutors revealed that the formative assessment of student-teachers in FDC 111 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of one assignment based on comprehension and writing. For comprehension (5 questions for 5 marks), a passage of about 100 words was set to test conceptual understanding, interpretation and analysis whereas two essay questions (one to be answered for 5 marks) with each having five questions for testing accuracy in opinion. Also, the mid-semester assessment comprises 20 compulsory structured questions on grammar (concord, tenses, fluidity, and writing skills) for 20 marks. A 21-day mandatory class attendance of student-teachers (recorded daily in a class register) was further assessed for 10 marks per student-teacher. The details of the findings are presented in table- 4.13.

Table 4.13: Modality for Conducting Internal Assessment in FDC 111

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	10	1	10
2	Mid-semester test	Structured	20	1	20
3	Classroom attendance	N/A	N/A	21 days	10

4.3.1.2.2 Modality for Conducting Summative Assessment in FDC 111

The BTE tutors further revealed that the summative assessment of student-teachers in FDC 111 was conducted in the BTE colleges by the Institute of Education, UCC at the end of the semester. Preparation of questions for the end-of-semester examination, supervision and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (2 to be answered). Framing of the questions (unstructured and structured) was based on areas such as grammar, speech work, writing and reading. Whilst the structured questions were allocated 20 marks, unstructured questions were 40 marks. The total marks obtained from this session is 60 which in addition to the formative assessment yields 100 marks in total.

Here, it can be said that the type of questions and the number of questions used in conducting the formative assessment and the summative assessment are appropriate for diagnosing the learning outcomes of the student-teachers. This is because the structure questions were about the grammatical structure of the language which was critical for developing their critical thinking skills. Also, the unstructured questions would enhance the writing skills of student-teachers as they write long answers. However, the communication ability of the student-teachers was not assessed. This is because the essay component of the paper was used to determine their communication abilities as mechanical accuracy and grammar would be checked.

4.3.1.3 Suggestions for Modification of the FDC 111 Contents

Based on the data presented above, suggestions were collected from the English language tutors and student-teachers for modification. The respondents were asked to

provide suggestions about areas of the contents where they felt necessary modifications can be made. The collected data from tutors were analyzed by using descriptive statistics; frequencies and percentages and presented in the table-4.14. The details of the analysis of collected data from tutors are presented as follows.

Table 4.14: Needed Suggestions Modification of the FDC 111

Sr. no	Suggestion	Frequency	Percentage
1	Methodology of teaching English should be incorporated to develop pedagogical skills	1	10
2	Increase the number of credit hours to three	4	40
3	No response	5	50

It can be seen from the table-4.14 that the English language tutors gave suggestions relating to the following areas; 1) methodology of teaching English and 2) increase in credit hours. Only one of the English language tutors suggested that in FDC 111, the methodology of teaching English should be incorporated. On further enquiry, they have observed that the contents were not given training on methodology of teaching which probably would impede the acquisition of pedagogical skills in teaching the English language in schools. Also, English language tutors (40 per cent) suggested that the credit hours should be increased from two to three. They felt that this would create more contact hours for preparing effective student-teachers.

Furthermore, group discussion conducted to collect suggestions from the final year student-teachers to modify the contents where they felt necessary (see details in Appendix D). The suggestions that emanated from the group discussion are presented as follows.

- a. The contents should be incorporated with concepts of technology integration to provide an opportunity for student-teachers to learn to teach speech sound with technology.
 - b. There should be contents on the methodology of teaching the English language.
- It can be concluded here that; 1) the course objectives were adequate and properly aligned with the important components of FDC 111 that were required to prepare

effective prospective teachers, 2) the contents were appropriate in terms of subject matter and pedagogy, 3) the teaching methods viz., Brainstorming, Grammar Translation, Storytelling, and Discussion were appropriate for the attainment of instructional objectives, 4) assessments of learning outcomes of student-teachers do not emphasize on communication skills, and 5) the two credit hours were not appropriate as per the contents and should be modified.

4.3.2 Appropriateness of Mathematics Contents (FDC 112)

The course title of first-semester Mathematics is Number and Basic Algebra with a given course code (FDC 112) designed for 2 credit hours. To judge the appropriateness of the contents of all these aspects, needed data were collected from ten randomly selected Mathematics tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes and provide suggestions for modification. The objectives of this courses are;

- i. To demonstrate a sound knowledge of mathematical concepts and procedures in the content areas studied
- ii. To make a connection between mathematics and other disciplines and activities in daily life.
- iii. To solve relevant mathematics problems using appropriate procedures and tools ICT including calculators

The objectives presented above are meant to direct learning activities in the BTE curriculum. In this regard, it can be seen from table-15 that majority (70 per cent) of tutors revealed that the objectives are adequate to support the learning experiences in the FDC 112. Also, (50 per cent) of the tutors revealed that there is a sense of consistency and feasibility with respect of the course objectives. This is appropriate for promoting effective teaching leading to a realisation of the objectives. The details of the collected data from the Mathematics tutors are presented in table-4.15.

**Table-4.15: Appropriateness and Relevance of Contents and Objectives of
FDC 112**

Sr. no.	Items	<u>Judgment</u>		
		- Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	7 (70%)	-	3 (30%)
2	Consistency feasibility of the course objectives	5 (50%)	4 (40%)	1 (10%)
3	Concepts and procedures for problem-solving in Real numbers and operations	6 (60%)	-	4 (40%)
4	Solve real life problems using ratio and proportion	5 (50%)	4 (40%)	1 (10%)
5	Perspective on algebraic expressions	6 (60%)	1 (10%)	3 (30%)
6	Concepts of set	7 (70%)	2 (20%)	1 (10%)
7	Perspective on ICT integration	3 (30%)	2 (20%)	5 (50%)
8	Significance of two credit hours to the course duration	5 (50%)	1 (10%)	4 (40%)
9	Significance of the reading list	5 (50%)	2 (20%)	3 (30%)

It can be seen from table-4.15 that the concept of the set is appropriate for equipping student-teachers with a basic knowledge of classification (70 per cent). Further interaction with the tutors revealed that student-teachers had the opportunity to study sets notation and description, types, subsets, operations, the complement of a set, two and three-set problems. Apart from the subject knowledge the tutors are acquainted with, it would be useful at the basic level for grouping of ideas and concepts, students and learning material. Also, majority of the tutors (60 per cent) judged the concepts and procedures for problem-solving in real numbers and operations (indices; number bases, relations & functions) were appropriate for preparing student-teachers whereas sixty per cent said perspective on algebraic expressions (Linear equations, inequalities and their graphs) were appropriate for preparing student-teachers. This is because almost all the topics featured are linked to the basic school Mathematics syllabus. So, what is learnt by the student-teachers would be useful for teaching Mathematics at the basic level.

To find out the competences of alumni teaching Mathematics at a basic level, two lessons taught by them were observed (see the details in Appendix A-1). It was observed that most of the teachers demonstrated subject knowledge in teaching the lessons. Although most of them were having comprehensive lesson notes, their Teaching Learning Activities were not activities based. Therefore, students were not motivated to participate in most of the lessons in making it successful. This suggests that the methodology of teaching FDC 112 needs to be relooked to prepare effective teachers.

The researcher also collected judgments from final year student-teachers about the contents of this course by using group discussion as presented in the chapter-III of this study (see details in Appendix B). Though the researcher was not having a set of questions, the student-teachers were required to judge the appropriateness of contents as per the following themes;

- 1) The needs and interest of the student-teachers
- 2) Strengths and weakness of the contents of this course

The points that emerged from the group discussion are presented as follows;

- a. The student-teachers expressed joy for studying FDC 112. According to them, the contents are logically sequenced, have interesting learning activities, and are connected to the contents of the basic schools' Mathematics.
- b. Also, the contents are appropriate for equipping the student-teachers with the subject matter, cumulative, and explaining new information to aid progressive learning and understanding.
- c. However, the student-teachers revealed that some of the contents are inappropriate for student-teachers who are not having a good background in Mathematics. For example, a topic like 'logarithms' is not connected to the basic school Mathematics syllabus whereas integration of ICT in Mathematics is still in limbo.

Based on the data presented above, it can be said that the contents of FDC 112 are appropriate for equipping student-teachers with the desired subject matter. As we know that the basic school Mathematics syllabus cover areas like sets, ratio, proportions, rates, scale drawing, indices; number bases, equations and inequalities and graphs, these areas are also covered by the FDC 112. This connection has therefore provided a knowledge background to prospective teachers to be effective in

the classroom. But student-teacher couldn't solve relevant Mathematics problems using ICT tools including calculators. This is due to the lack of computers in schools and a ban on using calculators at the basic level in Ghana.

4.3.2.1 Teaching Methods used by BTE Tutors for Teaching FDC 112

To judge the teaching methods used by the BTE tutors in teaching the first-semester Mathematics, the BTE Mathematics tutors were asked to tick mark teaching methods in a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.16.

Table-4.16: Appropriateness & relevance of Teaching Methods used in Teaching FDC 112

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Sometime	Rarely	Not at all
1	Discussion	10 (100%)	-	-	-	-
2	Games	-	-	-	-	-
3	Collaboration	7 (70%)	-	-	-	-
4	Demonstration	10 (100%)	-	-	-	-
5	Mentoring	-	-	8 (80%)	-	-
6	Role play	-	-	-	-	8 (80%)
7	Lecture	-	-	-	3 (30%)	-
8	Project	-	8 (80%)	-	-	-
9	Debate	-	-	-	4 (40%)	-
10	Brainstorming	-	-	5 (50%)	-	-

It can be seen from the table-4.16 that most frequently, the tutors used Discussion (100 per cent), Demonstration (100 per cent), Collaboration (70 per cent), and frequently used Project (80 per cent) methods to teach the course in the classroom. Essentially, the teaching of 'Number and Basic Algebra' involves developing the sense of numbers and competencies of using calculator strategies and logical reasoning for solving Mathematical problems. This means interactive teaching methods are critical in developing the algebraic reasoning of the student-teachers. In this respect, the major concern is skill development and enhancement of numerical reasoning. Therefore, it can be said here that the teaching methods viz., discussion,

demonstration and collaboration as most frequently used by the BTE Mathematics tutors are appropriate and can be used to achieve the instructional objectives.

4.3.2.2 Assessment of Learning Outcomes in FDC 112

To progress from one semester to the next semester, the assessment of learning outcomes of every student-teacher was mandatory. The collected data from the BTE mathematics tutors revealed that both formative assessment and summative assessments were used in FDC 112. Also, assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment.

4.3.2.3. The Modality for Conducting Formative Assessment in FDC 112

Further interaction with the BTE Mathematics tutors revealed that the formative assessment of student-teachers in FDC 112 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write one assignment comprising 5 unstructured questions (3 to be selected) for 10 marks. Also, the mid-semester assessment comprising 20 unstructured questions for 20 marks and 21-day mandatory class attendance (recorded daily in a class register) for 10 marks per student-teacher.

It can be said here that the formative assessment is appropriate for establishing the progress of the student-teachers. But it can also be said that this assessment (formative) can't promote further learning opportunities amongst student-teachers as they are not been encouraged to work collaboratively towards achieving a common goal. The details of the findings are presented in table-4.17.

Table-4.17: Modality in Conducting Internal Assessment in FDC 112

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5	1	10
2	Mid-semester test	Structured	20	1	20
3	Class attendance	N/A	N/A	21 days minimum	10

4.3.2.3.1 Modality of Conducting Summative Assessment in FDC 112

The BTE Mathematics tutors revealed that the summative assessment of student-teachers in FDC 112 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the Mathematics tutors in the BTE colleges to prepare questions, supervise and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (3 to be answered) for 60 marks in this paper. It was revealed that the duration of this paper was two hours as it is a 2-hour credit paper. The marks obtained by each student- teacher in formative assessment are used to supplement the marks obtained in the summative assessment (totalling 100 marks) to determine the student teacher's progress. The details of the findings are presented in table-4.18.

Table-4.18: Modality in Conducting External Assessment in FDC 112

Sr. No.	Assessment tool	Question type	Number of questions	Duration of The Paper	Marks
1	Written Examination	Unstructured & Structured	5(3 to be answered) 40	2 hours	40 20

Base on the data presented in table-4.18, it can be said that the type of questions and the number of questions used in conducting the formative assessment and the summative assessment are appropriate for diagnosing the learning outcomes of the student-teachers. This is because the structured questions would develop their critical thinking skills while the unstructured questions find out their ability to apply knowledge and principles learnt.

4.3.2.3.2 Modification of FDC 112 Contents

From the data presented above on the content of FDC 112, it can be deduced that the modification of FDC 112 is essential. To modify the contents of this course, needed data were collected from Mathematics tutors and final year student-teachers. The researcher requested the respondents to give suggestions for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by

using descriptive statistics and data from student-teachers were presented thematically. The details of the analysis of collected suggestions from tutors are presented in the table-4.19.

Table-4.19: Needed Suggestions Modification of FDC 112

Sr. No	Suggestion	Frequency	Percentage
1	There should be a linkage between BTE mathematics and the basic school mathematics	2	20
2	The methodology of teaching Mathematics should be incorporated in these contents	1	10
3	Increase credit hours to three	7	70

It can be seen from table-4.19 that tutors gave suggestions relating to the following areas; 1) linkage between BTE mathematics and school mathematics, 2) methodology of teaching mathematics and 3) increase of credit hours to three. The Mathematics tutors (20 per cent) suggested that the selection of first-year Mathematics contents should be appropriately linked to the basic schools' mathematics. Also, adjusting credit hours to three would be appropriate as per the contents here as suggested by the tutors (70 per cent). This phenomenon was in consideration of the fact that Mathematics is one of the core subjects in basic schools. As a lot of activities ought to be covered in a core subject, the tutors felt that two credit hours would not be appropriate to give sufficient contact hours for preparing prospective teachers in this course.

Also, group discussion was conducted for student-teachers to collect suggestions for modification of first-semester Mathematics contents. The student-teachers were asked to give suggestions on how to improve the contents of this course to train effective school teachers (see details in Appendix B). The points that emanated from the group discussion are presented as follows.

- i. Topics such as 'logarithms should be offloaded
- ii. Some topics such as 'money and taxes' and 'factors and angles' should be incorporated
- iii. Incorporate contents on the introduction of methods of teaching Mathematics

iv. Incorporate contents on the preparation of Teaching and Learning Material.

It can be concluded that; 1) the course objectives were appropriate as per the contents, 2) the contents were appropriate for equipping student teachers with content knowledge for classroom teaching, 3) some concepts like logarithms and use of calculators were inappropriate as it was not linked up with the basic school Mathematics syllabus, 4) the teaching methods viz., Discussion, Demonstration and Collaboration as most frequently used by the BTE Mathematics tutors were appropriate to achieve instructional objectives, 5) formative assessment was inappropriate as collaborative activities were not incorporated to promote further learning opportunities amongst student-teachers, and 6) the two credit hours were appropriate as per the contents.

4.3.3 Ghanaian Language and Culture (FDC 113)

The Ghanaian Language and Culture comprise eleven major Ghanaian languages that are taught in schools. These languages include Ga, Dangme, Ewe, Dagbane, Dagaare, Nzema, Kasem, Gonja, Ashanti-Twi, Akuapem-Twi, and Fante. All these courses operate on a common syllabus which is designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Ghanaian language tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes and provide suggestions for modification. The objectives of FDC 113 are;

- i. To consolidate knowledge of student-teachers in the syntactic structure of the language
- ii. To make student-teachers to be well-grounded in language usage skills in their respective Ghanaian Languages

The objectives presented above are meant to direct learning activities of FDC 113. In this regard, it can be seen from table-32 that majority (60 per cent) of tutors are uncertain as to whether the objectives are adequate to support the learning experiences in the FDC 113. However, about (50 per cent) of the tutors revealed that the

objectives are inappropriate for promoting cultural consciousness and national identity. This phenomenon suggests that the objectives do not emphasize on Ghanaian values for tutors to prepare learning experiences by using these values as social constructs to prepare prospective teachers. The details of the analysis of collected data about the course objectives and appropriateness of the contents are presented in table- 4.20.

Table-4.20: Appropriateness & Relevance of Contents & Objectives of FDC 113

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per the objectives	2 (20%)	6 (60%)	2 (20%)
2	Appropriateness of the objectives in terms of promoting cultural consciousness and national identity	3 (30%)	2 (20%)	5 (50%)
	Consolidating different Ghanaian cultures	4 (40%)	1 (10%)	5 (50%)
3	Equipping student-teachers with knowledge of syntactic structure of the language	6 (60%)	1 (10%)	3 (30%)
4	Consolidating language usage skills with respect of respective Ghanaian Languages	4 (40%)	5 (50%)	2 (20%)
5	Acquisition of knowledge for teaching Ghanaian language and Culture	4 (40%)	3 (30%)	3 (30%)
6	Significance of one credit hour to the course	5 (50%)	1 (10%)	4 (40%)
7	Significance of the reading list	3 (30%)	1 (10%)	6 (60%)

It can further be seen from table-4.20 that the contents of FDC 113 are inappropriate in terms of helping student-teachers to appreciate different Ghanaian cultures (50 per cent). As prospective teachers, they need to have an idea about the social behaviour of people in the country and differences in language and cultures. Therefore, the contents have not laid down standards for student-teachers to recognize the cultural practices, belief and values of Ghanaian people. Also, the contents are appropriate in terms of equipping student-teachers with required knowledge about the syntactic

structure of the language and usage (60 per cent). This phenomenon implies that appropriate learning experiences were provided to study a language by breaking it into different forms and functions in achieving instructional objectives. But some tutors (50 per cent) are not certain that the contents are consolidating language usage skills with respect of respective Ghanaian Languages.

To find out the competences of alumni teaching Ghanaian language and cultures at a basic level, two lessons taught by them were observed (see the details in Appendix A-1). It was observed that most of the teachers demonstrated subject knowledge in teaching the lessons. Although most of them were having incomplete lesson notes, their instructional strategies were activity-based including language games which encouraged the participation of students in achieving instructional objectives. This suggests that the methodology of teaching FDC 113 particularly lesson note preparation, needs to be relooked to prepare effective teachers.

Also, the researcher held group discussions with final year student-teachers about the contents of Ghanaian language and culture (see details in the appendix L). Here, a checklist was not used but the following themes were covered;

1. The interest of the student-teachers
2. Strengths and weakness of the contents

The points that emerged from the group discussion are presented as follows.

- a. The student-teachers revealed that this course was compulsory and as most of them were familiar with the linguistic structure of their local languages and culture, it turns to be simple, interesting and fun.
- b. The student-teachers were introduced to the structure of Grammar and Ghanaian culture that was useful at the basic schools. For example, they have studied some selected cultural practices such as puberty rites, marriage, funeral and naming ceremony.
- c. Whilst all the course outlines of the Ghanaian languages' were written in the English language, the same contents and information were embedded in all the Ghanaian languages irrespective of cultural differences.
- d. The methodology of teaching Ghanaian language and culture is not incorporated to equip student-teachers with pedagogical skills.

It can be seen from the data presented above that a variety of learning experiences for preparing prospective teachers has been considered. In practice, the contents contain appropriate learning experiences that would enhance the effective preparation of student-teachers. Also, they would be equipped with skill in appreciating our rich tradition and cultural heritage.

4.3.3.1. Teaching Methods used by BTE Tutors for teaching FDC 113

To judge the teaching methods used by the BTE tutors for teaching FDC 113, a randomly selected ten BTE Ghanaian language tutors were asked to tick mark teaching methods in a 5-point Likert scale. The collected data were subject to descriptive statistics. The details of the analysis are presented in table-4.21.

Table-4.21: Appropriateness & Relevance of Teaching Methods used in Teaching FDC 113

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Sometime	Rarely	Not at all
1	Discussion	10 (100%)	-	-	-	-
2	Collaboration	-	-	-	6 (60%)	-
3	Demonstration	-	7 (70%)	-	-	-
4	Mentoring	-	-	-	-	5 (50%)
5	Role play	-	-	-	-	6 (60%)
6	Lecture	-	-	4 (40%)	-	-
7	Project	-	-	-	-	5 (50%)
8	Debate	-	-	-	8 (80%)	-
9	Brainstorming	10 (100%)	-	-	-	-
10	Grammar Translation	10 (100%)	-	-	-	-
11	Story telling	8 (80%)	-	-	-	-

It can be seen from the table-4.21 that most frequently, the BTE tutors used Discussion method (100 per cent), Brainstorming (100 per cent), GrammarTranslation (100 per cent), and Storytelling (80 per cent), and Demonstration (70 per cent) methods frequently used to teach the course in the classroom. In essence, these teaching methods as presented above provide student-teachers with skills and knowledge for teaching Ghanaian language and culture. They are prepared to be culturally sensitive while teaching in a diverse cultural setting.

4.3.3.2 Assessment of learning outcomes in FDC 113

The collected data from the BTE Ghanaian language and Culture tutors revealed that both formative assessment and summative assessments were used in FDC 113. Also, assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment. How these assessments are conducted are discussed in the next subsection.

4.3.3.2.1 Modality for Conducting Formative assessment in FDC 113

Further interaction with the BTE tutors revealed that the formative assessment of student-teachers in FDC 113 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write one assignment comprising five compulsory unstructured questions (2 to be answered) for ten marks. Also, the mid-semester assessment comprising 20 compulsory structured questions for all the student-teachers for 20 marks. 21-day mandatory class attendance of student-teachers (recorded daily in a class register) for 10 marks per student-teacher. The details of the data are presented in table-4.22.

Table-4.22: Modality for Conducting Internal Assessment in FDC 113

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 (2 to be answered)	1	10
2	Mid-semester test	Structured	20	1	20
3	Class attendance	N/A	N/A	21 days minimum	10

4.3.3.3.2 Modality for Conducting Summative Assessment in FDC 113

The BTE Ghanaian language and Culture tutors revealed that the summative assessment of student-teachers in FDC 113 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision and marking of scripts was regulated by the Institute of Education UCC. This institute hires and contracts the Ghanaian language and Culture tutors in the BTE colleges to prepare questions, supervise and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 compulsory structured questions, one compulsory comprehension passage and three unstructured

questions (2 to be answered) for 100 marks in total. The duration of this paper is one and a half hours because it is one credit hour paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student teacher's progress. The details of the data are presented in table-4.23.

Table-4.23: Modality in Conducting External Assessment in FDC 113

Sr. No.	Assessment tool	Question type	Number of questions	Duration of The Paper	Marks
1	Written Examination	Unstructured	3 (2 to be answered)	1 ½ hours	40
		& Structured	40		20

Base on the data presented in table-4.23, it can be said that the type of questions and the number of questions used in conducting the formative assessment and the summative assessment are appropriate for diagnosing the learning needs of the student-teachers. This is because the structure questions were about the grammatical structure of the language which was critical for developing critical thinking skills of the student-teachers while the unstructured questions would enhance the writing skills of student-teachers as they write long answers.

4.3.3.4 Modification of First year Ghanaian Language and Culture

Following the data presented above, suggestions were collected from Ghanaian language tutor and final year student-teachers as stated in chapter III of this study for modification of FDC 113 contents. The respondents were requested to give suggestions for modification on areas of the contents where they felt necessary. The collected suggestions from the tutors were analyzed by using descriptive statistics via frequencies and percentages while collected suggestions from student-teachers were presented as per emerging themes. The details of the analysis of collected suggestions from the tutors are presented in the table-4.24.

Table-4.24: Needed Suggestions for Modification of FDC 113 Contents

Sr. no	Suggestion	Frequency	Percentage
1	The methodology of teaching Ghanaian language & culture should be incorporated to equip student-teachers with pedagogical skills	1	10
2	The reading list should be updated to encourage extensive reading	3	30

It can be seen from table-4.24 that the suggestions given by the Ghanaian language tutors are; 1) methodology of teaching Ghanaian language by ten per cent of tutors and 2) upgrade of the reading list by three tutors. The tutors felt that the reading list was insufficient and archaic in providing modern facts and concepts about the course.

Also, data about modification of FDC 113 was collected from the final year student-teachers through group discussion (see the details in Appendix L). The Student-teachers were asked to suggest modification for areas of the contents where they considered necessary. The points that emanated from the group discussion are presented as follows.

- a. The contents of FDC 113 should be written in the Ghanaian languages to ensure clarity and better understanding.
- b. The contents should be incorporated with the methodology of teaching to equip the student-teachers with pedagogical skills.
- c. There should be differences in the contents of the Ghanaian languages as culture and tradition differ.

The conclusion can be drawn that; 1) the course objectives were inappropriate as most of the components of this course such as cultural consciousness and national identity were not incorporated to direct the contents pathway, 2) the contents were appropriate in terms of providing student-teachers with content knowledge and pedagogical skills, 3) teaching methods viz., Discussion, Brainstorming, Grammar Translation, and Storytelling were appropriate for preparing prospective teachers in Ghanaian languages, 4) the nature of questions (structured and unstructured) was appropriate for diagnosing the learning needs of the student-teachers, 5) the reading list was inappropriate for encouraging extensive reading, and 6) the one credit hour was appropriate as per the contents.

4.3.4 Integrated Science FDC 114

The first-semester Integrated Science comprises four sections viz., Agriculture Science, Biology, Chemistry and Physics. These sections were designed for two credit hours. To judge the appropriateness of the contents of all these aspects, needed data were collected from ten randomly selected Integrated Science tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes and provide suggestions for modification. The details of the section-wise analysis are presented as follows.

4.3.4.1 Agriculture Science

This section of the Integrated Science has five objectives indicating that by the end of the section, student-teachers will be able;

- i. To describe the nature and importance of soil
- ii. To describe the principles in vegetable crop production
- iii. To outline the importance of fish farming
- iv. To perform some of the activities involved in rearing Tilapia
- v. To differentiate between various farming systems.

The objectives presented above are meant to direct learning activities of Agriculture Science. In this regard, it can be seen from table-4.25 that majority (70 per cent) of tutors revealed that the objectives are adequate to support the learning experiences in this course. Also, the majority (70 per cent) of tutors judged that the objectives are relevant for determining changes that the course has intended to bring to the student-teachers. This phenomenon suggests that the objectives have emphasized on major agriculture practices that tutors can base on to prepare prospective teachers. The details of the analysis are presented in table-4.25.

**Table-4.25: Appropriateness & Relevance of Contents & Objectives of
Agriculture Science**

Sr. no.	Items	<u>Judgment</u>		
		– Appropriate	Uncertain	Inappropriate
1	Adequacy of course contents as per given objectives	7 (70%)	-	3(30%)
2	The course objectives determine changes that the course has intended to bring to the student-teachers	7 (70%)	-	3(30%)
3	Demonstrate the separation of soil into gravel, sand, silt, clay and organic fractions	5 (50%)	2 (20%)	3 (30%)
4	Perform simple experiment to demonstrate soil texture (by the feel method)	3 (30%)	1 (10%)	6 (60%)
5	Factors to consider for vegetable crop production	5 (50%)	4 (40%)	1 (10%)
6	Discuss activities involved in rearing Tilapia (pond construction and management, stocking, feeding, harvesting, processing, packaging and marketing)	6 (60%)	-	4 (40%)
7	Distinguish between various farming systems	5 (50%)	2 (20%)	3 (30%)
8	Significance of course duration (three weeks of teaching this section)	5 (50%)	-	5 (50%)
9	Significance of the reading list	4 (40%)	-	6 (60%)

To judge the appropriateness of Agriculture Science contents, ten Integrated Science tutors were randomly selected from BTE colleges to provide needed data (see details in Chapter III of this study). It can be seen from table-4.25 that these contents particularly areas like nature of the soil, fish culture, farming system, and vegetable crop production are appropriate for preparing student-teachers. Here, appropriate content areas have a higher percentage of judgments from the tutors. The percentage-wise judgment shows that the majority (70 per cent) of tutors agreed to the contents of

the course as appropriate in terms of achieving given objectives. This suggests that the course objectives are properly set to determine the learning outcomes of the student-teachers.

Also, (60 per cent) of the tutors judged that the learning experiences involved in these contents were apt to introduce student-teachers to activities involved in rearing Tilapia. Here, they have been introduced to activities like pond construction and management, stocking, feeding, harvesting, processing, packaging and marketing. But all these activities were discussed in the classroom. This suggests that practice is not given due weightage. As tilapia is a good source of protein for meat-eaters, stock of tilapia on the market is gradually reducing due to population growth. Therefore, student-teachers need to practically learn how to rear tilapia to supplement their food and income after completing college. It was further judged by (50 per cent) of tutors that the contents were appropriate in terms of helping student-teachers to demonstrate the separation of soil into gravel, sand, silt, clay and organic fractions. This phenomenon allows them to identify the different types of soil and quality for crop production based on the differences in characteristics.

To find out the competences of alumni teaching Agriculture Science at a basic level, two lessons taught by them were observed (see the details in Appendix A-1). It was observed that most of the teachers demonstrated subject knowledge in teaching the lessons. The topics taught required field study for achieving objectives. But almost all the teachers taught the lessons in the classroom. And the students did not get practical experience for understanding the lesson properly. Therefore, most of the objectives were not successfully achieved. This was largely due to lack of college farms and equipment for fieldwork.

The researcher further collected judgments from final year student-teachers about the contents of first-semester Agriculture Science through group discussion (see details in Appendix C-4). Though the researcher was not having any structured tool, it was ensured that the following themes were covered;

1. The interest of the student-teachers
2. Strengths weakness of the contents

The points that emanated from the group discussion are presented as follows.

- a. The student-teachers showed interest in studying the contents by giving positive responses and contributions during lessons
- b. The contents equipped the student-teachers with appropriate subject matter which is connected to the basic school Agriculture Science syllabus
- c. The contents were not transacted by following field study on the farms due to lack of colleges' farms. This makes it impossible for student-teachers to put theory into practice.

Based on the data presented above, it can be said that the contents of first-semester agriculture science are building student-teachers capable of using our rich agriculture lands for the production of food. As agriculture is the main occupation of Ghana, the policy allows the study of agriculture science at every level of education. Earlier, it was studied as a separate subject at the JHS level but now integrated science. Due to tremendous interest in the subject, its study in BTE curriculum is essential. It can be learnt that the student-teachers are acquainted with the subject matter but much is not achieved concerning the practicality. This is largely due to the lack of college farms and inadequate contact hours.

4.3.4.1.1 Teaching Methods used by BTE Tutors for Teaching First-Semester Agriculture Science

To judge the teaching methods used by the BTE tutors in teaching First-Semester Agriculture Science, ten randomly selected BTE Integrated Science tutors were asked to tick mark teaching methods in a 5-point Likert scale (see details in Chapter-III of this study). The collected data were subjected to analysis by using descriptive statistics; frequencies and percentages. The details of the analysis are presented in table-4.26.

Table-4.26: Relevance & Appropriateness of Teaching Methods used in Teaching Agriculture Science

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Sometime	Rarely	Not at all
1	Discussion	4 (40%)	-	-	-	-
2	Collaboration	-	-	5 (50%)	-	-
3	Demonstration	7 (70%)	-	-	-	-
4	Mentoring	-	6 (60%)	-	-	-
5	Role play	-	-	-	-	6 (60%)
6	Lecture	-	-	-	7 (70%)	-
7	Project	5 (50%)	-	-	-	-
8	Debate	-	-	-	-	8 (80%)
9	Brainstorming	8 (80%)	-	-	-	-

It can be seen from the table-4.26 that the BTE tutors most frequently used teaching methods are Brainstorming (80 per cent), Demonstration (70 per cent), and Project (50 per cent) methods to teach the course in the classroom. But debate and role-play were not used as judged by about eighty per cent of the tutors. As student engagement in learning activities is critical, it can be said that these teaching methods are appropriate for teaching Agriculture Science. To further develop the knowledge and skills of student-teachers, it is imperative to adopt innovative teaching methods that would make them explore the subject rather than memorizing the concepts and regurgitating. Here, some of the innovating teaching methods include project, mentoring, brainstorming and collaboration which can be employed by tutors to achieve instructional objectives.

4.3.4.2 Assessment of learning outcomes in First-Semester Agriculture Science

Assessment of learning outcomes of every student-teacher was mandatory in Agriculture Science. The BTE Integrated Science tutors revealed that both formative assessment and summative assessments were used in Agriculture Science. Also, assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance and summative test for end-of-semester examination.

4.3.4.2.1 Modality for Conducting Formative assessment

Further interaction with the selected BTE tutors revealed that the formative assessment of student-teachers in Agriculture Science was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write one assignment with each comprising five compulsory unstructured questions (2 to be answered) for ten marks. Also, the mid-semester assessment comprising 20 structured questions for all the student-teachers for 20 marks. 21-day mandatory class attendance of student-teachers (recorded daily in a class register) for 10 marks per student-teacher. The details of the evaluation are presented in table-4.27.

**Table-4.27: Modality for Conducting Internal Assessment in First-Semester
Agriculture Science**

Sr. No.	Assessment tool	Question type	Number of questions	Regularity	Marks
1	Written assignment	Unstructured	5(2 to be selected)	1	10
2	Mid-semester test	Structured	20	1	20
3	Class attendance	N/A	N/A	21 days minimum	10

4.3.4.2.2 Modality for Conducting Summative Assessment

The BTE tutors further revealed that the summative assessment of student-teachers in Agriculture Science was conducted in the BTE colleges by the Institute of Education, UCC at the end of the semester. This paper was integrated with the other three Integrated Science subjects as stated earlier. This implies that this section (Agriculture Science) was not in isolation. Preparation of questions for the end-of-semester examination, supervision and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the Integrated Science tutors in the BTE colleges to prepare questions, supervise and mark the scripts of the end-of-semester examination. To prepare this paper (FDC 114), questions were selected from all the subjects and integrated for summative assessment. For Agriculture section, 10 compulsory structured questions, and two unstructured questions (one to be answered) were prepared. The same number of questions were prepared in each of the other sections totalling 40 compulsory structured questions, and 8 unstructured questions (4 to be answered). The duration of this paper is two hours because it is two credit hours

of paper. The marks obtained by each student-teacher in the formative assessment were used to supplement the marks obtained in the summative assessment to determine the student teacher's progress. The mode of assessment in this section is the same as Biology, Chemistry and Physics and should be referred to subsequently.

It can be said that modes of assessments of learning outcomes do not emphasize on practical skills. This suggests that practice is not given a due weightage as the BTE colleges are not having college farms and equipped laboratories to enhance practice. It is thought that a practical form of assessment helps the teacher to observe the extent to which the learner has acquired a given skill. It would have been better for student-teachers to work in groups or individually to solve problems on a farm or science laboratory but this was not done. In this semester, the modality of conducting assessment in all other integrated science subjects like Biology, Chemistry, and Physics are the same. Therefore, assessment in Integrated Science must be relooked.

4.3.4.2.3 Modification of First-Semester Agriculture Science

Based on the judgments given by the respondents on the content of first-semester Agriculture Science, suggestions were given by the respondents for modification. To suggest modification, needed data were collected from Integrated Science tutors and final year student-teachers. The tutors stated their suggestions in an open-ended questionnaire while student-teachers gave their suggestions in a group discussion. The collected data from tutors were analyzed by using descriptive statistics viz., frequencies and percentages and presented in the table-4.28.

Table-4.28: Needed Suggestions Modifications of First-Semester Agriculture Science

Sr. No.	Suggestion	Frequency	Percentage
1	Agriculture science should be taught as a vocational skill subject to make student-teachers self-sufficient	1	10
2	Course duration should be increased from 3 weeks to 5 weeks	5	50

It can be seen from table-4.28 that ten per cent of tutors gave suggestions that Agriculture Science should be taught as a vocational skills subject, and fifty per cent

said that the Course duration should be increased from 3 weeks to 5 weeks in this semester. They believed this would increase the number of contact hours needed to effectively engage the student-teachers in learning activities.

The researcher further collected data from final year student-teachers through group discussion. Here, they gave suggestions for modification of areas of the contents where they deemed necessary (see details in Appendix C-4). The suggestions that emanated from the group discussion are presented as follows.

- a. The BTE colleges should construct experimental farms to enhance practice and develop the interest of the student-teachers
- b. The contents of first-semester Agriculture Science should incorporate the methodology of teaching Agriculture Science to equip student-teachers with pedagogical skills.

It can be concluded here that; 1) the course objectives were adequate and relevant for determining the changes that this course has intended to bring to the student-teachers, 2) the contents were appropriate in terms of subject matter which was connected to the basic school Agriculture Science syllabus, 3) farms were not found at the BTE colleges to facilitate practical activities, 4) the teaching methods viz., Brainstorming, Demonstration and Project were appropriate for realizing instructional objectives, 5) the of assessments of learning outcomes were not appropriate as practical skills were not emphasized due to lack of farms at the BTE colleges and equipped laboratories, 6) three weeks durations of the course were appropriate, and 7) reading list was not appropriate to encourage extensive reading.

4.3.4.3 Biology

This sections of the Integrated Science has five objectives indicating that by the end of the semester, student-teachers will be able;

- i. To acquire knowledge in the naming and classification of organisms and the general characteristics of each of the 5 Kingdoms of living things; and cell theory.
- ii. To gain knowledge of the process of digestion in humans and also the processes of nutrition, and reproduction in flowering plants and animals
- iii. To acquire knowledge of the structure of flowering plants and the functions of their parts.
- iv. To perform practical activities related to the different aspects of the course

The objectives presented above are meant to direct learning activities of Biology. In this regard, it can be seen from table-4.29 that majority (70 per cent) of tutors revealed that the objectives are adequate to support the learning experiences in this course. However, some (50 per cent) tutors judged that the objectives are inappropriate for providing an opportunity to have hand-on-training on laboratory skills. This was because there was no emphasis on practicality. Therefore, it becomes difficult for most of them to help student-teacher to explain basic biological processes. The details of the analysis are presented in table-4.29.

Table-4.29: Appropriateness and Relevance of Biology Contents

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	7 (70%)	-	3 (30%)
2	The course objectives provide an opportunity for hand-on-training on laboratory skills which will help student-teacher to explain basic biological processes.	4 (40%)	1 (10%)	5 (50%)
3	Structure of cells and their relationship to tissues, organs and organ systems	7 (70%)	-	3 (30%)
4	Provision of samples organisms from different kingdoms for observation	4 (40%)	-	6 (60%)
5	Experiments on the digestive system in humans	3 (30%)	2 (20%)	5 (50%)
6	The contents consolidate relevant previous concept and skills of student-teachers	6 (60%)	-	4 (40%)
7	Significance of course duration (three weeks of teaching this section)	4 (40%)	-	6 (60%)
8	Significance of the reading list	4 (40%)	-	6 (60%)

It can be seen from the table-4.29 that the contents of the first-year Biology cover areas like the structure of cells and the digestive system in humans. The

appropriateness of content areas has been accorded by seventy per cent of tutors. It is also agreed (40 per cent) that to achieve course objectives, the adequacy of the content plays a major role and is quite adequate. Also, the majority (70 per cent) of the tutors judged that the structure of cells and their relationship to tissues, organs and organ systems were appropriate for equipping knowledge of prospective teachers. This phenomenon would help them in observing the structure of both the plant cell and the animal cell in an electron microscope and understand how they function differently. With this, they would establish a schema leading to effective learning. The majority (60 per cent) of the tutors judged that the contents were appropriate for connecting previous knowledge of the student-teachers to new concepts. This means student-teachers had studied Biology in their schools and were already having some level of knowledge. This was relevant in this course because they would have to make a little effort to upgrade the knowledge to achieve the optimum goal.

To find out the competences of alumni teaching Biology at a basic level, two lessons taught by them were observed (see the details in Appendix A-1). The results show that the alumni were equipped with content knowledge and capable of using a variety of instructional strategies to involve students in lessons in achieving objectives. This suggests that the alumni are capable of devising their teaching experiences to achieve instructional objectives.

The other areas of the contents that were inappropriate are 1) The course objectives provide an opportunity for hand-on-training on laboratory skills which will help student-teacher to explain basic biological processes, 2) Provision of samples organisms from different kingdoms for observation 3) Experiments on the digestive system in humans, 4) course duration (three weeks of teaching this section) and 5) reading list.

The researcher further collected judgments from final year student-teachers about the contents of first-semester Agriculture Science through group discussion (see details in Appendix C-3). Though the researcher was not having a checklist, it was ensured that the following themes were covered;

1. The interest of the student-teachers
2. Strengths of the contents
3. The weakness of the contents

The points that emanated from the group discussion are presented as follows.

- a. The student-teachers express their interest in studying this course by participating in lessons and giving positive responses
- b. Also, most of the student-teachers are equipped with appropriate subject matter which is connected to the basic school Biology syllabus
- c. The methodology of teaching Biology was not appropriately featured in the contents
- d. The content was overloaded
- e. Equal weightage was not given to experiment as there were unequipped Biology laboratory

Based on the data presented above, it can be said that the first-semester Biology contents did not specifically provide adequate practical activities for student-teachers to interact and make new recoveries. This was largely due to lack of equipped Biology laboratories in BTE colleges doubled with inappropriate course curriculum objectives. To prepare effective Integrated Science teachers, knowledge in Biology is critical. The Biology curriculum in BTE colleges must focus on engaging student- teachers with life activities around them. They should be equipped with knowledge of living organisms and how they interact with each other in their habitat. Most importantly, the curriculum should expose student-teachers to science experience, particularly in a real-life situation. Therefore, the contents of the first-semester Biology must be relooked.

4.3.4.3.1 Teaching Methods used by BTE Tutors for Teaching First-Semester Biology

To judge the teaching methods used by the BTE tutors in teaching First-Semester Biology, ten selected BTE Integrated Science tutors were asked to tick mark teaching methods in a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.30.

Table-4.30: Appropriateness & Relevance of Teaching Methods used in Teaching Biology

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	7 (70%)	-	-	-	-
2	Collaboration	-	-	-	5 (50%)	-
3	Demonstration	7 (70%)	-	-	-	-
4	Mentoring	-	-	7 (70%)	-	-
5	Role play	-	-	-	-	8 (80%)
6	Lecture	8 (80%)	-	-	-	-
7	Project	-	3 (30%)	-	-	-
8	Debate	-	-	-	-	10 (100%)
9	Brainstorming	-	5 (50%)	-	-	-

It can be seen from the table-4.30 that the BTE tutors most frequently used teaching methods such as Lecture (80 per cent), Demonstration (70 per cent) and Discussion (70 per cent) to teach the course in the classroom. These teaching methods were adopted by the BTE tutors depending on the facilities available. To transact these contents successfully, interactive methods are crucial to actively engage student-teachers in activities that would help them to understand complex concepts. For interactive teaching, Biology tutors would have engaged student-teachers in laboratory activities and guided them to accomplish tasks. This ought to be done to achieve course objectives.

4.3.4.3.2 Suggested Modification of the First-Semester Biology

Suggestions were collected from the respondents; Integrated Science tutors and final year student-teachers on the contents of the first-semester Biology, for its modification. The tutors stated their suggestions in an open-ended questionnaire while student-teachers gave their suggestions in a group discussion conducted by the researcher. The collected data from tutors were analyzed by using descriptive statistics; frequencies and percentages and presented in the table-4.31.

Table-4.31: Needed Suggestions Modification of the First-Semester Biology

Sr. no	Suggestion	Frequency	Percentage
1	Course duration should be increased from 3 weeks to 5 weeks	4	40
2	Practical activities related to the different aspects of the course	2	20
3	Update reading list	8	80

It can be seen from table-4.31 that tutors gave suggestions that the course duration should be increased from 3 weeks to 5 weeks in this semester (40 per cent). On further enquiry, they said that this would increase the number of contact hours needed to effectively engage the student-teachers in learning activities. Eighty per cent tutors suggested that the reading list shall be updated and twenty suggested for more practical activities for student-teachers.

The researcher further collected data from final year student-teachers through group discussion. Here, they gave suggestions for modification of areas of the contents where they deemed necessary (see details in Appendix C-3). The suggestions that emanated from the group discussion are presented as follows.

- a. Biology tutors should use multi-media material such as videos and games to make teaching and learning of Biology lively.
- b. The reading list needs to be updated
- c. The need for contents on the methodology of teaching Biology is necessary for the development of pedagogical skills.

In conclusion it can be said that 1) the four course objectives were appropriate as per the contents, 2) the contents were appropriate for providing content knowledge to student-teachers. This means the structure of cells and their relationship to tissues, organs and organ systems were connected to the basic school Biology, 3) Practical was not given equal weightage in this course. This could be largely attributed to unequipped Biology laboratories in the colleges and must be relooked, 4) the three weeks duration of this course was not appropriate as per the contents and must be addressed to produce competent teachers, and 5) the Lecture teaching methods wasnot appropriate and should be re-looked.

4.3.4.4 Chemistry

The course objectives of the Chemistry section of Integrated Science were not found in the BTE curriculum designed by the Institute of Education, UCC 2014. Further investigation revealed that Chemistry tutors were allowed to set accurate and achievable instructional objectives to measure the learning outcomes themselves. This phenomenon looks inappropriate because the course objectives are supposed to be the road map for the contents and methodology of the course. For this reason, course contents are designed simply to the extent that the tutors can construct instructional objectives as per the BTE standard. The course objectives were judged in absentia alongside with the contents of this course by Integrated Science tutors through a questionnaire (close-ended and opened ended) and analyzed by using frequencies and percentages. The details of the analysis are presented in table-4.32.

Table-4.32: Appropriateness & Relevance of Chemistry Contents

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Lack of course objectives helped BTE tutors to set up learning experiences to bring about desired learning outcomes	-	1 (10%)	9 (90%)
2	Acquired knowledge of the effects of science and technology on human life and the environment	8 (80%)	1 (10%)	1 (10%)
3	Ability to experiment to demonstrate the changes in the three main states of matter (solid, liquid and gas)	5 (50%)	3 (30%)	2 (20%)
4	Developing professionalism and pedagogical skills	4 (40%)	-	6 (60%)
5	Adequacy of course duration (two weeks of teaching this section)	6 (60%)	1 (10%)	3 (30%)
6	Significance of the reading list	-	1 (10%)	9 (90%)

It can be seen from table-4.32 that the content of first-year Chemistry covers areas like science and technology and matter. The contents were appropriate in terms of preparing student-teachers to acquire knowledge about the effects of science and technology on human life and the environment (80 per cent). This phenomenon has

become part of modern society. It has made human existence on the earth meaningful. Introducing student-teacher to science and technology particularly in this era of knowledge outburst is essential. Therefore, student-teachers are properly exposed to the relationship between science and technology and their effects on the way man thinks and does things in the environment. Also, the tutors (50 per cent) judged that the contents are appropriate in terms of helping student-teachers to experiment to demonstrate the changes in the three main states of matter (solid, liquid and gas). This points to the fact that the contents have incorporated learning activities to help student-teacher in experimenting the three states of matter as per instructional objectives.

Also, the researcher observed two chemistry lessons taught by the alumni at the basis schools (see the details in appendix A-1). It was observed that most of the teachers demonstrated subject knowledge of the lessons taught. The topics taught required laboratory experiments in achieving the objectives. But almost all the teachers taught the lessons in the classroom theoretically. And the students did not get the first-hand experience to understand the lesson properly. Therefore, most of the objectives were not successfully achieved. Lack of practical knowledge of the alumni, as well as lack of science laboratory at the basic schools, might be the causative factors in this situation.

As stated in the chapter-III of the presented study, further data were collected through group discussion from 320 final student-teachers on out-program teaching practice in four zones (North, West, East & Central). The observation was about the appropriateness of the contents of first-semester Chemistry (see details in Appendix C-1). Though the researcher was not having a checklist, it was ensured that the following themes were covered;

1. The interest of the student-teachers
2. Strengths and weakness of the contents

The points that emerged from the group discussions are presented as follows.

- a. The student-teachers expressed their interest in studying these contents by giving positive responses and contributions during lessons. The contents were simple, understandable and related to basic school chemistry.
- b. Also, the contents have equipped the student-teachers with the basic knowledge of chemistry. They further exemplified that they were introduced

to the three major elements of matter and were able to perform a simple experiment in the classroom on how each of the states of matter changes from one to the other.

- c. The contents did not introduce the student-teachers to teaching techniques in chemistry as there were no contents on teaching methodology.

It can be learnt from the data presented above that the contents of first-semester chemistry are designed to prepare student-teachers capable of teaching basic chemistry in schools. Student-teachers are mandated to study these contents as part of the integrated science curriculum. In this curriculum, chemistry has substantial contents about effects of science and technology on human life, the three main states of matter (solid-state, liquid state and gas state), and sufficient contact hours for treating the contents. However, in reviewing the BTE curriculum designed by the Institute of Education, UCC (2004), the course objectives were not found. Further interactions with the Integrated Science tutors revealed that instructional objectives were set by the course tutors to measure learning outcomes.

4.3.4.4.1 Teaching Methods used for Teaching First-Semester Chemistry

To judge the teaching methods used by the selected BTE tutors in teaching First-Semester Chemistry, the BTE Integrated Science tutors were asked to tickmark to judge the teaching methods in a 5-point Likert scale. The collected data were subjected to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.33.

Table-4.33: Appropriateness & Relevance of Teaching Methods used in Teaching Chemistry

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	8 (80%)	-	-	-	-
2	Collaboration	-	-	6 (60%)	-	-
3	Demonstration	8 (80%)	-	-	-	-
4	Mentoring	-	-	6 (60%)	-	-
5	Role play	-	-	-	-	8 (80%)
6	Lecture	-	-	-	7 (70%)	-
7	Project	4 (40%)	-	-	-	-
8	Debate	-	-	-	-	10 (100%)
9	Brainstorming	-	7 (70%)	-	-	-

It can be seen from the table-4.33 that most frequently the BTE tutors used teaching methods such as Demonstration (80 per cent), Discussion (80 per cent) and Brainstorming (70 per cent) frequently used to teach the course in the classroom. Engaging student-teachers in learning activities is critical for skill development. Therefore, a teacher-centred approach to teaching chemistry is inadequate for achieving targets. To develop knowledge and skills of student-teachers, it is essential to adopt innovative teaching methods that would make them explore the subject in the laboratories. In this context, some teaching methods such as project, mentoring, brainstorming and collaboration that can help Chemistry tutors to achieve instructional objectives.

4.3.4.5 Modification of First-Semester Chemistry

Based on the judgments given by the respondents on the content of first-semester Chemistry, suggestions were given by the respondents for modification. To suggest modification, needed data were collected from Integrated Science tutors and final year student-teachers. The tutors stated their suggestions in an open-ended questionnaire while student-teachers told their suggestions in a group discussion. The collected data from tutors were analyzed by using descriptive statistics via frequencies and percentages and presented in table-4.34.

Table-4.34: Needed Suggestions Modification of First-Semester Chemistry

Sr. no	Suggestion	Frequency	Percentage
1	The contents should be incorporated with detailed contents on laboratory experience	1	10
2	The contents should be incorporated with the method of teaching chemistry to develop pedagogical skills of student-teachers	1	10
3	The reading list should be upgraded	6	60

It can be seen from table-4.34 that detailed contents on laboratory experience for teaching chemistry in BTE curriculum and provision for developing pedagogical skills to teach Chemistry are essential. The tutors (60 per cent) further suggested that reading lists should be updated. An updated reading list would in traduce student-

teachers to modern and useful books and chemistry equipment to facilitate teaching and learning of chemistry in BTE colleges.

The researcher further collected data from final year student-teachers through group discussion. Here, they gave suggestions for modification of areas of the contents where they deemed necessary (see details in Appendix C-1). The suggestions that emanated from the group discussion are presented as follows.

- a. The Chemistry laboratory in BTE colleges should be equipped with facilities to facilitate effective teaching and learning of Chemistry
- b. The method of teaching chemistry should be taught to the student-teachers in this course to make them effective chemistry teachers.
- c. The BTE tutors should adopt projects methods of teaching chemistry to equip student-teachers with practical teaching skills.

It can be concluded here that; 1) the course was not having the objectives designed by curriculum designers, 2) the contents were appropriate for preparing student-teacher with subject knowledge, 3) Pedagogical skills was not given equal weightage as methodology of teaching was not incorporated, 4) Reading list was not appropriate to encourage extensive, 5) the two weeks of course duration was appropriate, 6) the modes of assessments were appropriate and suited for the course, and 7) teaching methods such as Demonstration, Discussion and Brainstorming were appropriate for engaging student-teachers in learning activities for skill development.

4.3.4.6 Physics

The course objectives of the Physics section of Integrated Science were not found in the BTE curriculum designed by the Institute of Education, UCC (2014). Interaction with tutors revealed that tutors were made to frame accurate objectives to measure the learning outcomes. This practice is inappropriate because the course objectives are supposed to direct learning activities. In terms of the contents, data were collected from tutors through a questionnaire (close-ended and opened ended) and analyzed by using frequencies and percentages. The details of the analysis are presented in table- 4.35.

Table-4.35: Appropriateness and Relevance of Physics Contents

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Lack of course objectives helped BTE tutors to set up learning experiences to bring about desired learning outcomes	-	1 (10%)	9 (90%)
2	The ability of student-teachers to measure the various quantities in science (length, mass, time, volume, area, weight and temperature)	6 (60%)	1 (10%)	3 (30%)
3	Equipping student-teachers with knowledge of energy conservation and transformation, work and power	7 (70%)	-	3 (30%)
4	Equipping student-teachers with knowledge about the concept of reflection and refraction of light	6 (60%)	1 (10%)	3 (30%)
5	Introducing student-teachers to the components of the solar system	8 (80%)	1 (10%)	1 (10%)
6	Student-teachers can perform practical activities related to practical areas of the contents such as measurements and energy	3 (30%)	1 (10%)	6 (60%)
7	Significance of course duration (five weeks of teaching this section)	8 (80%)	-	2 (20%)
8	Significance of the reading list	5 (50%)	2 (20%)	3 (30%)

It can be seen from table-4.35 that the contents of first-year physics cover areas like measurements, energy, light energy, and the solar system. The appropriate contents areas of the course were judged as appropriate by sixty per cent tutors. It was also judged by the majority (80 per cent) of tutors that the contents were appropriate in terms of introducing student-teachers to the components of the solar system, whereas (70 per cent) of the tutors judged that the contents were appropriate of equipping student-teachers with knowledge in energy conservation and transformation, work and power. This implies that the learning experiences encountered here are significant for prospective teachers. They further stated other essential areas of this course like the planets and stars of the solar system, energy, work and power are relevant and

adequate. All these areas provide appropriate subject matter because of the connection with the basic school integrated science syllabus.

Also, the researcher observed physics two lessons taught by the alumni at the basis schools (see the details in appendix A-1). It was found that most of the alumni taught energy but could not use proper instructional strategies to achieve objectives. Although most of them know the subject matter, they have poor classroom management techniques and incomplete lesson notes. This phenomenon is attributable to a lack of methodology in teaching physics in the first semester.

The researcher further collected judgments from final year student-teachers about the contents of first-semester Physics through group discussion (see details in Appendix C-1). Though a structured tool was not used, it was ensured that the following themes were covered;

1. The interest of the students
2. Strengths and weakness of the contents

The points that emerged from the group discussions are presented as follows.

- a. The student-teachers showed interest in studying the contents by giving positive responses and contributions during lessons. The contents had precise information about the subject which is related to basic school Physics' contents.
- b. The contents were appropriate for equipping the student-teachers with knowledge of the subject matter. They exemplified that that knowledge acquired in the measurement of the various quantities in science, and energy conservation and transformation are essential.
- c. The teaching methodology of Physics was not featured to equip student-teachers with pedagogical skills
- d. Equal weightage was not given to practicality probably due to lack of facilities.

Physics contents are designed to offer student-teachers fundamental principles that govern the physical environment. Considering the data presented above, first semester physics focuses on introducing student-teachers to a clear understanding of the solar system, energy conservation and energy transformation and measurement of the various quantities in science. The student-teachers have learned to think critically in

understanding the underlying scientific principles that would effectively enhance the teaching of this course.

4.3.4.6.1 Teaching Methods used by BTE Tutors for Teaching First-Semester Physics

To judge the teaching methods used by the BTE tutors in teaching First-Semester physics, ten selected BTE Integrated Science tutors were asked to tickmark to judge teaching methods in a 5-point Likert scale. The collected data were subject to analysis by using frequencies and percentages. The details of the analysis are presented in table-4.36.

Table-4.36: Relevance and appropriateness of Teaching Methods used in Teaching First-Semester Physics

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	7 (70%)	-	-	-	-
2	Collaboration	-	4 (40%)	-	-	-
3	Demonstration	7 (70%)	-	-	-	-
4	Mentoring	-	5 (50%)	-	-	-
5	Role play	-	-	-	-	8 (80%)
6	Lecture	-	-	7 (70%)	-	-
7	Project	6 (60%)	-	-	-	-
8	Debate	-	-	-	-	9 (90%)
9	Brainstorming	-	7 (70%)	-	-	-

It can be seen from the table-4.36 that most frequently used teaching methods include Discussion, Demonstration, and Project and Brainstorming methods to teach the student-teachers as judged by almost seventy per cent of them. Role-play and debates are not used by them and sometimes they use the lecture method to teach students. It can be said that the contents are transacted by using proper methods.

4.3.4.6.2 Modification of First-Semester Physics

To suggest modification, needed data were collected from Integrated Science tutors and final year student-teachers. The tutors stated their suggestions in an open-ended questionnaire while student-teachers gave their suggestions in a group discussion. The collected data from tutors were analyzed by using descriptive statistics via frequencies and percentages and presented in table-4.37.

Table-4.37: Needed Suggestions Modification of First-Semester Physics

Sr. no	Suggestion	Frequency	Percentage
1	The contents of first semester physics should be incorporated with the methodology of teaching physics	2	20
2	The contents should be incorporated with the contents of pedagogic reasoning	1	10
4	The reading list of the course should be upgraded to encourage extensive reading	5	50

It can be seen from table-4.37 that the methodology of teaching physics is essential and must be introduced in the first semester of the curriculum by 20 per cent. They believed this will equip student-teachers with adequate teaching skills to be effective in schools. Also, the Integrated Science tutors (10 per cent) suggested that these contents should be incorporated with contents relating to pedagogic reasoning. This can be done by encouraging tutors to use pedagogically oriented material in teaching in the classroom. The Integrated Science tutors (50 per cent) further suggested that the reading lists should be updated. An updated reading list would give modern and useful books and physics equipment to encourage extensive reading.

The researcher further collected data from final year student-teachers through group discussion. Here, they gave suggestions for modification of areas of the contents where they deemed necessary (see details in Appendix C-2). The suggestions that emanated from the group discussion are presented as follows.

- a. The contents of first semester physics should be incorporated with concepts of improvisation for student-teachers to be able to improvise teaching aids from their immediate environment.
- b. The contents of first semester physics should be incorporated with the methodology of teaching Physics.
- c. The content weightage between theory and practice of this course should be balanced.

Based on the above data, it can be concluded here that; 1) the objectives were not found in this course and must be re-looked, 2) the contents of this course was appropriate preparing student-teachers, 3) Pedagogy was not give equal weightage, 4)

the modes of assessments were appropriate and suited for the course, 5) the five weeks course duration were appropriate as per the contents, and 6) teaching methods such as Discussion, Demonstration, Project, and Brainstorming were appropriate for transacting the course.

4.3.5 Religious and Moral Education (FDC 119)

The Religious and Moral Education (RME) is designed for one credit hour to provide general education to the BTE student teachers. To judge the appropriateness of the contents, needed data were collected from ten randomly selected RME tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes and provide suggestions for modification. The objectives of this course FDC119 are;

- i. To examine the nature and scope of Religious and Moral Education
- ii. To distinguish between “educational” and “non-educational” aims of teaching Religious and Moral Education
- iii. To identify the “religious” and “non-religious” sources of morality
- iv. To describe the theories associated with Religious and Moral development and their pedagogical implications
- v. To identify factors which affect the moral development of learners.

With regard of the objectives presented above, it can be seen from table-50 that majority (70 per cent) of tutors revealed that the objectives are designed with pedagogical implications drawn from Ghanaian values, beliefs, and mode of worship. Also, (50 per cent) of tutors judged that the objectives are appropriate for covering adequate contents to be transacted. This suggests that tutors are provided with a clear clue about what to teach as they prepare their lessons. The details of the analysis of collected data about the course objectives and appropriateness of the contents are presented in table-4.38.

Table-4.38: Appropriateness and Relevance of Contents and Objectives of RME

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	5 (50%)	2 (20%)	3 (30%)
2	The objectives are designed with pedagogical implications drawn from Ghanaian values, beliefs, and mode of worship	7 (70%)	1 (10%)	2 (20%)
3	Providing knowledge to identify the “Religious” and “Non-Religious” Sources of Morality	6 (60%)	-	4 (40%)
4	Acquire knowledge and understanding in religious development theories	5 (50%)	1 (10%)	4 (40%)
5	Acquire knowledge and understanding of moral development theories	5 (50%)	1 (10%)	4 (40%)
6	Significance of one credit hour of the course	2 (20%)	-	8 (80%)
7	Significance of the reading list	3 (30%)	1 (10%)	6 (60%)

It can be seen from the table-4.38 that majority of the tutors (70 per cent) judged that the course objectives were designed with pedagogical implications drawn from Ghanaian values, beliefs, and mode of worship. The objectives covered concepts that relate to the three major religions in Ghana. Contextually, knowledge of these religions viz., Christianity, Islam and African Traditional Religion were appropriate to student-teachers. The learning experiences were to develop moral values and affection in student-teachers to become effective teachers. Also, most of the tutors (60 per cent) felt that the contents of the course stimulate moral development of student-teachers. Understanding the “Religious” and “Non-Religious” Sources of Morality, it is easier to figure out moral values and recognizes evil in the society in which they belong. This enables them to have some experience from the environment (social and culture) for all-round development as prospective teachers. It was further judged that by (50 per cent) of tutors that the contents were appropriate in terms of imparting knowledge and understanding of Religious Development Theories and Moral Development Theories onto the student-teachers. This indicates that the student-teachers were

equipped with the educational implications drawn from these theories which would be useful for effecting teaching and learning processes in the basic schools.

Also, the researcher observed two Physics lessons taught by the alumni at the basic schools (see the details in Appendix A-1). It was found that most of them were effective in the classroom. Most of them had prepared relevant lesson notes and employed interactive instructional strategies coupled with desirable subject knowledge in achieving instructional objectives. This phenomenon is attributable to pedagogical implications derived from the various development theories as incorporated in FDC 119.

The researcher further collected data from final year student-teachers about the contents of first-semester RME through group discussion (see details in Appendix G). Though any structured tool was not used, it was ensured that the following themes were covered;

- 1) The needs and interest of the student-teachers
- 2) Strengths and weakness of the contents of this course

The following points emanated from the group discussion.

- a. The contents of this course were appropriate for stimulating the interest of prospective basic school teachers
- b. Also, the Relationship between “Religious Education” and “Moral Education” was proper in terms of content knowledge. The contents emphasized on the “educational aims” and “non-educational” aims of teaching Religious and Moral Education. And stressed on the factors affecting the moral development of an individual
- c. The contents provided an insight into religious sources and non-religious sources of morality
- d. However, Religious Theories and Moral Theories were not providing appropriate educational implications. So, the Ghanaian heritage and culture system was not properly featured in the contents due to inadequate contact hours.

The data presented above indicate that the contents of FDC 119 were designed to provide student-teachers with an understanding of religious and moral issues to promote a compassionate society. They would be able to reflect and understand how a

tolerant society could be created by learning moral lessons and values of the three major religions in Ghana viz., Christianity, Islam and African Traditional Religion. This implies that the roles of these religions in teacher preparation is critical in modern society.

4.3.5.1 Teaching Methods used by BTE Tutors for Teaching FDC 119

To judge the teaching methods used by the BTE tutors in teaching FDC 119, the BTE tutors were asked to tick mark teaching methods in a 5-point Likert scale. The collected data were subjected to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.39.

Table-4.39: Relevance & Appropriateness of Teaching Methods used in Teaching FDC 119

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	10 (100%)	-	-	-	-
2	Collaboration	-	3 (30%)	-	-	-
3	Demonstration	-	8 (80%)	-	-	-
4	Mentoring	-	-	-	-	8 (80%)
5	Role play	-	6 (60%)	-	-	-
6	Lecture	8 (80%)	-	-	-	-
7	Project	-	-	-	-	7 (70%)
8	Debate	-	-	7 (70%)	-	-
9	Brainstorming	10 (100%)	-	-	-	-
10	Excursion	-	-	-	5 (50%)	-

It can be seen from the table-4.39 that most frequently, the BTE tutors used teaching methods such as Discussion (100 per cent), Brainstorming (100 per cent), and Lecture (80 per cent) to teach the course in the classroom. It can also be seen that Demonstration and Role-Play were frequently used to teach the RME in the colleges. These data show that the tutors used a variety of teaching methods to teach the course this semester. But many studies have recommended a problem-based approach to teach (Schuitema et al, 2007; Beane 2002; Saye 1998). They felt that student-teachers have to work cooperatively and interact among themselves to achieve instructional objectives.

4.3.5.2 Assessment of learning outcomes in FDC 119

To progress from one semester to the next semester, the assessment of learning outcomes of every student-teacher was mandatory. The collected data from the RME tutors revealed that both formative assessment and summative assessments were used in FDC 119. Also, assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment.

4.3.5.2.1 Modality for Conducting Formative assessment in FDC 119

Further interaction with the RME tutors revealed that the formative assessment of student-teachers in FDC 119 was conducted in the BTE colleges by the tutors. For written assignment based on the areas stated above, every student-teacher was mandated to write one assignment comprising five compulsory unstructured questions (3 to be answered) for ten marks. Also, the mid-semester assessment comprising 20 compulsory structured questions for all the student-teachers for 20 marks. Each one of them must also have a 21-day mandatory class attendance for 10 marks. The details of the data are presented in table-4.40.

Table-4.40: Modality in Conducting Internal Assessment in FDC 119

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 (3 to be answered)	1	10
2	Mid-semester test	Structured	20	1	20
3	Class attendance	N/A	N/A	21 days minimum	10

4.3.5.2.2 Modality for Conducting Summative Assessment in FDC 119

The tutors revealed that the summative assessment of student-teachers in FDC 119 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the RME tutors in the BTE colleges to prepare questions, supervise and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 8 unstructured questions (5 to be answered). The duration of

this paper is one and a half hours because it is one credit hour paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student teacher's progress.

As per the level of student-teachers, it can be said that the type of questions and the number of the question set in both formative assessment and summative assessments properly reflect on the areas covered here. Whereas the structured questions develop critical thinking skills of the student-teachers, the unstructured question helps the tutors to find out their weakness as they try to organize the subject matter in the form of long answers.

4.3.5.3 Modification of FDC 119 Content

Based on the data presented above, the modification of FDC 119 contents is essential. To modify the contents, the needed data were further collected from ten RME tutors and final year student-teachers. The researcher requested the respondents as stated in chapter III of this study to give suggestions for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics; frequencies and percentages while collected data from student- teachers were concomitantly presented. The details of the analysis of collected suggestions from tutors are presented in the table-4.41.

Table-4.41: Needed Suggestions Modification of the FDC 119

Sr. no	Suggestion	Frequency	Percentage
1	The contents of moral and religious theories should focus on how children learn	1	10
2	The contents should focus on developing self-initiative skills of students	1	10
3	Credit hours should be increased to three	4	40

It can be seen from table-4.41 that the suggestions given by tutors were directed to the following areas; the contents of moral and religious theories should focus on how

children learn, the contents should focus on developing self-initiative skills of students, and the credit hours should be increased to three.

The researcher further collected data from final year student-teachers through group discussion. Here, they gave suggestions for modification of areas of the contents where they deemed necessary (see details in appendix G). The suggestions that emanated from the group discussion are presented as follows.

- a. There should be contents on religious leadership and practices to educate the student-teachers the Ghanaian ways of worship
- b. There should be contents on moral values of the various ethnic groups in Ghana to make the prospective teachers well vexed in their moral practices
- c. The contents of religious and moral theories should be simple and provide precise information for easier understanding.

Based on the above data, it can be concluded here that; 1) the course objectives were adequate and appropriate as per the contents, 2) the contents were appropriate for imparting content knowledge and pedagogical skills to teach in the classroom, 3) one credit hour was not appropriate and should be adjusted, 4) the reading list was not appropriate to encourage extensive reading, 5) Teaching methods such as Discussion, Brainstorming, and Lecture were appropriate for teaching this course, and 6) the modes of assessing learning outcomes of student-teachers were appropriate. The type of questions and the number of the question set in both formative assessment and summative assessments properly reflect on the areas covered.

4.3.6 Environmental and Social Studies FDC 118

The course title of Environmental and Social Studies (E/SS) is Introduction to Foundations of Social Studies designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected E/SS tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes and provide suggestions for modification. The objectives of this course are;

- i. To create an awareness of the essential content base of Social Studies
- ii. To equip students with components of the environment and basic mapping skills
- iii. To help students to develop the ability to make rational decisions about land use
- iv. To provide opportunities for students to locate places within the environment
- v. To equip students with the knowledge and skills to describe physical, social and cultural features within the environment appropriately.

About the objectives presented above, it can be seen from table-4.42 that majority (60 per cent) of tutors revealed that the objectives are relevant as focussing on a multi-disciplinary approach to understanding societal issues. Also, (40 per cent) of tutors judged that the objectives are adequate to cover all the contents set to be transacted in the classroom. This indicates that tutors are not having difficulties in planning their lessons. The details of the analysis are presented in table-4.42.

Table-4.42: Appropriateness and Relevance of FDC 118 Contents

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	4 (40%)	3 (30%)	3 (30%)
2	The course objectives provide the multi-disciplinary approach to understand societal issues	6 (60%)	3 (30%)	1 (10%)
3	Perspective on the environment (Air, Land, Water),	6 (60%)	1 (10%)	3 (30%)
4	Acquire knowledge in land use	7 (70%)	2 (20%)	1 (10%)
5	Acquire basic mapping skills (location of places using the map)	5 (50%)	4 (40%)	1 (10%)
6	Perspective on features of the earth	4 (40%)	5 (50%)	1 (10%)
7	Significance of one credit hour to the course duration	2 (20%)	3 (30%)	5 (50%)
8	Significance of the reading list	1 (10%)	2 (20%)	7 (70%)

The Environmental and Social Studies and its appendage, Citizenship Education; derive ideas, concepts, facts and generalizations from various fields to explain societal issues and to address societal problems. To judge the appropriateness of the contents,

ten Environmental and Social Studies tutors were randomly selected from BTE colleges to provide needed data (see details in Chapter-III of this study). Therefore, it can be seen from table-4.42 that majority of the tutors (70 per cent) agreed that the contents are appropriate for equipping student-teachers with knowledge of land use. Based on this, most (60 per cent) of the tutors feel student-teachers are familiar with the physical environment (Air, Land, Water) and its related issues like pollution and land degradation. While observing lessons taught by alumni in basic schools, it was found that the generalist teachers were demonstrating knowledge of the subject matter in teaching subjects Social studies (see details in appendix A-1). In this phenomenon, it can be said that the contents of the FDC 118 are capable of producing basic school teachers capable of teaching Social Studies. This finding is supported by Quashigah et al (2014). These authors evaluated colleges of education (CoE) Social Studies curriculum vis-à-vis the Junior High School (JHS) Social Studies curriculum in Ghana and found that the contents of CoE Social Studies were appropriately equipping student-teachers with content knowledge to be effective in the classroom.

The researcher further collected data from final year student-teachers about the contents of FDC 118 as stated in chapter III of this study, through group discussion. Though the researcher was not having a checklist, it was ensured that the following themes (see appendix H) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows.

- a. The student-teachers expressed interest in studying FDC 118. They felt that the concepts are based on facts and capable of helping them to understand the relief features of their immediate environment.
- b. Also, they revealed that the contents have exposed them to know how to enquire societal issues in addressing possible problems that are of grave interest to them and society.
- c. They, however, revealed that the content weightage of FDC 118 was imbalanced as geography contents were more incorporated than other Social Science subjects like History, Economics, Sociology, Politics etc.

4.3.6.1 Teaching Methods used by BTE Tutors for teaching FDC 118

To judge the teaching methods used by the BTE tutors in teaching FDC 118, ten E/SS tutors were asked to tickmark to judge teaching methods in a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.43.

Table-4.43: Relevance & Appropriateness of Teaching Methods used in Teaching FDC 118

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	10 (100%)	-	-	-	-
2	Games	-	-	-	-	5 (50%)
3	Collaboration	-	3 (30%)	-	-	-
4	Demonstration	-	8 (80%)	-	-	-
5	Mentoring	-	-	-	-	8 (80%)
6	Role play	-	6 (60%)	-	-	-
7	Lecture	8 (80%)	-	-	3 (30%)	-
8	Project	-	-	-	-	7 (70%)
9	Debate	-	-	7 (70%)	4 (40%)	-
10	Brainstorming	10 (100%)	-	-	-	-
11	Excursion	-	-	-	5 (50%)	-

It can be seen from the table-4.43 that most frequently, the BTE tutors used Discussion (100 per cent), Brainstorming (100 per cent) and Lecture (80 per cent) methods to teach the course in the classroom. The contents of FDC 118 is diverse and dynamic. It consists of the nature of the environment, maps and scale, and the uses of land. These are broad concepts that require the participation of every student-teacher in the classroom. Therefore, the tutors felt that a blend of a variety of teaching methods such as Discussion, Brainstorming and Lecture is crucial for achieving instructional objectives.

4.3.6.2 Assessment of learning outcomes in FDC 118

To progress from one semester to the next semester, the assessment of learning outcomes of every student-teacher was mandatory. The collected data from the BTE E/SS tutors revealed that both formative assessment and summative assessments were

used in FDC 118. Also, assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment.

4.3.6.2.1 Modality for Conducting Formative assessment in FDC 118

Further interaction with the E/SS tutors revealed that the formative assessment of student-teachers in FDC 118 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of comprising 5 compulsory unstructured questions (3 to be answered) for ten marks. Also, the mid-semester assessment comprising 20 compulsory structured questions for all the student-teachers for 20 marks whereas a 21-day mandatory class attendance of student-teachers was assessed for 10 marks per student-teacher. The details of the data are presented in table-4.44.

Table-4.44: Modality in Conducting Internal Assessment in FDC 118

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 (3 to be answered)	1	10
2	Mid-semester test	Structured	20	1	20
3	Class attendance	N/A	N/A	21 days minimum	10

4.3.6.2.2 Modality for Conducting Summative Assessment in FDC 118

The BTE tutors revealed that the summative assessment of student-teachers in FDC 118 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the E/SS tutors in the BTE colleges to prepare questions, supervise and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 8 unstructured questions (5 to be answered). The duration of this paper is one and a half hours because it is one credit hour paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student teacher's progress. It can be said here that the type of questions and the number of

question used in both formative assessment and summative assessment are proper. This is because the structured questions seek to develop critical thinking skills of the student-teachers whereas the unstructured questions help the tutors to diagnose weakness as they try to organize the subject matter in a form of long answers.

4.3.6.3 Modification of FDC 118 Content

Based on the data presented above, the modification of FDC 118 contents is essential. To modify the contents, needed data were collected from ten randomly selected E/SS tutors (one department head each from ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to give suggestions for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics; frequencies and percentages and presented in table-4.45.

Table-4.45: Needed Suggestions Modification of FDC 118

Sr. no	Suggestion	Frequency	Percentage
1	The contents should be incorporated with the methodology of teaching social studies to develop pedagogical skills	2	20
2	The reading list must be upgraded to provide adequate books to encourage extensive reading	6	60
3	The one-credit hours should be increased to three	4	40

It can be seen from table-4.45 that E/SS tutors (20 per cent) suggested that the contents should be incorporated with the methodology of teaching social studies to develop pedagogical skills. For student-teachers to deliver the contents knowledge acquired, pedagogical knowledge is critical and must be emphasized. Also, the E/SS tutors (60 per cent) suggested that the reading list must be upgraded to provide adequate books to encourage extensive reading whereas the one credit hours should be increased to three to provide adequate contact hours to achieve the instructional objectives.

The researcher had a group discussion with final year student-teachers which emanated suggestions for modification of FDC 118 (see appendix H). The suggestions that emerged are presented as follows.

- a. The student-teachers suggested the contents of the FDC 118 should be redesigned to incorporate topics from other social science subjects like history, economics, sociology, politics etc.
- b. A topic, 'uses of land,' should be offloaded as it could be taught in Agriculture Science
- c. Libraries in the colleges should be furnished with modern books that have relevant information about the contents.

It can be concluded that 1) the course objectives were relevant for mitigating the given contents, 2) the contents were appropriate for helping student-teachers to acquire ideas, concepts, facts and generalizations from various fields to address societal problems, 3) One credit hour was inappropriate for transacting the contents, 4) the teaching methods viz., Discussion, Brainstorming, and Lecture were appropriate for achieving instructional objectives, 5) the type of questions used in both formative assessment and summative assessment were appropriate.

4.3.7 Pre-Vocational Skills

The Pre-Vocational course comprises of Catering, Creative Art and Technology and Home Economics-Sewing. In the first-semester, student-teachers studied Creative Art and Technology. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Pre-Vocational skills tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes and provide suggestions for modification. The details analysis of Creative Art and Technology are presented as follows.

4.3.7.1 Creative Art and Technology FVA 111

In first-semester, the Creative Art and Technology is titled Fundamentals in Visual Arts is designed for one credit hour. Its objectives indicate that by the end of the section, student-teachers would be able;

1. To demonstrate understanding the nature and scope of Vocational Skills- Visual Art
2. To gain knowledge in basic concepts and practical skills fundamentals in Visual Arts

About the relevance of the objectives presented above, it can be seen from table-4.46 that tutors (60 per cent) judge that the objectives are irrelevant as most of the fundamental concepts of visual arts subjects were not captured. For this reason, (50 per cent) of tutors were of the view that the objectives are inadequate to match up with the contents. This might pose a problem for tutors when planning for lessons. The detailed analysis of collected data about the course objectives and appropriateness of the contents are presented in table-4.46.

Table-4.46: Appropriateness and Relevance of Contents and Objectives of FVA 111

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	2 (20%)	3 (30%)	5 (50%)
2	The course objective covers fundamental concepts of all visual arts subjects	3 (30%)	1 (10%)	6 (60%)
3	Acquire knowledge in principles and elements of design	7 (70%)	3 (30%)	-
4	Familiar with colour work and can mix colours as per the twelve points colour wheel	7 (70%)	2 (20%)	1 (10%)
5	Ability to demonstrate drawing techniques in different perspectives	4 (40%)	1 (00%)	5 (50%)
6	Ability to establish a creative environment to enhance the productivity of creative products	5 (50%)	1 (10%)	4 (40%)
7	Significance of one credit hour to the course duration	3 (30%)	2 (20%)	5 (50%)
8	Significance of the reading list	2 (20%)	2 (20%)	6 (60%)

To judge the appropriateness of the FVA 111 contents, ten Pre-Vocational tutors were randomly selected from BTE colleges to provide needed data (see details in Chapter III of this study). It can be seen from table-4.46 that the contents cover areas like basic design, colour work, drawing, and concepts of creativity. Here, appropriate content areas have a higher percentage of judgments from the tutors. The percentage-wise judgment shows that the majority of the tutors (70 per cent) agreed that the contents were appropriate in helping student-teacher to gain knowledge in principles and elements of design. Talking about elements of design we are referring to dot, line, space, texture colour, Plane, weight, and volume whereas principles of design include variety, harmony, contrast, repetition, dominance, opposition, scale, proportion and rhythm. In the creative art industry, ideas are largely represented in art form using principles and elements. These principles and elements appear in natural and artificial forms which the tutors felt most of the student-teachers were conversant with and used in developing new ideas.

Also, the majority of the tutors (70 per cent) judged that student-teachers were familiar with colour work and could mix colours as per the twelve points colour wheel. For student-teachers to be effective in an art class, it is expected that they were familiar with mixing colours. According to the tutors, the concept of colour work was not a challenge to the student-teachers. They stated that the Ghanaian traditional concepts of colour as in deriving colour from nature such as lemon-yellow colour, the relationship between one colour and another in the twelve colour wheel were properly taught to the student-teachers. This phenomenon suggests that the ability of student-teachers to manipulate colours effectively and efficiently could not be doubted.

An average number of tutors (50 per cent) further judged that student-teachers have learned to establish a creative environment to enhance the productivity of creative products. In the creative industry, enabling environment is critical for strengthening minds and skills that lead to effective production of original artefacts (Kholoud et al, 2019). Further interaction with some tutors revealed that many of them were committed to ensuring a flexible atmosphere, particularly during Art lessons so that student-teacher could freely share their ideas and express their aesthetic skills. This approach was meant to help student-teachers to develop their potentials as they freely engage in drawing activities in the classroom.

Also, the researcher observed physics lessons taught by the alumni at the basic schools (see the details in Appendix A-2). It was found that most of them had prepared lesson notes indicating all the essential components and teaching aids. And under the Creative Arts and Technology, one would expect that interactive cum activities methods would be employed by the teachers to teach the lessons. Although most of them demonstrated subject knowledge, they could not actively engage the students in activities to achieve instructional objectives. They explained that complex practical work (painting) was not encouraged at the basic level. Therefore, their schools were not having in stock teaching aids, particularly painting material for practical work.

The researcher also collected judgments from 320 final year student-teachers about the contents of FVA 111 as stated in chapter III of this study through group discussion (see details in Appendix F-2). Though the researcher was not having a checklist, it was ensured that the following themes were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows.

- a. The student-teachers expressed interest and satisfaction in the contents of the FVA 111. They said that they were enthused to participate in the various activities that the course entails. They further ascertained that almost all the activities in the content were practically taught and that has sharpened their creative skills.
- b. Also, they revealed that contents about the design process, drawing techniques, printmaking and the concepts of creativity have boosted their confidence to teach Creative Art and Technology in the future as it is properly connected to the syllabus of Creative Art and Technology in basic schools
- c. However, they revealed that provision was not made in the contents in terms of time and material to take care of student-teachers who were not creatively inclined. The tutors tend to focus more attention on the creative student.
- d. The student-teachers were made to buy personal material for this course as the BTE colleges were not having equipped workshops. This was a demotivation for most of the student-teachers who could not afford.

The data presented above have provided the status of FVA 111 contents in the context of preparing student-teachers. Based on the data, most of the contents were appropriate for equipping student-teachers with knowledge and creative skills. Student-teachers were exposed to learning activities that would have helped them to create an enabling environment to enhance creativity. Also, an opportunity was provided for constant practice of skills. This suggests that the content weightage between theory and practice was duly balanced. This is to say student-teachers have gained theoretical knowledge and practical skills capable of teaching Creative Art and Technology in basic schools.

4.3.7.2 Teaching Methods used by BTE Tutors for teaching FVA 111

To judge the teaching methods used by the BTE tutors in teaching FVA 111, ten randomly selected subject tutors were asked to tickmark to judge the teaching methods in a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.47.

Table-4.47: Relevance & appropriateness of Teaching Methods used in Teaching FVA 111

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	9 (90%)	-	-	-	-
2	Collaboration	-	-	-	3 (30%)	-
3	Demonstration	-	8 (80%)	-	-	-
4	Mentoring	-	-	5 (50%)	-	-
5	Role play	-	-	-	-	6 (60%)
6	Lecture	-	-	-	-	7 (70%)
7	Project	8 (80%)	-	-	-	-
8	Debate	-	-	-	-	10 (100%)
9	Brainstorming	6 (60%)	-	-	-	-

It can be seen from the table-4.47 that most frequently, the BTE tutors used teaching methods such as Discussion (90 per cent), Project (60 per cent) and Brainstorming (60 per cent) to teach FVA 111. It can be thought that teaching FVA 111 in BTE colleges demands that tutors have to emphasize content knowledge and practical skills. How to make lessons practical largely depends on the teaching methods. In this regard the

learner-centred method is essential. This needs to be a structured approach so that whatever learning experience student-teachers would have gained could be applied in to achieve subsequent skills. In a close discussion with some tutors, it was found that they preferred these teaching methods because they were helping them in achieving instructional objectives, particularly at the periods when resources in the classroom were inadequate.

4.3.7.2.1 Assessment of Learning Outcomes of FVA 111

Assessment of learning outcomes of every student-teacher was mandatory in FVA 111. The collected data from the BTE tutors revealed that both formative assessment and summative assessments were used in this course. Also, assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment.

4.3.7.2.2. Modality for Conducting Formative Assessment of FVA 111

Further interaction with the BTE tutors revealed that the formative assessment of student-teachers in FVA 111 was conducted in the BTE colleges by the tutors of the course. For the written assignment, every student-teacher was mandated to write a minimum of one assignment comprising five compulsory unstructured questions (2 to be answered) for 10 marks. Also, the mid-semester test comprises 20 compulsory structured questions for all the student-teachers for 10 marks. In addition to this, each student-teachers have to complete one mandatory quiz comprising ten structured questions for 10 marks. The details of the same have been presented in table-4.48.

Table-4.48: Modality for Conducting Internal Assessment of FVA 111

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 (2 to be answered)	1	10
2	Mid-semester test	Structured	20	1	20
3	Quiz	Structured	10	1	10

4.3.7.2.3 Modality for Conducting Summative Assessment of FVA 111

The tutors revealed that the summative assessment of student-teachers in FVA 111 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of

questions for the end-of-semester examination, supervision and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (3 to be answered). The duration of this paper is one and a half hours because it is one credit hour paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student teacher's progress. Further discussion with tutors revealed that the five unstructured questions used in external assessment were a combination of questions that would determine student- teachers' conceptual understanding of the subject matter and questions that indirectly allowed them to manipulate real material to demonstrate their skill in the artwork. In this consideration, the practice was given due weightage. The student-teachers were allowed to demonstrate their practical skills indirectly. As concluded by Abrahams and Reiss (2015), indirect assessment of practical skills is appropriate for understanding the extent to which students have acquired a practical skill.

4.3.7.2.4 Modification of FVA 111 Contents

To modify the content of this course, needed data were collected from ten randomly selected Pre-Vocational Skills tutors (one department head each from ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were asked to provide suggestions for modification on areas of the content they felt necessary. The collected data from tutors were analyzed by using descriptive statistics; frequencies and percentages as presented in table-4.49.

Table-4.49: Needed Suggestions Modification of FVA 111

Sr. no	Suggestion	Frequency	Percentage
1	There should be comprehensive contents of printmaking	1	10
2	The methodology of teaching catering should be incorporated in FVA 111	3	30
3	The mode of internal assessment should take the form of a project to allow student-teacher to do more of creative work	1	10
4	The one-credit hour should be increased to three	2	20

It can be seen from table-4.49 that a tutor (10 per cent) suggests that comprehensive content of printmaking should be incorporated to train the student-teachers. Talking about printmaking we are referring to scribbling, block-printing, stencil printing, motif design and arrangement. Investigation revealed that these concepts were not sufficiently covered by tutors in the course. For student-teachers to gain ample knowledge and skills in these, detailed contents are necessary and shall be taught.

Also, the Pre-Vocational Skills tutor (30 per cent) suggested that the methodology of teaching FVA 111 should have a place in the BTE curriculum. The methodology of teaching plays a vital role in teacher preparation. It introduces the student-teachers to a variety of ways to deliver lessons successfully. In this consideration, the tutors felt there was a need to incorporate methodology in the BTE curriculum to enrich the teaching competencies of the student-teachers in this subject. The tutors (20 per cent) further suggested that one credit hour should be increased to three to create more contact hours in the classroom.

Also, data about modification of FVA 111 were collected from final year student-teachers (320) through group discussion. The student-teachers were asked to suggest modification for areas of the contents where they considered necessary. The findings that emanated from the group discussion are presented as follows;

- a. An updated reading list would give modern and useful information to facilitate teaching and learning of Catering.
- b. The BTE colleges should establish a market for the art products to be sold. The income that will accrue from these products could be used to purchase material for subsequent works.
- c. The BTE colleges should inaugurate Art days when student-teachers would showcase their aesthetics skills by displaying their art products for inspection. This would be a motivation tool to energize the talented ones and rejuvenate their skills.

It can be concluded here that; 1) the course objectives were not relevant as per the contents of this course, 2) the contents were appropriate in terms of equipping student-teachers with subject knowledge, 3) the pedagogy was not given equal weightage, 3) one credit hour was not adequate and needs to be adjusted, and 4) the reading list was not appropriate to encourage extensive reading, 5) teaching methods

were not appropriate for achieving instructional objectives, and 6) modes of assessments were appropriate for preparing student-teachers.

4.3.8 Principles and Practice of Education (EPS 111)

Principles and Practice of Education have been designed for two credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Education tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes and provide suggestions for modification. The objectives of this course are;

- i. To explain the concept and contexts of education from philosophical viewpoints and discuss aims and functions of education in Ghana and developing communities.
- ii. To describe the agencies involved in educational delivery and their contributions to the various aspects of child education.
- iii. To examine the liberal and vocational conceptions in education, their roles in developing the individual and their place in the curriculum.
- iv. To explain a curriculum, describe its design process and types, and discuss its relevance in national development.

About the relevance of the objectives presented above, it can be seen from table-4.50 that tutors (90 per cent) judge that the objectives are relevant as covering adequate contents to guide in building student-teachers' confidence and good attitudes towards teaching. For this reason, (60 per cent) of tutors were of the view that the objectives are adequate in mitigating the concepts incorporated in the contents. This implies that the tutors were provided with clear ideas about what and how to prepare for lessons. The details of the analysis of collected data about the course objectives and appropriateness of the contents are presented in table-4.50.

Table-4.50: Appropriateness and Relevance of Contents and Objectives of**EPS 111**

Sr. No.	Item	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	6 (60%)	-	4 (40%)
2	Objectives have covered adequate contents to guide in building student-teachers' confidence and good attitudes towards teaching	9 (90%)	-	1 (10%)
3	Significance of education delivery in Ghana	8 (80%)	2 (20%)	-
4	Perspective on curriculum design process	5 (50%)	-	5 (50%)
5	Perspective on curriculum changes and innovations	6 (60%)	-	4 (40%)
7	Significance of 2 credit hours to the course duration	6 (60%)	-	4 (40%)
8	Significance of the reading list	4 (40%)	-	6 (60%)

It can be seen from table-4.50 that (90 per cent) of tutors agreed that the course objectives were appropriate for developing confidence and attitude of student- teachers. To further ascertain this phenomenon, the researcher observed the lesson taught by alumni in basic schools (see details in Appendix A-1). It was revealed that the alumni were demonstrating confidence and knowledge of the subject matter in teaching most of the basic school subjects. This implies that by studying the EPS 111, student-teachers have acquired subject matter as well as developing the confidence to achieve instructional objectives.

The majority of the tutors (80 per cent) judged that the contents were appropriate in terms of introducing student-teachers to the concept of education delivery in Ghana. In their opinion, there is an emphasis on functions of education viz., socio-cultural functions, economic functions, and political functions. Other areas considered include the various agencies and Non-Governmental Organizations (NGO) which promote

education delivery in Ghana. This helps student-teachers in understanding and achieving educational objectives. Also, (60 per cent) of tutors judged that the contents were appropriate in the perspective on curriculum changes and innovations. Here, what comes to mind is the dynamic nature of the curriculum concerning social change. Through learning experiences acquired from here, it is expected that the student-teachers would be able to respond to social changes related to educational improvement. To respond to changes, knowledge in technology, and exposure to a variety of instructional strategies are critical. The tutors feel that all these issues have been addressed in EPS 111 to make prospective teachers effective in the classroom.

The researcher also collected judgments from final year student-teachers about the appropriateness of the contents of Principles and Practice of Education through group discussion (see the details in Appendix E-1). Though the researcher was not having prearranged questions, the student-teachers were required to judge the appropriateness of contents by ensuring that the following themes were covered;

- 1) The needs and interest of the student-teachers
- 2) Strengths and weakness of the contents of this course

The points that emerged from the group discussion are presented as follows;

- a. The contents of Principles and Practice of Education are appropriate for meeting the interest of student-teacher. This is because the arrangement of the contents is in sequence, and simple for understanding.
- b. Also, the contents provide useful basic information about the teaching profession. This is because some a concept like the role of the teacher in the processes of education has been covered.
- c. The contents are not providing in-depth subject matter about the philosophical and sociological principles underlying current educational practices and curriculum design.

4.3.8.1 Teaching Methods used by BTE Tutors for teaching EPS 111

To judge the teaching methods used by the BTE tutors in teaching EPS 111, the BTE tutors were asked to tick mark teaching methods on a 5-point Likert scale. The collected data were analyzed using frequencies and percentages. The details of the analysis are presented in table-4.51.

Table-4.51: Appropriateness & Relevance of Teaching Methods used in Teaching EPS 111

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	-	10 (100%)	-	-	-
2	Collaboration	-	-	-	-	4 (40%)
3	Demonstration	-	3 (30%)	-	-	-
4	Mentoring	-	-	4 (40%)	-	-
5	Role play	-	-	-	-	6 (60%)
6	Lecture	10 (100%)	-	-	-	-
7	Project	-	-	-	-	5 (50%)
8	Debate	-	-	-	-	8 (80%)
9	Brainstorming	10 (100%)	-	-	-	-

It can be seen from the table-4.51 that most frequently, the BTE tutors used teaching methods such as Lecture (100 per cent), and Brainstorming (100 per cent) to teach EPS 111 in the classroom. Also, Discussion (100 per cent) was frequently used to teach the course. These teaching methods are relevant and appropriate for stimulating the interest and experience of the student-teachers.

4.3.8.2 Assessment of learning outcomes in EPS 111

Assessment of learning outcomes of every student-teacher was mandatory in EPS 111. In this regard, the collected data from the ESP tutors revealed that both formative assessment and summative assessments were used in ESP 111. Also, assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment.

4.3.8.2.1 Modality for Conducting Formative assessment in EPS 111

While interacting with the EPS tutors, it was revealed that the formative assessment of student-teachers in EPS 111 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of two assignments with each comprising five compulsory unstructured questions for 10 marks. Also, the mid-semester assessment comprising 20 compulsory structured questions for all the student-teachers for 20 marks whereas a 21-day mandatory class

attendance of student-teachers were assessed for 10 marks per student-teacher. The details of the findings are presented in table-4.52.

Table-4.52: Modality for Conducting Internal Assessment in EPS 111

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 (2 to be answered)	2	10
2	Mid-semester test	Structures	(20)	1	20
3	Class attendance	N/A	N/A	21 days minimum	10

4.3.8.2.2 Modality for Conducting Summative Assessment in EPS 111

The EPS tutors revealed that the summative assessment of student-teachers was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (3 to be answered). The duration of this paper is two hours because it is two credit hours of paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student teacher's progress.

4.3.8.3 Modification of EPS 111

Based on the data presented above, suggestions were collected from the EPS tutors and student-teachers for modification. The respondents were asked to provide suggestions about areas of the contents where they felt necessary. The collected data from tutors were analyzed by using descriptive statistics via frequencies and percentages in table-4.53.

Table-4.53: Needed Suggestion for Modification of EPS 111

Sr. no	Suggestion	Frequency	Percentage
1	There is a need to incorporate detailed content on philosophy and sociology of education	1	10
2	Update of reading list	8	80

It can be seen from table-4.53 that EPS tutors gave suggestions relating to incorporate detailed contents on philosophy and sociology of education and eighty per cent opined that the reading list is updated.

Also, data about modification of EPS 111 were collected from the final year student-teachers through group discussion (see the details in the appendix E1). The Student-teachers were asked to suggest modifications for areas of the contents where they considered necessary. The points that emanated from the group discussion are presented as follows.

- a. The content of Philosophy and Sociology in this course should be disintegrated
- b. There is a need to incorporate contents about the process of teacher education in Ghana
- c. There is a need to incorporate contents about the policies of basic teacher education

Looking at the data presented above, it has been established that; 1) the two credit hours were appropriate as per the contents, 2) the course objectives were relevant to prepare student-teachers, 3) the contents were appropriate for preparing student- teachers with confidence to deliver lessons successfully in the classroom. What constitutes confidence in this context is curriculum, design process, and desired outcome of education, 4) the teaching methods viz., Discussion, Project, and Brainstorming were adequate for preparing student-teachers, and 5) modes of assessments were appropriate for determining learning outcomes of student-teachers,

6) the Philosophy and Sociology components of this course have a lot of significance in teacher preparation and ought to stand as separate papers. This suggests that as separate papers, adequate contents would be incorporated for training student- teachers, 7) the contents on the process of teacher education in Ghana as well as the policies of basic teacher education should be incorporated in this course to enlighten the student-teachers about policies guidelines associated with teaching career are appropriate.

Based on the foregoing discussion, it can be concluded that the seven courses (total of 12 credits) were transacted in the first semester. It was ensured that the courses were selected and represented each of the three categories of the BTE courses viz, Educational and Contemporary Studies, Curriculum and Pedagogic Studies and Value

Added Courses. More percentages of tutors in the various areas of the courses showed that the course objectives were relevant but curriculum designers did not incorporate objectives in some Integrated Science courses. Also, the contents of many of these courses were appropriate for equipping student-teachers with subject knowledge while pedagogical skills were problematic. Therefore, it can be said that the appropriateness and relevance of the contents of first semester courses in terms of subject knowledge are appropriate. But in terms of pedagogical skills, credit hours, and reading list, it is inappropriate and must be relooked.

4.4. Second-Semester

The second-semester courses in the BTE curriculum comprise nine mandatory subjects with a total of 12 credit hours. The courses and their respective course codes and credit hours are presented in table-4.54.

Table-4.54: Course Title, Course Code & Credit Hours of Second-Semesters

Courses

Sr. No	Course Code	Course Title	Credit Hours
1	FDC 121	English Language	2
2	FDC122	Mathematics (Geometry & Trigonometry)	2
3	FDC 123	Ghanaian Language and Culture	1
4	FDC 124	Integrated Science 2	2
5	FDC 128	Environmental & Social Studies	1
6	PRA 121	Music and Dance	1
7	PRA 122	Physical Education	1
8	GNS 121	HIV/AIDS Education	1
9	FVH 122	Pre-Vocational Skills (Catering)	1
Total			12

Source: Institute of Education, UCC (2014)

4.4.1 English Language Studies (FDC 121)

The course is designed for two credit hours. To judge the appropriateness of the contents, needed data were collected from ten randomly selected English tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and

pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To identify the various literary genres
- ii. To identify the features of prose and analyze a selected text
- iii. To use punctuation marks correctly
- iv. To write formal, semi-formal informal and letters using the appropriate language and formats.

Judging the relevance of the objectives presented above, it can be seen from table-4.55 that tutors (80 per cent) agree that the objectives are relevant as covering the dual approach to transacting the contents as in literature and language with a focus on practical skills in writing and communication. So, (60 per cent) of tutors' further judges that the objectives are adequate as per the given contents. These assertions imply that the objectives are relevant for directing the learning experiences of the student-teachers. The details of the analysis of collected data about the course objectives and appropriateness of the contents are presented in table-4.55.

Table-4.55: Appropriateness and Relevance of Contents and Objectives of FDC 121

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	6 (60%)	1 (10%)	3 (30%)
2	The course objectives provide a dual approach to teaching the contents as in literature and language and focus on practical skills in writing and communication	8 (80%)	1 (10%)	1 (10%)
3	Acquire knowledge in elements of grammar (sentence patterns and punctuation)	7 (70%)	2 (20%)	1 (00%)
4	Perspective on letter writing (formal semi-formal & informal)	5 (50%)	2 (20%)	1 (00%)
5	Acquire knowledge in the various literary genres (prose, drama & poetry)	6 (60%)	1 (10%)	3 (30%)
6	Significance of two credit hours to the course duration	5 (50%)	3 (30%)	2 (20%)
7	Significance of the reading list	4 (40%)	5 (50%)	1 (10%)

It can be seen from table-4.55 that the contents of FDC 121 have covered areas like elements of literature, elements of grammar (sentence patterns and punctuation), and letter writing. The tutors judged that the contents help in acquiring grammar knowledge (70 per cent) helps in acquiring knowledge of previous genres (60 percent) and help in developing letter writing skills (formal semi-formal & informal) as asserted by tutors (60 per cent). The perspective of letter writing and the significance of two credits are judged by fifty per cent of tutors as adequate. About the reading list tutors were not sure about its adequacy.

Further data were collected from final year student-teachers by using group discussion to judge the appropriateness of the FDC 121 contents (see the details in Appendix-D). Though the researcher was not having prearranged questions, the student-teachers were required to judge the appropriateness of contents by ensuring that the following themes were covered;

1. The needs and interest of the student-teachers
2. Strengths and weakness of the contents of this course

The emerged points from the group discussion are presented as follows;

- a. The contents were sufficient as per the course objectives and stimulated the interest of the student-teachers
- b. The contents were appropriately connected to the basic school English Language syllabus
- c. The contents covered all the aspects of the English Language; Grammar, literature, essay, and comprehension
- d. The methodology of teaching the English language was not featured in the contents

Based on the data presented above, it can be said that almost all the areas covered by FDC 121 are appropriate for preparing student-teachers to be effective in the classroom. The contents have a broad scope with a blend of learning activities in literature, writing, and communication skills. These are the fundamental learning experiences that are required to develop the literacy skills of the student-teachers.

4.4.1.1 Relevance and Appropriateness of Teaching Methods used by BTE

Tutors for teaching FDC 121

To evaluate the appropriateness of the teaching methods used by the BTE tutors in teaching FDC 121, the BTE tutors were asked to tick mark teaching methods on a 5-point scale. The results show that the teaching methods that were most often used by BTE tutors in teaching FDC 121 include discussion, brainstorming, grammar-translation, and storytelling. These teaching methods are not different from the teaching methods stated earlier while presenting the methods of teaching FDC 111.

4.4.1.2 Assessment of learning outcomes in FDC 121

Data were collected from English tutors to judge the appropriateness of formative assessment and summative assessments used in FDC 121. It was found that assessment tools viz., written assignment, mid-semester test, and class attendance were used for conducting internal assessment whereas end-of-semester examination was used for conducting the summative assessment. It was also observed that the assessment of learning outcome (internal and external assessment) in FDC 121 is the same as the assessment of learning outcomes in FDC 111 as stated earlier about the number of questions, duration, marks, and scoring procedure in this semester. Considering these learning experiences, it can be believed that student-teachers would acquire the knowledge and skills needed for achieving instructional goals.

4.4.1.3 Modification of FDC 121 Contents

Based on the foregoing findings of relevance and appropriateness of FDC 121 contents, suggestions were provided for modification. The tutors stated their suggestions in an open-ended questionnaire while student-teachers gave their suggestions in a group discussion. The collected data from tutors were analyzed by using descriptive statistics; frequencies and percentages as presented in table-4.56.

Table-4.56: Needed Suggestion for Modification of FDC 121

Suggestion	Frequency	Percentage
The contents should be incorporated with the methodology of teaching English language and literature genres	2	20

It can be seen from table-4.56 that tutors (20 per cent) suggest the contents of FDC 121 should be incorporated with the methodology of teaching English language and literature genres. To prepare effective teachers, it is proper to introduce student-teachers to pedagogical skills capable of designing learning activities to achieve instructional objectives.

Also, data about content modification of FDC 121 were collected from the final year student-teachers through group discussion (see the details in appendix D). The Student-teachers were asked to suggest modifications for areas of the contents where they considered necessary. The findings that emanated from the group discussion are presented as follows.

- a. There should be adequate contents on the methodology of teaching the English language and elements of literature
- b. Recommended books for FDC 121 should be made available in the libraries to encourage extensive reading.

It can be concluded here that; 1) the course objectives of FDC 121 were relevant for adequately covering essential aspects of the contents, 2) the contents were appropriate to equip student-teachers with subject knowledge and pedagogy, 3) the teaching methods were appropriate for preparing student-teachers, 4) modes of assessment was appropriate for determining learning outcomes of student-teachers, 5) two credit hours were appropriate for transacting the course.

4.4.2 Mathematics (FDC 122)

The course is designed for two credit hours. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Mathematics tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To review and consolidate the concepts and skills related to Geometry and Trigonometry

- ii. To discover relations involving shapes, perimeters, areas, and volumes and use these to solve problems.
- iii. To relate and apply mathematical knowledge to solve problems in Geometry and Trigonometry, using appropriate procedures and tools - ICT including calculators

Concerning the relevance of the objectives presented above, it can be seen from table-69 that the objectives are relevant as appropriately designed to determine how to calculate height and distance in real-life (50 per cent) whereas adequate contents are captured by the objectives (70 per cent). These mean that the objectives are relevant for leading learning activities that would be transacted. The details of the analysis of collected data about the course objectives and appropriateness of the contents are presented in table-4.57.

Table-4.57: Appropriateness and Relevance of Contents and Objectives of FDC 122

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	The course contents are adequate as per given objectives	7 (70%)	-	3 (30%)
2	The course objectives provide an opportunity for student-teachers to learn how to calculate height and distance in real-life	5 (50%)	3 (30%)	1 (10%)
3	Acquire concepts and procedures for problem-solving in Geometry and Trigonometry	7 (70%)	1 (10%)	2 (20%)
4	Ability to solve problems involving shapes, perimeters, areas, and volumes	6 (60%)	3 (30%)	1 (10%)
5	Perspective on Movement Geometry and Vectors	4 (40%)	3 (10%)	3 (30%)
6	Significance of two credit hours	5 (50%)	2 (20%)	3 (30%)
7	Significance of the reading list	5(50%)	2 (20%)	3 (30%)

It can be seen from table-4.57 that the majority of tutors (70 per cent) judged that the contents were appropriate for equipping student-teacher with knowledge on concepts

and procedures for problem-solving in Geometry and Trigonometry. They further explained that student-teachers were introduced to several concepts like Sine, Cosine, and Tangent of acute angles; solving problems on right-angled triangles using trigonometric ratios. Also, student-teachers were introduced to other related areas like geometrical construction including loci, movement geometry, and vectors which concepts provide a better understanding of Geometry and Trigonometry. Based on the knowledge acquired, the majority (60 per cent) of tutors feel most of the student-teachers would be able to solve problems involving shapes, perimeters, areas and volumes. These findings contradict the conclusion made by Nabie et al (2018). These authors studied pre-service teachers' perceptions and knowledge of trigonometric concepts in two Colleges of Education in Ghana and concluded that the student-teachers in Ghanaian College of Education lacked knowledge in the basic concepts of trigonometry by arguing that it was not properly taught. What might have influenced the conclusion could be that the data were generated from only two colleges which probably should not be generalized.

Also, the researcher collected judgments from final year student-teachers about the appropriateness of the contents of FDC 122 through group discussion (see the details in Appendix-B). Though the researcher was not having prearranged questions, the student-teachers were required to judge the appropriateness of contents by ensuring that the following themes were covered;

1. The needs and interest of the student-teachers
2. Strengths and weakness of the contents of this course

The emerged points from the group discussion are presented as follows.

- a. The student-teachers expressed interest in the contents by participating in the lessons with enthusiasm
- b. The student-teachers were introduced to use trigonometric to solve problems on right-angle-triangle
- c. They were taught to determine the distance between two points, midpoints of line segments, slopes (gradients) of lines, equation of a straight line
- d. There were inadequate contents on lesson planning and pedagogy
- e. Less emphasis on the use of ICT and calculators in solving problems on Geometry and Trigonometry
- f. Inadequate contents involving games methods of teaching mathematics

The data presented above indicate that the contents of FDC 122 are appropriate in terms of helping student-teachers to passionately work with angles and triangles. Though ICT tools such as computers and calculators were not used to enhance learning and pedagogy was not given due weightage, it is clear that student-teachers had an opportunity to develop their skills in the basic measurement of lines and distance. This indicates that ability to use proper tools and units to measure substance is crucial in our daily lives.

4.4.2.1 Teaching Methods used by BTE Tutors for teaching FDC 122 Contents

To judge the teaching methods used by the BTE tutors in teaching FDC 122, the BTE tutors were asked to tick mark teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most frequently used by BTE tutors in teaching FDC 122 include Discussion (100 per cent), Demonstration (100 per cent) and Collaboration (70 per cent). These teaching methods are the same as the teaching methods used in teaching FDC 112 as presented earlier. As the objectives and contents differ, it is expected that teaching methods should also differ. For this reason, this phenomenon needs to be relooked.

4.4.2.2 Assessment of learning outcomes in FDC 122

The collected data from the BTE tutors revealed that both formative assessment and summative assessments were used in FDC 122. The assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment. It was also observed that the assessment of learning outcome (internal and external assessment) in FDC 122 is the same as the assessment of learning outcomes in FDC 112 as stated earlier. It is the same in terms of the number of questions, duration, marks, and scoring procedure.

4.4.2.3 Modification of FDC 122 Contents

Based on the foregoing findings of relevance and appropriateness of FDC 122 contents, suggestions were provided for modification. The tutors stated their suggestions in an open-ended questionnaire while student-teachers gave their suggestions in a group discussion. The collected data from tutors were analyzed by using descriptive statistics; frequencies and percentages as presented in table-4.58.

Table-4.58: Needed Suggestions for Modification of FDC 122

Suggestion	Frequency	Percentage
The contents should be incorporated with technology integration strategies to enhance teaching and learning	1	10

Many Mathematics tutors did not see the need to modify the contents of FDC 122. It can be seen from table-4.58 above that a few of them (10 per cent) suggested that the contents should be incorporated with technology integration strategies to enhance teaching and learning. On further inquiry, it was found that multimedia tools help for technology integration. This can stimulate interest and enhance teamwork among student-teachers and encourage an inter-disciplinary approach to learning Mathematics in the BTE curriculum.

Also, data about modification of FDC 122 were collected from the final year student-teachers through group discussion. The Student-teachers were asked to suggest modifications for areas of the contents where they considered necessary. The findings that emanated from the group discussion are presented as follows.

- a. There is a need to incorporate content on TLM construction to differential instructions and reinforce learning skills in achieving instructional objectives.
- b. More content on teaching methods and the use of games to stimulate students' interest in the classroom.

Based on the findings above, it can be concluded here that; 1) the course objectives of FDC 122 are relevant for leading learning activities that would be transacted by the tutors, 2) the contents are appropriate to equip student-teachers with subject knowledge and pedagogy, 3) the teaching methods viz., Discussion, Demonstration, and Collaboration were appropriate for achieving instructional objectives, 4) modes of assessments were appropriate for determining the learning outcomes of student-teachers, 5) the two credits were appropriate for transacting the course.

4.4.3 Ghanaian Language and Culture (FDC 123)

Ghanaian Language and Culture are designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Ghanaian language tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course are;

- i. To have a clear understanding of the term “literature” and the difference between oral and written literature.
- ii. To appreciate both oral and written literature pieces
- iii. To determine the effective use of language in literary pieces.
- iv. To appreciate that people have different cultures.
- v. To have acquired skills for teaching the two areas

It can be seen from table-4.59 that the objectives are relevant as appropriately designed to guide student-teachers to be conversant with what constitutes literature, the characteristics and features of oral and written literature (60 per cent). But further assertions made by tutors (50 per cent) imply that the objectives are inadequate as some aspects of the contents are not covered. This is because aspects like poetry and some selected novels which are essential aspects of the literature did not capture the objectives. The details of the analysis of collected data about the course objectives and appropriateness of the contents are presented in table-4.59.

**Table-4.59: Appropriateness and Relevance of Objectives and Contents of
FDC 123**

Sr. No.	Item	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	3 (30%)	2 (20%)	5 (50%)
2	The course objectives guide student-teachers to be conversant with what constitutes literature, the characteristics, and features of oral and written literature	6 (60%)	1 (10%)	3 (30%)
3	A clear understanding of the term “literature” and the difference between oral and written literature	7 (70%)	1 (10%)	2 (20%)
4	Learn to appreciate why people have different cultures	6 (60%)	1 (10%)	3 (30%)
5	Acquire skills for teaching oral and written literature	4 (40%)	1 (10%)	5 (50%)
6	Significance of 1 credit hour	7 (70%)	2 (20%)	1 (10%)
7	Significance of the reading list	3 (30%)	3 (30%)	4 (40%)

It can be seen from table-4.59 that majority of the tutors (70 per cent) believe the contents were appropriate for providing a clear understanding of the term “literature” and the difference between oral and written literature. A majority of tutors (60 per cent) also judged the student-teachers have learned to appreciate why people have different cultures. For us to live in tranquillity in a society, it is essential to have a thorough understanding of the culture of people. By the learning experiences acquired, student-teachers would learn to understand the way of life of the various Ghanaian ethnic groups. A majority (60 per cent) of the tutors agreed the course objectives guided student-teachers to be conversant with what constitutes literature, the characteristics, and features of oral and written literature. And through the efforts of the tutors have helped student-teachers to acquire skills for teaching the two areas.

Also, the researcher collected judgments from final year student-teachers about the appropriateness of the contents of FDC 123 through group discussion as stated in chapter III of this study. Though the researcher was not having prearranged questions,

the student-teachers were required to judge the appropriateness of contents by ensuring that the following themes (see appendix L) were covered;

1. The needs and interest of the student-teachers
2. Strengths and weakness of the contents of this course

The points that emerged from the group discussion are presented as follows.

- a. Student-teachers were delighted to contribute feverishly to the development of the lesson in the classroom.
- b. Most of the student-teachers were familiar with characteristics of oral and written literature, and the genres of literature viz., prose, drama, and poetry.
- c. Most of the student-teachers felt they would not teach the literature aspect of the Ghanaian properly as the contents of FDC 123 lacks methodology of teaching.
- d. Student-teachers were not motivated to read extensively as most of the instructional time was spent on elements of literature, genres of literature, and literary strategies.

It can be learned from the above-presented data that knowledge in literature is critical for stimulating the interest of student-teachers and changing their perceptions towards people of different cultures and socio-economic backgrounds. A large part of the contents focuses on guiding student-teachers to be conversant with what constitutes literature, the characteristics, and features of oral and written literature. Therefore, it is expected for them to develop their interest in reading a variety of literary texts, comprehend properly, and reflect to achieve a goal.

4.4.3.1 Teaching Methods used by BTE Tutors for teaching FDC 123 Contents

To judge the teaching methods used by the BTE tutors in teaching FDC 123, the BTE tutors were asked to tick mark teaching methods on a 5-point scale. The results show that the teaching methods that were most often used by BTE tutors in teaching FDC 123 include Discussion, Brainstorming, Grammar-Translation, and Storytelling. The same teaching methods were found when we were presenting contents FDC 113 content early on. But the contents of literature differ from the contents of syntactic structures and usage. Therefore, different teaching methods are required.

4.4.3.2 Assessment of learning outcomes in FDC 123

Assessment of learning outcomes of every student-teacher was mandatory in each semester. The collected data about the assessment of FDC 123 from ten selected BTE tutors revealed that both formative assessment and summative assessments were used in FDC 123. Also, assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment. It was also observed that the assessment of learning outcomes (internal and external assessment) in FDC 123 is the same as the assessment of learning outcomes in FDC 113 as stated earlier. It is the same in terms of the number of questions, duration, marks, and scoring procedure. It is a known fact that the assessment of literature contents need to focus on language proficiency and the level of literary competence acquired by the learner. For this reason, the modes of assessing learning outcomes of student-teacher in FDC 123 should be relooked.

4.4.3.3 Modification of FDC 123 Contents

To suggest modification, needed data were collected from Ghanaian language tutors and final year student-teachers. The tutors stated their suggestions in an open-ended questionnaire while student-teachers gave their suggestions in a group discussion. The collected data from tutors were analyzed by using descriptive statistics via frequencies and percentages as presented in the table-4.60.

Table-4.60: Needed Suggestions for Modification of FDC 123

Sr. No.	Suggestion	Frequency	Percentage
1	The methodology of teaching literature should be incorporated in FDC 123 contents	3	30
2	The contents of FDC 123 should be designed in literary canon form	1	10
3	No suggestions	6	60

It can be seen from table-4.60 that tutors (30 per cent) wanted the methodology of teaching literature incorporated in the contents of FDC 123. They felt this would have equipped student-teachers with pedagogical skills to be effective in the classroom. Also, a tutor (10 per cent) suggested that the contents of FDC 123 should be designed

in literary canon form. This is because Ghana is a multi-lingual country whereby most of the student-teachers have to study the Ghanaian language and culture in BTE colleges as a second language. Therefore, they must be introduced to the background of literature from a Ghanaian perspective by way of the literary canon. However, sixty per cent of the tutors did not suggest any modification.

Also, data about modification of FDC 123 were collected from the final year student-teachers through group discussion. The Student-teachers were asked to suggest modifications for areas of the contents where they considered necessary. The points that emanated from the group discussion are presented as follows.

- i. The reading list should include commentary books to help explain some controversial poems and drama stories.
- ii. Student-teachers should be made to perform (drama, and role play) the stories and the poems they have been reading to make learning real.
- iii. Student-teachers should be allowed to choose literature books of their interest from a list of recommended books.

The conclusion can therefore be drawn that; 1) the course objectives of FDC 123 were irrelevant as some important aspects of the contents like poetry and some selected novels were not covered, 2) the contents were appropriate for equipping student-teachers with subject knowledge of Ghanaian literature, 3) the teaching methods viz., Discussion, Brainstorming, Grammar-Translation and Storytelling were not appropriate to teach oral and written literature, 4) modes of assessments was not appropriate and needs to be relooked, and 5) the one credit hour was appropriate as per the contents.

4.4.4. Integrated Science FDC 124

The second semester Integrated Science comprises four aspects viz., Agriculture Science, Biology, Chemistry and Physics. These sections were designed for two credit hours and have a course code FDC 124. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Integrated Science tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and

pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The details of the aspect-wise analysis are presented as follows.

4.4.4.1 Agriculture Science

This section of the Integrated Science has five objectives indicating that by the end of the section, student-teachers would be able;

- i. To distinguish between weather and climate
- ii. To identify and discuss the elements of climate
- iii. To identify measuring equipment of the weather
- iv. To discuss the effects of the elements of climate on agriculture
- v. To differentiate between pests and parasites
- vi. To differentiate between vectors and parasites
- vii. To discuss methods of controlling diseases, pests, and parasites

It can be seen from table-4.61 that the objectives are irrelevant as not emphasizing the preparation of student-teachers to gain expertise in crops and animal production (60 per cent). This is because some of the objectives like measuring equipment of the weather and methods of controlling diseases, pests, and parasites were not feasible due to lack of practice. For this reason, tutors (50 per cent) judged that the objectives are inadequate for covering all the important areas of the contents. The detailed analysis of collected data about the course objectives and appropriateness of the contents are presented in table-4.61.

**Table-4.61: Appropriateness & Relevance of the contents & Objectives of
Agriculture Science**

Sr. No.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	3 (30%)	2 (20%)	5 (50%)
2	The course objectives allow tutors to prepare student-teachers to gain expertise in crops and animals production	3 (30%)	1 (10%)	6 (60%)
3	Ability to describe the following elements of climate; rainfall, sunlight, wind speed, wind direction, temperature, humidity, and atmospheric pressure	6 (60%)	2 (20%)	2 (20%)
4	Familiar with weather instruments like a rain gauge, wind vane, anemometer, sunshine recorder, and thermometer	5 (50%)	2 (20%)	3 (30%)
5	Gain knowledge in how pests and parasites affect the growth, development, and production of farm animals	6 (60%)	-	4 (40%)
6	Familiar with the various methods of controlling pest and parasite on farm animals	3 (30%)	1 (10%)	6 (60%)
7	Significance of course duration (three weeks of teaching this section)	4 (40%)	1 (10%)	5 (50%)
8	Significance of the reading list	3 (30%)	-	7 (70%)

It can be seen from table-4.61 that the climate, weather instrument, and pests and parasites. Here, appropriate content areas have a higher percentage of judgments from the tutors. The percentage-wise judgment shows that the majority of the majority (60 per cent) judged that the contents are appropriate for equipping student-teachers with knowledge of how pests and parasites affect the growth, development, and production of farm animals. But unfortunately, colleges' farms or gardens were not found. This

implies that it would be impossible for student-teachers to practice and understand the theories learned in the classroom. This might be one of the reasons why tutors (50 per cent) felt the course objectives were inappropriate to prepare student-teachers to gain expertise in crops and animal production.

It is also noted that the majority (60 per cent) of the student-teaches was capable of describing the following elements of climate; rainfall, sunlight, wind speed, wind direction, temperature, humidity, and atmospheric pressure. To experiment with these elements, weather instruments were required. Therefore, (50 per cent) of tutors agreed that perspective on weather instruments like a rain gauge, wind vane, anemometer, sunshine recorder, and the thermometer was relevant. But further interaction with tutors revealed that it was impossible to teach this concept practically in the colleges. The reason was the unavailability of the weather instrument in the colleges. This suggests that the content weightage of the course is not balanced and must be reconsidered.

Also, the researcher collected judgments from final year student-teachers about the appropriateness of the contents of agriculture science through group discussion as stated in chapter III of this study. Though the researcher was not having prearranged questions, the student-teachers were required to give their opinion about the appropriateness of contents by ensuring that the following themes (see Appendix C4) were covered;

1. The needs and interest of the student-teachers
2. Strengths and weakness of the contents of this course

The points that emerged from the group discussion are presented as follows;

- a. Most of the student-teachers expressed joy in studying agriculture science as they gained some basic knowledge in food production
- b. Agriculture science was not designed to allow student-teachers to specialize in a major field like agriculture engineering, animal science, and soil science.
- c. The course books in the reading list are inadequate for extensive reading
- d. Assessment of learning outcomes was not based on project, presentation, and writing of reports. Rather, the 'paper and a pen' method was prominently adopted for assessment.

Based on the points presented above, it can be said that agriculture science contents in the BTE curriculum were not designed in a manner that would allow student-teachers to gain knowledge and expertise in the sector of agriculture. There are areas in this course where student-teachers should be allowed to specialize. These areas include Soil Science, Agriculture Engineering, and Animal Production. Therefore, student-teachers must be allowed to specialize in any of these areas to be effective. This is because the nature of these contents appeared theoretical instead of practical and must be relooked into.

4.4.4.1.1 Teaching Methods used by BTE Tutors for teaching Second-Semester Agricultural Science

To judge the teaching methods used by the BTE tutors in teaching second-semester Agricultural Science, the BTE tutors were asked to tick mark teaching methods that are in practice by them on a 5-point scale. The results show that the teaching methods that were most frequently used by BTE tutors in teaching second-semester Agricultural Science include Brainstorming (80 per cent), Demonstration (70 per cent), and Project (50 per cent). Noting that practical work is essential in the Agricultural Science curriculum, it can be said that most of these teaching methods (Demonstration & Project) are appropriate for drawing a balance between theoretical learning and practical learning. To further enhance the knowledge and skills of student-teachers, tutors should provide opportunities for student-teachers to engage in Investigation and Fieldwork.

4.4.4.1.2 Assessment of Learning Outcomes in Second-Semester Agricultural Science

The collected data from the BTE tutors revealed that both formative assessment and summative assessments were used in Second-Semester Agriculture Science. Also, assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment. It was also observed that the assessment of learning outcomes (internal and external assessment) in second-semester agriculture science is the same as the assessment of learning outcomes in first-semester agriculture science as stated earlier. It is the same in terms of duration, marks, and scoring procedure. But it can be said that the mode of assessment was not adequate.

To achieve a better result, project, presentation, and writing of reports are essential. So, there is a need for changing

4.4.4.1.3 Modification of Second-Semester Agriculture Contents

To suggest modification, needed data were collected from ten Integrated Science tutors and a group of final year student-teachers. The tutors stated their suggestions in an open-ended questionnaire while student-teachers gave their suggestions in a group discussion. The collected data from tutors were analyzed by using descriptive statistics; frequencies and percentages and presented in table-4.62.

Table-4.62: Needed Suggestions for Modification of Second-Semester Contents of Agriculture

Sr. no	Suggestion	Frequency	Percentage
1	Provision should be made for student-teachers to be engaged in practical agriculture activities on farms	1	10
2	Management of various BTE colleges should establish a collaboration between the colleges and the local department of agriculture in exchange for expertise and facilities	2	20
3	There is a need to incorporate content on ICT software in farm management.	1	10
4	No suggestion	6	60

It can be seen from the table-4.62 that some tutors (20 per cent) wanted the management of various BTE colleges to establish a collaboration between the colleges and the local department of Agriculture in exchange for expertise and facilities. Also, a tutor (10 per cent) suggested that there should a provision made in the contents whereby student-teachers would be engaged in practical agriculture activities on farms to develop their practical skills and understanding in the agriculture sector. Another tutor suggested a need to incorporate content on ICT software in farm management. This will enable student-teachers in gaining knowledge in computer applications such as M-S project and E-commerce in achieving a goal of agriculture education. But the remaining six tutors had no suggestion about the modification of contents.

Also, data about modification of second-semester agriculture science were collected from the final year student-teachers through group discussion. The Student-teachers were asked to suggest modifications for areas of the contents where they considered necessary. The findings that emanated from the group discussion (see Appendix C4) are presented as follows.

- a. Student-teachers should be allowed to do attachment in the local Agriculture department during vacations to gain practical experience.
- b. There is a need to incorporate the methodology of teaching agriculture science to develop the pedagogical skills of student-teachers.
- c. BTE colleges should own college farms for practical purposes

It can be concluded that; 1) the course objectives of Agriculture Science are irrelevant for not emphasizing the preparation of student-teachers to gain expertise, 2) the contents are inappropriate in terms of pedagogy as farms are not in the colleges to enhance practical activities, 3) the contents are appropriate for equipping student-teachers with the subject matter, 4) teaching methods viz., Brainstorming, Demonstration, and Project, as most frequently used by tutors, are appropriate for achieving instructional objectives, 5) the reading list is inadequate to encourage extensive reading, and 6) modes of assessments are not adequate in determining learning outcomes of student-teachers in all the components of Agriculture Science, particularly in the practical activities.

4.4.4.2 Biology

This section of the Integrated Science has three objectives indicating that by the end of the section, student-teachers would be able;

- i. To acquire knowledge of the structure and functions of the respiratory, circulatory, excretory, and reproductive systems in humans and also growth in humans.
- ii. To gain knowledge and understanding of the causes, symptoms, prevention, treatment, and control of diseases.
- iii. To acquire skills to perform practical activities related to the topics in the course.

Although it can be seen from table-4.62 that tutors (60 per cent) agree the objectives are adequate to have all the essential areas of the contents, some tutors (40 per cent)

judged the objectives-III is not feasible because of facilities problems in the BTE colleges. But this assertion contradicts the point-III of the objectives. Maybe, rigorous practical activities are not encouraged in this course as per the standard of the basic school teachers. If this is the case, it cannot be said that the objectives are irrelevant. The details of the analysis of collected data about the course objectives and appropriateness of the contents are presented in table-4.63

Table-4.63: Appropriateness and Relevance of Second-Semester Biology

Sr. no.	Item	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	6 (60%)	2 (20%)	1 (10%)
2	The course objectives have focused on developing the understanding, curiosity, and creativity of student-teachers to solve problems related to biology.	3 (30%)	2 (20%)	4 (40%)
3	Gain knowledge in diffusion and osmosis in plants and animals	7 (70%)	1 (10%)	2 (20%)
4	Ability to apply knowledge in osmosis to experiment to demonstrate absorption of water by root hairs and absorption of digested food and gases by plants	5 (50%)	3 (30%)	2 (20%)
5	Familiar with the structure and functions of the male and female reproductive systems in terms of copulation, fertilization, development of zygote and foetus, implantation and birth	8 (80%)	1 (10%)	1 (10%)
6	Ability to experiment to demonstrate factors necessary for photosynthesis viz., water, sunlight, chlorophyll, and carbon dioxide.	3 (30%)	5 (50%)	2 (20%)
7	Gain knowledge in antibodies, immunity, and prevention of infections in communities.	7 (70%)	1 (10%)	2 (20%)
8	Able to dissect small mammals to display the reproductive organs and drawn	-	2 (20%)	8 (80%)
9	Significance of course duration (two weeks of teaching this section)	5 (50%)	2 (20%)	3 (30%)
10	Significance of the reading list	3 (30%)	-	7 (70%)

It can be seen from table-4.63 that the contents of second-semester Biology include diffusion and osmosis, reproductive systems in humans, the concept of photosynthesis, and diseases and infections. Here, appropriate content areas have a higher percentage of judgments from the tutors. The percentage-wise judgment shows that the majority (80 per cent) of the tutors felt student-teachers were familiar with the structure and functions of the male and female reproductive systems in terms of copulation, fertilization, development of zygote and foetus, implantation and birth, while (70 per cent) of the tutors believes in the contents for helping student-teachers to gain knowledge in diffusion and osmosis in plants and animals, and know antibodies, immunity, and prevention of infections in communities. But cannot be said that all the contents were appropriate for preparing student-teachers. Further investigation revealed that most of the student-teachers were just adjusting their prior experience in senior high school Biology to fit new concepts. The reason is that the contents were not appropriate for the experiment. For instance, (80 per cent) of the tutors judged that student-teachers were not allowed to dissect small mammals to display the reproductive organs rather they draw, while (50 per cent) of the tutors were uncertain whether student-teachers could experiment to demonstrate factors necessary for photosynthesis viz., water, sunlight, chlorophyll, and carbon dioxide. This is due to the infeasibility nature of the course objectives in terms of developing the understanding, curiosity, and creativity of student-teachers to solve problems in the communities related to Biology. Also, the researcher collected judgments from final year student-teachers about the appropriateness of the contents of second-semester biology through group discussion as stated in Chapter III of this study. Though the researcher was not having prearranged questions, the student-teachers were required to judge the appropriateness of contents by ensuring that the following themes (see Appendix C3) were covered;

1. The needs and interest of the student-teachers
2. Strengths and weakness of the contents of this course

The points that emerged from the group discussion are presented as follows:

- a. The student-teachers expressed interest in studying Biology as they took delight in appreciating the nature of plants and animals. Therefore, they become aware of some environmental implications of Biology such as

absorption of water by root hairs, selective absorption of water, and absorption of digested food and gases by plants

- b. Also, student-teachers have acquired knowledge in principles and terminologies in Biology particularly in reproduction and growth in humans, diffusion, and osmosis in plants and animals, and circulatory system in humans.
- c. Student-teachers became aware of some health implications of Biology such as the effects of teenage pregnancy, inheritance characteristics genes, disorders of the circulatory system and their prevention, balanced diet, and disease control.
- d. The contents equipped the student-teachers with an appropriate subject matter which is linked to basic schools Biology syllabus.
- e. Although the contents were overloaded, the methodology of teaching Biology was not featured whereas the experiment was not given due weightage.

Based on the data presented above, it can be said that the contents of second-semester biology are flexible as per the standard of the student-teachers. This is to say that the contents have provided a platform particularly for student-teachers who are not from a Biology background to develop biological knowledge and to acquire relevant subject matter capable of teaching in basic schools. Also, these contents would help them to develop a positive attitude towards living things and commit themselves to promote healthy living. However, further analysis revealed that the methodology of teaching biology and vigorous experiment was not given due weightage. If this phenomenon is not addressed, it would be impossible for student-teachers to gain the required pedagogy and skills to become effective in the classroom.

4.4.4.2.1 Teaching Methods used by BTE Tutors for teaching Second-Semester

Biology

To judge the teaching methods used by the BTE tutors in teaching second-semester Biology, the BTE tutors were asked to tick mark teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most often used by BTE tutors in teaching second-semester Biology include Lecture, Demonstration, and Discussion. These teaching methods are not different from the teaching methods used in the first-semester biology as presented earlier. As we understand that practical work is essential in the Biology curriculum, most of these teaching methods are not

appropriate for drawing a balance between theoretical learning and practical learning. To enhance the knowledge and skills of student-teachers, tutors should provide opportunities for student-teachers to engage in investigation, projects, and fieldwork.

4.4.4.2.2 Assessment of learning outcomes in Second-Semester Biology

The collected data from the BTE tutors revealed that both formative assessment and summative assessments were used in Second-Semester Biology. Also, assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment. These modes of assessment (internal and external) in second-semester Biology are the same as the assessment of learning outcomes in first-semester Biology as stated earlier. It is the same in terms of duration, marks, and scoring procedure. But it can be said that these modes of assessment are not adequate in determining learning outcomes of student-teachers in all the components of Biology, particularly in the practical work. This must be relooked to promote effective teaching and learning.

4.4.4.2.3 Modification of Second-Semester Biology

To suggest modification, needed data were collected from ten Integrated Science tutors and final year student-teachers. The tutors stated their suggestions in an open-ended questionnaire while student-teachers gave their suggestions in a group discussion. The collected data from tutors were analyzed by using descriptive statistics as presented in table-4.64.

Table-4.64: Needed Suggestions for Modifications of Second-Semester Biology

Sr. no	Suggestion	Frequency	Percentage
1	There is a need to incorporate methodology of teaching biology to equip student-teachers with pedagogy	2	20
2	The two weeks of course duration should be increased to 5 weeks	7	70
3	The reading list should be updated to promote extensive reading	5	50

In the quest of modifying the BTE second-semester Biology contents, the majority of tutors (70 per cent) as shown in table-4.64, suggested that the 2 weeks of course duration should be increased to 5 weeks. This is to add-up more content hours that can help to complete the course content. In an interaction with some Biology tutors, it was revealed that some of them were not able to finish their syllabus prepared for the semester because of limited contact hours. This becomes a burden on some of them as they rush to complete their course outline regardless of the understanding of student- teachers. They felt that the haste to complete the syllabus affect the quality of teacher education. Also, some of the tutors suggested the methodology of teaching Biology should be incorporated in this semester to equip student-teachers with pedagogy while some tutors wanted the reading list updated to promote extensive reading.

Also, data about modification of second-semester Biology were collected from the final year student-teachers through group discussion. The Student-teachers were asked to suggest modifications for areas of the contents where they considered necessary. The points that emanated from the group discussion (see Appendix C3) are presented as follows;

- a. To develop practical skills and experience of student-teachers in animal anatomy, dissecting of mammals in the laboratories should be promoted in these contents.
- b. The use of multimedia tools such as digital content and video for the teaching of Biology should be encouraged to stimulate creativity among student- teachers

The conclusion can therefore be drawn that; 1) the course objectives of Biology are adequate and relevant as focusing on developing understanding, curiosity, and creativity of student-teachers in problem-solving, 2) the contents are appropriate in terms of subject knowledge and pedagogy, 3) Rigorous practical activities like dissecting of mammals are not encouraged, 4) modes of assessments need to be reconsidered, 5) the reading list is inadequate to encourage extensive reading, and 6) modes of assessment are not adequate in determining learning outcomes of student-teachers in all the components of Biology, particularly in the practical work.

4.4.4.3 Chemistry

The course objectives of second-semester Chemistry were not found in the BTE curriculum designed by the Institute of Education, UCC 2014. This is inappropriate because the learning experiences are directed by the course objectives. Apart from this, the course contents were judged by Integrated Science tutors through a questionnaire (close-ended and opened ended). The collected data were analyzed using frequencies and percentages. The details of the analysis are presented in table- 4.65.

Table-4.65: Appropriateness and Relevance of Second-Semester Chemistry

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Student-teachers are conversant with the atomic structure of the first 20 elements.	6 (60%)	2 (20%)	2 (20%)
2	Gain knowledge in the concepts of compounds and mixtures	6 (60%)	3 (30%)	1 (10%)
3	Familiar with properties of metals and non-metals	7 (70%)	2 (20%)	1 (10%)
4	Ability to perform a chemical test for water	5 (50%)	2 (20%)	3 (30%)
5	Ability to make a decision and solve problems in real life using the content knowledge they have gained.	4 (40%)	5 (50%)	2 (20%)
6	Significance of course duration (two weeks of teaching this section)	5 (50%)	2 (20%)	3 (30%)
7	Significance of the reading list	3 (30%)	1 (10%)	6 (60%)

It can be seen from table-4.65 that almost all the contents of the second-semester Chemistry were judged as appropriate for preparing student-teachers. In determining the appropriateness of the contents, the majority of the tutors (70 per cent) felt that the contents are appropriate in terms of helping student-teachers to understand properties of metals and non-metals, (60 per cent) of the tutors judged that student-teachers are conversant with the atomic structure of the first 20 elements as well as knowing the concepts of compounds and mixtures. These data suggest that a large percentage of the contents are appropriate and the required content knowledge was delivered to

student-teachers. However, it was suggested that pedagogical skills were required to make them more effective. But the data presented in table-4.65 did not show contents on the methodology of teaching Chemistry in the second semester. Subsequent interactions with tutors revealed that the methodology of teaching Chemistry was taught in the next semesters (three and four) where student-teachers would be taking their compulsory practice teaching. Also, the duration (two weeks) of teaching this Biology is appropriate (50 per cent), but tutors (50 per cent) are not certain about the ability of the student-teachers in making a decision and solving problems in real life by using the content knowledge they have gained while the reading list is not appropriate to encourage extensive reading.

Also, data were collected from final year student-teachers about the appropriateness of the contents of second-semester Chemistry through group discussion as stated in Chapter III of this study. Though the researcher was not having prearranged questions, the student-teachers were required to judge the appropriateness of contents by ensuring that the following themes (see Appendix C1) were covered;

1. The needs and interest of the student-teachers
2. Strengths and weakness of the contents

The points that emerged from the group discussion are presented as follows;

- a. Student-teachers' involvement in the lessons was encouraging as most of them used their prior knowledge for lessons development. Most of them were able to make a critical statement and claims by using scientific knowledge.
- b. The student-teachers became familiar with the interconnectivity between Chemistry and natural science through the study of elements of compounds and mixtures. The contents were vertically connected to the basic school Chemistry syllabus.
- c. The questions set in almost all the forms of assessments demanded recalling answers but not activity-based.

According to the data presented about Chemistry, concepts were properly addressed by the contents. But for further analysis of data, the researcher did not come across any topic that would help student-teachers to create new knowledge by their effort through discussion and experiment. A similar finding was made by Parker et al (2018). These authors found that the BTE Integrated Science syllabus was lacking content in entrepreneurship, technology, and development. This implies that it is

almost impossible for student-teachers to make a decision and solve problems in real life by using the content knowledge they have gained in this course.

4.4.4.3.1 Teaching Methods used by BTE Tutors for teaching Second-Semester Chemistry

To judge the teaching methods used by the BTE tutors in teaching second-semester Chemistry, the BTE tutors were asked to tickmark to judge the teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most often used by BTE tutors in teaching second-semester Chemistry include demonstration and discussion. These teaching methods are not different from the teaching methods used in first-semester Chemistry as presented earlier. To teach Chemistry effectively, it is critical to adopt teaching methods that will yield a scientific-based response from student-teachers. These methods are fondly called scientific methods and are commonly used in teaching other branches of Science. By using scientific methods, student-teachers will be made to observe a problem leading to questioning, formulation of hypothesis, making experiments, and analyzing results. This can help the tutors and student-teachers to solve problems and make logical conclusions in the field of Chemistry.

4.4.4.3.2 Assessment of Learning Outcomes in Second-Semester Chemistry

The collected data from the BTE tutors revealed that both formative assessment and summative assessments were used in Second-Semester Chemistry. The assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment. In effect, the assessment of learning outcomes (internal and external assessment) in second-semester chemistry is the same as the assessment of learning outcomes that were presented in first-semester Chemistry as stated earlier. It is the same in terms of duration, number of questions, marks, and scoring procedure. However, it can be said that these modes of assessments are not adequate in determining the learning outcomes of student-teachers in all the components of Chemistry, particularly in practical work. This must be reconsidered to promote effective teaching and learning.

4.4.4.3.3 Modification of Second-Semester Chemistry

To suggest modification, needed data were collected from ten Integrated Science tutors and a group of final year student-teachers. The tutors stated their suggestions in an open-ended questionnaire while student-teachers gave their suggestions in a group discussion. The collected data from tutors were analyzed by using descriptive statistics via frequencies and percentages as presented in table-4.66.

Table-4.66: Needed Suggestions for Modification of Second-Semester Chemistry

Sr. no	Suggestion	Frequency	Percentage
1	The reading list should be improved to stimulate extensive reading	3	30
2	The chemistry laboratories in BTE colleges should be renovated and furnished with equipment to facilitate teaching and learning	2	20
3	The general objectives should be stated in the curriculum to provide proper planning and organization of chemistry lessons.	2	20
4	No suggestion	3	30

It can be seen from table-4.66 that the reading list must be improved to stimulate extensive reading (30 per cent), the chemistry laboratories in BTE colleges should be renovated and furnished with equipment to facilitate teaching and learning (20 per cent), the general objectives should be stated in the curriculum to provide proper planning and organization of chemistry lessons (20 per cent). But no suggestion was given by some of the tutors (30 per cent).

It can be concluded that; 1) the course objectives of Chemistry were not stated by the curriculum designers, 2) the contents are appropriate in terms of subject knowledge and pedagogy, 3) Practical activities were not given due weightage, 5) teaching methods do not encourage problem-solving, 6) the reading list is inadequate to encourage extensive reading, and 7) modes of assessments are not adequate in determining learning outcomes of student-teachers in all the components of Chemistry, particularly in practical work.

4.4.4.4 Physics

The course objectives of the Physics section of Integrated Science were not found in the BTE curriculum designed by the Institute of Education, UCC 2014. This seems inappropriate because objectives are needed to provide a pathway for learning experiences. Concerning contents, a questionnaire (close-ended and opened ended) to collect needed data Integrated Science tutors and analyzed by using frequencies and percentages. The details of the analysis are presented in table-4.67.

Table-4.67: Appropriateness of Semester-Semester Physics Contents

Sr. no.	Item	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Student-teachers have gained knowledge in the effects and application of force	8 (80%)	1 (10%)	1 (10%)
2	Ability to apply Newton's three physical laws of motion for solving related problems in real life.	5 (50%)	3 (30%)	2 (26%)
3	Familiar with types and examples of simple machines	6 (60%)	1 (10%)	3 (30%)
4	Significance of course duration (three weeks of teaching this section)	5 (50%)	3 (30%)	2 (20%)
5	Significance of the reading list	3 (30%)	-	7 (70%)

It can be seen from the table-4.67 that the majority (80 per cent) of tutors agree second-semester Physics was appropriate for equipping student-teachers with knowledge in the effects and application of force whereas (60 per cent) of the tutors judged that student-teachers were familiar with types and examples of simple machines. While studying the basic school Integrated Science syllabus, it was learned that all these concepts are connected to it. This suggests that the knowledge gained here mitigates the needed subject knowledge at the basic level thereby helping in achieving instructional objectives. Other factors that might have contributed to the success of these contents include, a simplified hand-out for student-teachers, contents clarity, and content consistency. However, the majority (70 per cent) of the tutors were not satisfied with the reading list because it was inadequate, contained scarce books and unfamiliar authors.

Also, data were collected from final year student-teachers about the appropriateness of the contents of second-semester Physics through group discussion as stated in chapter III of this study. Though the researcher was not having prearranged questions, the student-teachers were required to judge the appropriateness of contents by ensuring that the following themes (see Appendix C2) were covered;

1. The needs and interest of the student-teachers
2. Strengths and weakness of the contents

The emerged points from the group discussion are presented as follows;

- a. The student-teachers immersed participation and contributions towards lessons in the classroom was a clear manifestation of their interest level in the contents. They were capable of providing correct answers to questions and solving mathematically related questions in Physics.
- b. Student-teachers were capable of applying knowledge of physics particularly Newton's laws of motion in their daily lives. This is because the contents are built on basic principles of physics and the laws of nature that allowed student-teachers to explore other physics concepts.
- c. The student-teachers felt that the reading list of this course lacks relevant books to stimulate extensive reading.

Based on the data presented above, it can be said that almost all the contents of second-semester Physics are appropriate for preparing student-teachers to be effective in the classroom. The contents have clarity, consistency, and provide needed subject matter for achieving instructional objectives at the basic level.

4.4.4.4.1 Teaching Methods used by BTE Tutors for Teaching Second-Semester Physics

To judge the teaching methods used by the tutors in teaching second-semester physics, Integrated Science tutors were asked to tickmark to judge the teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most frequently used include Demonstration, Discussion, and Project to teach the course in the classroom. These teaching methods are the same as the teaching methods used in first-semester Physics as presented earlier. In Physics, for instance, it is proper for tutors to routinely adopt teaching methods such as projects, and demonstrations to stimulate a response from students. Certainly, by effective use of

these teaching methods student-teachers would be able to explore further scientific concepts to solve problems in a real-life situation.

4.4.4.2 Assessment of Learning Outcomes in Second-Semester Physics

The collected data from the BTE tutors revealed that both formative assessment and summative assessments were used in Second-Semester Physics. The assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment. These modes of assessments (internal and external) in second-semester Physics is the same as the assessment of learning outcomes in first- semester Physics as stated earlier. It is the same in terms of duration, marks, and scoring procedure. In the calculation component of this course, the day-to-day assessment of student-teachers on every lesson taught was critical. This immediately provided information to help in making corrections for student-teachers to adjust in daily activities. The tutors further revealed that the modes of assessments were not adequate to foster practical skills but it was proper in developing critical thinkingskills and understanding of the contents.

4.4.4.3 Modification of Second-Semester Physics Contents

To suggest modification, needed data were collected from Integrated Science tutors. The tutors stated their suggestions in an open-ended questionnaire which was analyzed by using descriptive statistics via frequencies and percentages as presented in table-4.68.

Table-4.68: Needed Suggestions for Modification of Second-Semester Physics

Sr. no	Suggestion	Frequency	Percentage
1	Adequate books related to the contents of this course should be provided in the BTE colleges to enhance teaching and learning	4	40
2	The contents should be redesigned to provide strong practical experience in Physics.	1	10
3	The methodology of teaching Physics should be incorporated to equip student-teaches pedagogical skills	3	30
4	No suggestion	2	20

Suggestions provided by Integrated Science tutors for modification of second- semester physics contents are presented in table-4.68. The tutors suggested that adequate books related to the contents of this course should be provided in the BTE colleges to enhance teaching and learning (40 per cent), the policymakers must redesign these contents to provide strong practical experience in Physics (40 per cent), the methodology of teaching Physics should be incorporated to equip student-teaches pedagogical skills (30 per cent). But no suggestion was provided by some tutors (20 per cent).

The conclusion can be drawn that; 1) the course objectives of Physics were not stated by the curriculum designers, 2) the contents are appropriate in terms of subject knowledge and pedagogy, 3) teaching methods are appropriate in terms of helping student-teachers to explore further scientific concepts, 4) the reading list is inadequate to encourage extensive reading, and 5) modes of assessments are not adequate to foster practical skills.

4.4.5 Environmental and Social Studies (FDC 128)

The Environmental and Social Studies (E/SS) in the second-semester is entitled Governance, Policy, and Stability. It is designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected E/SS tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To create an awareness of the effects of colonization and the important roles of culture towards national development.
- ii. To prepare students to participate successfully in the civic life of their community.
- iii. To acquaint students with knowledge and skills in terms of conflict management.
- iv. To encourage students to associate themselves with basic issues in maintaining law and order with a fair knowledge of the 1992 constitution of the Republic of Ghana.

- v. To provide opportunities for students to appreciate the importance of Ghana relations with international organizations and agencies.

It can be seen from table-4.69 that the course objectives are relevant in terms of providing proper guidelines to promote citizenship education (50 per cent). This suggests that adequate contents have been incorporated to address this phenomenon as revealed by the tutors (100 per cent). The details of the analysis of collected data about the course objectives and appropriateness of the contents are presented in table- 4.69.

Table-4.69: Appropriateness and Relevance of Contents and Objectives of FDC 128

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course contents as per given objectives	10 (100%)	-	-
2	The course objectives have provided proper citizenship education to student-teachers	5 (50%)	3 (30%)	2 (20%)
3	Ability to give an account of the origin of different ethnic groups in Ghana	5 (50%)	1 (10%)	4 (40%)
4	Ability to give an account of activities of early Europeans in the Gold Coast (now Ghana)	6 (60%)	3 (30%)	1 (10%)
5	Familiar with major political events preceding the independence of Ghana	4 (40%)	5 (50%)	1 (10%)
6	Gain knowledge in the geographical features of Ghana	5 (50%)	3 (30%)	2 (20%)
7	Familiar with the rights and responsibilities of a Ghanaian citizen	7 (70%)	2 (20%)	1 (10%)
8	Gain knowledge in how law and order can be maintained in the country	7 (70%)	3 (30%)	-
9	Gain knowledge in Ghanaian cultural practices	8 (80%)	1 (10%)	1 (10%)
10	Gain knowledge in the concept of democracy and good governance	5 (50%)	3 (30%)	2 (20%)
11	Knowledge of Ghana relations with International Organizations and Agencies	4 (40%)	5 (50%)	1 (10%)
12	Significance of one credit hour to the course	1 (10%)	1 (10%)	8 (80%)
13	Significance of the reading list	3 (30%)	1 (10%)	6 (60%)

It can be seen from table-4.69 the contents are appropriate in terms of equipping student-teachers with knowledge in Ghanaian cultural practices (80 per cent). This is pointed to the fact that Ghana has a diverse cultural practice because of the many different ethnic groups in the country. The tutors expressed that these practices such as Female Genital Mutilation (FGM), 'trokosi', widowhood rite, betrothal marriage are outmoded due to their inhumane nature. In terms of culture preservation, knowledge in these practices is critical for student-teachers. As we know that good cultural practices are worth preserving, student-teachers need to be exposed to some good practices such as festivals, funeral rites, naming ceremonies, 'dipo' rites and marriage ceremonies due to their good images they portray on Ghana and can be preserved for the future generation. Also, the majority of tutors (70 per cent) judged the contents were appropriate for making student-teachers familiar with their rights and responsibilities as Ghanaian citizens. Every Ghanaian citizen is banded by the laws of Ghana as enshrined in the 1992 constitution. For ensuring peace and justice in the country and for better education, these contents have highlighted our rights and responsibilities, conditions for legal limitations of human rights, ways that human rights are abused, and how to seek redress when being abused. This is why the tutors feel student-teachers have gained knowledge about how law and order can be maintained in promoting the good name of the country.

It was further revealed by tutors (60 per cent) that student-teachers could give an account of activities of early Europeans in the Gold Coast (now Ghana). It is noted that the Europeans arrived on the Gold Coast (now Ghana) in the 15th century for many reasons ranging from trade, evangelization, the spread of education, and colonization. Knowledge of the activities carried out by the colonizers would put student-teachers in a reflective thinking position to deal with the negative effects of colonization in the political context, social context, and economic contexts. This can be applied when student-teachers learn to be patriotic citizens, positively cooperate, and learn to establish a good relationship with the colonial masters and other Europeans. However, it was revealed that one credit hour is inappropriate (80 percent) and an inadequate reading list to support extensive reading (60 per cent).

Also, the researcher collected data from final year student-teachers about the appropriateness of the contents of second-semester E/SS through group discussion as

stated in chapter III of this study. Though the researcher was not having prearranged questions, the student-teachers were required to judge the appropriateness of contents by ensuring that the following themes (see appendix H) were covered;

1. The needs and interest of the student-teachers
2. Strengths and weakness of the contents

The emerged points from the group discussion are presented as follows;

- a. The student-teachers have expressed interest in studying the contents as in participating actively in lessons and answering most of the assignment questions correctly.
- b. To be responsible and patriotic citizens, the student-teachers were introduced to the 1992 constitution and rights and responsibilities as Ghanaian citizens. There were learning experiences on Ghanaian culture, values, and traditions for student-teachers to know their identity.
- c. There was adequate content on the history of Ghana, colonization, and national development for student-teachers to understand important past events.
- d. The contents are linked to the basic school syllabus which would help student-teachers to master the subject matter in making effective
- e. The student-teachers felt that the contents were lengthy which required more contact hours to finish. So, provision was not made for student-teachers to work together as a team to solve problems.

The data presented above set to acquaint student-teachers with knowledge of the social and physical environment around them. According to the data, the contents can help student-teachers to understand the important past events in Ghana, culture, values, and traditions, and the constitution of Ghana which are essential for peaceful co-existence. This is because the content of E/SS is broad. The concepts have been drawn from many fields of study particularly from the Social Science subjects such as sociology, Anthropology, History, Economics Politics, etc. These have contributed to preparing student-teachers to be effective in the classroom.

4.4.5.1 Teaching Methods used by BTE Tutors for teaching FDC 128

To judge the teaching methods used by the BTE tutors in teaching FDC 128, the E/SS tutors were asked to tickmark to judge teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most often used by BTE tutors

in teaching FDC 128 Discussion, Brainstorming, and Lecture (see table-4.43.). It is noted that effective teaching methods are necessary for achieving instructional objectives. For effective teaching, tutors have to consider teaching methods that can motivate student-teachers and arouse their interest in the classroom. Based on the diversity of FDC 128 contents, these teaching methods can help the student-teachers to learn from simple to complex and known to unknown in making teaching and learning successful.

4.4.5.2 Assessment of Learning Outcomes in FDC 128

The collected data from the BTE tutors revealed that both formative assessment and summative assessments were used in FDC 128. The assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment. These modes of assessment (internal and external) in FDC 128 are the same as the assessment of learning outcomes in FDC 118 as stated above. It is the same in terms of duration, marks, and scoring procedure.

4.4.5.3 Modification of FDC 128 Contents

To suggest modification, needed data were collected from E/SS tutors. The tutors stated their suggestions in an open-ended questionnaire which was analyzed by using descriptive statistics via frequencies and percentages as presented in table-4.70.

Table-4.70: Needed Suggestions Modification of FDC 128

Sr. no	Suggestion	Frequency	Percentage
1	The methodology of teaching E/SS should be incorporated in FDC 128 contents to acquaint student-teachers with pedagogical skills	2	20
2	The credit hours should be increased to two to commensurate loaded contents	5	50
3	The reading list should be updated to provide more relevant study material	3	30

According to table-4.70, it was suggested that credit hours should be increased to two to commensurate loaded contents (50 per cent), the reading list should be updated to

provide more relevant study material (30 per cent), and methodology of teaching E/SS should be incorporated in FDC 128 contents to acquaint student-teachers with pedagogical skills (20 per cent).

Also, final year student-teachers were asked to suggest modification for areas of the contents FDC 128 where they considered necessary. The findings that emanated from the group discussion are presented as follows;

- a. There is a need to incorporate content the use of reference material such as the globe and a map to find critical information about geographical places for learning purposes
- b. The field trip should be encouraged for a minimum of once every semester for student-teachers to gain new experiences and exposure to the environment
- c. Adequate contents of lesson planning should be incorporated into the contents of FDC 128 to develop confidence in student-teachers to achieve a goal.

It can be concluded that that; 1) the course objectives of FDC 128 were relevant as per the contents, 2) the contents are appropriate in terms of equipping student-teachers with knowledge of Governance, Politics, and Stability in Ghana, 3) The contents are linked to the basic school syllabus which would promote teaching, 4) teaching methods viz., Discussion, Brainstorming, and Lecture was appropriate in terms of helping student-teachers to learn from simple to complex and known to unknown, 5) one credit hour was inappropriate to match the contents, 6) the reading list was inadequate to encourage extensive reading, and 7) modes of assessments are appropriate for determining learning outcomes of student-teachers.

4.4.6 Music and Dance (PRA 121)

The Music and Dance in the second-semester has course is designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Music and Dance tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and

provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To develop skills of discriminatory listening and observing
- ii. To appreciate the expressive qualities of the performing arts
- iii. To appreciate the relationship between different elements of music; dance; and drama
- iv. To develop their creative abilities through their interaction with the elements of music; dance; and drama
- v. To examine the value of the performing arts
- vi. To examine the role of the performing arts in Ghana's development

It can be seen from table-4.71 that the objectives are adequate to match up with the contents (50 per cent). But it was found that tutors (50 per cent) are not certain as to whether the course objectives have incorporated relevant learning experiences which can develop the confidence of student-teachers to create and perform Music and Dance. This phenomenon suggests that the necessary course of action has not been established for tutors to plan adequately for lessons in the classroom. The details of the analysis of collected data about the course objectives and appropriateness of the contents are presented in table-4.71.

**Table-4.71: Appropriateness and Relevance of Contents and Objectives of
PRA 121**

Sr. no.	Items	<u>Judgment</u>		
		– Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	5 (50%)	1 (10%)	4 (40%)
2	The course objectives have provided learning experiences in developing the confidence of student-teachers in creating and performing music and dance	4 (40%)	5 (50%)	2 (20%)
3	Acquire skills of discriminatory listening and observation	6 (60%)	-	4 (40%)
4	Appreciate the relationship between different elements of music; dance; and drama	4 (40%)	3 (30%)	3 (30%)
5	Significance of elements of music, dance, and drama	5 (50%)	1 (10%)	4 (40%)
6	Recognize the role of the performing arts in national development	7 (70%)	-	3 (30%)
7	Composition of simple rhythms & melodies	3 (30%)	2 (20%)	5 (50%)
8	Ability to help school pupils to create movement patterns	4 (40%)	3 (30%)	3 (30%)
9	Identify different music instruments and their mode of tone production	6 (60%)	1 (10%)	3 (30%)
10	Significance of one credit hour to the course	4 (40%)	-	6 (60%)
11	Significance of the reading list	3 (30%)	1 (10%)	6 (60%)

In terms of contents, it can be seen from table-4.71 that majority of tutors (70 per cent) judge that the contents are appropriate in terms of helping student-teachers to recognize the role of the performing arts in national development. This suggests that student-teachers have learned the various contributions that music and dance have been making towards national development. As we know Music and Dance plays a role in the socio-economic development of a nation, the knowledge gained herewould motivate those who wish to pursue this subject to the highest level to develop their career paths. Also, the majority of tutors (60 per cent) judged that the contents

have exposed student-teachers to different musical instruments and their mode of tone production. It is argued that musical instruments appear in different shapes and sizes. For student-teachers to develop their skills in playing with instruments, they need to be familiar with the variety of sounds transmitted. Though provision has been made in the contents to help student-teachers develop their discriminatory listening skills and observation skills, further investigation revealed that they couldn't develop their basic drumming skills as there was an inadequate musical instrument in BTE colleges for practice. This impedes successful learning of Music and Dance and must be looked into. This assertion confirms the finding made about the objectives stating that tutors (50 per cent) were not certain as to whether the course objectives have provided learning experiences in developing the confidence of student-teachers in creating and performing music and dance. It was further found that one credit hour is inappropriate as per the given contents (60 per cent) while the reading list was inadequate to encourage extensive reading (60 per cent).

Also, data were collected from final year student-teachers about the appropriateness of the contents of PRA 121 through group discussion as stated in chapter III of this study (see details in the appendix K). Though the researcher was not having prearranged questions, the student-teachers were required to judge the appropriateness of contents by ensuring that the following themes were covered;

1. The needs and interest of the student-teachers
2. Strengths and weakness of the contents

The emerged points from the group discussion are presented as follows;

- a. The contents are simple and interesting to study and offer the opportunity for student-teachers to listen to different musical instruments played on a tape in building their discriminatory listening skills.
- b. The contents have incorporated essential components of the elements of music, dance, and drama which were useful for developing creative abilities and the roles of performing arts play in national development.
- c. The contents have equipped the student-teachers with skills capable of guiding pupils to create basic movement patterns in the classroom
- d. The practical session of the contents was not effective due to inadequate facilities
- e. The contents lacked the methodology of teaching Music and Dance

Based on the data presented above, it can be said that the contents of PRA 121 have contextually been elaborated to help student-teachers gain subject matter capable of teaching the subject. These contents are practically oriented which seek to develop attitudes and skills of student-teachers in Performing Arts. However, the investigation revealed that the condition of learning activities in the BTE colleges did not support the rigorous and regular practice of skills. This was largely attributed to the lack of facilities in the colleges. Another instruction condition that was not fulfilled is the methodology of teaching Music and Dance. This might be because this subject is not taught at the basic level. As we know this is a foundation upon which pedagogical skills of the student-teachers could be developed, student-teachers must be taught how to teach this subject but not just receiving abstract knowledge.

4.4.6.1 Teaching Methods used by BTE Tutors for teaching PRA 121

To judge the teaching methods used by the BTE tutors in teaching PRA 121, the BTE tutors were asked to tick mark teaching methods on a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.72.

Table-4.72: Appropriateness & Relevance of Teaching Methods used in Teaching PRA 121

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	8 (80%)	-	-	-	-
2	Collaboration	-	-	-	5 (50%)	-
3	Demonstration	10 (100%)	-	-	-	-
4	Mentoring	-	-	4 (40%)	-	-
5	Role play	-	7 (70%)	-	-	-
6	Lecture	-	3 (30%)	-	-	-
7	Project	-	1 (10%)	-	-	-
8	Debate	-	-	-	-	6 (60%)
9	Brainstorming	8 (80%)	-	-	-	-

It can be seen from the table-4.72 that most frequently, the tutors used teaching methods such as Demonstration (100 per cent), Discussion (80 per cent), Brainstorming (80 per cent), and Role-Play (70 per cent) as frequently used to teach PRA 121 in the classroom. This means a variety of teaching methods are used in

preparing student-teachers. These are learner-centered teaching methods that are appropriate for creating a comfortable atmosphere for teaching and learning Music and Dance. Also, Paolino and Lummis (2014) propose four stages viz., imitation, exploration, improvisation, and composition which can be followed.

4.4.6.2. Assessment of Learning Outcomes of PRA 121

The collected data from the Music and Dance tutors revealed that both formative assessment and summative assessments are used in this course. It was further found that assessment tools used for conducting internal assessment are written assignment, mid-semester test, and fieldwork whereas end-of-semester examination was used for conducting the summative assessment.

4.4.6.2.1 Modality for Conducting Formative Assessment of PRA 121

Further interaction with the tutors revealed that the formative assessment of student-teachers in PRA 121 is conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of one assignment comprising five compulsory unstructured questions for 10 marks. Also, the mid-semester assessment comprises 20 compulsory structured questions for all the student-teachers for 10 marks whereas each student-teacher would have completed two mandatory compositions for 20 marks. The tutors explained that the composition could be sight-singing, dance composition using Labanotation, and creating of Scales and Key signatures up to two sharps. The details of the findings are presented in table-4.73.

Table-4.73: Modality for Conducting Internal Assessment of PRA 121

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 minimum	1	10
2	Mid-semester test	Structures	Structured (20)	1	10
3	Composition	N/A	N/A	2	20

4.4.6.2 Modality for Conducting Summative Assessment of PRA 121

It was further found that the summative assessment of student-teachers in PRA 121 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise and mark the scripts at the end-of-semester. In a paper, it was found that there are 40 structured questions and 5 unstructured questions (3 to be answered). The duration of this paper is one and a half hours because it is a one-credit hour paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student teacher's progress.

Considering the modes of assessment here, it can be said that the internal assessment was appropriate for developing the creative skills of the student-teachers whereas the external assessment focuses on the conceptual understanding of the subject. But only the conceptual understanding is not adequate to determine the capability of prospective teachers. There is a need to emphasize the practical skills in assessment to prepare effective teachers.

4.4.6.3 Modification of PRA 121 Contents

To suggest modification, needed data were collected from Music and Dance tutors. The tutors stated their suggestions in an open-ended questionnaire which was analyzed by using descriptive statistics via frequencies and percentages as presented in table-4.74.

Table-4.74: Needed Suggestions for Modification of PRA 121

Sr. No.	Suggestion	Frequency	Percentage
1	There is a need for detailed content on composition and performance	1	10
2	The one-credit hour should be increased to three	4	40
3	The reading list must be upgraded to stimulate extensive reading	8	80

It can be seen from the table-4.74 that the majority of tutors (80 per cent) suggested that the reading list of PRA 121 must be upgraded to stimulate extensive reading, (40 per cent) of tutors suggested the one credit hour should be increased to three, and (10 per cent) advocate for detailed content on composition and performance.

Also, student-teachers were asked to suggest modifications for areas of the contents where they considered necessary (see details in appendix K). The findings that emanated from the group discussion are presented as follows;

- a. There should be contents on the methodology of teaching PRA 121 to equip the student-teachers with pedagogical skills.
- b. Performance time should be created on the time table to promote the practice
- c. The student-teachers should be trained to critique ready-made Music and Dance to develop their senses of judgment
- d. The colleges should purchase sufficient musical instruments to facilitate the teaching and learning of this course.

To conclude, it can be said that; 1) the course objectives were not feasible and inappropriate, 2) the contents were appropriate in terms of subject matter, 3) Pedagogy was not given a due weightage, 4) the methodology of teaching Music and Dance was not incorporated, 5) teaching methods viz., Demonstration, Discussion, Brainstorming, and Role Play were appropriate for creating comfortable learning atmosphere in teaching Music and Dance, 6) one credit hour was inappropriate to match the contents, 7) the reading list was inadequate to encourage extensive reading, and 8) modes of assessments were appropriate for determining learning outcomes of student-teachers.

4.4.7 Physical Education (PRA 122)

The Physical Education (PE) in the second-semester is designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected PE tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions

for modification. The objectives of this course state that the student-teachers will be able;

- i. To explain the meaning and importance of Physical Education,
- ii. To differentiate between the aims and objectives of Physical Education
- iii. To trace the history of Ancient Greece about the development of physical activity
- iv. To trace the origin and history of the Ancient and Modern Olympic Games
- v. To explain the various psycho-social issues in physical education and sports

Concerning course objectives, it can be seen from table-4.75 that adequate objectives are set to cover essential areas of PRA 122 (70 per cent). Also, these objectives have provided a proper foundation for student-teachers to study PE to develop their potentials (50 per cent). The detailed analysis of collected data about the course objectives and appropriateness of the contents are presented in table-4.75.

Table-4.75: Appropriateness & Relevance of Contents & Objectives of PRA 122

Sr. No.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	7 (70%)	1 (10%)	2 (20%)
2	The course objectives have provided a proper foundation for student-teachers to study PE to develop their potentials	5 (50%)	4 (40%)	1 (10%)
3	Knowledge in physical education (Meaning, aims, and objectives)	7 (70%)	-	3 (30%)
4	Ability to identify differences between physical education in Athens and Sparta	3 (30%)	3 (30%)	4 (40%)
5	Tracing the Modern Olympic Games to the Ancient Olympic Games	5 (50%)	1 (10%)	4 (40%)
6	Recognize differences between health-related and motor skill-related physical fitness	6 (60%)	2 (20%)	2 (20%)
7	Develop the attitude in keeping fit & living healthily	3 (30%)	2 (20%)	5 (50%)
8	Procedures for providing basic first aid in schools	4 (40%)	3 (30%)	3 (30%)
9	Ability to performance basic patterns of physical activities	6 (60%)	1 (10%)	3 (30%)
10	Significance of one credit hour to the course	5 (50%)	2 (20%)	3 (30%)
11	Significance of the reading list	7 (70%)	1 (10%)	2 (20%)

It can be seen from the table-4.75 that (70 per cent) tutors agree the contents are appropriate in terms of equipping student-teachers with basic knowledge of PE (Meaning, aims, and objectives). This phenomenon is in consideration of the fact that an introduction stage of a course as acquainted student-teachers with needed general knowledge for developing their attitudes, stimulates interest, and stirring critical thinking to achieve learning success. Also, the tutors (60 per cent) judge that the

contents are appropriate in terms of preparing student-teachers to understand differences between health-related and motor skill aspects of physical fitness. Physical Education is associated with the general well-being of the individual. The success of learning experiences in this course partly depends on the physical fitness of the student-teachers. This means the student-teachers have been introduced to health and motor skills which would help in performing basic patterns of physical activities in the classroom.

Moreover, the tutors (50 per cent) agree that the contents are appropriate for preparing student-teachers to trace the modern Olympic Games to the Ancient Olympic Games. Olympic Games in modern days evolved from the old Olympic Games in Greece and might have been serving a different purpose in terms of events, date, venue, and participating countries. This is to say the student-teachers have gained insight into these games and can evaluate the impact they have made in societies. More specifically, student-teachers have acquainted themselves with how the modern Olympic Games had survived until today. In this scenario, it can be said that the course objectives have provided a proper foundation for student-teachers to study PE to develop their potentials. However, tutors (50 per cent) were not certain whether the contents could develop the attitude of student-teachers in keeping fit and living healthily. This is because some of the physical activities like swimming, gymnastic cricket, etc., were not in practice due to lack of facilities. This point is contradicting as there are facilities that are facilitating other physical activities such as football, volleyball, athletics, table tennis, basketball handball, etc., in developing the physical and mental welfare of the student-teachers.

Also, data were collected from final year student-teachers about the appropriateness of the contents of PRA 122 through group discussion as stated in chapter III of this study (see details in appendix M). Though the researcher was not having prearranged questions, the student-teachers were requested to judge the appropriateness of contents by ensuring that the following themes were covered;

1. The needs and interest of the student-teachers
2. Strengths and weakness of the contents of this course

The emerged points from the group discussion are presented as follows;

- a. The contents were simple and interesting to study by the student-teacher as they performed health-related and motor skill-related physical fitness such as running, kicking, dancing, and throwing and catching enhance their physical development
- b. The contents were sufficient and contained required information as per the standard of the student-teachers
- c. The contents of PRA122 have not featured the methodology of teaching PE at the basic schools
- d. The BTE colleges were lacking facilities like gyms, swimming pools, and time for effective organization of physical activities.

Based on the data presented above, it can be said that the contents of PRA 122 have been designed to expose student-teachers to learning experiences that would help achieve their potentials. This is the reason why they are allowed to participate in physical fitness activities and health-related activities. These activities are critical for the emotional development, physical and social well-being of the student-teachers. This implies that the course is focused basically on developing positive behaviors and creating healthy minds in healthy bodies. With these learning experiences, it is thought that the prospective teachers would sufficiently meet the health requirement of the teaching fraternity.

4.4.7.1 Teaching Methods used by BTE Tutors for teaching PRA 122

To judge the teaching methods used by the BTE tutors in teaching PRA 122, the BTE tutors were asked to tick mark teaching methods on a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.76.

Table-4.76: Appropriateness & Relevance of Teaching Methods used in Teaching PRA 122

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	10 (100%)	-	-	-	-
2	Collaboration	-	-	-	4 (40%)	-
3	Demonstration	10 (100%)	-	-	-	-
4	Mentoring	-	-	4 (40%)	-	-
5	Role play	-	6 (60%)	-	-	-
6	Lecture	-	-	10 (100%)	-	-
7	Project	-	-	-	-	5 (50%)
8	Debate	-	-	-	-	8 (80%)
9	Brainstorming	8 (80%)	-	-	-	-

It can be seen from the table-4.76 that most frequently, the BTE tutors used teaching methods such as Discussion (100 per cent), Brainstorming (80 per cent), and Demonstration (100 per cent) to teach PRA 122 in the classroom. It can be said that these teaching methods are appropriate for making learning meaningful to student-teachers. This is because student-teachers in the PE classroom might demonstrate different learning needs which require differentiation instruction to address the need of each of them. Therefore, student-centered teaching is required to realize the instructional goal. For this reason, Verma (2016) points out that appropriate PE instruction needs to create opportunities for students to have access to adequate facilities and time to practice tasks and skills rigorously either individually or in small groups most effectively and efficiently.

4.4.7.1.1 Assessment of learning Outcomes of PRA 122

The collected data from the PE tutors revealed that both formative assessment and summative assessments are used in this course. And assessment tools used for conducting internal assessment include; written assignment, mid-semester test, and fieldwork whereas end-of-semester examination was used for conducting the summative assessment.

4.4.7.1.2 Modality for Conducting Formative assessment of PRA 122

Further interaction with the PE tutors revealed that the formative assessment of student-teachers in PRA 122 was conducted in the BTE colleges by the tutors. For the

written assignment, every student-teacher was mandated to write a minimum of one assignment comprising five compulsory unstructured questions for 10 marks. Also, the mid-semester assessment comprises 20 compulsory structured questions for all the student-teachers for 10 marks whereas each student-teachers would have completed two mandatory fieldwork for 20 marks. The details of the findings are presented in table-4.77.

Table-4.77: Modality for Conducting Internal Assessment of PRA 122

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 minimum	1	10
2	Mid-semester test	Structures	Structured (20)	1	10
3	Fieldwork	N/A	N/A	2	20

4.4.7.1.3 Modality for Conducting Summative Assessment of PRA 122

It was found that the summative assessment of student-teachers in PRA 122 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (3 to be answered). The duration of this paper is one and a half hours because it is a one-credit hour paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student teachers' progress.

4.4.7.2 Modification of PRA 122 Contents

To suggest modification, needed data were collected from PE tutors. The tutors stated their suggestions in an open-ended questionnaire which was analyzed by using descriptive statistics via frequencies and percentages as presented in table-4.78.

Table-4.78: Needed Suggestions for Modification of PRA 122

Sr. no	Suggestion	Frequency	Percentage
1	There is a need to balance content weightage between theoretical knowledge and practical skills	2	20
2	There is a need to incorporate the methodology of teaching Physical Education in basic schools to equip student-teachers with pedagogical skills	1	10
3	The contents should be integrated with other disciplines like Science and HIV/AIDS Education for student-teachers to acquire multiple skills	1	10
4	No suggestion	6	60

Suggestions given in the table-4.78 show that there is a need to redesign a balance content weightage between theoretical knowledge and practical skills (20 per cent), there is a need to incorporate methodology of teaching Physical Education in basic schools to equip student-teachers with pedagogical skills (10 per cent), and the contents should be integrated with other disciplines like Science and HIV/AIDS Education for student-teachers to acquire multiple skills (10 per cent). But no suggestion was provided by some tutors (60 per cent).

Also, further data about modification of PRA 122 were collected from the final year student-teachers through group discussion. The student-teachers were asked to suggest modifications for areas of the contents where they considered necessary (see details in appendix M). The findings that emanated from the group discussion are presented as follows;

- a. The BTE colleges should provide facilities such as a gym, swimming pools, field stadium, indoor arena that are critical for physical fitness.
- b. The colleges should collaborate with the local sporting clubs to exchange expert knowledge and facilities.

It can be concluded that; 1) the course objectives were appropriate as per the contents, 2) the contents were appropriate in terms of subject knowledge, 3) pedagogy was not

given due weightage as the methodology of teaching PE was not incorporated, 4) teaching methods used by PE tutors were appropriate for making learning meaningful, 5) modes of assessments were appropriate for determining learning outcomes of student-teachers, and 6) one credit hour was not adequate and inappropriate as per the contents.

4.4.8 HIV/AIDS Education (GNS 121)

The HIV/AIDS Education is a one-semester designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected HIV/AIDS Education tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To demonstrate good knowledge and awareness of HIV and AIDS issues
- ii. To acquire skills required to prevent the spread of HIV and AIDS.
- iii. To use the knowledge and skills acquired to behave responsibly in the world of HIV and AIDS.
- iv. To build a supportive environment for people living with HIV and AIDS.
- v. To create awareness among the pupils and the community in which they will stay on the modes of transmission, prevention of the spread of the virus, care and support of people infected with HIV and AIDS.

Data about the course objectives as presented in the table-4.79 show that adequate objectives are set to cover essential areas of GNS 121 (60 per cent). Also, it is relevant for guiding tutors to prepare student-teachers to behave responsibly to protect their health and the wellbeing of others (50 per cent). The detailed analysis of collected data about the course objectives and appropriateness of the contents are presented in table-4.79.

Table-4.79: Appropriateness & Relevance of Contents & Objectives of GNS 121

Sr. No.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	6 (60%)	-	4 (40%)
2	The course objectives have guided tutors to prepare student-teachers to behave responsibly in protecting their health and the wellbeing of others	5 (50%)	3 (30%)	2 (20%)
3	Acquaintance with HIV and AIDS awareness creating	8 (80%)	1 (10%)	1 (10%)
4	Gain knowledge and skills in preventing HIV and AIDS spread	5 (50%)	1 (10%)	4 (40%)
5	Able to behave responsibly in the world of HIV and AIDS	7 (70%)	-	3 (30%)
6	Ability to build a supportive environment for people living with HIV and AIDS	7 (70%)	-	3 (30%)
7	Familiar with impact of HIV and AIDS on education	6 (60%)	-	4 (40%)
8	Significance of one credit hour to the course	5 (50%)	1 (10%)	4 (40%)
9	Significance of the reading list	2 (20%)	-	8 (80%)

It can be seen from the table-4.79 that the majority of tutors (80 per cent) judged that the contents were appropriate in terms of helping student-teachers to acquaint themselves with HIV and AIDS awareness creating. This appears as a sensitization course to make student-teachers understand issues of HIV/AIDS in the context of causes, effects, prevention, and common misconceptions covering its transmission. Knowing this information would help them to subsequently disseminate it in basic schools and the communities they would be stationed. But further investigation revealed that most of the student-teacher do not share this knowledge in some communities due to stigmatization and lack of commitment.

Also, the tutors (70 per cent) judged the contents were appropriate for helping student-teachers to behave responsibly in the world of HIV and AIDS. About equal

rights and treatment of persons in society, people living with HIV and AIDS also deserve equal treatment and recognition. This implies that student-teachers have learned to serve as the agents of change in building a supportive environment by giving care, attention, and offering referral services to people living with HIV and AIDS in their communities. The tutors (60 per cent) judged that the student-teachers were introduced to the impact of HIV/ AIDS on education. It may be thought that this virus has threatened the demand for education, the supply of education, and human resource management of education. Considering these threats, it is important to educate student-teachers to gain insight and be conscious of its predicaments. This was the reason why the majority (50 per cent) agreed that the course objectives have guided tutors to prepare student-teachers to behave responsibly in protecting their health and the wellbeing of others. This indicates that the contents were having adequate facts and concepts that would equip student-teachers with relevant knowledge and skills to live a responsible lifestyle thereby protecting their health and well-being. However, the reading list is inappropriate to encourage extensive reading.

Also, data were collected from final year student-teachers about the appropriateness of the contents of PRA 121 through group discussion as stated in chapter III of this study (see details in appendix I). Though the researcher was not having prearranged questions, the student-teachers were required to judge the appropriateness of contents by ensuring that the following themes were covered;

1. The needs and interest of the student-teachers
2. Strengths and weakness of the contents of this course

The emerged points from the group discussion are presented as follows;

- a. The contents of GNS 121 properly stimulated the interest of student-teachers to educate themselves about HIV/AIDS. They have learned to avoid stigmatization and discrimination against victims of HIV/AIDS.
- b. Student-teachers have learned appropriate strategies that can be used to sensitize pupils at basic schools in fighting against HIV/AIDS. They were introduced to counseling services and referral services available for the victims of HIV/AIDS.

- c. There were inadequate books about GNS 121 in BTE colleges to promote extensive reading whereas the course was not examinable at the basic schools so some student-teachers showed a lackadaisical attitude toward it.
- c. As the course was taught in one semester, there was inadequate time for experts and resource persons to be invited to provide expert knowledge and technical advice.

It can be seen from the findings above that the contents of HIV/AIDS Education are appropriate for equipping student-teachers with subject knowledge. In the opinion of student-teachers, the course promotes awareness creation on HIV/AIDS pandemic in schools and the communities. When they were probed further to elaborate on this concept, they said with the knowledge acquired, they would be working as an agent of change in educating people against stigmatization thereby building a supportive environment for people living with HIV and HIVAIDS in schools and communities.

4.4.8.1 Teaching Methods used by BTE Tutors for teaching GNS 121

To judge the teaching methods used by the BTE tutors in teaching GNS 121, the BTE tutors were asked to tickmark to judge the teaching methods on a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages as presented in table-4.80.

Table-4.80: Appropriateness & Relevance of Teaching Methods used in Teaching GNS 121

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	9 (90%)	-	-	-	-
2	Collaboration	-	-	-	4 (40%)	-
3	Demonstration	-	-	-	7 (70%)	-
4	Mentoring	-	-	-	-	4 (40%)
5	Role play	-	-	6 (60%)	-	-
6	Lecture	10 (100%)	-	-	-	-
7	Project	-	-	5 (50%)	-	-
8	Debate	-	-	-	-	8 (80%)
9	Brainstorming	9 (90%)	-	-	-	-

It can be seen from the table-4.80 that most frequently, the BTE tutors used teaching methods such as Lecture (100 per cent), Discussion (90 per cent), Brainstorming (90 per cent), and sometimes (60 per cent) used Role-Play to teach GNS 121 in the classroom. Looking for appropriate teaching methods to teach GNS 121 would help to reach out to the youth in the communities. This is because the knowledge and skills acquired by the student-teacher can easily have an impact on their peers and school children leading to positive change in attitude and behavior towards prevention of Sexually Transmitted Diseases such as HIV/AIDS. In the tutors' opinion, these methods viz., Lecture, Discussion, and Brainstorming provide specific information on the concept that the course intends to convey to the student-teachers. Therefore, Sarma and Oliveras (2013) can be referred to. These authors found that HIV/AIDS Education can be transacted successfully in schools if teaching methods such as Role- Play, Group Discussion, and Games are used by the instructor. These methods as explained by the authors, focus on the main information and develop skills that students deserve to acquire in the subject. To adopt these methods they further stated, appropriate facilities and material must be provided to make learning a success.

4.4.8.2 Assessment of Learning Outcomes of GNS 121

The collected data from the tutors revealed that both formative assessment and summative assessments were used to assess the learning outcomes of student-teachers in GNS 121. Here, assessment tools used for conducting internal assessment include written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment.

4.4.8.2.1 Modality for Conducting Formative Assessment of GNS 121

Further interaction with the tutors revealed that the formative assessment of student-teachers in GNS 121 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of one assignment comprising five compulsory unstructured questions for 10 marks. Also, the mid-semester test comprises 20 compulsory structured questions for all the student-teachers for 10 marks whereas each student-teachers would have completed two mandatory presentations for 20 marks. The details of the findings are presented in table-4.81.

Table-4.81: Modality for Conducting Internal Assessment of GNS 121

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5(2 to be answered)	1	10
2	Mid-semester test	Structured	20	1	10
3	Presentation	N/A	N/A	2	20

4.4.8.2.2 Modality for Conducting Summative Assessment of GNS 121

The HIV/AIDS Education tutors revealed that the summative assessment of student-teachers in GNS 121 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (3 to be answered). The duration of this paper is one and a half hours because it is a one credit hour paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student-teachers' progress.

4.4.8.3 Modification of HIV/AIDS Education

To modify the content of this course, needed data were collected from HIV/AIDS Education tutors and student-teachers about areas they felt necessary. The collected data from tutors were analyzed by using descriptive statistics via frequencies and percentages presented in the table-4.82.

Table-4.82: Needed Suggestions for Modification of GNS 121

Sr. no	Suggestion	Frequency	Percentage
1	BTE colleges should establish a collaboration with HIV/AIDS agencies for resource persons	1	10
2	The methodology of teaching HIV/AIDS should be incorporated in GNS 121 contents	1	10
3	HIV/AIDS education contents should be infused in lessons of all to offload the BTE curriculum	2	20
4	No suggestion	6	60

Suggestions presented in table-4.82 show that BTE colleges should establish a collaboration with HIV/AIDS agencies for resource persons (10 per cent), the methodology of teaching HIV/AIDS should be incorporated in GNS 121 contents (10 per cent), and HIV/AIDS education contents should be infused in lessons of all to offload the BTE curriculum (20 per cent. But no suggestion was given by some tutors (60 per cent).

Also, data about modification of GNS 121 were collected from the final year student-teachers through group discussion. The student-teachers were asked to suggest modifications for areas of the contents where they considered necessary (see details in appendix I). The findings that emanated from the group discussion are presented as follows;

- a. The student-teachers suggested that GNS 121 contents should be extended to cover two semesters to be able to complete large content successfully
- b. There is a need for BTE Colleges to form HIV/AIDS awareness clubs which could be used to sensitize the communities and create their awareness against the virus.
- c. The GES should make HIV/AIDS a core subject at the basic schools like other subjects for teachers and students to take the subject seriously
- d. The course should be merged with the Physical Education where student-teachers receive optimum training on healthy lifestyle, social integration, and physical fitness

The conclusion can be drawn that; 1) the course objectives were relevant for guiding tutors to prepare student-teachers to behave responsibly in society, 2) The contents were appropriate for helping student-teachers to acquaint themselves with HIV and AIDS awareness creating, 3) Pedagogy was not given due weightage due to lack of teaching methodology, 4) teaching methods viz., Lecture, Discussion, Brainstorming use by tutors were appropriate for achieving instructional objectives, 4) one credit hour was appropriate, 5) reading list was inappropriate for promoting extensive reading, 6) modes of assessments were appropriate for determining learning outcomes of student-teachers.

4.4.9 Pre-Vocational Skills

The Pre-Vocational course comprises of Catering, Creative Art and Technology, and Home Economics-Sewing. But in the second-semester, student-teachers study Catering. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Pre-Vocational tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campusteaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The detailed analysis of Catering contents is presented as follows.

4.4.9.1 Catering

The catering is designed for one credit hour and has a course code FVH 122. It has ten objectives indicating that by the end of the section, student-teachers would be able;

- a. To identify the social and economic importance of Catering as a vocation
- b. To identify tools and equipment used in catering, select, and purchase equipment to meet special needs.
- c. To demonstrate appropriate skills in care and maintenance of Catering equipment and tools.
- d. To explain the need for personal and kitchen cleanliness.
- e. To outline the causes of food poisoning and describe ways of preventing them.
- f. To mention some common kitchen accidents; state the causes and how they can be prevented.
- g. To carry out simple first aid treatment for accidents that occur in the kitchen.
- h. To identify and classify food into functional groups.
- i. To identify food nutrients and their sources.
- j. To state each nutrient and describe the deficiency signs and symptoms of the various nutrients.

It can be seen from table-4.83 that the objectives of FVH 122 are adequately set to cover the critical components of the course (70 percent). But tutors (50 per cents)

were not certain whether the extreme number objectives are relevant for guiding student-teachers to study Catering as a vocation within a stipulated one credit hour. For the occurrence of this doubt, some factors might have interplayed which would be possibly unraveled in our subsequent discussion. The detailed analysis of collected data about the course objectives and appropriateness of the contents are presented in table-4.83.

Table-4.83: Appropriateness and Relevance of Contents and Objectives of FVH 122

Sr. no.	Items	<u>Judgment</u>		
		- Appropriate	Uncertain	Inappropriate
1	Adequacy of course contents as per given objectives	7 (70%)	3 (30%)	3 (30%)
2	The course objectives have helped student-teachers to study Catering as a vocation	3 (30%)	5 (50%)	2 (20%)
3	Ability to use catering tools and equipment to prepare food	5 (50%)	2 (20%)	3 (30%)
4	Knowledge of causes and prevention of food poisoning	6 (60%)	2 (20%)	2 (20%)
5	Exposure to some accidents that may occur in a kitchen and how to preventive them	6 (60%)	3 (30%)	1 (10%)
6	Ability to carrying out simple first-aid treatment in case of accidents in the kitchen	4 (40%)	1 (10%)	5 (50%)
7	Ability to classify food we eat under the six food groups	6 (60%)	-	4 (40%)
8	Significance of one credit hour to the course duration	3 (30%)	-	7 (70%)
9	Significance of the reading list	3 (30%)	-	7 (70%)

It can be seen from table-4.83 that tutors (60 per cent) have touted the contents FVH 122 as appropriate as addressing issues related to causes and prevention of food poisoning. We all know that food poisoning can occur by mere contamination of food which poses acute health problems to human lives. As prospective teachers, it is important to learn basic preventive measures that can teachers and students to safeguard foods at home. Due to this phenomenon as further explained by the tutors,

most of the student-teachers were cautious of the food sold outside the campus and would prefer to wash their hands properly to ensure that they were cleaned enough to avoid contamination of food particularly in the dining hall when they gathered to eat their food.

Also, the majority of the tutors (60 per cent) agreed that an opportunity has been provided for student-teachers to study accidents that may occur in a kitchen and how to prevent them. However, the tutors emphasized that it is almost impossible to guide student-teachers to practice this concept in the colleges as there are inadequate facilities. This implies that practice as in the contents of the course was not accorded with appropriate weightage. But when it comes to cooking, the tutors (50 per cent) agreed that the contents were appropriate in terms of equipping the student-teachers with knowledge and skills in using catering tools and equipment for preparing food. Due to the previous knowledge of student-teachers, it was revealed that they might have acquired cooking experience from their homes and applied on learning this course with ease. This suggests that practice and prior experience is an essential strategy to achieve instructional objectives. It was further revealed that one credit hour is inappropriate to match the contents (70 per cent) while the reading list is inappropriate for referencing (70 per cent).

To find out the competencies of alumni teaching Catering at a basic level, two lessons taught by them were observed (see the details in appendix A-2). It was observed that most of the teachers planned lessons as per the objectives. Although most of them demonstrated subject knowledge for teaching the lessons, appropriate instructional strategies were not used to achieve targets. This suggests that the alumni were not equipped with pedagogical skills. Therefore, it can be said that the methodology of teaching Catering was not given due weightage in the BTE curriculum.

Also, data were collected from final year student-teachers about the appropriateness of the contents of FVH 122 through group discussion as stated in chapter III of this study (see details in the appendix F-1). Though the researcher was not having structured questions, the student-teachers were required to judge the appropriateness of contents by ensuring that the following themes were covered;

1. The needs and interest of the student-teachers
2. Strengths and weakness of the contents

The emerged points from the group discussion are presented as follows;

- a. The contents have been incorporated with adequate concepts particularly on food poisoning, names of catering tools, and their uses.
- b. Most of the contents are connected to the basic schools' Catering syllabus.
- c. Practicality is not accorded with due weightage due to lack of facilities.
- d. Inadequate contact hours (one contact hour per week).

Based on the data presented above, it can be said that the contents of FVH 122 provide appropriate subject matter to help prospective teachers to teach at the basic school. This is because the contents largely covered the activities in the basic school syllabus. However, further investigation has revealed that student-teachers could practice a few of the skills acquired and this was common among those who had learned some skills from their homes. This is to say that the facilities available in BTE colleges for this practical course were nothing to drive home about. This coincides with a study conducted by Mbaga et al (2018) in Nigeria. These authors found that the student-teachers were lacking practical skills because there were inadequate facilities to engage them in practical activities. Also, Vidergor et al (2018) posit that inadequate facilities in teacher training colleges impede teaching and learning progress as tutors would be subject to adapting inappropriate teaching methods without any choice. This would ultimately affect the learning success causing the production of undesirable teachers in the society.

4.4.9.1.1 Teaching Methods used by BTE Tutors for teaching FVH 122

The BTE tutors were asked to tickmark to judge teaching methods used in teaching FVH 122 on a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.84.

Table-4.84: Appropriateness & Relevance of Teaching Methods used in Teaching FVH 122

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	10 (100%)	-	-	-	-
2	Collaboration	-	-	-	3 (30%)	-
3	Demonstration	-	7 (70%)	-	-	-
4	Mentoring	-	-	5 (50%)	-	-
5	Role play	-	-	-	-	6 (60%)
6	Lecture	-	-	-	10 (100%)	-
7	Project	6 (60%)	-	-	-	-
8	Debate	-	-	-	-	10 (100%)
9	Brainstorming	7 (70%)	-	-	-	-

It can be seen from the table-4.84 that most frequently, the BTE tutors used teaching methods such as Discussion (100 per cent), Brainstorming (70 per cent), Project (60 per cent), and Demonstration (70 per cent) to teach FVH 122 in the classroom. It can be thought that teaching Catering to BTE College needs to emphasize theory and practical skills. How to make lessons practical largely depends on the teaching methods. In this regard the learner-centered methods are essential. This needs to be a structured approach so that whatever learning experience student-teachers would have gained could be applied in subsequent skills. In a close discussion with tutors, it was found that they preferred these teaching methods because there were inadequate facilities such as the equipped kitchen in the colleges when more and rigorous practical work could be done. They felt these methods save cost. This suggests that for effective catering teachers to be produced, catering facilities in BTE colleges cannot be underrated.

4.4.9.1.2 Assessment of Learning Outcomes of FVH 122

The collected data from the BTE tutors revealed that both formative assessment and summative assessments were used in this course. Here, assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment.

4.4.9.1.3 Modality for Conducting Formative Assessment of FVH 122

Further interaction with the BTE tutors revealed that the formative assessment of student-teachers in FVH 122 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of one assignment comprising five compulsory unstructured questions for 10 marks. Also, the mid-semester test comprising 20 compulsory structured questions for all the student-teachers for 10 marks. And each student-teachers must have to complete one mandatory quiz comprising ten structured questions for 10 marks. The details of the findings are presented in table-4.85.

Table-4.85 Modality for Conducting Internal Assessment of FVH 122

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5(2 to be answered)	1	10
2	Mid-semester test	Structured	20	1	20
3	Quiz	Structured	Structured (10)	1	10

4.4.9.1.4 Modality for Conducting Summative Assessment of FVH 122

The tutors revealed that the summative assessment of student-teachers in FVH 122 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further observed that there were 40 structured questions and 5 unstructured questions (3 to be answered). The duration of this paper is one and a half hours because it is a one-credit hour paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student-teachers' progress.

Looking at the external assessment, it can be said that its weightage was an imbalance. The assessment was more examination driven which cannot stimulate creative thinking skills and generation of new ideas to solve problems. According to the tutors, it was impossible to base on the external assessment to determine the extent

to which student-teachers had acquired catering skills. For this reason, many of them felt that the mode of assessing learning outcomes of student-teachers should be revised.

4.4.9.2 Modification of FVH 122 Contents

To modify the content of this course, needed data were collected from BTE tutors about areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics viz. frequencies and percentages presented in the table-4.86.

Table-4.86: Needed Suggestions for Modification of FVH 122 Contents

Sr. no	Suggestion	Frequency	Percentage
1	There is a need for comprehensive contents on first aid in the kitchen	2	20
2	The methodology of teaching catering should be incorporated in FVH 122 to provide pedagogical skills	1	10
3	The mode of external assessment should be revised to allow student-teacher to experiment with their catering skills in modern kitchen	5	50
4	The one-credit hour should be increased to three to provide adequate contact hours	4	40

The suggestions in table-4.86 show that there is a need for comprehensive contents on first aid in the kitchen (20 per cent), the methodology of teaching catering should be incorporated in FVH 122 to provide pedagogical skills (10 per cent), The mode of external assessment should be revised to allow student-teacher to experiment with their catering skills in the modern kitchen (50 per cent), and one-credit hour should be increased to three to provide adequate contact hours (50 per cent).

Also, data about modification of FVH 122 were collected from the final year student-teachers through group discussion. The student-teachers were asked to suggest modifications for areas of the contents where they considered necessary (see details in Appendix F-1). The points that emanated from the group discussion are presented as follows;

- a. An updated reading list would give modern and useful information to facilitate teaching and learning of Catering.
- b. The BTE colleges should collaborate with local Vocational Institutions for the exchange of resources and ideas
- c. The opportunity should be granted to allow student-teachers to prepare African dishes regularly, once every week, to sharpen their catering skills.

Here, it can be concluded that;1) the course objectives were not feasible due to inadequate catering facilities in the colleges, 2) The contents were appropriate in equipping student-teachers with the subject matter particularly on hygiene and food poisoning, 3) the methods of teaching viz., Discussion, Brainstorming, Project, and Demonstration were appropriate for achieving instructional objectives, 4) practice was not given due weightage, 5) one credit hour was inappropriate to provide adequate contact hours, 6) reading list was inappropriate to promote extensive reading, and 7) Modes of assessments were more of examination driven and inappropriate in stimulating creative thinking skills and generation of new ideas to solve problems.

Considering the foregoing analysis, it can be said that nine compulsory courses that involved curriculum pedagogical studies and value-added courses were transacted in the second semester for twelve credit hours. How the objectives and contents of these courses are appropriate and relevant for preparing effective teachers was focused on. The focused components include objective, content, method of teaching, and modes of assessment. Under the heading of each of the courses, suggestions were provided to help curriculum designers to modify the courses to prepare effective teachers.

4.5 Third-Semester

The third-semester courses in the BTE curriculum comprise seven mandatory subjects and six optional subjects (one to be selected) for a total of 10 credit hours. The courses and their respective course codes and credit hours are presented in table-4.87.

Table-4.87: Course Title, Course Code & Credit Hours of Third-Semesters Courses

Sr. No	Course Code	Course Title	Credit Hours
1	EPS 211	Principles and Methods of Teaching in Basic School	2
2	EPS 221	Educating Individuals with Special Needs	2
3	FDC 218	Environmental & Social Studies	1
4	FDC 222	Mathematics (Further Algebra)	1
5	GNS 211	Introduction to ICT	1
6	FDC 224	Integrated Science 3	2
7	PRA 211	Music and Dance *	↓
8	PRA 212	Physical Education *	↓
9	FVH 211	Pre-vocational Skills (Sewing) *	1
10	FDC 229A	Literature in English (Poetry)*	↑
11	AGN 228A	Agricultural Science *	↑
12	FDC 213	Ghanaian Language & Culture*	↑
Total			10

Source: Institute of Education, UCC (2014)

*optional for student-teachers to select one course

4.5.1 Principles and Methods of Teaching in Basic School (EPS 211)

The Principles and Methods of Teaching in Basic School is designed for two credit hours. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Education tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To describe the nature of teaching methods and the process of effective teaching.
- ii. To design lesson plans in relevant subjects.

iii. To identify and use different teaching methods and skills to enrich lesson delivery.

iv. To acquaint themselves with relevant techniques in classroom management.

It can be seen from table-4.88 that the course objectives are adequate to cover all the essential aspects of EPS 211 (70 per cent). Also, tutors (70 per cent) agree that the objectives are relevant in terms of reflecting current teaching practices as per the changing needs of society (50 per cent). This phenomenon is based on the fact that essential concepts viz., lesson planning, teaching methods, and classroom management are properly featured in the contents. In their view, they felt that these are the basic concepts that underline teaching effectiveness. The detailed analysis of collected data about the course objectives and appropriateness of the contents are presented in table-4.88.

Table-4.88: Appropriateness and Relevance of Contents and Objectives of EPS 211

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	7 (70%)	-	3 (30%)
2	The course objectives reflect current teaching practices as per the changing needs of society	5 (50%)	2 (20%)	3 (30%)
3	Ability to use a variety of teaching methods to achieve instructional objectives	6 (60%)	-	4 (40%)
4	Ability to design lesson plans in relevant subject areas	7 (70%)	-	3 (30%)
5	Familiar with relevant techniques of classroom management	5 (50%)	4 (40%)	1 (10%)
6	Significance of 2 credit hours to the course duration	7 (70%)	2 (20%)	1 (10%)
7	Significance of the reading list	2 (20%)	-	8 (80%)

Also, it can be seen from table-4.88 that appropriate opportunity has been provided to help student-teachers to design lesson plans in relevant subject areas in basic schools (70 per cent). As EPS 211 is a mandatory course and has incorporated concepts on

lesson planning, it is required that each student-teacher learn how to prepare an achievable lesson plan for teaching in the classroom particularly during the practice teaching stage. To understand how this skill was applied in the field, lessons prepared by alumni were observed in schools and found that most of the required components of the lesson plan were found properly written (see details in appendix A-1). This is an indication that the skills acquired from EPS 211 were properly utilized. It was further judged that the contents are appropriate in terms of exposing student-teachers to relevant techniques of classroom management (50 per cent). Classroom management skills are crucial for achieving instructional objectives. This suggests that such skills have been embedded in these contents to prepare the student-teachers. Another finding emerged that the contents are appropriate in terms of introducing student-teachers to a variety of teaching methods (60 per cent). This promotes the use of a variety of teaching methods to achieve instructional objectives in the classroom. However, the reading list is inappropriate for promoting reading in advance (80 per cent).

Also, data were collected from final year student-teachers about the appropriateness of the contents of EPS 211 through group discussion as stated in chapter III of this study (see details in the appendix E-2). Though the researcher was not having prearranged questions, the student-teachers were required to judge the appropriateness of contents by ensuring that the following themes were covered;

1. The needs and interest of the student-teachers
2. Strengths and weakness of the contents of this course

The emerged points from the group discussion are presented as follows;

- a. The learning activities of EPS 211 content were appropriate in stimulating interest in participating in lessons with enthusiasm.
- b. Appropriate practical skills in the lesson note preparation due to the efficacy of information as entrenched in these contents.
- c. The contents have provided needed competencies in classroom management skills.
- d. There are inadequate recommended books in this course to facilitate further reading.

As professional teachers, we are being trained to ensure effective teaching and learning in the classroom. Effective teaching has taken different approaches over the

years. But the bottom line is the respective teachers must show a sign of clear idea of what can foster learning in the classroom. In considering the data presented above, it can be said that the contents of EPS 211 have set up appropriate learning experiences in making student-teachers effective in the classroom. This suggests that student-teachers were properly exposed to what transpired in the classroom particularly during the interaction between the teacher and the learner.

4.5.1.1 Teaching Methods used by BTE Tutors for teaching EPS 211

The BTE tutors were asked to tickmark to judge the teaching methods used by them in teaching EPS211 on a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.89.

Table-4.89: Appropriateness & Relevance of Teaching Methods used in Teaching EPS 211

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	10 (100%)	-	-	-	-
2	Collaboration	-	-	-	4 (40%)	-
3	Demonstration	-	3 (30%)	-	-	-
4	Mentoring	-	-	4 (40%)	-	-
5	Role play	-	-	-	-	6 (60%)
6	Lecture	9 (90%)	-	-	-	-
7	Project	-	-	-	-	5 (50%)
8	Debate	-	-	-	-	8 (80%)
9	Brainstorming	10 (100%)	-	-	-	-

It can be seen from the table-4.89 that most frequently, the BTE tutors used teaching methods such as Discussion (100 per cent), Lecture (90 per cent), and Brainstorming (100 per cent) to teach EPS 211. Further interaction with the tutors revealed that these teaching methods were largely preferred based on the characteristics of the student-teachers. As prospective teachers, they are expected to have a broad knowledge of how children learn. This would help them to adjust to the current learning situation which has shifted the learning trend to creativity due to advancement in human capacity in reasoning. Therefore, introducing student-teachers to a learner-centered approach is critical in achieving targets.

4.5.1.2 Assessment of learning outcomes in EPS 211

The collected data from the ESP tutors revealed that both formative assessment and summative assessments were used in EPS 211. The assessment tools that are used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination is used for conducting the summative assessment.

4.5.1.2.1 Modality for Conducting Formative assessment in EPS 211

It was revealed that the formative assessment of student-teachers in EPS 211 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of two assignments with each comprising five compulsory unstructured questions for 10 marks. Also, the mid-semester assessment comprising 20 compulsory structured questions for all the student-teachers for 20 marks whereas a 21-day mandatory class attendance of student-teachers were assessed for 10 marks per student-teacher. The details of the points are presented in table-4.90.

Table-4.90: Modality for Conducting Internal Assessment in EPS 211

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 (2 to be answered)	2	10
2	Mid-semester test	Structures	20	1	20
3	Class attendance	N/A	N/A	21 days minimum	10

4.5.1.2.2 Modality for Conducting Summative Assessment in EPS 211

The BTE tutors revealed that the summative assessment of student-teachers was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the EPS tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (3 to be answered). The duration of

this paper is two hours because it is two credit hours of paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student-teachers' progress.

4.5.1.3 Modification of EPS 211 Contents

Based on the data presented above, suggestions were collected from the EPS tutors (10) and student-teachers (320) for modification of areas of the contents where they felt necessary. The collected data from tutors were analyzed by using descriptive statistics via frequencies and percentages as presented in table-4.91.

Table-4.91: Needed Suggestions for Modification of EPS 211

Sr. no	Suggestion	Frequency	Percentage
1	Concept of professional development of teachers should be incorporated to provide strategies for professional adjustment	2	20
2	Planning interactive session in the classroom should be incorporated in this course to prepare student-teachers capable of establishing a learning environment to achieve instructional goals	1	10
3	No suggestion	7	70

It can be seen from table-4.91 that professional development is crucial in the teaching profession and should be incorporated to provide strategies for a professional adjustment (20 per cent). It was also suggested that planning an interactive session in the classroom should be incorporated to prepare student-teachers capable of establishing a learning environment to achieve instructional goals (20 per cent). But no suggestion was provided by some tutors (70 per cent).

Also, data about modification of EPS 211 were collected from the final year student-teachers through group discussion. The student-teachers were asked to suggest modifications for areas of the contents where they considered necessary (see details in appendix E-2). The points that emanated from the group discussion are presented as follows;

- a. The contents of EPS 211 must incorporate a concept of effective teaching to provide theoretical and practical concepts that are essential in the teaching fraternity.
- b. The contents EPS211 must incorporate a concept of in-service training to introduce student-teachers to the various modes to upgrade their knowledge in the future.
- c. The reading list must be updated so that adequate books that are relevant to this course be made available on the reading list to support extensive reading.

The conclusion can be drawn here that; 1) the course objectives were adequate and relevant in terms of reflecting current teaching practices, 2) the contents were appropriate in terms of content knowledge and pedagogy, and professional development, 3) the teaching methods viz., Discussion, Lecture, and Brainstorming used by tutors were appropriate, 4) reading list was inappropriate for promoting extensive reading, 5) modes of assessments were appropriate for determining learning outcomes of student-teachers, and 6) the two credit hours were appropriate as per the contents

4.5.2. Educating Individuals with Special Needs (EPS 221)

Educating Individuals with Special Needs is designed for two credit hours. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Education tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To define special needs education, determine its rationale, and distinguish it from regular education.
- ii. To identify the various categories of special needs individuals and the modes of assessing children for such conditions.
- iii. To determine the main steps to follow in delivering inclusive education to children in the basic school.

- iv. To identify the instructional support strategies needed to assist individuals with special learning needs.

It can be seen from table-4.88 that the objectives of EPS 221 are adequately designed to cover the critical components of the contents (50 per cent). But many tutors (60 per cents) are uncertain as to whether the objectives are relevant for reflecting on learning experiences that are critical for student-teachers to identify and assist the individual with special educational needs. Factors that might have caused this doubt would be revealed in our subsequent discussions. The detailed analysis of collected data about the course objectives and appropriateness of the contents are presented in table-4.92.

Table-4.92: Appropriateness and Relevance of Contents and Objectives of EPS 221

Sr. No.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	5 (50%)	1 (10%)	4 (40%)
2	The course objectives reflect on learning experiences that are critical for student-teacher to identify and assist the individual with special educational needs	3 (30%)	6 (60%)	1 (10%)
3	Gain sufficient knowledge and skills in identifying children with special needs in classrooms	3 (30%)	1 (10%)	6 (60%)
4	Exposure to the instructional strategies relevant for handling and teaching children with special needs	4 (40%)	1 (10%)	5 (50%)
5	Knowledge in strategies of inclusive education practices in schools	5 (50%)	2 (20%)	3 (30%)
6	Significance of two credit hours to the course	7 (70%)	2 (20%)	1 (10%)
7	Significance of the reading list	5 (50%)	2 (20%)	3 (30%)

The views of tutors (60 per cent) in table-4.92 revealed that the contents were inappropriate in equipping student-teachers with sufficient knowledge and skills in

identifying children with special needs in the classrooms. The tutors explained that the contents were shallow and lacked relevant instructional strategies to help handle and teach children with special needs. The researcher further observed lessons taught by alumni to ascertain how knowledge of EPS 221 was being applied in identifying and assisting school children with special educational needs (see details in appendix A-1). It was observed that most of the alumni were having challenges in managing children who showed undesirable behaviors and attitudes in the classroom. While interacting with some of the teachers, it was discovered that some of them barely know what to do to such children in the classroom. This is a clear sign of a lack of instructional support strategies needed to assist individuals with special learning needs. In this context, the study conducted by Okechukwu and Kuyinin (2017) can be referred to. The authors found that most of the primary school teachers from Brunei Darussalam and Ghana had limited competencies in supporting children with learning difficulties in the general education classroom. Also, Gyimah and Amoako (2016) conclude that the BTE curriculum needs to equip the pre-service student-teachers with knowledge and teaching skills to assist children with learning difficulties. But it was revealed that two credit hours are appropriate for providing adequate contact hours to engage the student-teacher in the classroom (70 per cent).

The researcher further collected data from final year student-teachers by using group discussion about the appropriateness of the contents of EPS 221 (see details in appendix E-3). Though the researcher was not having structured questions, the student-teachers were required to judge the appropriateness of contents by ensuring that the following themes were covered;

1. The needs and interest of the student-teachers
2. Strengths and weakness of the contents

The emerged points from the group discussion are presented as follows;

- a. Student-teachers expressed joy in studying EPS 221 as the contents stimulate interest and professional skills as prospective teachers
- b. The contents have provided useful theoretical concepts that underpin inclusive education practices in schools. For example, Genetic and Environmental causes of special needs, learning disabilities, and Assessment in special education were essential.

- c. The contents of handling special needs children in the regular classroom were inadequate. Much was not discussed on how to manage the inclusive classroom to achieve instructional objectives.
- d. There are inadequate books in the libraries about EPS 221.

For children with special education needs to participate and benefit from the regular education system, teachers in the mainstream system must be provided with special needs education to be effective in this context. In this consideration, EPS 211 has been designed to provide special needs education to student-teachers to be effective. Issues emanated from the data presented above indicate that the course is not fulfilling its course objectives as most of the contents are inappropriate. The contents are inappropriate in equipping student-teachers with sufficient knowledge and skills in identifying children with special needs in the classrooms. This is largely attributed to shallow contents, lack of relevant instructional strategies, and lack of recommended reading material in the colleges' libraries. Therefore, it can be said that the efficacy of the EPS 221 has dented contents and need to be revisited.

4.5.2.1 Teaching Methods used by BTE Tutors for teaching EPS 221

Tutors were asked to tickmark to judge teaching methods on a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.93.

Table-4.93: Appropriateness & Relevance of Teaching Methods used in Teaching EPS 221

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	8 (80%)	-	-	-	-
2	Collaboration	-	-	-	6 (60%)	-
3	Demonstration	-	-	-	-	4 (40%)
4	Mentoring	-	-	5 (50%)	-	-
5	Role play	-	-	-	-	6 (60%)
6	Lecture	10 (100%)	-	-	-	-
7	Project	-	-	-	-	3 (30%)
8	Debate	-	-	-	7 (70%)	-
9	Brainstorming	7 (70%)	-	-	-	-

It can be seen from the table-4.93 that most frequently, the BTE tutors used teaching methods such as Discussion (80 per cent), Lecture (100 per cent), and Brainstorming (70 per cent) to teach EPS 221 in the classroom. The tutors further stated that these teaching methods were chosen to ensure that student-teachers learn to be efficient in the classroom. But lecture method is inappropriate as the tutors would not pay attention to the individual differences of the learner. Therefore, a variety of teaching strategies that dwell much of the learner-centered approach could be adapted by the tutors to provide key instructional support in a special education setting.

4.5.2.2 Assessment of learning outcomes in EPS 221

The collected data from tutors revealed that both formative assessment and summative assessments were used in EPS 221. The assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment. The details of modes of assessment are presented as follows.

4.5.2.2.1 Modality for Conducting Formative assessment in EPS 221

Discussion with the ten randomly selected EPS tutors revealed that the formative assessment of student-teachers in EPS 221 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of two assignments with each comprising five compulsory unstructured questions for 10 marks. Also, the mid-semester assessment comprising five unstructured (2 to be answered) and 20 compulsory structured questions for all the student-teachers for 20 marks whereas a 21-day mandatory class attendance of student-teachers were assessed for 10 marks per student-teacher. The details of the findings are presented in table-4.94.

Table-4.94: Modality for Conducting Internal Assessment in EPS 211

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 minimum	2	10
2	Mid-semester test	Structures and unstructured	Structured (20) and Unstructured (5)	1	20
3	Class attendance	N/A	N/A	21 days minimum	10

4.5.2.2 Modality for Conducting Summative Assessment in EPS 221

The tutors revealed that the summative assessment of student-teachers was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the EPS tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further observed that this paper consists of 40 structured questions and 5 unstructured questions (3 to be answered) for 100 marks altogether. The duration of the paper is two hours because it is two credit hours of paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student-teachers' progress.

4.5.2.3 Modification of Educating the Individual with Special Needs course EPS 221

Based on the data presented above, suggestions were collected from the tutors for modification of areas of the contents where they felt necessary. The collected data from ten selected tutors were analyzed by using descriptive statistics viz frequencies and percentages as in table-4.95.

Table-4.95: Needed Suggestions for Modification of Educating the Individual with Special Needs

Sr. no	Suggestion	Frequency	Percentage
1	A separate curriculum should be designed to prepare student-teacher capable of teaching the individual with special needs	1	10
2	The concept of behavioral management should be incorporated in EPS 221 to help basic school teachers to manage classrooms effectively	1	10
3	The reading list should be updated to encourage extensive reading	9	90

Suggestions presented in table-4.95 show that a separate curriculum should be designed to prepare student-teacher capable of teaching the individual with special needs (10 per cent), a concept of behavioral management should be incorporated in

EPS 221 to help basic school teachers to manage classrooms effectively (10 per cent), and the reading list should be updated to encourage extensive reading (90 per cent).

Also, data about modification of EPS 221 were collected from the final year student-teachers through group discussion. The student-teachers were asked to suggest modifications for areas of the contents where they considered necessary (see details in appendix E-3). The points that emanated from the group discussion are presented as follows;

- a. Provision should be made to allow student-teachers to visit special training schools to observe the instructional strategies that teachers in such schools adopt in achieving instructional objectives.
- b. The BTE tutors should adopt appropriate methods of teaching special needs children so that they can learn from them.
- c. The classrooms of the BTE colleges should be renovated to provide support for student-teachers leaving with disabilities.

It can be concluded that; 1) the course objectives were irrelevant and not feasible, 2) the two credit hours were appropriate as per the contents, 3) the weightage between theoretical knowledge and pedagogy was imbalanced, 4) the Lecture method was inappropriate for addressing the individual differences of student-teachers, 5) the contents about handling special needs children in the regular classroom were inappropriate, 6) there were inadequate books in the libraries about EPS 221, and 7) modes of assessments were inappropriate for determining learning outcomes of student-teachers.

4.5.3 Environmental and Social Studies (FDC 218)

The Environmental and Social Studies (E/SS) is titled this semester as Socio- Economic Development in Ghana which is designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected E/SS tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the

course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course are;

- i. To help students to acquire the knowledge-base to prepare successfully and participate fully in the socio-economic development of their communities.
- ii. To create an awareness of the significance and impact of the youth, community institutions as well as tourism and leisure on the development of society.
- iii. To assist students to develop the idea and propensity to save money and invest productively.
- iv. To help students embrace the essence of population dynamics about productivity in Ghana.

It can be seen from table-4.96 that the course objectives are adequate and cover essential components of FDC 218 (80 per cent). Also, the objects are appropriate for directing the training of student-teachers in required skills for national growth and development (50 per cent). The detailed analysis of collected data about the course objectives and appropriateness of the contents are presented in table-4.96.

Table-4.96: Appropriateness and Relevance of Contents and Objectives of FDC 218

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	8 (80%)	1 (10%)	1 (10%)
2	The course objects are appropriate for directing the training of student-teachers in required skills for national growth and development	5 (50%)	3 (30%)	2 (20%)
3	Opportunity to acquire knowledge and ability to participate in the issues of socio-economic development of Ghana	7 (70%)	2 (20%)	1 (10%)
4	Expose student-teachers to varieties of resources, and their utilization for sustainable development of Ghana	5 (50%)	2 (20%)	3 (30%)
5	Developing idea and propensity to save money and invest productively	5 (50%)	2 (20%)	3 (30%)
6	Embrace the essence of population dynamics relating to productivity in Ghana	4 (40%)	1 (10%)	5 (50%)
7	Significance of one credit hour to the course	-	-	10 (100%)
8	Significance of the reading list	1(10%)	-	9 (90%)

It can be seen from the table-4.96 that the contents of FDC 218 have provided opportunity to acquire knowledge and ability to participate in the issues of socio-economic development of Ghana (70 per cent), exposed student-teachers to varieties of resources, and utilization for sustainable development of Ghana (50 per cent), help to develop ideas and propensity to save money and invest productively (50 per cent). Further investigation revealed that these concepts are connected to the basic school syllabus. This means that the contents of FDC 218 are appropriate in terms of equipping student-teachers with the needed subject matter to be effective in the classroom.

However, the one-credit hours is inappropriate to match the contents (100 per cent), the reading list is inappropriate to encourage extensive reading (90 per cent), and contents about the ability of student-teachers to embrace the essence of population dynamics relating to productivity in Ghana is inappropriate (50 per cent). This assertion indicates that appropriate indicators that can guide student-teachers to predict changes in population growth and related productivity in the country are not emphasized.

Also, data were collected from final year student-teachers about the contents of FDC 218 as stated in chapter III of this study, through group discussion (see the details in the appendix H). Though the researcher was not having a checklist, it was ensured that the following themes were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows.

- a. The contents of FDC 218 are appropriate for fulfilling the interest of the student-teachers. This is because an opportunity has been provided to study the roles that community institutions play in national development
- b. The contents of JSH Social Studies are linked to the content of E/SS in BTE colleges. For example, topics such as the concepts of money, population growth and development, and the roles of community institutions can be found in the syllabi.

- c. One week is not enough to study the population of Ghana. This is because the contents are too many and would require adequate contact hours.
- d. Modern books on this course are not available in colleges to encourage further reading.

Based on the points above, it can be said that most of the contents of FDC 218 are appropriate for preparing student-teachers. The design of the course objectives and most of the contents are as per the needs of the student-teachers. They have the opportunity to acquire subject knowledge and a full grasp of social and economic issues that influence the levels of development in Ghana.

4.5.3.1 Teaching Methods used by BTE Tutors for teaching FDC 218

The E/SS tutors were asked to tickmark to judge the teaching methods on a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.97.

Table-4.97: Appropriateness & Relevance of Teaching Methods used in Teaching FDC 218

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	10 (100%)	-	-	-	-
2	Games	-	-	-	-	5 (50%)
3	Collaboration	-	3 (30%)	-	-	-
4	Demonstration	-	8 (80%)	-	-	-
5	Mentoring	-	-	-	-	8 (80%)
6	Role play	-	6 (60%)	-	-	-
7	Lecture	8 (80%)	-	-	-	-
8	Project	-	-	-	-	7 (70%)
9	Debate	-	-	7 (70%)	-	-
10	Brainstorming	10 (100%)	-	-	-	-
11	Excursion	-	-	-	5 (50%)	-

It can be seen from the table-4.97 that the BTE tutors used Discussion (100 per cent), Brainstorming (100 per cent), and Lecture (80 per cent) are used most frequently, while Demonstration (80 per cent) and Role-Play (60 per cent) methods are frequently used to teach in the classroom. The contents of FDC 218 are diverse and dynamic. It encompasses some pertinent socio-economic issues viz., population, productivity,

resource development and utilization, technology, and the concept of money. Therefore, the tutors felt that blended teaching methods such as Discussion, Brainstorming, and Lecture are crucial for helping the student-teachers to gain insight into socio-economic issues in the country.

4.5.3.2 Assessment of Learning Outcomes in FDC 218

The collected data from the BTE E/SS tutors revealed that both formative assessment and summative assessments were used in FDC 218. Also, assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment.

4.5.3.2.1 Modality for Conducting Formative assessment in FDC 218

The discussions with selected BTE tutors of FDC 218 revealed that the formative assessment of student-teachers in FDC 218 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of two assignments with each comprising five compulsory unstructured questions for ten marks. The mid-semester assessment comprised five unstructured (2 to be answered) and 20 compulsory structured questions for all the student-teachers for 20 marks whereas a 21-day mandatory class attendance of student-teachers were assessed for 10 marks per student-teacher. The details of the findings are presented in table-4.98.

Table-4.98: Modality in Conducting Internal Assessment in FDC 218

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 minimum	2	10
2	Mid-semester test	Structures and unstructured	Structured (20) and Unstructured (5)	1	20
3	Class attendance	N/A	N/A	21 days minimum	10

4.5.3.2.2 Modality for Conducting Summative Assessment in FDC 218

The tutors revealed that the summative assessment of student-teachers in FDC 218 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the E/SS tutors in the BTE colleges to prepare questions, supervise and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 8 unstructured questions (5 to be answered). The duration of this paper is one and a half hours because it is a one-credit hour paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student teacher's progress.

As per the level of students, the type of questions, and the number of questions used in both formative assessment and summative assessment are proper. Whereas the structured questions develop the critical thinking skills of the student-teachers, the unstructured questions help to identify weaknesses as student-teacher try to organize the subject matter in the form of long answers.

4.5.3.4 Modification of FDC 218 Contents

To modify the contents, needed data were collected from BTE tutors about areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics viz., frequencies, and percentages as presented in the table-4.99.

Table-4.99: Needed Suggestions Modification of FDC 218

Sr. no	Suggestion	Frequency	Percentage
1	The need to incorporate content on process developing skills to help solve critical problems	1	10
2	The concept of recreation and tourism should be incorporated in FDC 218 to create a sense of leisure time and tourism in society	1	10
3	The reading list should be upgraded to facilitate extensive reading	7	70
4	The one-credit hours should be increased to three to provide ample contact hours	4	40

Suggestions presented in table-4.99 show the need to incorporate content on process developing skills to help solve critical problems (10 per cent), the concept of recreation and tourism should be incorporated in FDC 218 to create a sense of leisure time and tourism in society (10 per cent), the reading list should be upgraded to facilitate extensive reading (70 per cent), and one-credit hours should be increased to three to provide ample contact hours (40 per cent).

Also, data were collected from student-teachers through group discussion (see the details in appendix H). And suggestions that emanated for modification of FDC 218 are presented as follows.

- a. There should be contents about the structure and benefits of international organizations
- b. Libraries in the colleges should be furnished with recent reference books that have relevant information about the contents.

It can be concluded that; 1) the objectives are adequate and appropriate for directing the training of student-teachers in required skills for national growth and development, 2) the contents are appropriate in terms of equipping student-teachers with the needed subject matter to be effective in the classroom, 3) the use of many teaching methods such as Discussion, Brainstorming, Lecture, and Demonstration are appropriate for preparing student-teachers to adopt a variety of instructional strategies

in achieving targets, 4) one credit hour was not appropriate to match the contents, 5) reading list is inappropriate to provide adequate reading material as per the contents, and 6) modes of assessments are appropriate for determining learning outcomes of student-teachers.

4.5.4 Mathematics (FDC 222)

Mathematics in this semester is titled Further Algebra which is designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Mathematics tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course are;

- i. To explain and discover patterns in simple series and sequences;
- ii. To apply matrices and binomial expansions to the solutions of problems;
- iii. To pose and solve problems that require the use of calculators and ICT.

It can be seen from table-4.100 that the course objectives are adequate to match the given contents of FDC 222 (80 per cent). Also, the course objectives have provided student-teachers with further exposure to topics in algebra (70 per cent). The detailed analysis of collected data about the course objectives and appropriateness of the contents are presented in table-4.100.

**Table-4.100: Appropriateness and Relevance of Contents and Objectives of
FDC 222**

Sr. no.	Item	Judgment		
		Appro p riate	Uncertain	Inappro p riate
1	Adequacy of course content as per given objectives	8 (80%)	2 (20%)	1 (10%)
2	The course objectives have provided student-teachers with further exposure to topics in algebra	7 (70%)	3 (30%)	-
3	Gain knowledge in Arithmetic Progression and can determine the general terms and sum of given series	5 (50%)	4 (40%)	1 (10%)
4	Appreciate Investigating Number Patterns such as investigate square numbers, triangular numbers, patterns in calendar numbers (3x3) and (4x4); 3x3 and the magic square	3 (30%)	7 (70%)	-
5	Familiar with Binomial Expansion and can perform operations on Expansion of integral powers of binomial expressions (square and higher powers of binomials up to the sixth power) using Pascal's triangles.	6 (60%)	3 (30%)	1 (10%)
6	Significance of the reading list	3 (30%)	2 (20%)	5 (50%)
7	Significance of one credit hour to the course	5 (50%)	1 (10%)	4 (40%)

It can be seen from table-4.100 that most of the contents (60 per cent) of FDC 222 are appropriate in terms of providing an opportunity for student-teachers to study Binomial Expansion, perform operations on Expansion of integral powers of binomial expressions (square and higher powers of binomials up to the sixth power) by using Pascal's triangles. Also, the contents are appropriate for helping student-teachers to understand Arithmetic Progression and can determine the general terms and sum of given series (50 per cent), while one credit hour was appropriate to match the contents (50 per cent). However, the tutors (70 per cent) were uncertain as to whether student-teachers would appreciate a concept related to Investigate Number Patterns like investigating square numbers, triangular numbers, patterns in calendar numbers (3x3)

and (4×4) ; 3×3 and the magic square. This is because the concepts could be found in the basic school Mathematics syllabus.

To find out how alumni were teaching at the basic schools, two Mathematics lessons were observed at the basic schools (see details in appendix A-1). It was found that generalist teachers at the primary school who were prepared with FDC 222 could not show impressive subject knowledge in achieving instructional objectives. Most of the pupils could not give correct responses to questions posed by teachers in the classroom. Whilst interacting with some teachers regarding their competencies in Mathematics, it appears most of them would prefer to teach different subjects to mathematics. In their opinion mathematics appears a difficult subject for them to teach properly. On the other hand, observation of lessons taught by alumni at the JHS revealed effective delivery of the subject matter. Here, it was found that these teachers had a proper background in Mathematics from Senior High Schools. And such caliber of teachers are having a full grasp of the content knowledge and upon receiving further training from the colleges, they become effective than their colleagues without prior knowledge in Mathematics. Although most of the contents were judged as appropriate, it can be said that the weightage between theoretical contents and pedagogy is not balanced. This was clear in the situation whereby the primary school generalist Mathematics teachers could not apply appropriate instructional strategies to achieve learning targets. A similar result was found by UNICEF (2017) that school teachers in Ghana needed excessive pedagogical training, particularly in core subjects to align with the changing needs of the basic school students.

Also, data were collected from final year student-teachers about the contents of FDC 222 as stated in chapter III of this study, through group discussion. Though the researcher was not having a checklist, it was ensured that the following themes (see appendix B) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. Further algebra is a fulfilling experience for student-teachers particularly those who wished to pursue Mathematics to a higher level.

- b. The contents have emphasized a specific strand of further algebra viz., Series and Sequences, Binary operations, Matrices, and Binomial expansion.
- c. The methodology of teaching is not incorporated in FDC 222 contents to equip pedagogical skills.

Based on the data presented above, the contents of algebra would extend the knowledge of student-teachers in several areas such as Series and sequences, Binary operations, Matrices, and Binomial expansion. But the data indicate that student- teachers require pedagogical skills to deliver the content knowledge successfully. This shows discrepancies in the framework of FDC 222 that need to be addressed to achieve targets.

4.5.4.1 Teaching Methods used by BTE Tutors for Teaching FDC 222

The BTE Mathematics tutors were asked to tickmark to judge teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most frequently used by BTE tutors in teaching FDC 222 are Discussion (100 per cent), Demonstration (100 per cent), and Collaboration (70 per cent). The same teaching methods were found in our previous discussions when we were presenting about the teaching methods used in teaching first semester and second-semester Mathematics. It is expected that different teaching methods would be used to motivate student- teachers and arouse their interest in the classroom as the objectives and content differ from one semester to another. Although these are appropriate teaching that can help to achieve instructional objectives, the student-teachers needed to be exposed to a variety of teaching methods to make them effective.

4.5.4.2 Assessment of learning outcomes in FDC 222

The collected data from the BTE Mathematics tutors revealed that both formative assessment and summative assessments were used in FDC 222. The assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination is used for conducting the summative assessment. In effect, the assessment of learning outcomes (internal and external) in FDC 222 is the same as the assessment of learning outcomes in FDC 112 as stated above. It is the same in terms of duration, marks, and scoring procedure (see table-4.16 above).

4.5.4.3 Modification of FDC 222 Contents

Based on the findings presented above, modification of FDC 222 contents is essential. To modify the contents, needed data were collected from BTE tutors and final year student-teachers. The researcher requested the respondents as stated in chapter III of this study to give suggestions for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics viz., frequencies as presented in the table-4.101.

Table-4.101: Needed Suggestions Modification of FDC 222

Sr. no	Suggestion	Frequency	Percentage
1	The reading lists should be modified to provide adequate and relevant reading material as per the contents	4	40
2	A balance should be established between a conceptual understanding of algebra, method of teaching, and problem-solving skills	1	10
3	No suggestion	5	50

Suggestions that are presented in the table-4.101 show that reading lists should be modified to provide adequate and relevant reading material as per the contents (40 per cent), a balance should be established between a conceptual understanding of algebra, method of teaching, and problem-solving skills (10 per cent) while no suggestion was provided by 50 per cent tutors.

Also, data were collected from final year student-teachers for modification of FDC 222. The suggestions that emerged are presented as follows.

- a. Tutors should adopt a flexible grouping of student-teachers in the Mathematics classroom to assist one another.
- b. Tutors should give feedback on class assignments and indicate weaknesses of student-teachers if any for improvement.
- c. The methodology of teaching Mathematics should be incorporated in FDC 222 contents to introduce student-teachers to instructional strategies of teaching algebra.

It can be concluded that; 1) the course objectives were relevant in terms of providing student-teachers with further exposure to concepts in algebra, 2) the contents were appropriate in terms of subject matter, 3) one credit hour was inappropriate as per the contents, 4) teaching methods viz., Discussion, Demonstration, and Collaboration as used by tutors are appropriate for achieving instructional objectives, 5) the contents were appropriate for equipping student-teachers with the subject matter, 6) Mathematical concepts like square numbers, triangular numbers, patterns in calendar numbers (3x3) and (4x4); 3x3 and the magic square were inappropriate as not connected to basic school Mathematics syllabus, and 7) reading list was inappropriate for providing adequate reading material as per the contents, and 8) modes of assessments were appropriate for determining learning outcomes of student-teachers.

4.5.5 Introduction to ICT (GNS 211)

The contents of the Introduction to ICT is designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected ICT tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course are;

- i. To explain the difference between computer, information, and integration literacy
- ii. To explain the four operations of the information processing cycle: input, process, output, and storage
- iii. To differentiate among the various categories of software
- iv. To identify the important features of widely used application software
- v. To identify the major hardware components of a computer and their functions
- vi. To explain how the CPU uses the four steps of a machine cycle to process data
- vii. To develop the basic skills needed to work with MS Word up to skills level 2.

It can be seen from table-4.102 that the objectives of GNS 211 are adequate that aligned with the contents (70 per cent). Also, the objectives are relevant in terms of providing critical concepts related to computer-based information systems,

information systems concepts, and information privacy and application software (50 per cent). This implies that the course objectives have provided adequate learning activities to prepare student-teachers to be effective in the classroom. The details about the analysis are presented in table-4.102.

Table-4.102: Appropriateness and Relevance Contents and Objectives of GNS 211

Sr. no.	Items	<u>Judgment</u>		
		- Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	7 (70%)	2 (20%)	1 (10%)
2	The course objectives provide students with an understanding of computer-based information systems and technologies such as information systems concepts, information privacy, and application software	5 (50%)	2 (20%)	3 (30%)
3	Gain knowledge in the four operations of the information processing cycle (input, process, output, and storage)	6 (60%)	-	4 (40%)
4	Ability to demonstrate knowledge in educational computer software	3 (30%)	4 (40%)	3 (30%)
5	Ability to demonstrate knowledge in major hardware components of a computer	5 (50%)	4 (40%)	1 (10%)
6	Ability to use Excel (2003) to organize and analyze data	2 (20%)	7 (70%)	1 (10%)
7	Appropriateness for curriculum integration	4 (40%)	6 (60%)	-
8	Ability to communicate and find relevant information by using the internet	4 (40%)	5 (50%)	1 (10%)
9	Significance of one credit hours to the course	3 (30%)	2 (20%)	5 (50%)
10	Significance of the reading list	5 (50%)	1 (10%)	4 (40%)

It can be seen from table-4.102 that the majority of tutors (60 per cent) judge that the contents are appropriate for exposing student-teachers to the four operations of the information processing cycle (input, process, output, and storage). The analysis revealed that student-teachers have gained an understanding of how the process works together in processing data and converting it into meaningful information. Also, the contents are appropriate in terms of introducing student-teachers to hardware components of a computer (50 per cent). However, the majority of tutors (70 per cent) are uncertain as to whether the contents have equipped student-teachers with skills to use Excel (2003) to organize and analyze data. Other doubts held by the tutors are in the areas of appropriate contents in terms of curriculum integration (60 per cent), appropriate contents in terms of communicating and finding relevant information by using the internet (60 per cent). Factors that might have caused these doubts among the tutors include inadequate ICT facilities in the colleges. Of course, this is likely to affect the mode of transacting ICT in the colleges to achieve the desired goals.

To further ascertain the competencies of ICT teachers at the basic schools, two lessons taught were observed (see details in appendix A-1). It was found that lesson notes were not properly prepared as some components like the core-points and evaluation were not incorporated, and appropriate instructional strategies were not adopted to achieve instructional objectives. Consequently, further investigation revealed that the basic school candidates who appear for the Basic Education Certificate Examination (BECE) performed abysmally ICT. Here, the Chief Examiner's report can be referred to (WAEC, 2017). The report states most of the basic school candidates who appeared for the BECE in 2017 performed woefully in practical oriented subjects including the ICT. This suggests that content weightage between the conceptual understanding of ICT, pedagogy, and practical skills was imbalanced in GNS 211 contents.

Also, data were collected about the contents of GNS 211 as stated in chapter III of this study, through group discussion (see details in appendix J). Though the researcher was not having a checklist, it was ensured that the following themes were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. The student-teachers expressed interest in studying GNS 211. They actively participated in the classroom lessons and every learning activity involving the course.
- b. The contents were connected to the basic school ICT syllabus and have equipped student-teachers with relevant content knowledge particularly in the processing cycle -Input, process, output, and storage and soft-wares that can be used for teaching and learning.
- c. The contents have two sections; theory and practical. The theory section was effective in equipping student-teachers with knowledge of using a computer in education while the practical section was ineffective due to inadequate computers, low electricity supply, lack of internet facilities, and smart boards

The contents of GNS 211 largely attempt to prepare student-teachers with computer knowledge and skills capable of using ICT tools to achieve learning targets. It can be seen from the data presented above that indeed, student-teachers were equipped with conceptual knowledge as having acquired a basic understanding of how computers operate and their importance in education. For this knowledge to make an impact in the classroom, student-teachers need to develop their digital literacy skills by manipulating computer tools and devices during ICT lessons in BTE colleges. However, this practical concept has largely eluded them in this course due to unequipped computer laboratories and an unstable power supply. To prepare effective teachers, student-teachers need to attain a full grasp of ICT skills as well as knowing technology integration.

4.5.5.1 Teaching Methods used by BTE Tutors for teaching GNS 211

The tutors were asked to tickmark to judge teaching methods on a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.103.

Table-4.103: Appropriateness & Relevance of Teaching Methods used in teaching GNS 211

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	-	7 (70%)	-	-	-
2	Games	-	-	-	-	6 (60%)
3	Collaboration	-	2 (20%)	-	-	-
4	Demonstration	9 (90%)	-	-	-	-
5	Mentoring	-	-	-	6 (60%)	-
6	Role play	-	-	-	-	8 (80%)
7	Lecture	-	-	8 (80%)	-	-
8	Project	7 (70%)	-	-	-	-
9	Debate	-	-	7 (70%)	-	-
10	Brainstorming	8 (80%)	-	-	-	-

It can be seen from the table-4.103 that most frequently, the BTE tutors used Demonstration (90 per cent), Brainstorming (80 per cent), and Project (70 per cent), and frequently use Discussion (70 per cent) methods to teach the course in the classroom. These teaching methods show tutors' attempt to establish a balance between the use of child-centered and teacher-centered approach to achieve instructional objectives. This means both the tutors and the student-teachers played a role in enhancing understanding of lessons. It may be thought that teaching the 21st- century student-teachers ICT, requires the use of high-tech computer facilities such as virtual laboratories, flipped classrooms, open educational resources, etc. in BTE colleges. These modern facilities would help student-teachers to interact and work cooperatively in advance to achieve learning goals.

4.5.5.2 Assessment of learning outcomes in GNS 211

The collected data from the BTE tutors revealed that both formative assessment and summative assessments were used in GNS 211. The assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment. The modality of conducting assessments is presented in the next subsection.

4.5.5.2.1 Modality for Conducting Formative assessment in GNS 211

Further interaction with the tutors revealed that the formative assessment of student-teachers in GNS 211 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of two assignments with each comprising five compulsory unstructured questions for ten marks. Also, the mid-semester assessment comprised five unstructured (2 to be answered) and 20 compulsory structured questions for all the student-teachers for 10 marks, practical work for 10 marks whereas a 21-day mandatory class attendance of student-teachers were assessed for 10 marks per student-teacher. The details of the findings are presented in table-4.104.

Table-4.104: Modality in Conducting Internal Assessment in GNS 211

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 minimum	2	10
2	Mid-semester test	Structures and unstructured	Structured (20) and Unstructured (5)	1	10
3	Practical work	-	-	1	10
4	Class attendance	N/A	N/A	21 days minimum	10

4.5.5.2.2 Modality for Conducting Summative Assessment in GNS 211

The tutors revealed that the summative assessment of student-teachers in GNS 211 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 8 unstructured questions (5 to be answered). The duration of this paper is one and a half hours because it is a one-credit hour paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student-teachers' progress.

Here, it can be said that the assessment of student-teachers in GNS 211 is appropriate. This is due to proper assessment items, frequency of the assessment, and item reliability. But the assessment of practical work was not properly featured in the summative assessment. Also, some of the tutors felt it was not proper for the Institute of Education, UCC to conduct external assessments because they are not in physical contact with the student-teachers to determine how they learn. This is not to say summative assessment was not appropriate in determining the learning outcomes of the student-teacher. But total autonomy could be granted to the BTE tutors to assess them as they know the learning abilities of the student-teachers better than any external body.

4.5.5.3 Modification of ICT Contents

To modify the contents, needed data were collected from BTE tutors about areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics via frequencies as presented in the table-4.105.

Table-4.105: Needed Suggestions Modification of GNS 211

Sr. no	Suggestion	Frequency	Percentage
1	There should be adequate content on technology integration to broaden knowledge of student-teachers	1	10
2	There should be professional development training courses for tutors on the use of ICT for instruction	3	30
3	The policy-makers should allow student-teachers to carry their mobile phones, tablets, and laptops to the classroom during instructions to facilitate learning	1	10
4	No suggestion	5	50

Suggestions presented in table-4.105 show there should be adequate content on technology integration to broaden knowledge of student-teachers (10 per cent), there should be professional development training courses for tutors on the use of ICT for instruction (30 per cent), and the policy-makers should allow student-teachers to carry their mobile phones, tablets and laptops to the classroom during instructions to

facilitate learning (10 per cent). But no suggestion was given by some tutors (50 per cent).

Also, data were collected from final year student-teachers for modification of GNS 211 contents by using group discussion (see details in appendix J). The suggestions that emerged are presented as follows.

- a. BTE colleges should adhere to the maintenance of computers to ensure the working condition of computers, internet facilities, and other appliances
- b. The BTE colleges should procure more computers, Wi-Fi facilities, and power plants to ensure a constant supply of electricity at the computer laboratories.
- c. The methodology of teaching ICT should be incorporated in the contents to equip the student-teachers with pedagogical skills.

It can be concluded that; 1) The objectives were relevant for determining the learning outcomes of the course, 2) The one-credit hour was not appropriate as per the contents, 3) The contents were appropriate for helping student-teachers to acquire subject matter particularly in the area of information processing cycle (input, process, output, and storage) and soft-wares that can be used for teaching and learning, 4) the teaching methods viz., Demonstration, Brainstorming, Project, and Discussion were appropriate for achieving instructional objectives, 5) assessment of practical activities was inappropriate as the practical section was not properly featured in summative assessment.

4.5.6 Integrated Science (FDC 224)

The Integrated Science comprises four sections viz., Agriculture Science, Biology, Chemistry and Physics. But further interaction with tutors revealed Agriculture Science as an optional course this semester. All these courses here have two credit hours. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Integrated Science tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and

provide suggestions for modification. The details of the section-wise analysis are presented as follows.

4.5.6.1 Biology

The objectives of third-semester Biology were not found in the BTE curriculum designed by the Institute of Education UCC, 2014. Therefore, tutors designed lessons based on previous knowledge. This seems inappropriate and must not be encouraged. Here, the course contents were judged by Integrated Science tutors through a questionnaire (close-ended and opened ended). The collected data were analyzed by using frequencies and percentages as presented in table-4.106.

Table-4.106: Appropriateness & Relevance of Contents of third-semester Biology

Sr. no.	Items	<u>Judgment</u>		
		- Appropriate	Uncertain	Inappropriate
1	Familiar with methods of controlling mosquito (environmental, chemical, biological and genetic)	6 (60%)	3 (30%)	1 (10%)
2	Gain knowledge in dentition in humans in terms of tooth structure, functions, and dental care	7 (70%)	1 (10%)	2 (20%)
3	Ability to describe the process of digestion of food substances (protein, fats and oils, and carbohydrates) in human	6 (60%)	1 (10%)	3 (30%)
6	Significance of course duration (three weeks of teaching this section)	5 (50%)	3 (30%)	2 (20%)
7	Significance of the reading list	-	3 (30%)	7 (70%)

It can be seen from table-4.106 that provision has been made to introduce student-teacher to the dentition in humans in terms of tooth structure, functions, and dental care (70 per cent), expose student-teachers to methods of controlling mosquito-like environmental method, chemical method, biological method and genetic method (60 per cent), exposure to the process of digestion of food substances (protein, fats and oils and carbohydrates) in human (60 per cent), and three weeks of teaching this

aspect is appropriate for preparing prospective teachers (50 per cent). But the reading list is inappropriate to match the contents (70 per cent).

Further investigation by using observation of the lesson taught by alumni was carried out to find out the competencies of basic school teachers in teaching Integrated Science (see details in appendix A-1). The results indicate that most of the generalist alumni teaching Biology were able to deliver lessons successfully as planned in their lesson notebooks. But the students were not engaged in any form of practical activities. The teachers explained rigorous practical engagement was not required at the basic level.

Also, data were collected from final year student-teachers about the contents of third-semester Biology as stated in chapter-III of this study, through group discussion. Though the researcher was not having a checklist, it was ensured that the following themes (see Appendix C3) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. The contents focus on real-life experiences related to individuals' environment and growth.
- b. They also revealed that several contents are appropriate for enhancing conceptual understanding of Biology. Example include content about the life cycle of the mosquito, dentition in humans, and digestion in humans
- c. Biology laboratories in the colleges are equipped to support practical Biology. For this reason, projects were seldom carried out by them to develop problem-solving skills.

Based on the data presented above, it can be said that the third-semester Biology contents are appropriate for enhancing the knowledge of the student-teachers. This could be largely attributed to adequate concepts that have been addressed in the syllabus for developing a conceptual understanding of student-teachers. Also, it can be learned that practice is not being given due weightage in these contents which has affected the teachers' choice of instructional strategies in making lessons practical at basic schools.

4.5.6.1.1 Teaching Methods used by BTE Tutors for teaching Third-Semester Biology

The tutors were asked to tickmark to judge the teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most often used by BTE tutors in teaching third-semester Biology include Lecture, Demonstration, and Discussion. These teaching methods are not different from the teaching methods used in the teaching of Biology in the previous semester (see table-4.30 above). As we understand that practical work is essential in the Biology curriculum, most of these teaching methods (Lecture) are not appropriate for drawing a balance between theoretical learning and practical learning. To enhance the knowledge and skills of student-teachers, tutors should adopt additional methods to provide opportunities for student-teachers to engage in Investigation, Project, and Fieldwork.

4.5.6.1.2 Assessment of Learning Outcomes in Third-Semester Biology

The collected data from the BTE tutors revealed that both formative assessment and summative assessments were used in Third-Semester Biology. Here, assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment. The assessment of learning outcomes (internal and external) in third-semester Biology is the same as the assessment of learning outcomes in Biology in previous semesters. It is the same in terms of duration, marks, and scoring procedure. But it can be said that these modes of assessments are not adequate in determining learning outcomes of student-teachers in all the components of Biology, particularly in the practical work. This must be relooked to promote effective teaching and learning.

4.5.6.1.3 Modification of Third-Semester Biology Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics via frequencies as presented in the table- 4.107.

Table-4.107: Needed Suggestions Modification of Third-Semester Biology

Sr. no	Suggestion	Frequency	Percentage
1	Third-year Biology should be made optional for specialization by student-teachers	3	30
2	Assessment should involve an experiment in the laboratory to test student-teachers' practical skills	2	20
3	No suggestion	5	50

Suggestions presented in table-4.107 show that third-year Biology should be made optional for specialization by student-teachers (30 per cent), and assessment should involve an experiment in the laboratory to test student-teachers practical skills (10 per cent). But no suggestion was given by some tutors (50 per cent).

Also, data were collected from final year student-teachers for modification of third-semester Biology through group discussion. The suggestions that emerged are presented as follows;

- a. Experts should be invited from health services to share expert knowledge on topics such as dentition in humans and methods of controlling the mosquito.
- b. The methodology of teaching Biology should be incorporated in these contents to equip student-teachers with pedagogical skills.
- c. The reading list should be modified and include more accessible books to encourage broad reading.

It can be concluded that; 1) third-year Biology has no course objectives designed by curriculum designers, 2) the contents are appropriate in terms of subject matter and pedagogy, 3) Biology laboratory in colleges are unequipped to support practical section, 4) Lecture method is inappropriate for teaching Biology, 5) the modes of assessments are inappropriate for determining learning outcomes of student-teachers in the practical activities and must be reconsidered.

4.5.6.2 Chemistry

The objectives of third-semester Chemistry were not found in the BTE curriculum designed by the Institute of Education, UCC 2014. Therefore, tutors designed lessons

based on previous knowledge. This seems inappropriate and must not be encouraged. Here, the course contents were judged by Integrated Science tutors through a questionnaire (close-ended and opened ended). The collected data were analyzed by using frequencies and percentages as presented in table-4.108.

Table-4.108: Appropriateness and Relevance of Contents of third-Semester Chemistry

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Introduce to the concept of Acids, Alkali, Salt, and Bases concerning sources, examples, and properties	8 (80%)	2 (20%)	-
2	Familiar with using the PH scale to test for acid, alkali, salt, and bases of a given substance	4 (40%)	5 (50%)	1 (10%)
3	Preparation of indicator from flowers or a given part of a plant in a laboratory	2 (20%)	7 (70%)	1 (10%)
4	Significance of course duration (one week of teaching this section)	7 (70%)	1 (10%)	2 (20%)
5	Significance of the reading list	1 (10%)	2 (20%)	7 (70%)

The data presented in table-4.108 show that the contents of Chemistry are appropriate in terms of introducing student-teachers to the concept of acids, alkali, salt, and bases concerning sources, examples, and properties (80 per cent), and the one-week duration of teaching the contents is appropriate (70 per cent). But the majority of the tutors (70 per cent) are uncertain that the contents can help student-teachers to prepare indicators from flowers or a given part of a plant in a laboratory. Also, (50 per cent) of tutors are uncertain that student-teachers can use the PH scale to test for acid, alkali, salt, and bases of a given substance. Further investigation with the tutors revealed some factors that might have created some doubts about these components of the contents include; inadequate laboratory work, overloaded contents, and inappropriate instructional strategies. To further ascertain the competencies of Chemistry teachers in basic schools, two lessons taught by alumni were observed (see details in appendix A-1). The result indicates that lessons were taught as planned and the teachers demonstrated a full grasp of the subject matter. But proper instructional

strategies were not used in the classroom. This phenomenon suggests a methodological gap in the Chemistry syllabus that needs to be filled.

Also, data were collected from final year student-teachers about the contents of third-semester Chemistry as stated in chapter III of this study, through group discussion. Though the researcher was not having a checklist, it was ensured that the following themes (see Appendix C1) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. The contents overemphasized the conceptual aspect of Chemistry
- b. The contents are connected to Chemistry contents that are taught at the basic school Science syllabus.
- c. Appropriate instructional strategies are not used by the tutors to balance conceptual knowledge and practical skills.

It is evident from the data presented above that student-teachers were exposed to the concept of acids, alkali, salt, and bases. Although these concepts have provided a conceptual understanding of Chemistry, most of them could not apply them in their real-life situation. This suggests that making these contents meaningful, flexible, and interesting to students lies in the ability of teachers to relate concepts to everyday life activities that have an impact on their lives. How these concepts are transacted in the classroom is presented in the next sub-section.

4.5.6.2.1 Teaching Methods used by BTE Tutors for teaching Third-Semester Chemistry

To judge the teaching methods used by the BTE tutors in teaching third-semester Chemistry, the BTE tutors were asked to tick mark teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most frequently used by BTE tutors include Lecture, Demonstration, Discussion, and Brainstorming. It can be recalled that the same teaching methods were found when we were presenting Chemistry contents in the previous semester (see table-48 above). As we understand that practical work is essential in the Chemistry curriculum, Lecture, for example, is not appropriate for drawing a balance between theoretical learning and practical learning. To enhance the knowledge and skills of student-teachers, tutors

should provide opportunities for student-teachers to engage in oral presentation, investigation, project, and fieldwork, this is also being found and suggested by Aikenhead (1994) and Jessani (2015).

4.5.6.2.2 Assessment of learning outcomes in Third-Semester Chemistry

The collected data from the BTE tutors revealed that both formative assessment and summative assessments were used in Third-Semester Chemistry. The assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment. Here, it can be said that the assessment of learning outcomes (internal and external) is the same as the assessment of learning outcomes in Chemistry in the previous semesters. It is the same in terms of duration, marks, and scoring procedure. But it can be said that these modes of assessment are not adequate in determining the learning outcomes of student-teachers. This is because rigorous laboratory works are not emphasized. This must be relooked to promote effective teaching and learning.

4.5.6.2.3 Modification of Third-Semester Chemistry Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary by using an open-ended questionnaire. The collected data from tutors were analyzed by using descriptive statistics via frequencies as presented in the table-4.109.

Table-4.109: Needed suggestions for Modification of Third-Semester Chemistry

Sr. no	Suggestion	Frequency	Percentage
1	Equal weightage should be established between a conceptual understanding of Chemistry contents and practical work to produce effective teachers	3	30
2	Third-semester Chemistry should be made optional for specialization by student-teachers	2	20
3	The methodology of teaching Chemistry should be incorporated in the contents to develop pedagogical skills	3	30
4	No suggestion	2	20

Suggestions presented in table-4.109 show the need to establish equal weightage between conceptual understanding Chemistry contents and practical work to produce effective teachers (30 per cent), third-semester Chemistry should be made optional for specialization by student-teachers (20 per cent), and Methodology of teaching Chemistry should be incorporated in the contents to develop pedagogical skills. But no suggestion was given by some tutors (20 per cent).

Data were collected from final year student-teachers through group discussions for modification of third-semester Chemistry. The suggestions that emerged are presented as follows;

- a. The Chemistry laboratories in BTE colleges should be equipped with required facilities such as equipment, supporting staff, and chemicals to help in carrying out scientific investigations.
- b. Assessment should involve questions testing of practical skills in the Chemistry laboratory. This would help student-teachers to put theory into practice.
- c. The total contact hours per week should be increased from 4 to 8 by shifting the one-week coverage to two.

It can be concluded that; 1) course objectives were not found in third-semester Chemistry contents, 2) the contents were appropriate for addressing the subject matter, 3) pedagogy was not given equal weightage, 4) Lecture method, as most frequently used by Chemistry tutors was inappropriate for drawing a balance between theoretical knowledge and practical knowledge, 5) modes of assessment (internal and external) were not adequate to determine learning outcomes of student-teachers as rigorous laboratory works were not emphasized, and 6) one-week course duration was appropriate.

4.5.6.3 Physics

The objectives of third-semester physics were not found in the BTE curriculum designed by the Institute of Education, UCC 2014. Therefore, tutors designed lessons based on their previous knowledge. This is inappropriate and must not be encouraged. Here, the course contents were judged by Integrated Science tutors through a questionnaire (close-ended and opened ended). The collected data were analyzed by using frequencies and percentages as presented in table-4.110.

**Table-4.110: Appropriateness and Relevance of Contents of Third-Semester
Physics**

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Student-teachers have the opportunity to learn sound energy regarding sources of sound waves and properties of sound waves	9 (90%)	-	1 (10%)
2	Ability to experiment to demonstrate the transfer of heat	6 (60%)	4 (40%)	-
3	Familiar with electricity in respect of sources and the components of electrical circuits (diagrams, series, and parallel connection)	5 (50%)	3 (30%)	2 (20%)
4	Ability to construct simple electronic circuit using the battery, switch, light-emitting diode, and insulated wires	5 (50%)	4 (40%)	1 (10%)
5	Significance of course duration (five weeks of teaching this section)	7 (70%)	2 (20%)	1 (10%)
6	Significance of the reading list	-	3 (30%)	7 (70%)

It can be seen from table-4.110 that the contents are appropriate in terms of providing an opportunity for student-teachers to sound, energy, sources of sound waves and properties of sound waves (90 per cent), introduced to experiment to demonstrate the transfer of heat (60 per cent), exposure to electricity with respect of sources of electricity and the components of electrical circuits (50 per cent), developing skills in the construction of simple electronic circuit using the battery, switch, light-emitting diode and insulated wires (50 per cent). But it was found that the reading list is inappropriate to encourage extensive reading (70 per cent).

Looking closely at the data presented, it can be said that contents have incorporated the critical components of Physics that can develop the knowledge and skills of prospective teachers for teaching Physics. But observation of the lesson taught by Physics teachers in basic schools revealed that most of them could not achieve instructional objectives (See details in appendix A-1). Further investigation reveals

major causative factors like inappropriate instructional strategies and curriculum implementation. Issues raised regarding curriculum implementation include inadequate facilities, unequipped Physics laboratories, and inadequate reading material. This suggests an imbalance between a conceptual understanding of the contents and pedagogy.

Also, data were collected from final year student-teachers about the contents of third-semester Physics through group discussion (see details in Appendix C-2). Though the researcher was not having a checklist, it was ensured that the following themes were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. The contents that are taught in the third-semester Physics are linked to basic school Physics syllabus
- b. The contents offer student-teachers appropriate opportunity to gain a thorough conceptual understanding of basic Physics
- c. The contents are loaded and could not possibly be complete in a stipulated period of five weeks
- d. The Physics laboratories in the BTE colleges were not equipped to test theories and reinforce the knowledge gained during classroom lessons

Based on the data presented above, it can be said that the third-semester Physics contents have been designed to equip student-teachers with a conceptual understanding of fundamental physics and process skills of basic school learning standards. It includes a section that elaborates on the basic process skills of Physics. Therefore, it is critical to focus classroom instructions on student-teachers' understanding and how they can apply concepts in solving problems.

4.5.6.3.1 Teaching Methods used by BTE Tutors for Teaching Third-Semester Physics

The BTE tutors were asked to tickmark to judge teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most often used by BTE tutors in teaching third-semester Physics include Demonstration, Discussion, Project, and Brainstorming. Looking at the presentation of the previous semester's Physics

contents, the same teaching methods were found (see table-51 above) to have used in this semester. As asserted by Ajewole (2000), many of these teaching methods are innovative and reconstruct learning in achieving instructional objectives. To teach physics successfully, Ajaja and Kpanja (2000) pointed out that the innovative approach and team teaching are critical in the 21st century. Certainly, by effective use of these teaching methods student-teachers would be able to explore further scientific concepts to solve problems in a real-life situation.

4.5.6.3.2 Assessment of learning outcomes in Third-Semester Physics

The collected data from the BTE tutors revealed that both formative assessment and summative assessments were used in third-semester Physics. The assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment. Here, the assessment of learning outcomes (internal and external), the same components of assessment viz., duration, marks, and the scoring procedure was found when we were presenting Physics contents in the previous semesters. Looking at the calculation aspect of Physics, assessments involve day-to-day activities of student-teachers on every lesson taught. This immediately provides information to help in making corrections for student-teachers to adjust in their daily lives.

4.5.6.3.3 Modification of Third-Semester Physics Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics via frequencies as presented in the table- 4.111.

Table-4.111: Needed Suggestions Modification of Third-Semester Physics

Sr. no	Suggestion	Frequency	Percentage
1	Contents on the methodology of teaching Physics are critical and must be incorporated in these contents	1	10
2	The contact hours should be extended to 8 weeks for tutors to complete the course outline successfully	5	50
3	The BTE colleges required sufficient funds to purchase laboratory and science equipment	3	30

Suggestions presented in the table-4.107 show that Contents on the methodology of teaching Physics are critical and must be incorporated in these contents (10 per cent). The contact hours should be extended to 8 weeks for tutors to complete the course outline successfully (50 per cent), and The BTE colleges required sufficient funds to purchase laboratory and science equipment (30 per cent).

Also, data were collected from final year student-teachers by using group discussion (see details in Appendix C-2). The suggestions that emerged are presented as follows;

- a. The Physics tutors in the BTE colleges should resort to using a solderless breadboard to train student-teachers on 'basic electronic'. This suggests that the solderless breadboard is affordable and has standard electronic components, and can easily be connected without difficulties.
- b. The management of BTE colleges should equip Physics laboratories with equipment, specimen, and laboratory assistants to help in practical work.
- c. The reading list should be modified so that student-teacher can have access to relevant books to update their knowledge and skills.

It can be concluded that; 1) there were no course objectives found in the third- semesters Physics contents, 2) the contents were appropriate in terms of subjectmatter and pedagogy, 3) the teaching methods viz., Demonstration, Discussion, Project and Brainstorming as most frequently used by tutors were appropriate, 4) the reading list was inappropriate to encourage extensive reading, 5) the five weeks duration was appropriate for transacting this course, 6) the Physics laboratories in the BTE colleges were not equipped to test theories and reinforce the knowledge gained during classroom lessons, and 7) modes of assessments were appropriate for determining learning outcomes of student-teachers.

4.5.6.4 Agriculture Science (AGN 228A)

Agriculture Science is an optional (elective) course that is designed for one credit hour. The objectives are presented as follows;

- i. To enumerate the contributions of Agriculture to national development
- ii. To analyze the roles of government and various institutions in enhancing Agriculture

It can be seen from table-4.108 that the course objectives are not adequate to cover the given contents (50 per cent). But the course objectives provide the necessary pathway and concepts of studying Agriculture Science in schools. This suggests that the objectives have addressed critical components of AGN 228A to prepare effective teachers. The details of the analysis are presented in table-4.112.

Table-4.112: Appropriateness and Relevance of Contents and Objectives of AGN 228A

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	4 (40%)	1 (10%)	5 (50%)
2	The course objectives provide the necessary pathway and concepts of studying Agriculture Science in schools	7 (70%)	2 (20%)	1 (10%)
3	To be familiar with the contributions of agriculture to the socio-economic development of Ghana	6 (60%)	-	4 (40%)
4	To be familiar with the role of government and non-governmental agencies in agricultural development	7 (70%)	2 (20%)	1 (10%)
5	Acquire skills needed to operate an Agri-Business	3 (30%)	5 (50%)	2 (20%)
6	Ability to demonstrate the various means of producing crops by using the seeds and vegetative parts of the crop	4 (40%)	5 (50%)	1 (10%)
7	Ability to demonstrate the methods of weed control in respect of mechanical, chemical, biological & cultural	6 (60%)	4 (40%)	-
8	Significance of one credit hours to the course	3 (30%)	2(20%)	5 (50%)
9	Significance of the reading list	2 (20%)	1(10%)	7 (70%)

It can be seen from table-4.112 that the contents of AGN 228A have provided student-teachers with the opportunity to learn the role of government and non- governmental agencies in agricultural development (70 per cent). Here, some of the identified agencies include research, educational institutions, The Ministry of Food and Agriculture, and credit institutions. It is a known fact that these agencies play a crucial role in the provision of credit facilities as well as the formulation and implementation of policies to enhance agricultural development. This means student- teachers who wish to pursue this course as a career in the future have been provided with the necessary information regarding available facilities and policies to support their career. Also, the contents are appropriate in terms of introducing student- teachers to some contributions of Agriculture to the socio-economic development of Ghana (60 per cent). The roles of Agriculture in the context include income generation, employment, food, material for industries, and means for economic development. This phenomenon stimulates interest and motivates student-teachers to pursue it as an optional subject this semester. It was further found that the contents are appropriate in terms of exposing student-teachers to the various methods of weed control such as mechanical, chemical, biological, and cultural (60 per cent). But some tutors (50 per cent) were not sure whether student-teachers have acquired the skills needed skills to operate an Agri-Business. In their view, much content was not covered in developing their ability to initiate ventures, good human relation, exhibiting good leadership qualities, and creating foresight. This is because detailed contents are not taught at the basic level and need to be reconsidered.

The researcher also collected data from final year student-teachers about the contents of AGN 228A by using group discussion. Though the researcher was not having a checklist, it was ensured that the following themes (see Appendix C4) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. Most of the contents are related to the prior knowledge of the student-teachers making it easy to engage with learning activities in the classroom.
- b. The learning activities which are incorporated in this course create an entrepreneurial attitude in student-teachers by providing relevant knowledge,

and how to apply Agri-Business principles to identify and manage Agri-Business in the locality.

- c. Lack of resources such as land, funds, and equipment are in limited supply in BTE colleges thereby making it impossible to undertake practical agriculture projects in the colleges.

According to the data presented above, efforts have been made in AGN 228A contents to prepare student-teachers to achieve targets. Also, it can be seen from the data that there are career opportunities attached to this course. The contents are elaborated to provide valuable ideas for student-teachers to understand their career paths and develop them. This is to say the contents are flexible as student-teachers have the opportunity to develop their expertise.

4.5.6.4.1 Teaching Methods used by BTE Tutors for teaching Third-Semester Agriculture Science

The BTE tutors were asked to tickmark to judge the teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most often used by BTE tutors include Lecture, Demonstration, and Discussion. We can recollect that these are the same as the teaching methods presented in the previous semester's Agriculture contents (see table-40 above). Noting that practical work is essential in the Agricultural Science curriculum, it can be said that the lecture teaching method for example is inappropriate for drawing a balance between theory and practice. Further interaction with the tutors revealed that inadequate resources in the BTE colleges have largely informed their choice of teaching methods. But tutors can create a conducive learning environment through investigation, projects, and fieldwork to enhance the knowledge and skills of student-teachers.

4.5.6.4.2 Assessment of learning outcomes in Third-Semester Agricultural Science

The modes of assessment in this course include formative and summative. How these assessments are conducted have already been presented in the previous discussions when we were presenting the contents of Agriculture Science in the previous semesters. It is the same in terms of duration, marks, and scoring procedure. The assessment tools used for conducting formative assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was

used for conducting the summative assessment. But it can be said that the modes of assessments were not adequate as project, presentation, and writing of reports were not considered.

4.5.6.4.3 Modification of Third-Semester Agriculture Science Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary by using group discussion. The collected data from tutors were analyzed by using descriptive statistics viz frequencies and percentages as presented in the table-4.113.

Table-4.113: Needed Suggestions for Modification of Third-Semester Agriculture Science

Sr. no	Suggestion	Frequency	Percentage
1	There is a need to incorporate contents on instructional strategies of teaching Agriculture Science to enhance pedagogical skills	3	30
2	The one-credit hour should be increased to 3 to provide sufficient contact hours to complete the course outline	4	40
3	The BTE colleges required sufficient funds to purchase farm equipment and inputs for practical work	6	60
4	The BTE colleges should establish a collaboration with local agriculture extension service to share expertise and facilities	2	20

Suggestions presented in table-4.113 show that there is a need to incorporate contents on instructional strategies of teaching Agriculture Science to enhance pedagogical skills (30 per cent), the one-credit hour should be increased to 3 to provide sufficient contact hours to complete course outline (40 per cent), the BTE colleges required sufficient funds to purchase farm equipment and inputs for practical work (60 per cent), and the BTE colleges should establish a collaboration with local agriculture extension service to share expertise and facilities (20 per cent).

Also, data were collected from final year student-teachers for modification through group discussion. The suggestions that emerged are presented as follows;

- a. Provision should be made for student-teachers visit some Agri-Business sites at least once every semester to observe management processes
- b. Assessment should involve questions to test practical skills in the field. This would help student-teachers to put their conceptual understanding into practice
- c. There is a need to draw a balance between crop production, Agri-Business, and animal production in these contents as all are critical for producing effective prospective agriculture science teachers.

It can be concluded that; 1) the course objectives were relevant for providing the necessary pathway and concepts of studying Agriculture Science, 2) the contents were appropriate in terms of subject matter and pedagogy, 3) the Lecture teaching method was inappropriate for drawing a balance between theory and practice, 4) modes of assessments were not adequate as a project, presentation and writing of reports were not considered, 5) reading list was inappropriate to encourage extensive reading, and 6) one credit hour was inappropriate to contain the contents.

4.5.7 Music and Dance (PRA 211)

The Music and Dance is an optional (elective) course designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Music and Dance tutors who are Department Heads (one from each of the ten BTE colleges) and 40 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To appreciate the value and nature of the performing arts
- ii. To acquire competencies and skills which will enable them to compose simple rhythms, melodies, and movement patterns for school pupils.

It can be seen from table-4.110 that the course objectives were inadequate to match the learning activities of the PRA 211 contents (50 per cent). However, it can also be

seen that the course objectives have incorporated learning activities that promote conceptual understanding of nature and value of the performing arts in Ghana (50 per cent). The details of the analysis are presented in table-4.114.

Table-4.114: Appropriateness and Relevance of Contents and Objectives of PRA 211

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	4 (40%)	1 (10%)	5 (50%)
2	The course objectives have incorporated learning activities that promote conceptual understanding of the nature and value of the performing arts in Ghana	6 (60%)	3 (30%)	1 (10%)
3	Ability to apply philosophy and history of performing arts education in Ghana to achieve instructional objectives	7 (70%)	2 (20%)	1 (10%)
4	To be familiar with the rhythmic notation in respect of ‘simple time and compound time’	5 (50%)	3 (30%)	2 (20%)
5	To be familiar with form and structure in respect of binary, ternary, rondo, and hocket, variation	2 (20%)	1 (10%)	6 (60%)
6	Ability to demonstrate movement notation in respect of dance composition using labanotation	5 (50%)	4 (40%)	1 (10%)
7	Significance of one credit hour to the course	6 (60%)	3 (30%)	1 (10%)
8	Significance of the reading list	1 (10%)	1 (10%)	8 (80%)

It can be seen from table-4.114 that the contents of PRA 211 are appropriate in terms of incorporating learning activities to help student-teacher to apply philosophy and history of performing arts education in Ghana to achieve instructional objectives (70 per cent), introduce student-teachers to the rhythmic notation in respect of ‘simple

time and compound time'(50 per cent), expose student-teachers to demonstrate movement notation in respect of dance composition using labanotation (50 per cent), and one credit hour is appropriate for containing the contents (60 per cent). However, the contents are inappropriate to make student-teachers to be familiar with form and structure like binary, ternary, rondo, hocket, and variation. This was because of inadequate course contents to suffice the concepts.

The researcher also collected data from final year student-teachers about the contents of PRA 211 through group discussion. Though the researcher was not having a checklist, it was ensured that the following themes (see appendix K) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. The activities of the contents allow interaction amongst student-teachers to develop skills, ideas, and confidence.
- b. The contents have reflected Ghanaian culture making it possible for student-teacher to relate the nature and value of the performing arts in Ghana
- c. The contents have helped the student-teachers to have first-hand experience in rhythmic notation from the musical instrument.
- d. Most of the student-teachers were not familiar with symbols of written notations
- e. Most student-teacher couldn't compose simple rhythms, melodies, and movements for the pupil because of inadequate practice. This was largely attributed to inadequate contact hours and musical instruments in the BTE colleges.

Looking at the data presented above, it can be said that the contents of PRA 211 involve areas of music, dance, and drama. These areas are characterized by body movement through the arts of creativity. Student-teachers in the BTE colleges particularly those who have opted to specialize in this course need to be provided with opportunities to explore all these areas for creating Arts Works, develop skills and potentials. There are planned learning activities to introduce student-teachers to improvisation strategies to bring out their aesthetic skills. Through improvisation strategies, most of the student-teachers can acquire teaching styles that can be used to achieve instructional objectives.

4.5.7.1 Teaching Methods used by BTE Tutors for teaching PRA 211

The BTE tutors were asked to tickmark to judge teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most frequently used by BTE tutors include Demonstration, Discussion, and Brainstorming. It may be recalled that similar teaching methods were found when presenting for Music and Dance in the previous semester (see table-4.72 above). These are learner-centered methods that are appropriate for preparing student-teachers and should be encouraged.

4.5.7.2 Assessment of Learning Outcomes in PRA 211

The modes of assessment in PRA 211 include formative and summative. How these assessments are conducted have already been presented in the previous discussions when we were presenting the contents of Music and Dance in the previous semester. The modes of assessment are the same in terms of duration, marks, and scoring procedure. The assessment tools used for conducting formative assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment. It can be said that the internal assessment was appropriate for developing the creative skills of the student-teachers while the external assessment focuses on the conceptual understanding of the subject. But only the conceptual understanding is not adequate to determine the capability of prospective teachers. This implies that the external assessment here needs to be reconsidered to prepare effective teachers.

4.5.7.3 Modification of PRA 211 Contents

To modify the contents, needed data were collected from BTE tutors and final year student-teachers. The data were collected to modify areas of the contents which were felt necessary. The collected data from tutors were analyzed by using descriptive statistics viz., frequencies, and percentages as presented in the table-4.115.

Table-4.115: Needed Suggestions Modification of PRA 211

Sr. no	Suggestion	Frequency	Percentage
1	The BTE colleges need to establish a collaboration with the Department Of Music, Dance, Theatre Arts in the Universities and other Higher Education Institutions for exchange of expertise and facilities	1	10
2	The Music And Dance Departments in colleges require sufficient funds to procure teaching and learning aids	7	70
3	Topics such as rhythmic notation and movement notation are essential for every student-teacher and must be incorporated in the core paper for all.	1	10

Suggestions presented in table-4.115 show that the BTE colleges need to establish a collaboration with the Department of Music, Dance, Theatre Arts in the Universities and other Higher Education Institutions for exchange of expertise and facilities (10 per cent), the Music and Dance Departments in colleges require sufficient funds to procure teaching and learning aids (70 per cent) and topics such as rhythmic notation and movement notation are essential for every student-teacher and must be incorporated in the core paper for all (10 per cent).

Also, data were collected from final year student-teachers for modification of PRA 211 contents. The suggestions that emerged are presented as follows;

- a. One credit hour of PRA 211 should be increased to three to provide adequate contact hours for practicing skills
- b. There is a need to review the Junior High School curriculum and incorporate Music and Dance in BECE to develop the interest of student-teachers and basic school students in studying this subject.
- c. The subject tutors should be allowed to prepare comprehensive reading material to cover all the topics this semester as there are inadequate books in the colleges' library to rely on.

It can be concluded here that; 1) the course objectives were relevant as per the contents, 2) the contents about philosophy and history of performing arts education in

Ghana, and rhythmic notation (Simple Time & Compound Time) were appropriate for helping student-teachers to appreciate the value and nature of the performing arts, 3) practice was not given due weightage as most student-teacher could not compose simple rhythms, melodies, and movements, 4) teaching methods such as Demonstration, Discussion, and Brainstorming were appropriate for preparing student-teachers, 5) Modes of assessments (formative and summative) did not emphasize on practical skills, and 6) one credit hour was appropriate for transacting the course.

4.5.8 Physical Education (PRA 212)

Physical Education (PE) is an optional (elective) course designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected PE tutors who are Department Heads (one from each of the ten BTE colleges) and 40 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To identify the various body types (Sheldon's classification) and the different types of sporting activities associated with each type
- ii. To classify the human skeleton and joints into various types and their functions,
- iii. To demonstrate the basic movement skills in soccer, netball, and athletics and play individually and in teams

It can be seen from table-4.116 that the course objectives are relevant to provide adequate learning activities to prepare student-teachers (80 per cent). Also, the objectives are relevant for incorporating fundamental human physical performance and the scientific basis of PE concerning movement skills; track and field events like athletics, soccer, and netball (50 per cent). The detailed analysis of collected data about the course objectives and appropriateness of the contents are presented in table- 4.116.

**Table-4.116: Appropriateness and Relevance of Contents and Objectives of
PRA 212**

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	8 (80%)	2 (20%)	-
2	The course objectives provide student-teachers with the basis of human physical performance and the scientific basis of PE concerning movement skills; track and field events like athletics, soccer, and netball	5 (50%)	4 (40%)	1 (10%)
3	Student-teachers have gained knowledge in body types (Sheldon's classification) and the different types of associated sporting activities	3 (30%)	3 (30%)	4 (40%)
4	Ability to classify the human skeleton and joints into various types and their functions	5 (50%)	1 (10%)	4 (40%)
5	Ability to demonstrate basic movement skills in soccer	8 (80%)	2 (20%)	-
6	Ability to demonstrate basic movement skills in netball	6 (60%)	3 (30%)	1 (10%)
7	Ability to demonstrate basic movement skills in track events viz., sprints, middle and long-distance	9 (90%)	1 (10%)	-
8	Ability to demonstrate basic movement skills in field events viz., jumps and throws	9 (90%)	1 (10%)	-
9	Significance of one credit hour of the course	3 (30%)	2 (20%)	5 (50%)
10	Significance of the reading list	2 (20%)	1 (10%)	7 (70%)

It can be seen from table-4.116 that the contents are appropriate in terms of preparing student-teachers to demonstrate basic movement skills in track events viz., sprints, middle and long-distance as well as movement skills in field events like jumps and throws (90 per cent), help student-teachers to demonstrate basic movement skills in soccer and netball (80 per cent). In their opinion, student-teachers have the

opportunity to practice these events frequently in colleges. Further investigation revealed that these activities were practiced during lesson periods and as part of the extra-curricular activities. This is an indication of a balance between theory and practice concerning the handling of field and track events in the PRA 212 contents. Also, it was found that the contents were appropriate in terms of exposing student- teachers to the classification of the human skeleton and joints into various types and their functions (50 per cent). But some of the tutors (40 per cent) judged that the contents were inappropriate in terms of introducing student-teachers to body types (Sheldon's classification) and associated sporting activities. As we know that Sheldon William's classification of human body types (ectomorph, mesomorph, and endomorph) is very significant in sporting activities, student-teachers need to be familiar with the body types and sporting activities associated with each for decision making. Whilst interacting with the tutors it appears impossible for the student-teachers to recognize the body types and tell their associated sporting activities. This was because of inadequate reading material to clarify technical concepts for better understanding.

Also, data were collected from final year student-teachers about the contents of PRA 212 through group discussion (see details in appendix M). Though the researcher was not having a checklist, it was ensured that the following themes were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. A few student-teachers prefer to study PRA 212 as an optional course because it is non-examinable and less emphasized at the basic school.
- b. The content weightage between theory and practice in this course is balanced. For instance, the knowledge gained in the classroom concerning soccer, athletics discus, shot put, and Javelin was equally practiced on the field.
- c. The concept of inclusive education is inappropriate in PRA 212. This is because there are no facilities found in the BTE colleges to support student- teachers living with disabilities.

Looking at the data presented above, it can be said that the PRA 212 is an elective course open to every second-year student-teacher at the BTE College. Selection of the course is based on the interest of the student-teachers. The contents have offered the

opportunity to acquire lifetime body growth and development through the knowledge gained in the human skeletal system and learning of basic movement skills. These learning activities have helped student-teachers to develop their basic skills in Soccer, Netball, Field, and Track events.

4.5.8.1 Teaching Methods used by BTE Tutors for teaching PRA 212

The BTE tutors were asked to tickmark to judge teaching methods on a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.117.

Table-4.117:Appropriateness & Relevance of Teaching Methods used in teaching PRA 212

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	10 (100%)	-	-	-	-
2	Collaboration	-	-	-	4 (40%)	-
3	Demonstration	10 (100%)	-	-	-	-
4	Mentoring	-	-	4 (40%)	-	-
5	Role play	-	6 (60%)	-	-	-
6	Lecture	-	-	10 (100%)	-	-
7	Project	-	-	-	-	5 (50%)
8	Debate	-	-	-	-	8 (80%)
9	Brainstorming	-	-	-	8 (80%)	-
10	Case study	-	3 (30%)	-	-	-
11	Model analysis	-	-	-	7 (70%)	-

It can be seen from the table-4.117 that most frequently, the BTE tutors used teaching methods such as Discussion (100 per cent), Demonstration (100 per cent), and used Role-Play (60 per cent) frequently to teach PRA 212. These teaching methods show that learning must appear meaningful to student-teachers as every student-teacher would have an opportunity to participate in learning activities as per the instructional objectives. As asserted by Verma (2016), teachers need to employ instruction that can create opportunities for students to have access to facilities that facilitate the practicing of tasks and skills rigorously either individually or in small groups. So, it can be said that teaching methods used for teaching PRA 212 are appropriate.

4.5.8.2. Assessment of learning outcomes of PRA 212

The collected data from the PE tutors revealed that both formative assessment and summative assessments were used in this course. Also, assessment tools used for conducting internal assessment are written assignment, mid-semester test, and fieldwork whereas end-of-semester examination was used for conducting the summative assessment. The details of the assessment are presented in the next subsection.

4.5.8.2.1 Modality for Conducting Formative assessment of PRA 212

Further interaction with the PE tutors revealed that the formative assessment of student-teachers in PRA 212 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of one assignment comprising five compulsory unstructured questions based on the areas covered in this course for 10 marks. Also, the mid-semester assessment comprises 20 compulsory structured questions for all the student-teachers for 10 marks whereas each student-teachers would complete two mandatory practical (fieldwork) for 20 marks. The details of the findings are presented in table-4.118.

Table-4.118: Modality for Conducting Internal Assessment of PRA 122

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 minimum	1	10
2	Mid-semester test	Structures	Structured (20)	1	10
3	Practical (fieldwork)	N/A	N/A	2	20

4.5.8.2.2 Modality for Conducting Summative Assessment of PRA 212

The PE tutors revealed that the summative assessment of student-teachers in PRA 212 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (2 to be answered). Framing of the questions

(unstructured and structured) was based on areas such as the human skeleton, movement skills involved in track and field athletics, soccer, and netball. Whilst the structured questions were allocated 20 marks, unstructured questions were of 40marks. The total marks obtained from this session is 60. The duration of this paper is one and a half hours because it is a one-credit hour paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student-teachers' progress. However, fieldwork which is a typical practical activity is not incorporated in the summative assessment. This is not appropriate and must be reconsidered.

4.5.8.3 Modification of PRA 212 Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents which are necessary. The collected data from tutors were analyzed by using descriptive statistics viz., frequencies, and percentages as presented in the table-4.119.

Table-1.119: Needed Suggestions for Modification of PRA 212

Sr. no	Suggestion	Frequency	Percentage
1	The external assessment should involve practical sections so that student-teachers can show their practical skills in the field	1	10
2	The one-credit hour should be increased to three for adequate contact hours	4	40
3	No suggestion	5	50

The suggestions presented in the table-1.119 show that the external assessment should involve practical sections so that student-teachers can show their practical skills on the field (10 per cent), and one-credit hour should be increased to three for adequate contact hours (40 per cent). But some tutors presented no suggestion (50 per cent).

Also, data were collected from final year student-teachers by using group discussion for modification of PRA 212 contents (see details in appendix M). The suggestions that emerged are presented as follows;

- a. Aerobic activities such as swimming, cycling, jogging, and running must be incorporated to ensure individual differences in the PRA 212 classroom

- b. The BTE colleges need to provide facilities such as gyms, dance studio, swimming pool, shooting range, and extensive with immediate effect to enhance physical fitness

From the above presentation about PRA 212, it can be concluded here that; 1) objectives are relevant to provide adequate learning activities to prepare student- teachers, 2) The content weightage between theory and practice is balanced, 3) teaching methods viz., Discussion, Demonstration, and Role-Play as most frequently used by tutors are appropriate for preparing student-teachers, 4) field works which are typical practical activities are not incorporated in the summative assessment, 5) facilities are not found in the BTE colleges for supporting student-teachers living with disabilities, 6) modes of assessments are appropriate for determining learning outcomes of student-teachers, and 7) one credit hour was inappropriate.

4.5.9 Pre-Vocational Skills-Sewing (FVH 211)

Sewing is another area of the Pre-Vocational Skills studied as an elective course by interested student-teachers in the third-semester. It is designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Pre-Vocational Skills tutors who are Department Heads (one from each of the ten BTE colleges) and 40 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To describe the different methods of obtaining patterns, stating their advantages and disadvantages.
- ii. To describe the various figure types and take body measurement
- iii. To draft, basic bodies block using their body measurements.
- iv. To identify and explain pattern markings.
- v. To identify, describe, and demonstrate skills in arranging fullness.
- vi. To explain the need for finishing edges and finish some edges on garments and articles with appropriate finishes.

- vii. To identify and describe the different types of collars, sleeves, and pockets and work on samples of them.

It can be seen from table-4.120 that the course objectives are adequate and appropriately covering the learning activities of FVH 211 (60 per cent). But many tutors (70 per cent) are uncertain as to whether the objectives are relevant in making it possible for student-teachers to study different methods of obtaining patterns for making up garments. For the occurrence of this doubt, certain factors might have come to play which would be found out in our subsequent discussion. The details of the analysis are presented in table-4.120.

Table-4.120: Appropriateness and Relevance of Contents and Objectives of FVH 211

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	6 (60%)	3 (30%)	1 (10%)
2	The course objectives have made provision for student-teachers to study different methods of obtaining patterns for making up garments	2 (20%)	7 (70%)	1 (10%)
3	Ability to take body measurement with the right tool	7 (70%)	3 (30%)	-
4	Ability to draft simple basic blocks using their body measurements	5 (50%)	4 (40%)	1 (10%)
5	Ability to demonstrate skills in arranging fullness	4 (40%)	5 (50%)	1 (10%)
6	Ability to finish some edges on garments and articles with appropriate finishes	3 (30%)	7 (70%)	-
7	Able to describe the different types of collars, sleeves, and pockets	5 (50%)	3 (30%)	3 (30%)
8	Significance of one credit hour of the course	3 (30%)	1 (10%)	6 (60%)
9	Significance of the reading list	2 (20%)	1 (10%)	7 (70%)

It can be seen from table-4.120 that the contents of FVH 211 are appropriate for introducing student-teachers to the taking of body measurement with the right tool (70 per cent), appropriate for exposing student-teachers to draft simple basic blocks using their body measurements (50 per cent) and guiding student-teachers to describe the different types of collars, sleeves, and pockets (50 per cent). However, the majority (70 per cent) of the tutors were not certain that student-teachers could finish some edges on garments and articles with appropriate finishes. In their view, this was because of inadequate practice and skill training. This suggests that practice was not given due weightage and must be reconsidered.

Also, data were collected from final year student-teachers about the contents of FVH 211 through group discussion (see details in Appendix F-3). Though the researcher was not having a checklist, it was ensured that the following themes were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. They further revealed that female student-teachers dominate in this class because of the misconception that sewing is a vocation for women.
- b. Provision of relevant subject matter to be effective in the classroom as garment making is connected to the basic school creative arts
- c. The workshops in the colleges are not equipped with tools and material to facilitate teaching and learning of these contents. This adversely affects practical skills concerning arranging fullness and finishing some edges on garments.

Considering the data presented above, it can be said that the FVH 211 seeks to prepare student-teachers to acquire first-hand work experience. But the content weightage between the conceptual understanding of the subject matter and the trade skill is not balanced. As this course is the beginning of a long time career development opportunity for student-teachers who wish to further their studies in sewing, the BTE colleges should provide the needed resources to achieve targets.

4.5.9.1 Teaching Methods used by BTE Tutors for teaching FVH 211

The BTE tutors were asked to tickmark to judge the teaching methods on a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.121.

Table-4.121: Appropriateness & Relevance of Teaching Methods used in Teaching FVH 211

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	7 (70%)	-	-	-	-
2	Collaboration	-	-	-	4 (40%)	-
3	Demonstration	10 (100%)	-	-	-	-
4	Mentoring	-	-	4 (40%)	-	-
5	Role play	-	-	-	-	5 (50%)
6	Lecture	-	-	10 (100%)	-	-
7	Project	3 (30%)	-	-	-	-
8	Debate	-	-	-	-	8 (80%)
9	Brainstorming	-	-	-	5 (50%)	-
10	Field trip	-	2 (20%)	-	-	-

It can be seen from the table-4.121 that most frequently, the BTE tutors used teaching methods such as Demonstration (100 per cent) and Discussion (70 per cent) for teaching FVH 211 in the classroom. It can be said that these teaching methods are appropriate for developing a conceptual understanding of the subject matter. To establish a balance between theory and practical skills, Broad (2013) asserted that it is essential for tutors to employ technology, Peer-observation, and Collaboration methods in the classrooms. With these methods of teaching, student-teachers would develop different ways of solving problems.

4.5.9.2 Assessment of Learning Outcomes of FVH 211

The collected data from the tutors revealed that both formative assessment and summative assessments are used in this course. The assessment tools used for conducting internal assessment are written assignment, mid-semester test, and fieldwork whereas end-of-semester examination was used for conducting the summative assessment. The details of the modes of assessments are presented in the next subsection.

4.5.9.2.1 Modality for Conducting Formative assessment of FVH 211

Investigation reveals that the formative assessment of student-teachers in FVH 211 is conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher is mandated to write a minimum of one assignment comprising five compulsory unstructured questions based on the topic covered in this course for 10 marks. Also, the mid-semester assessment comprising 20 compulsory structured questions for all the student-teachers for 10 marks whereas each student-teachers must complete one mandatory practical work for 10 marks. The details of the findings are presented in table-4.122.

Table-4.122: Modality for Conducting Internal Assessment of FVH 211

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 minimum	1	10
2	Mid-semester test	Structures	Structured (20)	1	20
3	Practical (fieldwork)	N/A	N/A	1	10

4.5.9.2.2 Modality for Conducting Summative Assessment of FVH 211

It revealed that the summative assessment of student-teachers in FVH 211 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 compulsory structured questions and 5 unstructured questions (2 to be answered). Framing of the questions (unstructured and structured) was based on areas such as body measurement, arranging fullness, and finishing edges on garments. Whilst the structured questions were allocated 20 marks, the unstructured questions were 40 marks. The total marks obtained from this session is 60. The duration of this paper is one and a half hours because it is a one-credit hour paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student-teachers' progress. Here, it can be

said that assessment about the exhibition of practical skills by using a sewing machine is not emphasized and must be reconsidered.

4.5.9.3 Modification of FVH 211 Contents

Based on the findings presented above, modification of FVH 211 contents is essential. To modify the contents, needed data were collected from BTE tutors and final year student-teachers. The researcher requested the respondents as stated in chapter III of this study to give suggestions for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics via frequencies as presented in the table-4.123.

Table-4.123: Needed Suggestions for Modification of FVH 211

Sr. no	Suggestion	Frequency	Percentage
1	The routine practice of sewing in colleges must be encouraged	1	10
2	Student-teachers should be allowed to undertake an internship in sewing industries to develop skills	1	10
3	There is a need to incorporate methods of teaching sewing to enhance pedagogical skills	3	30
4	The one-credit hour should be increased to three for adequate contact hours	4	40

Suggestions are hereby presented in table-4.123 that; routine practice of sewing in colleges must be encouraged (10 per cent), Student-teachers should be allowed to undertake an internship in sewing industries to develop skills (10 per cent), there is a need to incorporate methods of teaching sewing to enhance pedagogical skills (30 per cent), and one-credit hour should be increased to three for adequate contact hours (40 per cent).

Also, data were collected from final year student-teachers by using group discussion for modification of FVH 211 contents (see details in the appendix F-3). The suggestions that emerged are presented as follows;

- a. Modern technology such as the multi-media should be used to teach FVH 211 contents to equip student-teachers with desirable skills as per the changing occurrences in the global economy.
- b. In every semester, external supervisors should go round the BTE colleges to supervise the practical activities of the student-teachers and give feedback for improvement.

It can be concluded that; 1) the course objectives were irrelevant as most of them were not feasible, 2) the contents were appropriate in terms of helping student-teachers to acquire subject knowledge, 3) Practice was not given equal weightage because most of the student-teachers could not demonstrate skills in finishing some edges on garments and articles with appropriate ‘finishes’, 4) the one credit hour was inappropriate to contain the contents, 5) the reading list was inappropriate to encourage extensive reading, 6) modes of assessments were appropriate for determining learning outcomes of student-teachers, and 7) teaching methods were appropriate for preparing student-teachers.

4.5.10 Literature in English (FDC 229A)

Literature in English (Poetry) is an elective course selected by interested student-teachers in the third-semester. It is designed for one credit hour. To judge the relevance of the course objectives, appropriateness of the contents, needed data were collected from ten randomly selected English tutors who are Department Heads (one from each of the ten BTE colleges) and 40 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To identify and describe types of poetry
- ii. To describe the elements of both poetry
- iii. To appreciate poetry
- iv. To teach poems at the basic level.

It can be seen from the table-4.124 that the course contents are not adequate to commensurate with the stated objectives (50 per cent). Also, the majority of the tutors (70 per cent) are uncertain about the feasibility of the course objectives. What might

have caused the uncertainty would be unraveled in our subsequent discussions. The details of the analysis are presented in table-4.124.

Table-4.124: Appropriateness and Relevance of Contents and Objectives of FDC 229A

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	3 (30%)	2 (20%)	5 (50%)
2	The course objectives offer further studies in Literature in English	2 (20%)	7 (70%)	1 (10%)
3	Ability to differentiate between oral poetry and written poetry	6 (60%)	3 (30%)	1 (10%)
4	Ability to differentiate between narrative poetry and dramatic poetry	5 (50%)	4 (40%)	1 (10%)
5	Familiar with the elements of poetry and their relevance	7 (70%)	2 (20%)	1 (10%)
6	Ability to discuss selected poems as per the underlying themes	4 (40%)	5 (50%)	1 (10%)
7	Significance of one credit hour of the course	6 (60%)	1 (10%)	3 (30%)
8	Significance of the reading list	2 (20%)	1 (10%)	7 (70%)

It can be seen from table-4.124 that the contents of FDC 229A are appropriate in terms of introducing student-teachers to the elements of poetry and their relevance to the Ghanaian society (70 per cent), appropriate in terms of helping student-teachers to be able to differentiate between oral poetry and written poetry (60 per cent), and also help them to differentiate between narrative poetry and dramatic poetry (50 per cent). Despite these level of confidence built in the student-teachers by the contents, some tutors (50 per cent) are not certain as to whether the student-teachers can discuss selected poems as per the underlying themes. The tutors further explained that commentary books were not available to elaborate the poems. So, they spend most of the contact hours reading and discussing the poems in the classroom. And due to limited contact hours, they are not able to treat all the poems before the end of the

semester. For this reason, some of the student-teachers might be lacking the confidence to teach literature in English at the basic school.

Also, data were collected from final year student-teachers about the contents of FDC 229A through group discussion. Though the researcher was not having a checklist, it was ensured that the following themes (see appendix D) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. The FDC 229A is offered by a few student-teachers as an elective due to disinterest.
- b. The contents are appropriate for broadening the horizons and reasoning skills of student-teachers to understand why people portray some characters in society.
- c. The themes in Narrative poetry (ballad, lyrical) and Dramatic poetry were essential and appropriate. For instance, themes such as social criticism, colonialism and independence, and war and peace were relevant to contemporary situations and generated student-teachers' responses.
- d. Most of the poems have complex diction and blank verses. Therefore, it becomes difficult for student-teachers who did not have a background in literature to appreciate them.
- e. The genres of the literature like prose and drama are not featured in FDC 229A. It can be thought that the genres of literature form the three laggard stool upon which literature foundation is laid. Though the previous semesters have covered all the three aspects, here in an elective course, much is expected in making student-teachers effective. Therefore, the absence of the two aspects is evidence that the contents are not adequate for preparing student-teachers.

4.5.10.1 Teaching Methods used by BTE Tutors for teaching FDC 229A Contents

The BTE tutors were asked to tickmark to judge the teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most often used by BTE tutors in teaching FDC 229A include Brainstorming (100 per cent), Grammar Translation (100 per cent), Storytelling (80 per cent), and Discussion (70 per cent). It can be recalled that the same teaching methods were found when we were presenting

the contents of the English Language in the previous semesters. It can be said that the teaching methods are appropriate for preparing prospective teachers. This is because the tutors are facilitators guiding student-teachers to appreciate the selected poems. Here, an attempt has been made to achieve the needs of the learners about communication, culture, and literacy.

4.5.10.2 Assessment of learning outcomes of FDC 229A

The collected data from the tutors revealed that the assessment of student-teachers involves formative assessment and summative assessments. The assessment tools used for conducting formative assessment are written assignment, mid-semester test, and classroom attendance whereas end-of-semester examination was used for conducting the summative assessment.

4.5.10.2.1 Modality for Conducting Formative assessment of FDC 229A

Further interaction with the tutors revealed that the formative assessment of student-teachers in FDC 229A was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of one assignment based on extracts from the selected poems to test their inferences, analytical ability, and aesthetic skills. Three unstructured questions were set and one to be answered for 10 marks. Also, the mid-semester assessment comprises 20 compulsory structured questions and one unstructured questions based on extracts from the selected poems and concord for 20 marks. And they must complete 21 mandatory classroom attendance for 10 marks. The details of the emerged points are presented in table-4.125.

Table-4.125: Modality for Conducting Internal Assessment of FDC 229A

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	1 minimum	1	10
2	Mid-semester test	Structured (1)	Structured (20)	1	20
3	Classroom attendance	N/A	N/A	21 days	10

4.5.10.2.2 Modality for Conducting Summative Assessment of FDC 229A

Here, it was revealed that the summative assessment of student-teachers in FDC 229A was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (2 to be answered). Whilst the unstructured questions (40 marks) were based on descriptive extracts from unseen poems as per the given cue, the questions of the structure (20 marks) were based on the extracts and concord for testing their analytical ability, vocabulary, and aesthetic skills. The total marks obtained from this session is 60. The duration of this paper is one and a half hours because it is a one credit hour paper. The marks obtained by each student- teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student-teachers' progress.

4.5.10.3 Modification of FDC 229A Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics viz., frequencies, and percentages as presented in the table-4.126.

Table-4.126: Needed Suggestions Modification of FDC 229A

Sr. no	Suggestion	Frequency	Percentage
1	Other genres of literature such as prose and drama should be incorporated for student-teachers to have further studies in Literature in English	2	20
2	There is a need to incorporate methods of teaching literature to enhance pedagogical skills	5	50
3	No suggestion	3	30

The suggestions presented in table-4.126 show all genres of literature like prose and drama should be incorporated for student-teachers to have further studies in Literature

in English (20 per cent), and there is a need to incorporate methods of teaching literature to enhance pedagogical skills (50 per cent). However, some tutors did not give suggestions (30 per cent).

Also, data were collected from final year student-teachers by using group discussion and the suggestions that emerged are presented as follows;

- a. Provision of reading material particularly the commentary books by the BTE colleges, on the selected poems for better understanding of poems
- b. Periodic workshop for young writers in the BTE colleges to develop their creative writing skills.

It can be concluded that; 1) the course objectives were not appropriate to commensurate the given contents 2) pedagogy was not given due weightage as student-teachers could not discuss selected poems as per the underlying themes, 3) The contents were appropriate for broadening the horizons and reasoning skills of student-teachers, 4) the teaching methods like Brainstorming, Grammar Translation, Storytelling, and Discussion were appropriate for preparing prospective teachers to appreciate poems, and 5) modes of assessments were appropriate for determining learning outcomes of student-teachers.

4.5.11 Ghanaian Language and Culture (FDC 213)

In this semester, Ghanaian Language and Culture is selected by interested student-teachers as an elective course. It is designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Ghanaian Language tutors who are Department Heads who are Department Heads (one from each of the ten BTE colleges) and 40 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objective of this course states that the student-teachers will be able;

- i. To enhance their knowledge and be well equipped to teach their respective languages effectively”.

It can be seen from table-4.127 that the course objective is not adequate to contain the contents (80 per cent). Also, some tutors are not sure about the relevance of the course objectives for providing firm grounding for students concerning Language Structure, Language Usage, and Cultural Studies (40 per cent). This suggests that the learning activities covered by the objectives are not addressing the needs of society. The details of the analysis are presented in table-4.127.

Table-4.127: Appropriateness and Relevance of Contents and Objectives of FDC 213

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objective/s	-	2 (20%)	8 (80%)
2	The course objective/s provide the firm grounding for student-teachers concerning Language Structure, Language Usage, and Cultural Studies	3 (30%)	4 (40%)	1 (10%)
3	To be familiar with phonology and can differentiate between letters and phoneme	7 (70%)	3 (30%)	-
4	Ability to explain basic grammar rules by using appropriate examples	6 (60%)	3 (30%)	1 (10%)
5	Conversant with language usage and can properly introduce specialized expressions such as proverbs and idioms in conversations	9 (90%)	1 (10%)	-
6	Ability to explain cultural practices of major ethnic groups in Ghana	6 (60%)	3 (30%)	1 (10%)
7	Significance of one credit hour of the course	3 (30%)	1 (10%)	6 (60%)
8	Significance of the reading list	2 (20%)	3 (30%)	5 (50%)

It can be seen from the table-4.127 that the contents are appropriate in terms of introducing student-teachers to language usage and specialized expressions such as

proverbs and idioms in conversations (90 per cent), appropriate for exposing student-teachers to phonology making them differentiate between letters and phoneme (70 per cent), appropriate in terms of helping students to explain basic grammar rules by using appropriate examples (60 per cent). This suggests that most of the concepts incorporated are appropriate for preparing student-teachers to be effective in the classroom. For this reason, the doubts about the feasibility of the course objectives can be clarified.

Also, data were collected from final year student-teachers about the contents of FDC 213 as through group discussion. Though the researcher was not having a checklist, it was ensured that the following themes (see appendix L) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. Most of the students prefer to study FDC 213 as one of their elective courses to understand the Ghanaian cultural heritage and to develop their respective languages.
- b. There is scarce reading material in most of the Ghanaian languages such as Dagaari, Kasem, Nzema, and Ga-Adangbe. For this reason, the student-teachers of these courses would have to waste contact hours while waiting for the order of the books from other colleges.

In considering the contents of FDC 213, it can be said that basic skills that are related to phonology, grammar, and specialized expression have been emphasized. The thrust of these skills would help the student-teachers to effectively teach their respective Ghanaian languages. Also, the cultural activities would reinforce their values, beliefs in making them fit as responsible citizens in society.

4.5.11.1 Teaching Methods used by BTE Tutors for teaching FDC 213 Contents

The BTE tutors were asked to tickmark to judge the teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most frequently used by BTE tutors in teaching FDC 213 include Discussion method (100 per cent), Brainstorming (100 per cent), Grammar Translation (100 per cent), and Storytelling (80 per cent), and Demonstration (70 per cent). These teaching methods were found in our previous discussion when we were presenting for Ghanaian Language and Culture

in the previous semesters. These are learner-centered methods that are appropriate in developing communication skills, literacy skills, and cultural sensitivity to be effective in the classroom.

4.5.11.2 Assessment of Learning Outcomes of FDC 213

It was found that two modes of assessment viz., formative and summative were adopted in the BTE curriculum. For conducting the formative assessment, tools used include written assignment, mid-semester test, and classroom attendance and for the summative assessment, the end-of-semester examination was used. The details of the modes of assessments are presented in the next subsection.

4.5.11.2.1 Modality for Conducting Formative assessment of FDC 213

The tutors revealed that the formative assessment of student-teachers in FDC 213 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of one assignment based on the areas such as Language Structure, Language Usage, and Cultural Studies. And this is meant to test their grammar usage skills, analytical ability and knowledge, and the Ghanaian culture. Here, three unstructured questions were set (one to be answered) for 10 marks. Also, the mid-semester assessment comprises 20 compulsory structured questions and one unstructured questions based on the areas above for 20 marks. And they must complete 21 mandatory classroom attendance for 10 marks. The details of the findings are presented in table-4.128.

Table-4.128: Modality for Conducting Internal Assessment of FDC 213

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	1 minimum	1	10
2	Mid-semester test	Structures (1)	Structured (20)	1	20
3	Classroom attendance	N/A	N/A	21 days	10

4.5.11.2.2 Modality for Conducting Summative Assessment of FDC 213

The tutors revealed that the summative assessment of student-teachers in FDC 213 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts

was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (2 to be answered). Whilst the unstructured questions (40 marks) were based on the descriptive chart (vowels, consonance, and diphthong) as per the given cue, the questions of the structure (20 marks) were based on the concord, culture, customs, and institutions. The total marks obtained from this session is 60. The duration of this paper is one and a half hours because it is a one-credit hour paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student-teachers' progress.

4.5.11.3 Modification of FDC 213 Contents

Based on the findings presented above, modification of FDC 213 contents is essential. To modify the contents, needed data were collected from BTE tutors and final year student-teachers. The researcher requested the respondents as stated in chapter III of this study to give suggestions for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics via frequencies as presented in the table-4.129.

Table-4.129: Needed Suggestions Modification of FDC 213

Sr. no	Suggestion	Frequency	Percentage
1	There is a need to incorporate detailed content on phonology in the area of allophones	1	10
2	The FDC 213 should be made compulsory as every student-teachers to be equipped in their respective languages	3	30
3	The reading list must be upgraded to encourage extensive reading	6	60

The suggestions presented in table-4.129 show that there is a need to incorporate detailed content on phonology in the area of allophones (10 per cent), FDC 213 should be made compulsory as every student-teachers to be equipped in their

respective languages (30 per cent), and reading list must be upgraded to encourage extensive reading (60 per cent).

Also, data were collected from final year student-teachers through group discussion, and the suggestions that emerged are presented as follows;

- a. The contents of FDC 213 should be written in the various Ghanaian languages as certain vital information cannot be translated properly.
- b. The use of tape recorder and other multimedia tools like videos should be encouraged in teaching phonology. This would enhance the pronunciations of words.

It can be concluded that; 1) one-course objective as stated by the curriculum designers was appropriate and achievable, 2) the contents were appropriate for preparing student-teachers to understand the Ghanaian cultural heritage and their respective languages, 3) the reading list was inappropriate to encourage extensive reading in the various Ghanaian languages, 4) one credit hour was inappropriate to contain the contents, 5) teaching methods such as Discussion, Brainstorming, Grammar Translation, Storytelling, were appropriate in developing communication skills, literacy skills and cultural sensitivity among the student-teachers, and 6) modes of assessments were appropriate for determining learning outcomes of student-teachers.

Considering the analysis presented above, it can be said that the courses in the third semester are made up of Educational and Contemporary Studies, Curriculum and Pedagogical Studies and Value Added courses. Here, seven compulsory courses were selected from Educational and Contemporary Studies and Curriculum and Pedagogical Studies while six (one to be selected) optional courses were selected from Value Added courses. In these categories of courses, the focus was placed on the relevance of the course objectives, appropriateness of the contents for preparing effective teachers. The suggestions that emerged from the findings would be used by the curriculum designers to redesign the BTE curriculum.

4.6 Fourth-Semester

The fourth-semester courses in the BTE curriculum comprise five mandatory subjects and seven optional subjects (one to be selected) for a total of 11 credit hours. The courses and their respective course codes and credit hours are presented in table- 4.130.

Table-4.130: Course Title, Course Code & Credit Hours of Fourth-Semesters Courses

Sr. No	Course Code	Course Title	Credit Hours
1	FDC 211	English Language (Methodology)	3
2	EPS 222	Trends in Education & School Management	2
3	PFC 222	Methods of Teaching Basic Mathematics	2
4	FDC 228	Methods of Teaching Social Studies	2
5	GNS 221	Introduction to ICT 2	1
6	PRA 221	Music and Dance *	↓
7	PRA 222	Physical Education *	↓
8	FVH 222	Vocational Skills (Catering) *	1
9	FDC 229B	Literature in English (Drama)*	↑
10	AGN 228B	Agricultural Science *	↑
11	FDC 223	Ghanaian Language & Culture*	↑
Total			11

Source: Institute of Education, UCC (2014)

*optional for student-teachers to select one course

4.6.1 English Language Methodology (FDC 211)

The English Language Methodology is designed for three credit hours. To judge the appropriateness of the objectives and contents, needed data were collected from ten randomly selected English Language tutors who are Department Heads who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014). They were to give their judgments about the objectives, contents relevance, and appropriateness for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and suggestions for modification. The objectives of this course are;

- i. To do a comparative study of the basic curriculum materials
- i. To apply the approaches studied in the teaching of English as a second language
- ii. To write good lesson notes to be used in teaching English
- iii. To design and use appropriate TLMs for effective lesson delivery.

It can be seen from table-4.131 that the course objectives are adequate to align with the contents (60 per cent). Also, the set objects are relevant for guiding the choice of learning activities that would develop and sharpen student-teachers' skills and competencies in the teaching of English at the basic level (70 per cent). The details of the analysis are presented in table-4.131.

Table-4.131: Appropriateness and Relevance of Contents and Objectives of FDC 211

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	6 (60%)	3 (30%)	1 (10%)
2	The course objectives are set to develop and sharpen student-teachers' skills and competencies in the teaching of English at the basic level	7 (70%)	3 (30%)	-
3	Appropriateness of curriculum material like a syllabus in respect of content and topic sequence	8 (80%)	2 (20%)	-
4	Acquire pedagogical skills for teaching reading	7 (70%)	2 (20%)	1 (10%)
5	Acquire pedagogical skills for teaching grammar	7 (70%)	3 (30%)	-
6	Acquire pedagogical skills for teaching writing	6 (60%)	3 (30%)	1 (10%)
7	Significance of two credit hours of the course	5 (50%)	3 (30%)	2 (20%)
8	Significance of the reading list	6 (60%)	5 (50%)	-

It can be seen from table-4.131 that the contents of FDC 211 are appropriate in terms of introducing student-teachers to curriculum material like syllabus involving contents and topics sequence arrangement (80 per cent). The sequence of concepts could be seen in the areas like the four language modes; listening, speaking, reading, and writing. Also, lesson presentations followed the order of pre-presentation, presentation, and post-presentation. For this reason, the majority of the tutors judge the contents are appropriate in equipping student-teachers with pedagogical skills for

teaching reading (70 per cent), teaching grammar (70 per cent), and teaching writing (60 per cent) at the basic level. To find out the extent to which basic school teachers were applying the pedagogy in teaching the English language, two lessons taught by alumni were observed. It was found that the alumni were capable of planning lessons and employing appropriate instructional strategies for achieving instructional objectives (see the details in the appendix A-1). Therefore, it can be said that the contents of FDC 211 are appropriate for developing and sharpening student-teachers' skills and competencies to teach the teaching English language at the basic level.

Also, data were collected from final year student-teachers about the contents of FDC 211 through group discussion. Though the researcher was not having a checklist, it was ensured that the following themes (see appendix D) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. The contents are appropriate for developing their knowledge and pedagogy to English as a second language. An opportunity has been provided to develop skills in lesson planning and lesson presentation.
- b. Also, the contents are appropriately connected to the basic school English Language syllabus. The methodology of teaching the major aspects of the English Language such as grammar, reading, and writing was properly featured.
- c. The methodology of teaching storytelling was inadequate. Here a few learning activities for teaching verse and conversation have been covered and need to be reconsidered.

To be a language teacher, it is essential to learn and understand the various teaching methods that can be used to achieve targets in the classroom. For this reason, the methodology of teaching the English language at the basic school level has been considered here. It is evident from the data presented above that selection of teaching methods of FDC 211 is based on the needs of the student-teachers. And having studied the contents and some essential features of the basic school English syllabus, prospective teachers are likely to meet standards and adjust as effective teachers.

4.6.1.1 Teaching Methods used by BTE Tutors for teaching FDC 211 Contents

Tutors were asked to tickmark to judge teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most frequently used by BTE tutors in teaching FDC 211 include Brainstorming (100 per cent), Grammar translation (100 per cent), Storytelling (80 per cent), and Discussion (70 per cent). Here, it appears that the same teaching methods were found when we were presenting for contents of the English language in the previous semester (see table-33 above). It can be said that these teaching methods are appropriate for teaching methodology. And this is an attempt made to prepare prospective teachers in the context of pedagogy to be effective in the classroom.

4.6.1.2 Assessment of learning outcomes of FDC 211

Assessment of learning outcomes of student-teachers of FDC 211 is by two modes viz, formative and summative. The tools used for conducting internal assessment are written assignment, mid-semester test, and classroom attendance. For the summative assessment, the end-of-semester examination was used. The details of the modes of assessments are presented in the next subsection.

4.6.1.2.1 Modality for Conducting Formative assessment of FDC 211

Further interaction with the tutors revealed that the formative assessment of student-teachers in FDC 211 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of one assignment based on areas such as approaches to teaching reading, writing, and lesson planning. Three unstructured questions were set and only one was to be answered for 10 marks. Also, the mid-semester assessment comprises 20 compulsory structured questions and one unstructured questions based on the areas above for 20 marks. Also, student-teachers must record 21 mandatory classroom attendance for 10 marks. The details of the findings are presented in table-4.132.

Table-4.132: Modality for Conducting Internal Assessment of FDC 211

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	3(1 to be answered)	1	10
2	Mid-semester test	Structured	20	1	20
3	Classroom attendance	N/A	N/A	21 days	10

4.6.1.2.2 Modality for Conducting Summative Assessment of FDC 211

The tutors revealed that the summative assessment of student-teachers in FDC 211 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (2 to be answered). Framing of the questions (unstructured and structured) was based on areas such as approaches to teaching reading, writing, and lesson planning. Whilst the structured questions were allocated 20 marks, the unstructured questions were 40 marks. The total marks obtained from this session is 60. The duration of this paper is two hours because it is three credit hours of paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student-teachers' progress.

4.6.1.3 Modification of FDC 211 Contents

To modify the contents, the needed data were collected from BTE tutors. The collected data from tutors were analyzed by using descriptive statistics viz., frequencies, and percentages as presented in the table-4.133.

Table-4.133: Needed Suggestions Modification of the FDC 211 Contents

Sr. no	Suggestion	Frequency	Percentage
1	Student-teachers should be taught how to use computer applications for learning grammar in the classroom	3	30
2	‘Teaching English as Second Language’ should be incorporated in FDC 211 to prepare effective student-teachers	2	20
3	No suggestion	5	50

Suggestions presented in table-4.133 show that student-teachers should be taught how to use computer applications for learning grammar in the classroom (30 per cent), and ‘Teaching English as Second Language’ should be incorporated in FDC 211 to prepare effective student-teachers (30 per cent). However, some tutors did not provide any suggestion (50 per cent).

It can be concluded that; 1) the objectives of FDC 211 were adequate and relevant for guiding the choice of learning activities that would develop and sharpen student-teachers’ skills and competencies in the teaching of English at the basic level, 2) the contents were appropriate for equipping student-teachers with knowledge and pedagogical skills for classroom teaching, 3) the two credit hours were appropriate as per the contents, 4) the teaching methods viz., Brainstorming, Grammar Translation, Storytelling, and Discussion were appropriate for preparing prospective teachers, and 5) modes of assessment were appropriate for determining the learning outcomes of prospective teachers.

4.6.2 Trends in Education & School Management (EPS 222)

The Trends in Education and School Management is designed for two credit hours. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Education tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used

for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course are;

- i. To explain the main concepts in school management and leadership and describe key management tasks and leadership functions.
- ii. To distinguish between traditional and western education and describe the provisions that were made to develop and promote education, literacy, and development from the pre-colonial period to date.
- iii. To describe key educational innovations that have occurred in recent years and their contributions and challenges to educational effort in Ghana.
- iv. To describe the main records used in educational administration in Ghana, their uses and importance

It can be seen from table-4.134 that the objectives of EPS 222 are adequate to match the given contents (80 per cent). Also, the course objectives are relevant for providing learning experiences in mitigating management and organizational issues in educational delivery in Ghana (60 per cent). The details of the analysis are presented in table-4.134.

**Table-4.134: Relevance and Appropriateness of Objectives and Contents of
EPS 222**

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	8 (80%)	1 (10%)	1 (10%)
2	The course objectives provide a learning experience in mitigating management and organizational issues in educational delivery in Ghana	6 (60%)	3 (30%)	1 (10%)
3	Acquire knowledge in management tasks and leadership functions in education	6 (60%)	2 (20%)	2 (20%)
4	Gain knowledge in leadership functions in education	5 (50%)	4 (40%)	1 (10%)
5	Gain knowledge in the trend and contemporary issues in educational development in Ghana	7 (70%)	1 (10%)	2 (20%)
6	Acquire knowledge of records keeping and use in educational administration in Ghana	3 (30%)	2 (20%)	5 (50%)
7	Significance of 2 credit hours as per the contents	4 (40%)	4 (40%)	2 (20%)
8	Significance of the reading list	3 (30%)	-	7 (70%)

It can be seen from the data presented in table-4.134 that the contents of EPS 222 are appropriate in terms of exposing student-teachers to the trends and contemporary issues in educational development in Ghana (70 per cent). The tutors expressed that the pre-colonial, colonial, and post-colonial system of education has been the benchmark in the Ghanaian education system. Here, issues regarding Castle Schools, Missionary works, policies, and reforms have been addressed in getting student- teachers informed and updated. Also, the contents are appropriate in terms of equipping student-teachers with knowledge of school management tasks and leadership functions (60 per cent). Here some factors might have influenced these occurrences. Such factors could be adequate content concerning leadership qualities,

the concept of authority, and discipline in the classroom. Further data were collected by using lesson observation of alumni in the classroom (see the details in the appendix A-1). The points that emerged from the group discussion indicate that most of the specialist teachers managed their classrooms properly than generalist teachers. For the possible cause of this phenomenon, it was further found that the generalist teachers were teaching at the primary schools in overcrowded classrooms (more than 35 pupils in a class) than the specialist teachers at the JHS. As we know, much effort is required in managing an overcrowded classroom than a normal classroom (35 pupils in a class or less). This could have contributed to the differences in their classroom management style. However, the reading list is inappropriate to encourage extensive reading (70 per cent).

Also, data were collected from final year student-teachers about the contents of EPS 222 through group discussion (see the details in the appendix E 4). Though the researcher was not having a checklist, it was ensured that the following themes were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. The contents of EPS 222 are simple and understandable according to the standard of the student-teacher.
- b. The contents have incorporated appropriate learning activities that can develop the management skills of prospective teachers. Some of the learning experiences include school leadership, management tasks, and contemporary issues in education.
- c. Practicality was not given the due weightage as the student-teachers were not introduced to practical time table preparation and school records keeping. This suggests that the prospective basic school teachers were not familiar with the school records and the time table preparation which are critical at the basic schools.

Based on the data presented above, it can be said that the contents of EPS 222 have addressed the concepts in school management, leadership, and described key management tasks and leadership functions. The thrust of this phenomenon has

helped the student-teachers and the alumni of the BTE curriculum to manage their classrooms effectively. It can be seen from table-4.134 that almost all the contents (except records keeping in education) were appropriate for preparing student-teachers. But there are differences in the management style of the teachers in respect of several students in a classroom. This implies that adequate infrastructures such as spacious classrooms and management facilities are essential in school management in Ghana.

4.6.2.1 Teaching Methods used by BTE Tutors for teaching EPS 222

The BTE tutors were asked to tickmark to judge teaching methods on a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.135.

Table-4.135: Appropriateness and Relevance of Teaching Methods used in Teaching EPS 222

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	7 (70%)	-	-	-	-
2	Collaboration	-	-	-	4 (40%)	-
3	Demonstration	-	3 (30%)	-	-	-
4	Mentoring	-	-	4 (40%)	-	-
5	Role play	-	-	-	-	6 (60%)
6	Lecture	8 (80%)	-	-	-	-
7	Project	-	-	-	-	5 (50%)
8	Debate	-	-	-	-	8 (80%)
9	Brainstorming	10 (100%)	-	-	-	-

It can be seen from the table-4.135 that most frequently, the BTE tutors used teaching methods such as Brainstorming (100 per cent), Lecture (80 per cent), and Discussion (70 per cent) to teach EPS 222 in the classroom. Although Debate (80 per cent) and role-play (60 per cent) were not all used, it can be said that the BTE tutors have used a variety of teaching methods in teaching this course and their teaching methods are appropriate as per the standard of the student-teachers.

4.6.2.2 Assessment of learning outcomes in EPS 222

The major modes of assessment in ESP 222 are formative and summative. The tool used for conducting internal assessment includes written assignment, mid-semester

test, and class attendance whereas end-of-semester examination is used for conducting the summative assessment. The details of the modes of assessment are presented in the next subsection.

4.6.2.2.1 Modality for Conducting Formative assessment in EPS 222

Further interaction with the EPS tutors revealed that the formative assessment of student-teachers in EPS 222 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of two assignments with each comprising five compulsory unstructured questions of the areas covered in this course for 10 marks. Also, the mid-semester assessment comprising 20 compulsory structured questions for all the student-teachers for 20 marks whereas a 21-day mandatory class attendance of student-teachers were assessed for 10 marks per student-teacher. The details of the findings are presented in table- 4.136.

Table-4.136: Modality for Conducting Internal Assessment in EPS 222

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 (2 to be answered)	2	10
2	Mid-semester test	Structures	20	1	20
3	Class attendance	N/A	N/A	21 days minimum	10

4.6.2.2.2 Modality for Conducting Summative Assessment in EPS 222

The BTE tutors revealed that the summative assessment of student-teachers was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (3 to be answered). Framing of the questions (unstructured and structured) was based on areas such as leadership issues in educational delivery in Ghana, issues in the management and administration of education in Ghana, and the development of education in Ghana from the pre-colonial, through the colonial era to the present. Whilst the structured questions were

allocated 20 marks, the unstructured questions were 40 marks. The total marks obtained from this session is 60. The duration of this paper is two hours because it is two credit hours of paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student teachers' progress.

4.6.2.3 Modification of EPS 222 Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics via frequencies as presented in the table-4.137.

Table-4.137: Needed Suggestions Modification of EPS 222

Sr. no	Suggestion	Frequency	Percentage
1	There is a need to incorporate time management in EPS 111 to help student-teachers in managing their instructional time	2	20
2	The BTE colleges should establish a practical session on their time table in encouraging the practice of skills in school records keeping and other practical administrative duties in schools	1	10
3	It is important to incorporate the concept of school supervision to expose student-teachers to the need for effective supervision in the teaching fraternity	1	10
4	No suggestion	6	60

The suggestions presented in the table-4.137 state that there is a need to incorporate time management in EPS 111 to help student-teachers in managing their instructional time (20 per cent), the BTE colleges should establish a practical session on their time table in encouraging the practice of skills in school records keeping and other practical administrative duties in schools (10 per cent), and it is important to incorporate the concept of school supervision to expose student-teachers to the need for effective supervision in the teaching fraternity (10 per cent). But no suggestion was presented by some tutors (60 per cent).

Also, data collected from final year student-teachers for modification of EPS 222 contents (see the details in the appendix E-4). The suggestions that emerged are presented as follows;

- a. Time table preparation needs to be practically taught in the BTE colleges. Student-teachers must be conversant with the skills involved in designing a school time table to be able to implement it in schools when necessary.
- b. There is a need to incorporate artificial intelligence in educational management. Computer applications that can monitor teachers' and students' attendance, the progress of work, and communication in schools need to be taught. The student-teachers need to be exposed to these skills to work efficiently in their respective schools.

It can be concluded that; 1) the objectives of EPS 222 were adequate and relevant for providing learning experiences in mitigating management and organizational issues in educational delivery in Ghana, 2) the contents were appropriate for preparing student-teachers to be effective classroom teachers and school managers, 3) the two credit hours were appropriate as per the contents, 4) the teaching methods viz., Brainstorming, Lecture, and Discussion were appropriate for preparing student- teachers, 5) the contents about time table preparation and school records keeping were not appropriate in terms of practicality and should be re-looked, and 6) modes of assessments were appropriate for determining learning outcomes of student-teachers.

4.6.3 Methods of Teaching Basic School Mathematics (PFC 222)

The Methods of Teaching Basic Mathematics is designed for two credit hours. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Mathematics tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course are;

- i. To acquire in-depth knowledge and understanding of the Basic School Mathematics Curricula

- ii. To plan activities and prepare materials for teaching investigation with numbers; operations on whole numbers, integers, and rational numbers; rates, money, and taxes
- iii. To explore ways in which calculators could be used to enhance teaching, learning, and problem solving by children.

It can be seen from table-4.137 that the course objectives of PFC 222 are adequate and aligned properly with the given contents (60 per cent). Also, the objectives are relevant in terms of providing a conduit for tutors to plan learning activities to equip student-teachers with the knowledge of the Basic School Mathematics Curricular (80 per cent). The details of the analysis are presented in table-4.138.

Table-4.138: Appropriateness and Relevance of Contents and Objectives of PFC 222

Sr. no.	Items	Judgment		
		Approp riate	Uncertain	Inappro priate
1	Adequacy of course content as per given objectives	6 (60%)	3 (30%)	1 (10%)
	The course objectives provide learning activities to equip students with the knowledge of the Basic School Mathematics Curricula (Primary and JHS)	8 (80%)	2 (20%)	-
2	Familiar with the structure and organization of the Basic School Mathematics Syllabuses, Profile Dimensions.	6 (60%)	3 (30%)	1 (10%)
3	Significance of addition, subtraction, multiplication, and division of whole numbers.	5 (50%)	4 (40%)	1 (10%)
4	Ability to perform operations on integers	7 (70%)	1 (10%)	2 (20%)
5	Ability to teach measurement in respect of length, time, money, capacity, and mass	5 (50%)	2 (20%)	3 (30%)
6	Perspective on the measurement of angles and polygons	6 (60%)	3 (30%)	1 (10%)
7	Ability to design activities to teach congruent and similar shapes and symmetry	3 (30%)	2 (20%)	5 (50%)
8	Significance of collecting and handling of data	8 (80%)	1 (10%)	1 (10%)
9	Significance of lesson plan preparation in mathematics	9 (90%)	1 (10%)	-
10	Exposure to the calculator and its use for basic Mathematical operations	4 (40%)	5 (50%)	1 (10%)
11	Significance of 2 credit hours as per the contents	8 (80%)	-	2 (20%)
12	Significance of the reading list	4 (40%)	-	6 (60%)

It can be seen from table-4.138 that the contents of PFC 222 are appropriate in terms of exposing student-teachers to the preparation of a lesson plan in Mathematics (90 per cent). Of course, other factors like knowledge in basic school Mathematic syllabus weekly forecast and scheme of work might have contributed to this achievement. Also, the contents are appropriate for introducing student-teachers to collecting and handling of data (80 per cent), and many of them are capable of performing operations on integers (70 per cent). This establishes that student-teachers have more opportunities in developing their knowledge in many Mathematical concepts. However, the contents are inappropriate for helping student-teachers to design activities to teach congruent and similar shapes and symmetry (50 per cent). What might have resulted in the occurrence of this phenomenon are instructional planning and teaching methods that tutors adopt in the classroom.

To find out the competencies of the basic school teachers, two Mathematics lessons taught by alumni were observed (see the details in the appendix A1-A2). It was found that most of the alumni (generalist and specialist) planned their lessons appropriately and demonstrate content knowledge in achieving targets. This suggests that the contents of PFC 222 are appropriate for equipping prospective teachers to be effective in the classroom.

The researcher also collected data from final year student-teachers about the contents of PFC 222 as stated in chapter III of this study, through group discussion. Though the researcher was not having a checklist, it was ensured that the following themes (see appendix B) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. The content weightage between theory and practice is duly balanced. Provision was made in the BTE curriculum for student-teachers to practice the theory they learned in the classroom.
- b. Most of the contents like data collection, data handling, and lesson plan are helpful in the daily activities of prospective teachers. Whilst knowledge of data collection and handling helps in analyzing assessment scores of the students, knowledge of lesson plan helps in building their confidence in the classroom.

- c. Content about ICT for teaching and learning Mathematics was inappropriate. This was because computer software applications were not introduced while the use of calculators, as taught in this course is not useful at the basic level.

4.6.3.1 Teaching Methods used by BTE Tutors for teaching PFC 222

The BTE Mathematics tutors were asked to tickmark to judge teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most frequently used by BTE tutors in teaching PFC 222 include Discussion (100 per cent), Demonstration (100 per cent), Collaboration (70 per cent), and frequently used Project method (80 per cent). It can be said here that these teaching methods are appropriate for preparing prospective teachers as most of the tutors were able to achieve their instructional objectives. Also, most of the student-teachers were motivated in contributing to the success of the lesson.

4.6.3.2 Assessment of learning outcomes in PFC 222

The collected data from the tutors revealed that formative assessment and summative assessments were used in PFC 222. Assessment tools used for conducting internal assessment include written assignments, mid-semester tests, and class attendance. For the summative assessment, the end-of-semester examination was used. The details of the analysis are presented in the next subsection.

4.6.3.2.1 Modality for Conducting Formative Assessment in PFC 222

Further interaction with the tutors revealed that the formative assessment of student-teachers in PFC 222 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of two assignments with each comprising five compulsory unstructured questions of the areas covered in this course for 10 marks. Also, the mid-semester assessment comprised five unstructured (2 to be answered) and 20 compulsory structured questions for all the student-teachers for 20 marks whereas a 21-day mandatory class attendance of student-teachers was assessed for 10 marks per student-teacher. The details of the findings are presented in table-4.139.

Table-4.139: Modality for Conducting Internal Assessment in PFC 222

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 (2 to be selected)	2	10
2	Mid-semester test	Structures	(20)	1	20
3	Class attendance	N/A	N/A	21 days minimum	10

4.6.3.2.2 Modality for Conducting Summative Assessment in PFC 222

The BTE tutors revealed that the summative assessment of student-teachers was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (3 to be answered). Also, it was revealed that framing of the questions (unstructured and structured) was based on areas such as investigation with numbers, integers, rational numbers, teaching measurement, lesson planning in Mathematics, calculator, data collection and handling, and teaching number plane. Whilst the structured questions were allocated 20 marks, the unstructured questions were 40 marks. The total marks obtained from this section is 60. The duration of this paper is two hours because it is two credit hours of paper. The marks obtained by each student-teacher in formative assessment are added to the marks obtained in the summative assessment to determine the student-teachers' progress.

4.6.3.3 Modification of PFC 222 Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics via frequencies as presented in the table-4.140.

Table-4.140: Needed Suggestions Modifications of PFC 222

Sr. no	Suggestions	Frequency	Percentage
1	The contents of PFC 222 are overloaded and must be reduced to ease the teaching and learning process of Mathematics	2	20
2	A comprehensive continuous assessment of learning outcomes of student-teachers is needed to determine the extent to which they are progressing from one lesson to another.	1	10
3	Technology integration should be reinforced in PFC 222 to prepare viable teachers capable of using ICT in teaching and learning mathematics	5	50

Suggestions given in table-4.140 indicate that the contents of PFC 222 are overloaded and must be reduced to ease the teaching and learning process of Mathematics (20 per cent), a comprehensive continuous assessment of learning outcomes of student-teachers is needed to determine the extent to which they are progressing from one lesson to another (10 per cent), and technology integration should be reinforced in PFC 222 to prepare viable teachers capable of using ICT in teaching and learning of mathematics (50 per cent).

Also, the researcher had a group discussion with final year student-teachers which emanated suggestions for modification of PFC 222 contents. The suggestions that emerged (see appendix B) are presented as follows;

- a. Tutors should be made to teach PFC 222 with concrete materials that can facilitate the understanding of concepts.
- b. The end of semester examination should be made flexible. Framing of the questions should be precise and related to the activities that take place in the classroom.
- c. Tutors should be made to upgrade their knowledge in Mathematical concepts and pedagogy to be effective in the classroom.

It can be concluded that; 1) the objectives of PFC 222 were adequate and relevant in terms of providing a conduit for tutors to plan learning activities as per the Basic

School Mathematics Curricula, 2) the contents of PFC 222 were appropriate for equipping prospective teachers with pedagogical skills to be effective in the classroom, 3) Content about ICT for teaching and learning Mathematics was inappropriate. This was because computer software applications are not incorporated while the use of calculators, as taught in this course is not useful at the basic level, 4) teaching methods viz., Discussion, Demonstration, Collaboration, and Project were appropriate for preparing prospective teachers to achieve targets, 5) modes of assessments were appropriate for determining learning outcomes of student-teachers, and 6) two credit hours were appropriate for transacting the course.

4.6.4 Methods of Teaching Social Studies (PFC 228)

The Methods of Teaching Social Studies is designed for two credit hours. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Social Studies tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course are;

- i. To make students aware of some approaches in the design of Social Studies programs and their implications for effective instruction.
- ii. To help students to acquire adequate knowledge and skills in using a variety of teaching and learning techniques in Social Studies.
- iii. To provide students with knowledge and skills in the selection and use of a variety of resources for instruction in Social Studies.
- iv. To equipping students with the knowledge and skills to be able to plan lessons and adequately prepare lesson plans out of credible schemes of work.

It can be seen from table-4.141 that the course objectives of PFC 228 are adequate to support the selection of the contents (70 per cent). Also, the course objectives are relevant in terms of providing curricular and pedagogic approaches to design and facilitate the implementation of contents in Social Studies (60 per cent). This means the concepts covered by the objectives are critical for preparing prospective teachers. The details of the analysis are presented in table-4.141.

Table-4.141: Appropriateness and Relevance of Contents and Objectives of**PFC 228**

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	7 (70%)	3 (30%)	-
2	The course objectives provide details of curricular and pedagogic approaches in the design and facilitation of effective implementation of contents in Social Studies	6 (60%)	3 (30%)	1 (10%)
3	To be familiar with the approaches (concentric & spiral) for designing social studies programs	5 (50%)	4 (40%)	1 (10%)
4	To be familiar with the structure of basic school Social Studies syllabuses	5 (50%)	3 (30%)	2 (20%)
5	Due attention is given to the diversity of resources available within and outside the school for effective planning and delivery of lessons in Social Studies	8 (80%)	1 (10%)	1 (10%)
6	Acquire knowledge and skills to prepare a lesson plan in Social Studies	9 (90%)	1 (10%)	-
7	Significance of the resource person in teaching Social Studies	6 (60%)	2 (20%)	2 (20%)
8	Ability to use learner-centered techniques in achieving instructional objectives	6 (60%)	3 (30%)	1 (10%)
9	Significance of one credit hour as per the contents	2 (20%)	-	8 (80%)
10	Significance of the reading list	3 (30%)	1 (10%)	6 (60%)

It can be seen from the table-4.141 that the contents of PFC 228 are appropriate in terms of introducing student-teachers to lesson plan in Social Studies (90 per cent).

Student-teachers were introduced to hand-on-activities for planning lessons. So, the skills acquired here are appropriate for broadening their horizons in the various stages of lesson planning. Also, the contents have incorporated with appropriate resources that are available within and outside the school for effective planning and delivery of lessons in Social Studies (80 per cent). This means the contents have addressed criteria for selection of resources viz., multimedia resources, community resources, and resource room and how best they can be utilized in attaining instructional objectives. Other contents that were judged as appropriate include exposure to learner-centered techniques in achieving instructional objectives (60 per cent), exposure to the significance of resource person in teaching Social Studies (60 per cent), and introduction to the structure of basic school Social Studies syllabuses (50 per cent). However, one credit hour is inappropriate to contain the contents (80 per cent), and the reading list is also inappropriate to encourage extensive reading (60 per cent).

Also, observation of lessons taught by alumni at the basic level (see the details in the appendix A-2) revealed that most of the teachers planned lessons properly and employed a learner-centered approach in achieving instructional objectives. This suggests that the course objectives provide details of curricular and pedagogic approaches in the design and facilitation of effective implementation of courses in Social Studies.

The researcher also collected data from final year student-teachers about the contents of PFC 228 as stated in chapter-III of this study, through group discussion. Though the researcher was not having a checklist, it was ensured that the following themes (see appendix H) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. The contents are appropriate in terms of introducing student-teachers to a variety of didactic tools and processes needed for instruction in Social Studies.
- b. The concepts about lesson plans and schemes of work are appropriate for preparing student-teachers.

- c. The books about PFC 228 in the library are inadequate for teaching and learning.

4.6.4.1 Teaching Methods used by BTE Tutors for teaching PFC 228

The BTE tutors were asked to tickmark to judge teaching methods on a 5-point scale. The collected data were subjected to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.142.

Table-4.142: Relevance & Appropriateness of Teaching Methods used in Teaching PFC 228

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	10 (100%)	-	-	-	-
2	Collaboration	-	-	-	5 (50%)	-
3	Demonstration	-	-	-	6 (60%)	-
4	Mentoring	-	-	4 (40%)	-	-
5	Role play	-	7 (70%)	-	-	-
6	Lecture	8 (80%)	-	-	-	-
7	Field trip	-	3 (30%)	-	-	-
8	Project	-	-	-	-	2 (20%)
9	Debate	-	-	-	-	6 (60%)
10	Brainstorming	8 (80%)	-	-	-	-

It can be seen from the table-4.142 that most frequently, the BTE tutors used teaching methods such as Discussion (100 per cent), Brainstorming (80 per cent), Lecture (80 per cent), and frequently used Role Play (70 per cent) to teach PFC 228 in the classroom. It can be said here that much attention is given to the learner-centered method of teaching PFC 228 which in effect can influence exploration of the environment for better understanding of concepts.

4.6.4.2 Assessment of learning outcomes in PFC 228

Two modes of assessment viz., formative and summative are used for determining learning outcomes of the student-teachers in PFC 228. The assessment tools used for conducting formative assessment include written assignment, mid-semester test, and class attendance while the end-of-semester examination was used for conducting the summative assessment. The details of the analysis are presented in the next subsection.

4.6.4.2.1 Modality for Conducting Formative assessment in PFC 228

Data about the procedures of formative assessment was collected from tutors through discussion sessions revealed that the formative assessment of student-teachers in PFC 228 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of two assignments with each comprising five compulsory unstructured questions of the areas covered in this course for 10 marks. Also, the mid-semester assessment comprised 20 compulsory structured questions for all the student-teachers for 20 marks whereas a 21-day mandatory class attendance of student-teachers were assessed for 10 marks per student-teacher. The details of the findings are presented in table-4.143.

Table-4.143: Modality for Conducting Internal Assessment in PFC 228

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 (2 to be answered)	2	10
2	Mid-semester test	Structures	20	1	20
3	Class attendance	N/A	N/A	21 days minimum	10

4.6.4.2.2 Modality for Conducting Summative Assessment in PFC 228

The BTE tutors revealed that the summative assessment of student-teachers was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (3 to be answered). Also, it was said that framing of the questions (unstructured and structured) was based on areas such as approaches for designing social studies programs, analytical study of the basic school social studies syllabuses, teaching and learning resources, resource persons, and lesson planning. Whilst the structured questions were allocated 20 marks, the unstructured questions were 40 marks. The total marks obtained from this session is 60 which in addition to the formative assessment yields 100 marks altogether. The duration of this paper is two hours because it is two credit hours of paper. The marks

obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student teachers' progress.

4.6.4.3 Modification of PFC 228 Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics viz., frequencies, and percentages as presented in the table-4.144.

Table-4.144: Needed Suggestions Modification of PFC 228 Contents

Sr. no	Suggestion	Frequency	Percentage
1	Each of the BTE colleges should build a resource room and stock it with resources and material to help in achieving instructional objectives	3	30
2	The student-teachers should be allowed to embark on a field trip to places of educational significance for a minimum of once every semester to acquire more experience outside the classroom	1	10
3	The two credit hours of the PFC 228 should be increased to three to provide more contact hours for engaging student-teachers	5	50

Suggestions are given in table-4.144 indicate that each of the BTE colleges should build a resource room and stock it with resources and material to help in achieving instructional objectives (30 per cent), the student-teachers should be allowed to embark on a field trip to places of educational significance for a minimum once every semester to acquire more experience outside the classroom (10 per cent), and The two credit hours of the PFC 228 should be increased to three to provide more contact hours for engaging student-teachers (50 per cent).

Also, the researcher had a group discussion with final year student-teachers which emanated suggestions for modification of PFC 228 contents. The suggestions that emerged are presented as follows;

- a. Tutors of PFC 228 should make good use of the resources persons in the communities to share light on some issues relating to the community. This will expose student-teachers to the role that resource person plays towards the attainment of instructional objectives.
- b. Student-teachers should be allowed to engage in debate on issues emanated from this course to develop their skills in using debate as an instructional strategy for teaching social studies at the basic level.

It can be concluded that; 1) the objectives of PFC 228 were adequate and relevant as per the contents, 2) the contents were appropriate in terms of equipping student- teacher with knowledge and pedagogical skills to be effective, 3) the teaching methods viz., Discussion, Brainstorming, Lecture, and Role Play as used by tutors were appropriate for preparing student-teachers in PFC 228, 4) reading list is inappropriate to encourage extensive reading, 5) one credit hour was not appropriate, 6) modes of assessments were appropriate for determining learning outcomes of student-teachers, and 7) the one credit hour was not appropriate as per the contents.

4.6.5 Introduction to ICT (GNS 221)

The GNS 221 is designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected ICT tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course are;

- i. To identify types of storage media and devices
- ii. To explain how data is stored on floppy and hard disks
- iii. To differentiate between CD-ROMs and DVD-ROMs
- iv. To identify the basic components of a communications system.
- v. To describe how and why network computers are used in schools
- vi. To define multimedia, multimedia elements, and describe types of media used in multimedia applications

vii. To identify ways in which technology can positively influence learning.
Provide examples

viii. Identify ways to plan for technology integration and the barrier to technology integration

ix. Develop the basic skills needed to work with MS Excel up to skills level II

It can be seen from table-4.145 that the course objectives are adequate to contain the selected contents of GNS 221 (50 per cent). Also, the course objectives are relevant in terms of providing details of the component of a computer data file organization and access including file processing (80 per cent). This phenomenon guides the tutors in planning lessons effectively. The details of the analysis are presented in table-4.145.

Table-4.145: Appropriateness and Relevance of Contents and Objectives of GNS 221

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1.	Adequacy of course content as per given objectives	5 (50%)	3 (30%)	2 (20%)
2.	The course objectives provide details of the component of a computer data file organization and access including file processing	8 (80%)	1 (10%)	1 (10%)
3.	To be familiar with various types of storage media and devices	9 (90%)	1 (10%)	-
4.	To describe the differences between input devices and output devices	8 (80%)	1 (10%)	1 (10%)
5.	Significance of the basic components (channel & mode) of a communications system	4 (40%)	5 (50%)	-
6.	Significance of network for sharing information and resources	2 (20%)	7 (70%)	1 (10%)
7.	Acquire knowledge on the internet and can use in teaching and learning	4 (40%)	5 (50%)	1 (10%)
8.	The relevance of integrating multimedia and educational software applications	2 (20%)	3 (30%)	5 (50%)
9.	Ability to integrate technology into teaching	3 (30%)	6 (60%)	1 (10%)
10.	Significance of one credit hour as per the contents	1 (10%)	3 (30%)	6 (60%)
11.	Significance of the reading list	3 (30%)	1 (10%)	6 (60%)

It can be seen from table-4.145 that the contents of GNS 221 are appropriate in terms of introducing student-teachers to the various types of storage media and devices (90 per cent). These storage devices include a floppy disk, hard disk, magnetic tape, magnetic disk, optical disk in stock. These were supposed to facilitate instructions in the classroom making student-teachers to be familiar with the types, description, and how data are stored in them. Also, the contents are appropriate for exposing student-teachers to the differences between input devices and output devices (80 per cent). According to the tutors, these are tangible devices that were supposed to be available for demonstration in the classroom. From the environment, it was difficult getting keyboards, pointing devices, touch screens, optical scanners, and digital cameras to introduce input devices to the student-teachers while in the same way devices such as monitors, printers, and plotters were not available in larger quantities for demonstration lessons.

However, the majority (70 per cent) of the tutors were not certain about the significance of networking about the sharing of information and resources in school. They doubted this concept because many components of GNS 221 were not practically carried out to provide the first-hand experience for student-teachers. And such components include; the four principal network topology (star, bus, ring, mesh) used in LAN, strategies for sharing information and resources (terminal, peer-to-peer, server), network navigation devices (repeater, hubs, switches, bridges, and routers) and networking security (authentication, access privileges, physical protection measures, firewalls). This suggests that the weightage between theory and practice is an imbalance. As part of this reason, it was found that the concept of integrating multimedia and educational software applications was inappropriate (50 per cent). Due to concepts imbalances, it may be thought that prospective teachers would find it difficult to apply ICT knowledge in the teaching of other subjects in schools.

An observation session was conducted to observe two ICT lessons taught by the alumni (see the details in the appendix A-1). It was revealed that computers were not used to facilitate instructions. For this reason, most of the instructional objectives could not be achieved. This phenomenon was probably due to other factors such as inadequate computers in BTE colleges to equip prospective teachers with skills of using ICT to facilitate learning. Here, it is essential to allude to the finding of Agyei and Douglas (2013). These authors revealed that teacher education institutions in

Ghana have inadequate computers and internet facilities. In this regard, student-teachers were lacking practical skills because of inadequate training facilities for the training of trade teachers of technical colleges in north-eastern states of Nigeria. This suggests that training facilities are critical in teacher preparations and must not be underrated.

Also, data were collected from final year student-teachers about the contents of GNS 221 as stated in chapter-III of this study, through group discussion. Though the researcher was not having a checklist, it was ensured that the following themes (see appendix J) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. There are adequate contents about the major component of computers in GNS 221. How data are represented on the computer, processed, and protected are all thoroughly addressed in this course. This will ensure that student-teachers acquire in-depth subject knowledge capable of teaching ICT at the basic level.
- b. The learning activities of GNS 221 are not flexible in ensuring interactive learning amongst beginners.
- c. One credit hour is insufficient to align with the lengthy contents of this course. This has led to inadequate contact hours in a semester. In most of the cases, the tutors are unable to cover all the course outline designed for a semester.

Looking at the data presented above, it can be said that the GNS 221 is designed to expose student-teachers to ICT skills and resources necessary for professional support to enhance teaching and learning in schools. The contents have provided a conceptual understanding of the course. But the practical skills of the student-teacher are not properly cultivated due to inadequate facilities at the BTE colleges. Most of the alumni of the curriculum are not using computers in lesson delivery at the basic level. This suggests that GNS 221 objectives are unsuccessful. This phenomenon must be relooked to produce effective teachers.

4.6.5.1 Teaching Methods used by BTE Tutors for teaching GNS 221

The tutors were asked to tickmark to judge teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most frequently used by BTE tutors in teaching GNS 221 include Demonstration (90 per cent), Brainstorming (80 per cent), and Project (70 per cent), and frequently use Discussion (70 per cent). These teaching methods were also found when we were presenting the contents of ICT in the previous semester (see table-4.99. above). Here, it can be said that these teaching methods were appropriate for preparing student-teachers in a less privileged environment to achieve targets. But it was observed that most of the BTE colleges did not have adequate computers for demonstration lessons. So, the teaching methods such as Demonstration and Project were not achieving the expected target.

4.6.5.2 Assessment of learning outcomes in GNS 221

Assessment in GNS 221 comprising modes viz., formative and summative. For formative assessment, tools used are written assignment, mid-semester test, and class attendance while the end-of-semester examination is used for conducting the summative assessment. The details of the modes of assessment are presented in the next subsection.

4.6.5.2.1 Modality for Conducting Formative assessment in GNS 221

In discussion conducted for tutors revealed that the formative assessment of student-teachers in GNS 221 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of two assignments. The first assignment comprising five compulsory unstructured questions (2 to be answered) of the areas covered in this course for 10 marks whereas the second assignment was a practice (a case study) of MS Excel 2003 and MS Excel 2003 for 10 marks. Also, the mid-semester assessment comprised 20 compulsory structured questions for all the student-teachers for 20 marks. The details of the findings are presented in table-4.146.

Table-4.146: Modality for Conducting Internal Assessment in GNS 221

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 (2 to be selected)	2	10
2	Mid-semester test	Structures	20	1	20
3	Practical	A case study	2	1	10

4.6.5.2.2 Modality for Conducting Summative Assessment in GNS 221

The BTE tutors revealed that the summative assessment of student-teachers was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (3 to be answered). Also, it was said that the framing of the questions (unstructured and structured) was based on areas such as storage devices, input devices and output devices, data communication, networking, the internet, multimedia, and technology and curriculum integration. Whilst the structured questions were allotted 20 marks, the unstructured questions were 40 marks. The total marks obtained from this session is 60 which in addition to the formative assessment yields 100 marks altogether. The duration of this paper is one and a half hours because it is a one-credit hour paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student teachers' progress. Looking at the modes of assessments, the practical skills of student-teachers are not properly featured and must be relooked.

4.6.5.3 Modification of GNS 221 Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics viz., frequencies, and percentages as presented in the table-4.147.

Table-4.147: Needed Suggestions Modification of GNS 221 Contents

Sr. no	Suggestion	Frequency	Percentage
1	Ultra-modern computer laboratory stocked with computers and its appliances should be built in every BTE colleges to enhance teaching and learning	7	70
2	There is a need to incorporate practical session at the end of semester examination for student-teachers to demonstrate their practical skills in manipulating personal computer	2	20
3	The one-credit hour of the GNS 221 should be increased to two to provide more contact hours for engaging student-teachers	4	40

Suggestions given in table-4.147 show that an ultra-modern computer laboratory stocked with computers and its appliances should be built in every BTE colleges for teaching and learning (70 per cent), there is a need to incorporate practical session at the end of semester examination for student-teachers to demonstrate their practical skills in manipulating personal computer (20 per cent), and one-credit hour of the GNS 221 should be increased to two to provide more contact hours for engaging student-teachers (40 per cent).

Also, the researcher had a group discussion with final year student-teachers which emanated suggestions for modification of GNS 221 contents. The suggestions that emerged are presented as follows;

- a. The GNS 221 should be transacted as an optional course to allow interested student-teachers to study by choice to advance their knowledge in ICT.
- b. There is a need to provide training for ICT tutors at the BTE colleges on technology integration. Therefore, the periodic workshop should be organized for them every semester to revitalize their skill.

It can be concluded that; 1) the course objectives were adequate and relevant as per the contents, 2) the contents about types of storage media and devices were reported as appropriate in terms of equipping student-teachers with subject knowledge, 3) the contents were reported as inappropriate to support technology integration, 4) the

weightage between theory and practice of teaching ICT in BTE college was not balanced as student-teachers were not having access to practical skills in most of the ICT concepts, 4) teaching methods viz., Demonstration and Project were not achieving instructional objectives as most of the BTE colleges did not have adequate computers for demonstration lessons, 4) Modes of assessments were not appropriate to prepare competent teachers with practical skills, 5) one credit hour was inappropriate to contain the contents, and 6) reading list was inappropriate to encourage extensive reading.

4.6.6 Music and Dance (PRA 221)

Music and Dance is an elective course selected by interested student-teachers in the fourth-semester. It is designed for one credit hour. The course title is Principles and methods of teaching the Performing Arts II. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Music and Dance tutors who are Department Heads (one from each of the ten BTE colleges) and 40 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course are;

- i. To acquire competencies and skills which will enable them to develop their strategies for Performing Arts teaching in basic schools in Ghana.
- ii. To acquire skills and strategies necessary in organizing and directing creative activities among basic school pupils.

It can be seen from table-4.148 that the objectives of PRA 221 are inadequate to mitigate the selected contents (60 per cent). Also, the majority (80 per cent) of the tutors are not certain about the viability of the objectives for developing skills and providing directives for student-teachers to learn performing arts. The cause of this doubt may be unraveled in our subsequent discussions. The details of the analysis are presented in table-4.148.

Table-4.148: Appropriateness and Relevance of Contents and Objectives of PRA

Sr. no.	Items	<u>Judgment</u>		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	3 (30%)	1 (10%)	6 (60%)
2	The course objectives provide the opportunity to develop skills and creating an enabling environment for student-teachers to learn the performing arts.	2 (20%)	8 (80%)	-
3	Significance of Theories of Performing Arts learning	3 (30%)	2 (20%)	5 (50%)
4	To be familiar with pedagogical strategies for teaching the Performing Arts	7 (70%)	2 (20%)	1 (10%)
5	Ability to organize cultural festivals in schools	4 (40%)	5 (50%)	-
6	Developing career opportunities in the performing arts	2 (20%)	4 (40%)	4 (40%)
7	Significance of one credit hour as per the contents	5 (50%)	2 (20%)	3 (30%)
8	Significance of the reading list	3 (30%)	1 (10%)	6 (60%)

It can be seen from table-4.148 that the contents of PRA 221 are appropriate for equipping student-teacher with pedagogical strategies for teaching the Performing Arts in schools (70 per cent). The tutors further elaborated that student-teachers had the opportunity to study the Music and Dance curriculum, learn how to prepare a scheme of work and lesson plan to be effective. Some (50 per cent) of the tutors judged that the Theories of Performing Arts learning were not appropriate. In their opinion theories related to Referentialism, Absolutism, Behaviourism did not make an impact on the student-teachers as educational implications were not reflected. For this reason, tutors (50 per cent) were skeptical as to whether prospective teachers would be effective in schools concerning organizing events such as poetry recital, drum language, dance, drama, dance drama, sight-reading, choral singing, storytelling at culture festivals. While interacting with alumni of the BTE curriculum at the basic

level, it was revealed that most of them were lacking practical skills in PRA 221. Due to this, the management of schools was paying less attention to the subject thereby making it non-examinable. At the time of conducting this study, the subject was not incorporated in most of the time tables of the Ghanaian basic schools, and teachers were not assigned to teach it.

The researcher also collected data from final year student-teachers about the contents of PRA 221 as stated in chapter-III of this study, through group discussions. Though the researcher was not having a checklist, it was ensured that the following themes (see appendix K) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. A few student-teachers opted to study PRA 221 as it is not being recognized at the basic schools.
- b. The contents of this course expose student-teachers to the teaching of the performing arts at the basic level. And that they were introduced to how to develop their skills in creating the enabling environment for pupils to learn the performing arts.
- c. Assessment of PRA 221 was a paper and pen test. This means learning outcomes of student-teachers' practical skills were not given due weightage.
- d. There are no music laboratory and musical instruments in colleges for teaching this course.

4.6.6.1 Teaching Methods used by BTE Tutors for teaching PRA 221 Contents

The BTE tutors were asked to tick mark teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most often used by BTE tutors in teaching include Demonstration (100 per cent), Discussion (80 per cent), Brainstorming (80 per cent), and Role-Play (70 per cent). These teaching methods were found when we were presenting the contents of Music and Dance in the previous semester (see table-88). Here, it can be said that the teaching methods are appropriate for achieving instructional objectives based on their diverse nature.

4.6.6.2 Assessment of Learning Outcomes of PRA 221

The collected data from the tutors revealed that both formative assessment and summative assessments were used to determine the learning outcomes of student-teachers. The assessment tools used for conducting internal assessment are written assignment, mid-semester test, and classroom attendance while the end-of-semester examination was used for conducting the summative assessment. The details are presented in the next subsection.

4.6.6.2.1 Modality for Conducting Formative assessment of PRA 221

Further interaction with the tutors revealed that the formative assessment of student-teachers in PRA 221 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of one assignment (10 marks) based on the areas presented above. Also, the mid-semester assessment comprises 20 compulsory structured questions based on the areas above for 20 marks. And they must complete 21 mandatory classroom attendance for 10 marks. The details of the findings are presented in table-4.149.

Table-4.149: Modality for Conducting Internal Assessment of PRA 221

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	2 minimum	1	10
2	Mid-semester test	Structured	20	1	20
3	Classroom attendance	N/A	N/A	21 days	10

4.6.6.2.2 Modality for Conducting Summative Assessment of PRA 221

Discussion sessions conducted for tutors revealed that the summative assessment of student-teachers in PRA 221 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (2 to be answered) as per the given cue. The unstructured questions (40 marks) were based on

pedagogical strategies for teaching the Performing Arts about rhythm, pitch, form, dynamics, texture, movement, dance, and dance drama as well as events at cultural festivals like poetry recital, drum language, dance, drama, dance drama, sight-reading, choral singing, and storytelling. The structured questions (20 marks) were based on theories of performing arts learning, methods of teaching the performing arts, organization of cultural festivals, and preparation for the world of work. The total marks obtained from this session is 60. The duration of this paper is one and a half hours because it is a one-credit hour paper. The marks obtained by each student- teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student-teachers' progress.

4.6.6.3 Modification of PRA 221Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics viz., frequencies, and percentages as presented in the table-4.150.

Table-4.150: Needed Suggestions Modification of PRA 221Contents

Sr. no	Suggestion	Frequency	Percentage
1	Portfolio assessment of student-teachers should be encouraged to show a collection of student-teachers best work over some time	1	10
2	Management should allocate adequate funds to the Music and Dance Department in the colleges for purchasing of instruments and organization of events regularly	6	60
3	The one-credit hour of the PRA 221 should be increased to two to provide more contact hours for engaging student-teachers	4	40

Suggestions given in table-4.150 show that portfolio assessment of student-teachers should be encouraged to show a collection of student-teachers best work over some time (10 per cent), management should allocate adequate funds to the Music and Dance Department in the colleges for purchasing of instruments and organization of

events regularly (60 per cent), and one-credit hour of the PRA 221 should be increased to two to provide more contact hours for engaging student-teachers (40 per cent).

Also, the researcher had a group discussion with final year student-teachers which emanated suggestions for modification of PRA 221 contents. The suggestions that emerged are presented as follows;

- a. The tutors should adopt the project method of teaching in ensuring that the student-teacher can demonstrate their knowledge and skills gained in practically solving related problems.
- b. The field trip should be encouraged to allow student-teachers to visit museum and travel to observe different cultural festivals for the first-hand experience.
- c. The student-teachers should regularly be guided to organize cultural events in their colleges at least, once every semester to enhance their skills.
- d. There is a need to incorporate practical sessions at the end of the semester examination for student-teachers to demonstrate their practical skills.

It can be concluded that; 1) the course objectives were inadequate and irrelevant as per the contents, 2) the one credit hour was appropriate as per the contents, 3) the contents were appropriate for exposing student-teachers to the teaching of the Performing Arts. The student-teachers have learned to prepare a scheme of work and lesson plan to be effective, 4) the theories related to Referentialism, Absolutism, and Behaviourism, for instance, did not provide reflections on educational implications and must be modified, 5) modes of assessments of student-teachers were not appropriate as the emphasis was not placed on practical skills, 6) teaching methods such as Demonstration, Discussion, Brainstorming, and Role Play were appropriate for achieving instructional objectives, and 7) reading list was inappropriate to encourage extensive reading.

4.6.7 Physical Education (PRA 222)

Physical Education is an elective course selected by interested student-teachers in the fourth-semester. It is designed for one credit. The course title is Methods and Practice of Physical Education. To judge the appropriateness of the contents, needed data were collected from ten randomly selected PE tutors who are Department Heads (one from each of the ten BTE colleges) and 40 final year student-teachers on out-campus

teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course are;

- i. Explain the rationale and scope of the physical education syllabus,
- ii. Prepare Physical Education lesson plan for teaching in the basic school,
- iii. Explain the role of psycho-social and sociological issues like drugs, ergogenics, and locus of control in Physical Education and sports,
- iv. Demonstrate various basic movement skills in volleyball, table tennis, and gymnastics,
- v. Identify the location and action of some major muscles of the human body,

It can be seen from table-4.151 that the objectives of PRA 222 are adequate to determine the selection of the contents (50 per cent). Also, course objectives are relevant in terms of addressing issues regarding the structure of the universal lesson plan and the phases of teaching the practical PE lesson (70 per cent). The details of the analysis are presented in table-1.151.

**Table-1.151: Appropriateness and Relevance of Contents and Objectives of
PRA 222**

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	5 (50%)	4 (40%)	1 (10%)
2	The course objectives provide student-teachers with the structure of the universal lesson plan and the phases of teaching the practical physical education lesson	7 (70%)	3 (30%)	-
3	Significance of basic school syllabus and the preparation of the lesson plan	7 (70%)	2 (20%)	1 (10%)
4	Significance of psycho-social and sociological issues like drugs, ergogenics, and locus of control in Physical Education and sports	5 (50%)	2 (20%)	3 (30%)
5	Demonstrate Service (underarm, overhead) skills in volleyball	8 (80%)	2 (20%)	-
6	Demonstrate offensive and defensive strokes skills in table tennis	8 (80%)	1 (10%)	1 (10%)
7	To demonstrate forward and backward rolls and inverted support skills in gymnastics	6 (60%)	3 (30%)	1 (10%)
8	Acquire knowledge of location and action of the major muscles in the human body	4 (40%)	3 (30%)	3 (30%)
9	Significance of one credit hour of the course	3 (30%)	2 (20%)	5 (50%)
10	Significance of the reading list	5 (50%)	4 (40%)	1 (10%)

It can be seen from table-4.151 that the contents of PRA 222 are appropriate in terms of introducing student-teachers to various movement skills in volleyball to perform underarm and overhead service (80 per cent), introducing student-teachers to

movement skills in table tennis to perform offensive and defensive strokes (80 per cent), to demonstrate forward and backward rolls and inverted support skills in gymnastics (60 per cent), expose student-teachers to study basic school syllabus and the preparation of the lesson plan (70 per cent) and expose them to psycho-social and sociological issues like drugs, ergogenics, and locus of control in Physical Education and sports (50 per cent). The tutors explained that provision was made for student-teachers to regularly practice and to get acquainted with the basic rule of the games. This suggests that the student-teachers had regular practical training on volleyball, basic gymnastic movements, and table tennis where basic rules of the games were applied in developing their skills.

However, in my visit to the basic schools to further interact with alumni, it was observed that PE was not given due priority in schools. The reason was given that PE was non-examinable, not incorporated in the school's timetable and teachers were not assigned to teach it. This situation in schools has discouraged alumni from practicing PE in schools and also demotivated many student-teachers from pursuing PE as their elective subject. Therefore, it can be said that despite the role played by PE in child development, its significance has not been fully realized at the basic school levels.

The researcher also collected data from final year student-teachers about the contents of PRA 222 as stated in chapter-III of this study, through group discussion. Though the researcher was not having a checklist, it was ensured that the following themes (see appendix M) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. Many student-teachers opted to study PE as an elective course for holistic development.
- b. The concept of the basic school syllabus and lesson plan is appropriate for preparing prospective teachers to be effective in the classroom.
- c. The assessment of PRA 222 was not properly balanced. Consideration was not given for student-teachers to practice their skills acquired on the field as part of the assessment process.

Looking at the data presented above, it can be said that PRA 222 has incorporated several physical activities that are geared towards physical development and the healthy life of student-teachers. Also, how to plan a PE lesson to meet the needs of individual students at the basic level has been addressed. This suggests that the contents of PRA 222 are appropriate for serving the needs of the prospective teachers. But these teachers could not make a tremendous impact on schools because priority was not accorded to this subject. Therefore, appropriate measures ought to be taken to achieve the objectives of this subject.

4.6.7.1 Teaching Methods used by BTE Tutors for teaching PRA 222 Contents

The BTE tutors were asked to tickmark to judge teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most frequently used by BTE tutors in teaching include Discussion (100 per cent), Demonstration (100 per cent), and frequently used Role Play (60 per cent). The same teaching methods were found when we were presenting the content of PE in the previous semester of PE. It can be said that these are learner-centered teaching methods that are appropriate for the attainment of instructional objectives.

4.6.7.2 Assessment of learning outcomes of PRA 222

Two modes of assessment viz., formative and summative are employed in determining learning outcomes of student-teachers in this course. The assessment tools used for conducting internal assessment are written assignment, mid-semester test, and classroom attendance while the end-of-semester examination is used for conducting the summative assessment. The details are presented in the next subsection.

4.6.7.2.1 Modality for Conducting Formative assessment of PRA 222

In interaction sessions with the tutors, it was revealed that the formative assessment of student-teachers in PRA 222 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of one assignment (10 marks) comprised of five unstructured questions (2 to be selected). Also, the mid-semester assessment comprises 20 compulsory structured questions (10 marks) and two practical activities on the fieldwork (20 marks). The details of the findings are presented in table-1.152.

Table-1.152: Modality for Conducting Internal Assessment of PRA 222

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 (2 to be selected)	1	10
2	Mid-semester test	Structured	20	1	10
3	Fieldwork	N/A	N/A	2	20

4.6.7.2.2 Modality for Conducting Summative Assessment of PRA 222

The tutors revealed that the summative assessment of student-teachers in PRA 222 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (2 to be answered). The unstructured questions (40 marks) and the questions of the structure (20 marks) were based on basic school PE syllabus, lesson planning, the psycho-social basis of PE and sport, movement skills in volleyball, movement skills in table tennis, movement skills in gymnastics, and skeletal muscles. The total marks obtained from this session is 60. The duration of this paper is one and a half hours because it is a one-credit hour paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student-teachers' progress.

4.6.7.3 Modification of PRA 222 Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics viz., frequencies, and percentages as presented in the table-4.153.

Table-4.153: Needed Suggestions for Modification of PRA 222

Sr. no	Suggestion	Frequency	Percentage
1	There is a need to incorporate health education in the areas of safety and accident prevention, physiotherapy, and personal hygiene	1	10
2	There is a need to incorporate interpersonal and organization skills	1	10
3	The one-credit hour should be increased to three to pave way for more contact hours	5	50
4	No suggestion	3	30

The suggestions presented in table-4.153 show that there is a need to incorporate health education in the areas of safety and accident prevention, physiotherapy, and personal hygiene (10 per cent), there is a need to incorporate interpersonal and organization skills (10 per cent), and one-credit hour should be increased to three to pave way for more contact hours (10 per cent).

Also, the researcher had a group discussion with final year student-teachers which emanated suggestions for modification of PRA 222 contents. The suggestions that emerged are presented as follows;

- a. The BTE colleges should provide facilities such as gyms, dance studio, swimming pool, shooting range, and extensive pitches within colleges to facilitate teaching and learning.
- b. The health benefits derived from PE is enormous. Therefore, policymakers should ensure that this subject is taught as a core subject at the basic schools to encourage teachers and students to participate fully in studying it.
- c. During the practice section, the tutors should pay equal attention to every student-teacher when participating in activities on the field.

It can be concluded that; 1) the objectives were adequate and relevant for addressing issues regarding the structure of the universal lesson plan and the phases of teaching

the practical PE lesson, 2) the content was appropriate as having a balanced weightage between theory and practice in that student-teachers practice on the field most of the concept they learn in the classroom, 3) methodology of teaching viz., Discussion, Demonstration, and Role-Play were appropriate for the attainment of instructional objectives, 4) the modes of assessments were balanced and deemed appropriate for determining the learning outcomes of the prospective teachers, and 5) one credit hour was inappropriate to contain the contents.

4.6.8 Catering (FVH 222)

Catering is an elective course selected by interested student-teachers in the fourth-semester. It is designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Pre-Vocational Skills tutors who are Department Heads (one from each of the ten BTE colleges) and 40 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course are;

- i. To explain and give reasons for reheating foods.
- ii. To state and explain the important guidelines for reheating food.
- iii. To prepare simple reheated dishes.
- iv. To explain the term: convenience food and identify types of convenience foods.
- v. To discuss the advantages and disadvantages of convenience foods.
- vi. To provide guidelines for choosing convenience foods.
- vii. To identify causes of food spoilage.
- viii. To apply knowledge and skills to preserve food in season.
- ix. To identify and explain catering enterprises.
- x. To identify and explain the teaching strategies used in teaching catering.
- xi. To plan a lesson.

It can be seen from table-4.154 that the objectives of FVH 222 are adequate to merit the selected contents (60 per cent). Also, the objectives are relevant in terms of addressing concepts about food preservative methods for enhancing productivity and

maximizing profits in the Catering vocation (50 per cent). The details of the analysis are presented in table-4.154.

Table-4.154: Appropriateness and Relevance of Contents and Objectives of FVH 222

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	6 (60%)	3 (30%)	1 (10%)
2	The course objectives have made student-teachers aware of food preservative methods to enhance productivity and maximize profits in the catering vocation	5 (50%)	4 (40%)	1 (10%)
3	Acquire knowledge in different types of convenience foods	3 (30%)	2 (20%)	3 (30%)
4	Acquire knowledge in methods of food preservation	7 (70%)	2 (20%)	1 (10%)
5	Acquire knowledge in mounting of exhibition	3 (30%)	2 (20%)	5 (50%)
6	Ability to set up and manage Catering Enterprises	4 (40%)	5 (50%)	1 (10%)
7	Acquire knowledge in preparation of lesson note for Teaching Catering	8 (80%)	1 (10%)	1 (10%)
8	Significance of one credit hour of the course	4 (40%)	1 (10%)	5 (50%)
9	Significance of the reading list	5 (50%)	4 (40%)	1 (10%)

About the contents, it can be seen from table-4.154 that the contents of FVH 222 are appropriate for equipping student-teachers with knowledge in preparation of lesson notes for teaching Catering (80 per cent). This phenomenon was made possible because of exposure to other factors such as the components of the lesson plan, weekly forecast, and the alignment procedure for writing lesson plans. Also, the contents are appropriate for equipping student-teachers with knowledge in methods of food preservation (70 per cent). The tutors explained that several factors were taken into consideration to help student-teachers to prevent micro-organisms from food to

last longer. They considered introducing student-teachers to the concept of food spoilage and simple methods of food preservation viz., reheating, salting, drying, frying, canning, freezing, and the use of chemicals. The advantages and disadvantages involved in using these methods were also taught to them to help them in the kitchen.

However, (50 per cent) of the tutors judged the contents were not appropriate for equipping student-teachers with knowledge in the mounting of the exhibition. According to the tutors, organizing detailed events that would bring together different marketing strategies was not encouraged in the FVH 222. They said this is one credit hour paper with inadequate contact hours. So, knowing the purpose of the exhibition and the procedure involved was the main concern. Therefore, it can be said that practice was not given due weightage as the procedure of exhibition was theoretical- based.

The researcher also collected data from final year student-teachers about the contents of FVH 222 as stated in chapter-III of this study, through group discussion. Though the researcher was not having a checklist, it was ensured that the following themes were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. Many student-teachers opted to study Catering as an elective course to develop their essential life skills for healthy living.
- b. The contents are appropriate in terms of exposing student-teachers to the various food preservative methods in enhancing production and maximizing profits.
- c. The contents provide abstract knowledge which is not adequate to encourage student-teachers to invest in a Catering establishment. In their opinion, many learning activities were not carried out practically to hone their skills and experiences in the subject. This was attributed to inadequate catering facilities (modern kitchen) and inadequate contact hours (one hour per week for three weeks) in the classroom.

Looking at the data presented above it can be said that a few of the contents (except the course objectives) of FVH 222 were judged as appropriate. Inadequate facilities appeared as a factor affecting the practical section of this course. Tutors and student-teachers have no access to a modern kitchen where a practical section could be carried out. However, they were satisfied with the appropriate contents and making good use of it in the classroom.

4.6.8.1 Teaching Methods used by BTE Tutors for teaching FVH 222 Contents

To judge the teaching methods used by the BTE tutors in teaching FVH 222, the BTE tutors were asked to tick mark teaching methods on a 5-point Likert scale. The collected data were subjected to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.155.

Table-4.155: Appropriateness & Relevance of Teaching Methods used in Teaching FVH 222

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	7 (70%)	-	-	-	-
2	Collaboration	-	-	-	5 (50%)	-
3	Demonstration	9 (90%)	-	-	-	-
4	Mentoring	-	-	4 (40%)	-	-
5	Role play	-	6 (60%)	-	-	-
6	Lecture	4 (40%)	-	-	-	-
7	Field trip	-	-	5 (50%)	-	-
8	Project	-	-	-	3 (30%)	-
9	Debate	-	-	-	-	6 (60%)
10	Brainstorming	-	8 (80%)	-	-	-

It can be seen from the table-4.155 that most frequently, the BTE tutors used teaching methods such as Demonstration (90 per cent), Discussion (70 per cent), and Lecture (40 per cent) to teach FVH 222. These are diverse teaching methods employed by the tutors to meet the diverse learning needs of student-teachers in the classroom. But it can be said that the lecture method is inappropriate for teaching a practical course like Catering and must not be encouraged.

4.6.8.2 Assessment of Learning Outcomes of FVH 222

The collected data from the tutors revealed that formative assessment and summative assessments were used to assess the learning outcomes of student-teacher. The assessment tools used for conducting formative assessment are written assignment, mid-semester test, and classroom attendance while for summative assessment, the end-of-semester examination was used. The details of the modes of assessments are presented in the next subsection.

4.6.8.2.1 Modality for Conducting Formative assessment of FVH 222

In discussion session with the tutors revealed that the formative assessment of student-teachers in FVH 222 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of one assignment (10 marks) comprises five unstructured questions (2 to be selected) based on the stated course objectives presented above. Also, the mid-semester assessment comprises 20 compulsory structured questions (10 marks) and 20 structured questions for the quiz (20 marks) as per the objectives. The details of the findings are presented in table-4.156.

Table-4.156: Modality for Conducting Internal Assessment of FVH 222

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 (2 to be selected)	1	10
2	Mid-semester test	Structured	20	1	10
3	Quiz	Structured	20	1	20

4.6.8.2.2 Modality for Conducting Summative Assessment of FVH 222

The tutors revealed that the summative assessment of student-teachers in FVH 222 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (2 to be answered) as per the given cue. The unstructured-questions (40 marks) and the structured-questions (20 marks) were

based on reheated dishes, convenience foods, food preservation, and exhibition, setting up and managing catering enterprises, teaching strategies, and planning for teaching Catering. The total marks obtained from this session is 60. The duration of this paper is one and a half hours because it is a one-credit hour paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student teachers' progress.

It can be said here that conceptual understanding of learning activities of FVH 222 seems to have dominated in the assessment processes. Assessment of practical skills (in the kitchen) was not found in both the formative assessment and summative assessment. But there is a practical section on the question paper during the end of semester examination which requires only paper and pen. Here, there was no involvement of physical manipulation of Catering equipment to produce outcomes.

4.6.8.3 Modification of FVH 222 Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics viz., frequencies, and percentages as presented in the table-4.157.

Table-4.157: Needed Suggestions for Modification of FVH 222

Sr. no	Suggestion	Frequency	Percentage
1	A modern kitchen should be built in all the BTE colleges for student-teachers to practice the skills learned	3	30
2	Arts room is needed in all the colleges to enable student-teachers plan and mount their exhibitions	1	10
3	The one-credit hour should be increased to two to pave way for more contact hours	4	40
4	Adequate funds should be allotted to the catering department for purchasing of foodstuffs and equipment for demonstration lessons	8	80

The suggestions presented in the table-4.157 show that a modern kitchen should be built in all the BTE colleges for student-teachers to practice the skills they learn (30 per cent), Arts room is needed in all the colleges to enable student-teachers plan and mount their exhibitions (10 per cent), a one-credit hour should be increased to two to pave way for more contact hours (40 per cent), and adequate funds should be allotted to the catering department for purchasing of foodstuffs and equipment for demonstration lessons (80 per cent).

Also, the researcher had a group discussion with final year student-teachers which emanated suggestions for modification of FVH 222 contents. The suggestions that emerged are presented as follows;

- a. Local dishes that student-teachers have prior knowledge of should be encouraged in this course to enhance the domestication of Ghanaian foods.
- b. For inadequate facilities in the colleges to experiment, student-teachers should be allowed to bring Catering equipment from home for this purpose.
- c. Content of the exhibition should be offloaded. This is because it is almost impossible for student-teachers to mount an exhibition in the BTE Colleges because of the lack of inadequate contact hours and art rooms.
- d. The catering tutors should invite resource persons to share their expertise with them particularly when setting up and managing Catering enterprises. The factors to consider, technical and financial support are critical.

It can be concluded that; 1) the course objectives were adequate and relevant as per the contents, 2) the contents were appropriate in terms of subject matter and pedagogy, 3) practice was not given equal weightage as student-teachers were not having access to practical activities to hone their skills and experiences in this course, 4) lecture teaching method was inappropriate for teaching this course, 5) modes of assessments were not appropriate as practical (in the kitchen) was not carried out in both the formative assessment and summative assessment, and 6) one credit hour was inappropriate to contain the contents.

4.6.9 Literature in English-Drama (FDC 229B)

Literature in English (Drama) is an elective course selected by interested student-teachers in the fourth-semester. It is designed for one credit hour. To judge the

appropriateness of the contents, needed data were collected from ten randomly selected English tutors who are Department Heads (one from each of the ten BTE colleges) and 40 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To identify and describe types of drama
- ii. To identify and describe the elements of drama
- iii. To appreciate drama
- iv. To teach drama at the basic level.

It can be seen from the table-4.158 that the objectives of 229B are not adequate to merit the given contents (50 per cent). Also, the course objectives are irrelevant in terms of encouraging further studies in Literature in English-Drama (70 per cent). This suggests that objectives have not addressed some essential concepts of the contents to prepare prospective teachers. The details of the analysis are presented in table-4.158.

Table-4.158: Appropriateness and Relevance of Content and Objectives of FDC 229B

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	4 (40%)	1 (10%)	5 (50%)
2	The course objectives offer further studies in Literature in English (Drama)	1 (10%)	2 (20%)	7 (70%)
3	Ability to differentiate between comedy-drama and tragedy drama	8 (80%)	3 (30%)	1 (10%)
4	Ability to appreciate drama piece using the elements of drama	4 (40%)	3 (30%)	3 (30%)
5	Equip with skills for teaching drama at the basic level	4 (40%)	5 (50%)	1 (10%)
6	Significance of one credit hour of the course	6 (60%)	1 (10%)	3 (30%)
7	Significance of the reading list	2 (20%)	3 (30%)	5 (50%)

It can be seen from Table-4.158 that the contents of FDC 229B are appropriate in terms of helping student-teachers to differentiate between comedy-drama and tragedy-drama. The differences between these types of drama were exposed to the student- teachers through video scenes. So, many of them were familiar with the features associated with each type. Also, the contents are appropriate for equipping student- teachers with the knowledge to appreciate drama piece by using the elements of drama (40 per cent), and one credit hour is appropriate to contain the contents (60 per cent). However, the tutors were uncertain as to whether the student-teachers were equipped with skills for teaching drama at the basic level (50 per cent). This is because the methodology of teaching drama is not incorporated to equip student- teachers with pedagogical skills. As part of the observation of two English language lessons taught by the alumni at the basic schools, a lesson on literature (drama) was not found. Although alumni demonstrated competencies in preparing and delivering the observed lessons in Literature in English, none of them prepared a lesson on drama. This suggests that several factors including less emphasis on literature, teachers' incompetency, and lack of literature books might have contributed to this phenomenon.

The researcher also collected judgments from final year student-teachers about the contents of FDC 229B as stated in chapter III of this study, through group discussion. Though the researcher was not having a checklist, it was ensured that the following themes (see appendix D) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. FDC 229B is one of the courses of elective Literature in English. Therefore, all the student-teachers in this class had the opportunity to study FDC 229B as one of the courses. They expressed interest in this course by participating actively in almost all its activities in the classroom.
- b. The drama contents are significant for enlightening student-teachers on social issues that are confronting the Ghanaian people. Student-teachers exemplified that one of the drama books titled 'changes' written by Ama Ata Aido was a

social commentary. The book highlights conflicting issues between the Ghanaian culture and Western ideas concerning marriage and family life.

- c. The methodology of teaching was not incorporated in the contents of drama to equip student-teachers with pedagogical skills.

Based on the data presented above, it can be said that FDC 229B introduces student-teachers to acquire basic knowledge in literature in English particularly in drama. They have gained interest and knowledge in literature through reading and analyzing drama books. The theme of some of the books includes social commentary. The contents have been properly arranged for student-teachers to understand and to appreciate drama. But the methodology of teaching drama was not incorporated to equip student-teachers with pedagogical skills. This is likely to affect their teaching competencies in literature at the basic level.

4.6.9.1 Teaching Methods used by BTE Tutors for teaching FDC 229B Contents

The BTE tutors were asked to tickmark to judge teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most frequently used by BTE tutors in teaching FDC 229B include Brainstorming (100 per cent), Grammar Translation (100 per cent), Storytelling (80 per cent), and Discussion (70 per cent). These teaching methods were found when we were presenting the contents of the English Language (see table-24 above). This suggests that diverse teaching methods are being employed by tutors in achieving instructional objectives.

4.6.9.2 Assessment of learning outcomes of FDC 229B

The modes of assessment of learning outcomes in FDC 229B are formative and summative. For formative assessment, tools used include written assignment, mid-semester test, and classroom attendance while the end-of-semester examination is used for conducting the summative assessment. The details of the modes of assessments are presented in the next subsection.

4.6.9.2.1 Modality for Conducting Formative assessment of FDC 229B

In discussion sessions with tutors, it was revealed that the formative assessment of student-teachers in FDC 229B was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of one assignment based on the element of drama related to the literature books (drama).

Five unstructured questions were set and out of those two to be answered for 10 marks. Also, the mid-semester assessment comprises 20 compulsory structured questions and one unstructured questions based on extracts from the selected poems and concord for 20 marks. And they must complete 21 mandatory classroom attendance for 10 marks. The details of the findings are presented in table-4.159.

Table-4.159: Modality for Conducting Internal Assessment of FDC 229B

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5 (2 to be answered)	1	10
2	Mid-semester test	Structures	20	1	20
3	Classroom attendance	N/A	N/A	21 days	10

4.6.9.2.2 Modality for Conducting Summative Assessment of FDC 229B

The tutors revealed that the summative assessment of student-teachers in FDC 229B was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (2 to be answered). Both the unstructured questions (40 marks) and the structured questions (20 marks) were based on selected drama books. The total marks obtained from this session is 60. The duration of this paper is one and a half hours because it is a one-credit hour paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student-teachers' progress.

4.6.9.3 Modification of FDC 229B Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics via frequencies as presented in the table-4.160.

Table-4.160: Needed Suggestions Modification of FDC 229B

Sr. no	Suggestion	Frequency	Percentage
1	Stage performance should be incorporated in the formative assessment to determine the aesthetic skills of student-teachers	1	10
2	The one-credit hour should be increased to two to pave way for more contact hours	3	30
3	Adequate funds should be allotted to the English department for purchasing costumes and stage decoration during the performance	3	30
4	The methodology of teaching drama at the basic school should be incorporated to equip student-teachers with pedagogical skills	5	50

Suggestions presented in able-4.160 show that stage performance should be incorporated in the formative assessment to determine the aesthetic skills of student-teachers (10 per cent), a one-credit hour should be increased to two to pave way for more contact hours (30 per cent), adequate funds should be allotted to the English department for purchasing costumes and stage decoration during the performance (30 per cent), and methodology of teaching drama at the basic school should be incorporated to equip student-teachers with pedagogical skills (50 per cent).

Also, the researcher had a group discussion with final year student-teachers which emanated suggestions for modification of FDC 229B. The suggestions that emerged are presented as follows;

- a. Supplementary reading material (commentary books) about the selected drama should be provided to student-teacher for understanding.
- b. When selecting the drama books for this course, local writers and foreign writers should have equal weightage. But most of the tutors rather spend time discussing more of the local writers while ignoring the foreign writers. This is not proper for the holistic development of the student-teachers who are aspiring to pursue literature in the future.

- c. Stage performance should be regularized in the colleges (at least one stage drama in every semester) so that student-teachers would have the opportunity to develop their skills.

It can be concluded that; 1) the objectives were inadequate and irrelevant as per the contents, 2) the contents are appropriate in terms of subject matter as student-teachers could appreciate drama piece by using the elements of drama, 3) Pedagogy was not given equal weightage as the methodology of teaching drama was not incorporated, 4) teaching methods such as Brainstorming, Grammar Translation, Storytelling, and Discussion, were appropriate for preparing student teachers, 5) reading list was not appropriate in encouraging extensive reading, and 6) modes of assessments were appropriate for determining learning outcomes of student-teachers.

4.6.10 Agriculture Science (AGN 228B)

Agriculture Science is an elective course selected by interested student-teachers as part of the Integrated Science in the fourth-semester. It is designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Integrated Science tutors who are Department Heads (one from each of the ten BTE colleges) and 40 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To identify the factors of agricultural production
- ii. To identify disease conditions in farm animals
- iii. To demonstrate the methods of preventing and controlling diseases in farm animals
- iv. To discuss the effect of soil erosion on agriculture
- v. To control soil erosion in their locality
- vi. To discuss marketing agents in agriculture
- vii. To explain food safety and quality assurance issues in Agricultural Chains
- viii. To identify the agencies in food safety and quality assurance

It can be seen in the table-4.160 that the objectives of AGN 228B are adequate in fulfillment of the contents (50 per cent). Also, the objectives are relevant in terms of addressing essential concepts of Agriculture Science to prepare effective teachers. The details of the analysis are presented in table-4.161.

Table-4.161: Appropriateness and Relevance of Contents and Objectives of AGN 228B

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	5 (50%)	3 (30%)	2 (20%)
2	The course objectives provide student-teachers with conceptual understanding capable of teaching agriculture science in schools	7 (70%)	2 (20%)	1 (10%)
3	Influence of factors of Agriculture on production in Ghana	8 (80%)	2 (20%)	-
4	Familiar with the factors causing the incidence of diseases in animals	7 (70%)	2 (20%)	1 (10%)
5	Discuss treatment and preventive measures of disease control in farm animals	7 (70%)	3 (30%)	-
6	Describe the methods of checking soil erosion	5 (50%)	3 (30%)	2 (20%)
7	Discuss the problems of marketing agricultural produce in Ghana	7 (70%)	2 (20%)	1 (10%)
8	Significance of various types of agricultural chains	6 (60%)	3 (30%)	1 (10%)
9	Significance of various agencies in food safety and quality assurance	5 (50%)	3 (30%)	2 (20%)
10	Significance of one credit hours to the course	3 (30%)	2 (20%)	5 (50%)
11	Significance of the reading list	2 (20%)	1 (10%)	7 (70%)

It can be seen from table-4.161 that the contents of AGN 228B are appropriate in terms of introducing student-teacher to how factors of Agriculture influence

production in Ghana (80 per cent). This is because provision has been made to examine the characteristics and values of some factors such as land, labor, and capital concerning Agricultural production. Also, the contents are appropriate as student- teacher are exposed to the factors causing the incidence of diseases in animals, instigate treatment, and preventive measures of disease control in farm animals (70 per cent). The tutors further noted that more about the roles of pests and parasites, injury, chemicals, nutrition, hereditary and hormonal, and behavior of animals in causing diseases of farm animals were appropriately covered. Therefore, student- teachers can derive some preventive methods viz, environmental, chemical mechanical for controlling diseases of farm animals to achieve optimum production. Other phenomena that show that the contents are appropriate for preparing student- teachers include; provision for student- teachers to study the problems of marketing of Agricultural produce in Ghana (70 per cent), and an introduction to the various types of Agricultural chains (60 per cent). Data were further collected by observation of two lessons taught by alumni at the basic schools. It was found that appropriate subject matter and instructional strategies were used to achieve instructional objectives (see the details in appendix A-1 & A-2). This shows the extent to which the alumni are equipped with subject knowledge capable of delivering the contents of Agriculture Science in the classroom.

The researcher also collected data from final year student-teachers about the contents of AGN 228B as stated in chapter III of this study, through group discussion. Though the researcher was not having a checklist, it was ensured that the following themes (see Appendix C4) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. Student-teachers expressed interest in this course by participating actively in almost all its activities in the classroom.
- b. The contents address issues in a critical aspect of Agriculture Science viz., care for farm animals, soil, marketing, and disease control. This equips student-teachers with appropriate skills to increase production and understanding of commercial principles in the world of Agriculture.

- c. Almost all the learning activities were carried out in the classroom which is not proper for the pedagogical development of student-teachers. For instance, methods of disease control should have been demonstrated on the farm by embarking on a trip to observe the various types of soil erosion and assess the destruction caused by soil erosion. This would provide first-hand experience to student-teachers.

4.6.10.1 Teaching Methods used by BTE Tutors for teaching AGN 228B

The BTE tutors were asked to tickmark to judge the teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most frequently used by BTE tutors in teaching AGN 228B include Brainstorming (80 per cent), Demonstration (70 per cent), and Project (50 per cent). These teaching methods were found in our previous discussion of Agricultural Science contents (see table-40). Noting the practical activities in Agricultural Science, it can be said that these teaching methods are adequate for drawing a balance between theoretical learning and practical learning. Also, in a discussion session with the tutors, it was revealed that the Demonstration lessons and Projects were not carried out on the field because of a lack of college farms. But most of the activities were demonstrated on the teachers' table. This is not appropriate and must be relooked.

4.6.10.2 Assessment of learning outcomes in AGN 228B

Modes of assessments of learning outcomes of student-teachers in AGN 228B is comprising formative assessment and summative assessment. For formative assessment, tools used include written assignment, mid-semester test, and classroom attendance while the end-of-semester examination is used for conducting the summative assessment. As stated in the previous discussions of the contents of Agriculture Science (see table-4.27), the framing of questions was based on the stated objectives. But it was observed that the types of questions framed were based on the principle of knowledge and understanding. This is not appropriate as student-teachers would be compelled to learn by rote memorization and must not be encouraged.

4.6.10.3 Modification of AGN 228B Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary. The collected data from tutors were

analyzed by using descriptive statistics viz., frequencies, and percentages as presented in the table-4.162.

Table-4.162: Needed Suggestions for Modification of AGN 228B

Sr. no	Suggestion	Frequency	Percentage
1	The one-credit hour should be increased to two to create more contact hours to complete the course outline in a semester	5	50
2	BTE colleges should collaborate with the local Agriculture Extension Department for the exchange of resources and expertise	3	30

Suggestions presented in table-4.162 show one-credit hour should be increased to two to create more contact hours to complete course outline in a semester (50 per cent), and BTE colleges should collaborate with local Agriculture Extension Department for exchange of resources and expertise (30 per cent).

Also, the researcher had a group discussion with final year student-teachers which emanated suggestions for modification of AGN 228B. The suggestions that emerged are presented as follows;

- a. Student-teachers should be allowed to undertake field trips regularly (at least once every semester) to observe the various types of soil erosion and assess the destruction caused by soil erosion.
- b. There is a need to construct college farms to provide student-teachers with practical skills in farming to balance theoretical knowledge acquired in the classroom
- c. It is essential to incorporate the perspective of fish farming in AGN 228B as it is taught at the basic schools.

It can be concluded that; 1) the objectives were adequate and relevant as per the contents, 2) the contents were appropriate for equipping prospective teachers with subject knowledge to teach in the classroom. For instance, the contents about diseases in animals, methods of checking soil erosion, and marketing of agricultural produce were essential, 3) teaching methods viz., Brainstorming, Demonstration and Project

were appropriate for preparing student-teachers, 5) Assessment procedures were inappropriate as fieldwork was not emphasized due to lack of farms in the BTE colleges, 6) one credit hour was inappropriate to contain the contents, and 7) reading list was inappropriate to encourage extensive reading.

4.6.11 Ghanaian Language and Culture (FDC 223)

Ghanaian Language and Culture is an elective course selected by interested student-teachers in the fourth-semester. It is designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Ghanaian Language tutors who are Department Heads (one from each of the ten BTE colleges) and 40 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To write lesson plans based on the selected topics from the basic school syllabus
- ii. To use teaching techniques like dramatization, questioning, role-playing, etc.
- iii. To write the steps for teaching any topics in the basic school syllabus

It can be seen in the table-4.163 that the objectives of FDC 223 are adequate to merit the selected contents (50 per cent). Also, the objectives are relevant for incorporating essential components that have introduced student-teachers to Ghanaian language syllabus and methodology to be effective at the basic schools (80 per cent). The details of the analysis are presented in table-4.163.

**Table-4.163: Appropriateness and Relevance of Contents and Objectives of
FDC 223**

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	5 (50%)	3 (30%)	2 (20%)
2	The course objectives address Ghanaian language syllabus and methodology to be effective at the basic schools	8 (80%)	2 (20%)	-
3	Ability to write lesson plans based on the selected topics from the basic school syllabus	8 (80%)	3 (30%)	1 (10%)
4	Ability to use appropriate instructional strategies for achieving targets	4 (40%)	5 (50%)	1 (10%)
5	Outline the steps for teaching any topic of the Ghanaian languages in the basic school syllabus	6 (60%)	3 (30%)	1 (10%)
6	Significance of one credit hour of the course	6 (60%)	1 (10%)	3 (30%)
7	Significance of the reading list	5 (50%)	1 (10%)	4 (40%)

Concerning the contents of FDC 223, it can be seen from table-4.163 that the course objectives are appropriate in terms of introducing student-teachers to write lesson plans based on the selected topics from the basic school syllabus (80 per cent). According to the tutors, essential components incorporated include stating a topic, writing of objectives, writing Relevance Previous Knowledge, stating Teaching Learning Material, writing the core points, evaluation, and remarks. Also, the contents are appropriate in terms of exposing student-teachers to steps for teaching any topic of the Ghana languages in the basic school syllabus were explicitly outlined in the contents (60 per cent). Their conviction indicates that almost all the student-teachers were capable of achieving instructional objectives related to oral skills, writing skills, and reading skills. Further data were collected from observation of two lessons taught by alumni at the basic schools. It was revealed that lesson notes were properly prepared and appropriate instructional strategies used to achieve instructional

objectives (see the details in appendix A-1 & A-2). This shows the extent to which the alumni are equipped with the methodology of teaching with the primary and J.H.S. syllabi.

The researcher also collected data from final year student-teachers about the contents of FDC 223 as stated in chapter III of this study, through group discussion. Though the researcher was not having a checklist, it was ensured that the following themes (see appendix L) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. Almost all of the student-teachers expressed interest in the learning activities and participated actively in the classroom discussions.
- b. All the eleven major Ghanaian languages studied in the Ghanaian schools have been appropriately incorporated in FDC 223. But Region-wise representation of student-teachers shows that a larger proportion of the student-teachers are studying Ashanti-Twi. This is because it is widely spoken by about 45 per cent of the Ghanaian people.
- c. Student-teachers have an opportunity to learn the methodology of teaching the primary and J.H.S. syllabi. Much was learned about lesson plans based on the selected topics from the basic school syllabus and using teaching techniques like Dramatization, Questioning, and Role-Playing to achieve targets.
- d. The language of the Ghanaian language and Culture syllabi is in English which needs to be translated into the various Ghanaian languages by the subject tutors. This is likely to distort vital information if not translated properly.

4.6.11.1 Teaching Methods used by BTE Tutors for teaching FDC 223 Contents

The BTE tutors were asked to tickmark to judge teaching methods on a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.164.

Table-4.164: Appropriateness and Relevance of Teaching Methods used in Teaching FDC 223

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	7 (70%)	-	-	-	-
2	Collaboration	-	-	-	6 (60%)	-
3	Demonstration	9 (90%)	-	-	-	-
4	Mentoring	-	-	-	-	5 (50%)
5	Role play	6 (60%)	-	-	-	-
6	Lecture	-	-	4 (40%)	-	-
7	Project	-	-	-	5 (50%)	-
8	Debate	-	-	-	-	8 (80%)
9	Brainstorming	-	-	-	-	-
10	Grammar	-	-	-	3 (30%)	-
11	Translation Story telling	-	8 (80%)	-	-	-

It can be seen from the table-4.164 that most frequently, the BTE tutors used Demonstration (90 per cent), Discussion (70 per cent), and Role-Play (60 per cent) and frequently used Storytelling (80 per cent) to teach the course in the classroom. It can be said that the teaching methods used here are appropriate as based on the student-centered approach which allows active participation of student-teachers in learning activities for attainment of goals.

4.6.11.2 Assessment of learning outcomes of FDC 223

To assess the learning outcomes of student-teachers, two modes of assessments viz., formative and summative are used. For formative assessment, tools used include written assignment, mid-semester test, and classroom attendance while the end-of- semester examination is used for conducting the summative assessment. The details are presented in the next subsection.

4.6.11.2.1 Modality for Conducting Formative assessment of FDC 223

It was revealed that the formative assessment of student-teachers in FDC 223 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of one assignment based on areas such as lesson plan and methods of teaching in the basic schools. Three unstructured

questions (2 to be answered) were set for 10 marks. Also, the mid-semester assessment comprises 20 compulsory structured questions and one unstructured questions based on the areas above for 20 marks. And they must complete 21 mandatory classroom attendance (recorded daily in a class register) for 10 marks. The details of the findings are presented in table-4.165.

Table-4.165: Modality for Conducting Internal Assessment of FDC 213

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	3 (2 to be answered)	1	10
2	Mid-semester test	Structured	20	1	20
3	Classroom attendance	N/A	N/A	21 days	10

4.6.11.2.2 Modality for Conducting Summative Assessment of FDC 213

The tutors revealed in discussion sessions that the summative assessment of student-teachers in FDC 223 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (2 to be answered). Whilst the unstructured questions (40 marks) were based on the preparation of the lesson plan as per the given cue, the structured-questions (20 marks) were based on the methods of teaching in the basic schools, the syllabus, scheme of work, and record of work. The total marks obtained from this session is 60. The duration of this paper is one and a half hours because it is a one-credit hour paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student-teachers' progress.

4.6.11.3 Modification of FDC 223 Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics via frequencies as presented in the table-4.166.

Table-4.166: Needed Suggestions for Modification of FDC 223

Sr. no	Suggestion	Frequency	Percentage
1	Incorporate perspective of the Two-Way Immersion Model of instruction (bilingual teaching) to promote high academic attainment	1	10
2	Language-wise instructional strategies should be incorporated to mitigate the learning needs of student-teachers in their various choice of Ghanaian languages	3	30
3	Incorporate strategies of designing instructional material for teaching language	1	10

The suggestions presented in table-4.166 show that there is a need to incorporate the perspective of the Two-Way Immersion Model of instruction (bilingual teaching) to promote high academic attainment (10 per cent), language-wise instructional strategies should be incorporated to mitigate the learning needs of student-teachers in their various choice of Ghanaian languages (30 per cent), and there is a need to incorporate strategies of designing instructional material for teaching language (10 percent).

Also, the researcher had a group discussion with final year student-teachers which emanated suggestions for modification of FDC 223. The suggestions that emerged are presented as follows;

- a. The course outline and all learning material associate with this course should be written in the various Ghanaian languages in making instructions real for better understanding.
- b. The reading list of FDC 223 should be modified by adding adequate reading materials to encourage extensive reading.

It can be concluded that; 1) the objectives were adequate and relevant for incorporating essential components like syllabus study and methodology of teaching,

2) the contents were appropriate in terms of preparing prospective teachers cable of writing effective lesson plan and using appropriate instructional strategies to achieve targets, 3) teaching methods viz., Demonstration, Discussion, Role-Play, and

Storytelling were appropriate for achieving instructional objectives, and 4) the modes of assessments were appropriate for determining the learning outcomes of the student-teachers, and 5) the one credit hour was appropriate as per the contents.

Here, it can be said that the courses in the fourth semester are an amalgamation of Educational and Contemporary Studies, Curriculum and Pedagogical Studies and Value Added courses. Here, five compulsory courses were selected from Educational and Contemporary Studies and Curriculum and Pedagogical Studies while six (one to be selected) optional courses were selected from Value Added courses. How the objectives and contents of each of the courses are appropriate and relevant for preparing effective teachers was evaluated. Almost all the contents in this semester address methodology of teaching at the basic school.

4.7 Fifth-Semester

The fifth-semester courses in the BTE curriculum comprise six mandatory subjects for a total of 11 credit hours. Here, in this subsection relevance and appropriateness of the course objectives, contents, methods of teaching, and modes of assessments would be evaluated. The courses and their respective course codes and credit hours are presented in table-4.167.

Table-4.167: Course Title, Course Code & Credit Hours of Fifth-Semesters Courses

Sr. No	Course Code	Course Title	Credit Hours
1	FDC 311	English Language Studies	2
2	FDC 312	Statistics and Probability	2
3	EPS 311	Introduction to Guidance and Counseling	2
4	EPS 312A	Assessment in Basic School	1
5	EPS 312B	Research Methods in Education	1
6	EPS 313	On-Campus Teaching Practice	3
Total			11

Source: Institute of Education, UCC (2014)

4.7.1 English Language Studies (FDC 311)

English Language Studies is a mandatory course offered by all the student-teachers in the fifth-semester. It is designed for two credit hours. To judge the appropriateness of the contents, needed data were collected from ten randomly selected English tutors

who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To discuss types of sentences
- ii. To discuss elements of language
- iii. To write articles
- iv. To write an argumentative essay
- v. To discuss the difference between direct and indirect speech
- vi. To analyze errors in sentences

It can be seen from table-4.168 that the objectives of FDC 311 are adequate in determining the standard of the contents (80 per cent). Also, the objectives are relevant in terms of encouraging further studies in grammar, comprehension, and writing (60 per cent). The details of the analysis are presented in table-4.168.

Table-4.168: Appropriateness and Relevance of Contents and Objectives of FDC 311

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	8 (80%)	2 (20%)	-
2	The course objectives offer further studies in grammar, comprehension, and writing	6 (60%)	3 (30%)	1 (10%)
3	Significance of Rank scale and Rank shift	5 (50%)	4 (40%)	1 (10%)
4	Perspective on argumentative essays	7 (70%)	1 (10%)	2 (20%)
5	Perspective on writing of articles	8 (80%)	1 (10%)	1 (10%)
6	Perspective on error analysis in a passages	5 (50%)	3 (30%)	2 (20%)
7	Emphasis on direct and indirect speech	6 (60%)	3 (30%)	1 (10%)
8	Significance of two credit hours of the course	7 (70%)	3 (30%)	-
9	Significance of the reading list	5 (50%)	1 (10%)	4 (40%)

It can be seen from table-4.168 that the contents of FDC 311 are appropriate in terms of preparing prospective teachers to develop their writing skills. The tutors explained that efforts were made to let the student-teachers recognize the differences between the article and rejoinder. As part of the efforts, they were introduced to the features of articles and rejoinders. And several individuals and group practice writing were carried out in the classroom based on these features. Also, it was revealed that the contents are appropriate in terms of preparing prospective teachers in argumentative essays (70 per cent), direct and indirect speech (60 per cent), Rank scale and Rank shift (50 per cent), and error analysis (50 per cent). All these data suggest that the prospective teachers have the opportunity to offer further studies in grammar, comprehension, and writing to be effective in the classroom. To further collect data about the appropriateness of the FDC 311 contents, two English Language lessons taught by alumni were observed. It was found that most of them were equipped with subject matter capable of achieving instructional objectives (see the details in the appendix A-1).

The researcher also collected data from final year student-teachers about the contents of FDC 311 as stated in chapter III of this study, through group discussion. Though the researcher was not having a checklist, it was ensured that the following themes (see appendix D) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. The contents of FDC 311 are appropriate for developing writing skills, and critical thinking skills for generating solutions to problems.
- b. The contents are appropriate for preparing student-teachers in different aspects of the English language viz., grammar, communication, and writing. In their opinion, most of them are capable of expressing their views on issues related to the writing of articles, giving speeches, and mounting on debate platform.
- c. Writing competition and debating competition is not regularly practiced in colleges. As a result, the pace of developing fluency skills and accuracy skills in most of the student-teachers is slow.

Based on the data presented above, it can be said that the contents of FDC 311 are posed for equipping student-teachers with the various language skills capable of

performing related language functions through comprehension, speech, and writing. It is evident from the data that student-teachers were engaged in activities in building confidence and level of proficiency in communication (written and oral) which is crucial for making personal analysis and reflecting on issues in the classroom.

4.7.1.1 Teaching Methods used by BTE Tutors for teaching FDC 311 Contents

The BTE tutors were asked to tick mark teaching methods on a 5-point Likert scale. The data show that the teaching methods that were most frequently used by BTE tutors in teaching FDC 311 include Brainstorming (100 per cent), Grammar Translation (100 per cent), Storytelling (80 per cent), and Discussion (70 per cent). These are the same results that were found in our previous presentation (see table-4.12 above). These teaching methods are appropriate to encourage interaction among student-teachers to achieve targets.

4.7.1.2 Assessment of Learning Outcomes of FDC 311

The collected data from the tutors revealed that two modes of assessment viz., formative and summative are used to determine learning outcomes of student- teachers. For formative assessment, tools used include written assignment, mid- semester test, and classroom attendance while the end-of-semester examination is used for conducting the summative assessment. The details are presented in the next subsection.

4.7.1.2.1 Modality for Conducting Formative assessment of FDC 311

Data collected from the tutors revealed that the formative assessment of student-teachers in FDC 311 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of one assignment based on comprehension and writing. For comprehension (5 questions for 5 marks), a short passage of about 100 words was set to test conceptual understanding, interpretation, and analysis whereas two essay questions (one to be answered for 5 marks) with each having five questions for testing accuracy in opinion. Also, the mid-semester assessment comprises 20 compulsory structured questions on grammar (concord, tenses, reported speech, determiners, and prepositions) for 20 marks. And every student-teachers must complete 21 mandatory classroom attendance (recorded daily in a class register) for 10 marks. The details of the findings are presented in table-4.169.

Table-4.169: Modality for Conducting Internal Assessment of FDC 311

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	10	1	10
2	Mid-semester test	Structured	20	1	20
3	Classroom attendance	N/A	N/A	21 days	10

4.7.1.2.2 Modality for Conducting Summative Assessment of FDC 311

The tutors revealed that the summative assessment of student-teachers in FDC 311 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (2 to be answered). Whilst the unstructured questions (40 marks) were based on grammar (concord, tenses, reported speech, determiners, and prepositions), the structured questions (20 marks) were based on a comprehension passage of about 100 words for testing conceptual understanding, interpretation, and analysis. The total marks obtained from this session is 60. The duration of this paper is two hours because it is two credit hours of paper. The marks obtained by each student-teacher in formative assessment are added to the marks obtained in the summative assessment to determine the student teachers' progress.

4.7.1.3 Modification of FDC 311 Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics viz., frequencies, and percentages as presented in the table-4.170.

Table-4.170: Needed Suggestions for Modification of FDC 311

Sr. no	Suggestion	Frequency	Percentage
1	A mixture of different types of questions is critical for providing the true reflection of learning outcomes and must be employed to set structured questions for assessment	1	10
2	The course outline is given by the Institute of Education, UCC must be followed strictly to achieve the target	1	10
3	The mandatory practice of speaking and writing in the college must be encouraged to develop accuracy and fluency skills	2	20

Suggestions presented in table-4.170 show that a mixture of different types of questions is critical for providing the true reflection of learning outcomes and must be employed to set structured questions for assessment (10 per cent), the course outline is given by the Institute of Education, UCC must be followed strictly to achieve the target (10 per cent), and mandatory practice of speaking and writing in the college must be encouraged to develop accuracy and fluency skills (20 per cent).

Also, the researcher had a group discussion with final year student-teachers which emanated suggestions for modification of FDC 223. The suggestions that emerged are presented as follows;

- a. Debating clubs should be allowed in the colleges to provide an open platform for student-teachers to develop their communication and argumentation skills.
- b. Incorporate the methodology of teaching articles and rejoinders to equipped student-teachers with further knowledge and skills to be effective in the classroom.
- c. Adequate reading material should be made available in the colleges' libraries to encourage extensive reading.

It can be concluded that; 1) the objectives were adequate and relevant in terms of encouraging further studies in grammar, comprehension, and writing, 2) the contents were appropriate in terms of subject matter and pedagogy. This is because the contents engage student-teachers in critical learning activities involving different

aspects of the English language viz., grammar, communication and writing, 3) teaching methods viz., Brainstorming, Grammar Translation, Storytelling, and Discussion were appropriate for achieving targets, 4) Modes of assessments were appropriate for determining learning outcomes of student-teachers, and 5) two credit hours were appropriate as per the contents.

4.7.2 Statistics and Probability (FDC 312)

Statistics and Probability is a mandatory course offered by all the student-teachers in the fifth-semester. It is designed for two credit hours. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Mathematics tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To demonstrate a sound knowledge of the topics and apply them in real-life situations.
- ii. To collect, organize, represent, analyze, and interpret data.
- iii. To pose Mathematics tasks in the content studied and solve them using appropriate procedures and tools including ICT (calculators, spreadsheets, etc.)

It can be seen from table-4.170 that the objectives of FDC 312 are not adequate to determine the standard of the selected contents (50 per cent). In this regard, most of the tutors are uncertain as to whether the contents are relevant for providing student-teachers with an in-depth knowledge of Statistics and Probability (70 per cent). Why the tutors felt the course objectives were feasible and relevant for preparing student-teachers. The details of the analysis are presented in table-4.170.

**Table-4.171: Appropriateness and Relevance of Contents and Objectives of
FDC 312**

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	3 (30%)	2 (20%)	5 (50%)
2	The course objectives provide student-teachers with an in-depth knowledge of Statistics and Probability	7 (70%)	2 (20%)	1 (10%)
3	Gain knowledge in methods of collecting and representing data	5 (50%)	4 (40%)	1 (10%)
4	Perspective on measures of central tendency	6 (60%)	2 (20%)	2 (20%)
5	Perspective on measures of dispersion	4 (40%)	5 (50%)	1 (10%)
6	Significance of probability related to using experiments to obtain outcomes and events	3 (30%)	1 (10%)	6 (60%)
7	Significance of two credit hours of the course	7 (70%)	1 (10%)	2 (20%)
8	Significance of the reading list	5 (50%)	1 (10%)	4 (40%)

It can be seen from table-4.171 that the contents of FDC 312 are appropriate for introducing student-teachers to measures of central tendency (60 per cent). The feat of this phenomenon is due to other factors such as exposure to the concept of Mode, Median, Mean, and using Excel to compute Mean, and Median. Also, the contents are appropriate for exposing student-teachers to methods of collecting and representing data. The tutors explained that student-teachers were introduced to different types of data (qualitative and quantitative), the methods of collecting the data (interview, questionnaire, observation, focus group discussion, and documents analysis) as well as methods of representing collected data (line graphs, bar graphs, pie chart, stem and leaf plot, histograms and cumulative curves) by using Excel. It can be said that these factors have contributed to the extent to which the student-teachers have mastered data collection and representation. However, it was revealed that the contents were

inappropriate for equipping student-teacher with knowledge of probability related to using experiments to obtain outcomes and events (60 per cent). According to the tutors, the contents do not emphasize the exhaustive practice of probability of events. Rather, simple experiments were encouraged to obtain outcomes and events at this level. Therefore, the perspective of most of the learning activities viz., relative frequency, mutually exclusive events, independent events, combined events, tree diagrams, and conditional probability were not given the due weightage and must be relooked. Also, some tutors (50 per cent) were uncertain about the effectiveness of measures of dispersion. While interacting with the tutors, it was found that inadequate contents were covered about range, inter-quartile range, semi-inter-quartile range, mean deviation, and the standard deviation. The inadequate component of the contents means that the student-teachers did not have much to learn. Therefore, the appropriateness of this component of the contents is doubted and must be reconsidered.

The researcher also collected judgments from final year student-teachers about the contents of FDC 312 as stated in chapter III of this study, through group discussion. Though the researcher was not having a checklist, it was ensured that the following themes (see appendix B) were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. The contents of FDC 312 are linked to basic school Mathematics.
- b. The contents are useful for analyzing students' assessment scores in the classroom, data collection, and analysis stage of dissertation works.
- c. Topics, such as 'calculator' and 'spreadsheet', were not appropriate as not useful at the basic schools.
- d. Content on the methodology of teaching statistics and probability was not incorporated to equip student-teachers with pedagogical skills.

4.7.2.1 Teaching Methods used by BTE Tutors for teaching FDC 312 Contents

The Mathematics tutors were asked to tick mark teaching methods on a 5-point Likert scale. The results show that the teaching methods that were most frequently used by BTE tutors in the teaching of FDC 312 include Discussion (100 per cent),

Demonstration (100 per cent), Collaboration (70 per cent), and Project (80 per cent). The same teaching methods were found in our previous discussion (see table-28). These teaching methods are appropriate to motivate student-teachers to actively participate in teaching and learning activities in the classroom.

4.7.2.2 Assessment of Learning Outcomes of FDC 312

Assessment of learning outcomes of every student-teacher was mandatory in FDC 312. The collected data from the tutors revealed that both formative assessment and summative assessments were used in this course. The assessment tools used for conducting internal assessment are written assignment, mid-semester test, and classroom attendance whereas end-of-semester examination was used for conducting the summative assessment.

4.7.2.2.1 Modality for Conducting Formative assessment of FDC 312

Further interaction with the tutors revealed that the formative assessment of student-teachers in FDC 311 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of one assignment based on five unstructured questions in finding Mean, Mean, and Median from ungrouped and grouped distribution from a case study (10 marks). Also, the mid-semester assessment comprises 20 compulsory structured questions (20 marks) based on collection, organization, representation, analysis, and interpretation of data, relative frequency, standard deviation, and the probability of simple events. And they must complete 21 mandatory classroom attendance (recorded daily in a class register) for 10 marks. The details of the findings are presented in table-4.172.

Table-4.172: Modality for Conducting Internal Assessment of FDC 312

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	5	1	10
2	Mid-semester test	Structured	20	1	20
3	Classroom attendance	N/A	N/A	21 days	10

4.7.2.2.2 Modality for Conducting Summative Assessment of FDC 312

The tutors revealed that the summative assessment of student-teachers in FDC 312 was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (3 to be answered). Both the unstructured questions (40 marks) and the structured questions (20 marks) were based on collection, organization, representation, analysis, and interpretation of data, relative frequency, standard deviation, and the probability of simple events. The total marks obtained from this session is 60. The duration of this paper is two hours because it is two credit hours of paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment to determine the student-teachers' progress.

4.7.2.3 Modification of FDC 312 Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics via frequencies as presented in the table-4.173.

Table-4.173: Needed Suggestions for Modification of FDC 312 Contents

Sr. no	Suggestion	Frequency	Percentage
1	The teaching of probability should reflect real-life problem-solving process as per the needs of the student-teachers	3	30
2	Student-teachers must be introduced to all categories of data, viz., categorical, discrete, numerical, and continuous to gain versatile knowledge in solving statistical problems	1	10
3	The four weeks of instruction in the colleges must be increased to six for adequate preparation of student-teachers	1	10
4	No suggestion	4	40

Suggestions presented in table-4.173 show that teaching of probability should reflect real-life problem-solving process as per the needs of the student-teachers (30 per cent), student-teachers must be introduced to all categories of data, viz., categorical, discrete, numerical, and continuous to gain versatile knowledge in solving statistical problems (10 per cent), four weeks of instruction in the colleges must be increased to six for adequate preparation of student-teachers, and no suggestion was provided by some tutors (40 per cent).

Also, the researcher had a group discussion with final-year student-teachers which emanated suggestions for modification of FDC 312. The suggestions that emerged are presented as follows;

- a. Mathematics tutors should prepare themselves adequately before going to class to clarify the differences between statistics and probability
- b. Many Mathematics tutors are not capable of using excel for analyzing data. Such tutors need to collaborate with ICT tutors for teaching statistics.
- c. Mathematics tutors need to undertake professional development courses in statistics and probability to be effective in the classroom.

It can be concluded that 1) the course objectives were adequate and relevant as per the contents, 2) the contents were appropriate for equipping student-teachers with knowledge and skills for the collection, organization, representation, analysis, and interpretation of data, 3) the teaching methods viz., Discussion, Demonstration, Collaboration, and Project were appropriate for transacting this course, and 4) the modes of assessments were appropriate for determining learning outcomes of student-teachers, the two credit hours were appropriate as per the contents.

4.7.3 Introduction to Guidance and Counselling (EPS 311)

Introduction to Guidance and Counselling is a mandatory course offered by all the student-teachers in the fifth-semester. It is designed for two credit hours. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Education tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the

course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To explain basic concepts in Guidance and Counselling.
- ii. To describe the guidance services provided by the school and explain their functions.
- iii. To describe the approaches used in Guidance and Counselling.
- iv. To discuss the concept and use of communication in the counseling process, and some skills that ensure effective communication.

It can be seen from table-4.174 that the course objectives of EPS 311 are adequate to determine the standard of selected contents (50 per cent). Also, the objectives are relevant for providing the basis and principles of Guidance and Counselling and describing what would be taught to prospective teachers (70 per cent). The details of the analysis are presented in table-4.174.

Table-4.174: Appropriateness and Relevance of Contents and Objectives of EPS 311

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	5 (50%)	4 (40%)	1 (10%)
2	The course objectives provide a fundamental basis and principles of guidance and counseling	7 (70%)	2 (20%)	1 (10%)
3	Familiar with practices and services provided by the school in delivering guidance services to students	6 (60%)	3 (30%)	1 (10%)
4	Acquaint with the approaches in guidance and counseling	5 (50%)	4 (40%)	1 (10%)
5	Acquaint with the stages of counselling	6 (60%)	4 (40%)	2 (20%)
6	Acquire the role of the teacher in providing guidance services to students and parents	3 (30%)	3 (30%)	4 (40%)
7	Perspective on skills and use of communication in the counseling process	4 (40%)	1 (10%)	5 (50%)
8	Significance of two credit hours of the course	8 (80%)	2 (20%)	-
9	Significance of the reading list	2 (20%)	1 (10%)	7 (70%)

It can be seen from table-4.174 that the contents of EPS 311 are appropriate in terms of exposing student-teachers to the practices and services provided by the school in delivering guidance services to students (60 per cent). This phenomenon is due to the introduction to various guidance services ranging from; orientation, appraisal, information, counseling, consultation, placement, evaluation, and follow-up service. These are the services that are required in schools in meeting the needs of the learners. Also, the majority (60 per cent) of the tutors judged the contents were appropriate for preparing student-teachers to be acquainted with the stages of counseling. According to the Institute of Education, UCC (2014), the stages of counseling include; 1) Establishing rapport, 2) Problem identification and definition 3) Establishing counseling goals, 4) Intervention Stages, 5) Evaluation, and 6) Termination. It can be said here that these stages count much in the preparation of student-teachers to be effective counselors in schools.

On the other hand, (50 per cent) of the tutors judged that perspective on skills and use of communication in the counseling process was inappropriate. This phenomenon was having adverse effects on the student-teachers because most of them were not familiar with the factors that enhance effective communication in counseling. The factors that might have contributed to this were defunct counseling centers in the colleges, inadequate reading material, and imbalances between conceptual understanding and practice. These are potential factors that affect the nature of communication used in counseling.

The researcher also collected judgments from final year student-teachers about the contents of EPS 311 as stated in chapter III of this study, through group discussion (see the details in appendix E-5). Though the researcher was not having a checklist, it was ensured that the following themes were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. The contents are in proper sequence and promoting self-awareness and emotional consistency in the prospective teachers.

- b. The contents are appropriate in terms of introducing student-teachers to the basic principles and understanding of guidance and counseling practices as well as the various services that schools provide in delivering guidance services to students at the basic level.
- c. But student-teachers cannot undertake practical lessons on counseling practices in the colleges because the counseling units are lacking resources. This can be said that practical skills are not encouraged by the contents of EPS311.

It can be seen from the data presented above that the content of EPS 311 promotes conceptual understanding which is important for professional development. However, provision was not made in this curriculum for student-teachers to regularly visit colleges' counselors to reinforce whatever was taught in the classroom. This imbalance would pose negative implications on the student-teachers for providing counseling services to school children.

4.7.3.1 Teaching Methods used by BTE Tutors for teaching EPS 311

The BTE tutors were asked to tickmark to judge teaching methods on a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.175.

Table-4.175: Appropriateness & Relevance of Teaching Methods used in Teaching EPS 311

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	8 (80%)	-	-	-	-
2	Collaboration	-	-	-	-	4 (40%)
3	Demonstration	-	3 (30%)	-	-	-
4	Mentoring	-	-	4 (40%)	-	-
5	Role play	-	-	-	6 (60%)	-
6	Lecture	10 (100%)	-	-	-	-
7	Project	-	-	-	-	5 (50%)
8	Debate	-	-	-	-	8 (80%)
9	Brainstorming	-	10 (100%)	-	-	-

It can be seen from the table-4.175 that most frequently, the BTE tutors used teaching methods such as Lecture (100 per cent), and Discussion (80 per cent), and Brainstorming (100 per cent) to teach EPS 311 in the classroom. Further interaction with the tutors about their choice of teaching methods revealed that due to lack of resources and inadequate contact hours, they have no option than employing these methods most frequently. As asserted by Nkechi et al, (2016), instructional resources play a major role in developing the potential and capabilities of prospective teachers. For the Guidance and Counseling program to achieve the target, the contribution of the student-teachers in the classroom is critical. Their contributions in the classroom discussion and participation in the counseling practices in the classroom develop their experience in the counseling profession (Nkechi et al, 2016). It can be said that the teaching methods used here are apt for stimulating the interest and experience of the student-teachers.

4.7.3.2 Assessment of learning outcomes in EPS 311

Assessment of learning outcomes of every student-teacher appeared in two modes viz., formative and summative. The assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment. The details are presented in the next subsection.

4.7.3.2.1 Modality for Conducting Formative assessment in EPS 311

Regarding formative assessment, data collected from EPS tutors revealed that the formative assessment of student-teachers in EPS 311 was conducted in the BTE colleges by the tutors. For the written assignment, every student-teacher was mandated to write a minimum of one assignment comprising three compulsory unstructured questions (2 to be answered) for 10 marks. Also, the mid-semester assessment comprised five unstructured (3 to be answered) and 20 compulsory structured questions for all the student-teachers for 20 marks. These assessments are based on the nature of guidance and counseling, guidance services, and approaches and stages of counseling. A minimum of 21 days of mandatory class attendance of student-teachers (recorded daily in a class register) was considered for additional 10 marks per student-teacher. The details of the findings are presented in table-4.176.

Table-4.176: Modality for Conducting Internal Assessment in EPS 311

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	3 (2 to be answered)	1	10
2	Mid-semester test	Structured	20	1	20
3	Class attendance	N/A	N/A	21 days minimum	10

4.7.3.2.2 Modality for Conducting Summative Assessment in EPS 311

The BTE tutors revealed that the summative assessment of student-teachers was conducted in the BTE colleges by the Institute of Education, UCC. Preparation of questions for the end-of-semester examination, supervision, and marking of scripts was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (3 to be answered) for 60 marks. The questions were based on the nature of guidance and counseling, guidance services, approaches and stages of counseling, and communication in guidance and counseling. The duration of this paper is two hours because it is two credit hours of paper. The marks obtained by each student-teacher in formative assessment are used to supplement the marks obtained in the summative assessment (total 100 marks) to determine the student-teachers' progress.

4.7.3.3 Modification of ESP 311 Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics viz., frequencies, and percentages as presented in the table-4.177.

Table-4.177: Needed Suggestions for Modifications of ESP 311

Sr. no	Suggestions	Frequency	Percentage
1	Practical session for Guidance and Counselling should be encouraged in the colleges to enhance career skills and professional development	1	10
2	Active counseling unit should be created in colleges to provide a supportive environment for preparing effective student-teachers	3	30
3	The BTE colleges should establish collaboration with other government and local organizations where they can exchange expertise knowledge, professional skills, and facilities to achieve targets	1	10
4	No suggestion	5	50

Suggestions presented in table-4.177 show that practical session for Guidance and Counselling should be encouraged in the colleges to enhance career skills and professional development (10 per cent), active counseling unit should be created in colleges to provide a supportive environment for preparing effective student-teachers (30 per cent), and the BTE colleges should establish collaboration with other government and local organizations where they can exchange expertise knowledge, professional skills and facilities to achieve targets (10 per cent). But some tutors did not suggest anything (50 per cent).

Data was further collected by using group discussion with final year student-teachers which emanated suggestions for modification of ESP 311(see the details in appendix E-5). The suggestions that emerged are presented as follows;

- a. Periodic workshops and programs should be made part of the contents of ESP 311 to enhance the skills and professional development of the prospective school teachers. Here, the student-teachers could be grouped and assigned counseling tasks. This would help in acquiring new guidance and counseling skills from experts who would facilitate the workshops and programs, thereby building their skills and confidence.

- b. The reading list should be modified, and furnish colleges' libraries with modern books that have updated information to enhance teaching and learning.

It can be concluded that; 1) the objectives were adequate and relevant for directing learning activities of Guidance and Counselling, 2) The contents were appropriate for exposing student-teachers to the practices and services provided by the school in delivering guidance services to students, 3) the content weightage between theory and practice was not balanced as student-teachers were not exposed to undertake practical lessons on counseling practices at the colleges, 5) the teaching methods such as Lecture, Discussion, and Brainstorming were appropriate for achieving instructional outcomes, and 6) modes of assessments were appropriate for determining learning outcomes of the student-teachers.

4.7.4 Assessment in Basic School (EPS 312A)

Assessment in Basic School is a mandatory course offered by all the student-teachers in the fifth-semester. It is designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Education tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To define assessment and related terms
- ii. To differentiate between the various types of assessment in education
- iii. To identify the characteristics of a good test assessment
- iv. To follow the principles of test construction to construct a good test
- v. To appraise assessments items
- vi. To administer a test effectively
- vii. To interpret and analyze test scores for further teaching
- viii. To analyze and interpret assessment scores

It can be seen from table-4.178 that the objectives EPS 312A are adequate to define the concepts that are expected to be covered (60 per cent). Also, objectives are relevant for describing educational assessment principles, methods, and practices necessary for basic school teachers (50 per cent). The details of the analysis are presented in table-4.178.

Table-4.178: Appropriateness and Relevance of Objectives and Contents of EPS 312A

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	6 (60%)	3 (30%)	1 (10%)
2	The perspective of educational assessment principles, methods, and practices necessary for basic school teachers	5 (50%)	4 (40%)	1 (10%)
3	Perspective on the various types of assessment in education	7 (70%)	1 (10%)	2 (20%)
4	Familiar with characteristics of a good test assessment	5 (50%)	4 (40%)	3 (30%)
5	Significance of the principles of test construction	5 (50%)	1 (10%)	4 (40%)
6	Ability to appraise assessments items	4 (40%)	5 (50%)	1 (10%)
7	Ability to analyze and interpret test scores for further teaching	3 (30%)	2 (20%)	5 (50%)
8	Significance of one credit hour of the course	2 (20%)	3 (30%)	5 (50%)
9	Significance of the reading list	2 (20%)	1 (10%)	7 (70%)

It can be seen from table-4.178 that the contents of EPS 312A are appropriate in terms of introducing student-teachers to the various types of assessment in education (70 per cent), and appropriate in terms of introducing student-teachers to characteristics of a good test assessment (50 per cent). Here, the tutors were convinced that student-teachers would be able to distinguish between formative and summative assessment with examples and recognize other characteristics of test like reliability and validity of

assessment results. Also, the contents are appropriate for preparing student-teachers to analyze and interpret test scores for further teaching (50 per cent). It was explained that the uses of norm-referenced interpretation and criterion-referenced interpretation were not properly featured in the contents. Therefore, it seems impossible for student-teachers to determine norm-referenced test results and those which are criterion-referenced. Also, the contents of the principles of test construction were appropriate for achieving objectives (50 per cent). Further observation of the lesson taught by alumni at the basic level revealed that most of them evaluated the learning outcomes of the student-teachers at the end of every lesson (see the details in appendix A-1 & A-2). But there was no attempt made by the teachers to use the learning outcomes of the lessons to prepare for subsequent lessons. This was because lessons were pre-planned for the entire week leaving no space for correction of wrong answers. Therefore, it can be said that teachers and students at the basic school find it difficult to identify their weaknesses and build on them to achieve desire goals.

The researcher also collected data from final year student-teachers about the contents of EPS 312A as stated in chapter III of this study, through group discussion (see the details in appendix E-6). Though the researcher was not having a checklist, it was ensured that the following themes were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. The contents are in proper sequence and providing a basic conceptual understanding of various ways of assessing the learning outcomes of pupils.
- b. Most of the student-teachers have learned to evaluate every lesson they teach in the classroom to understand the learning needs of the students.
- c. A reading list was not provided on the given course-outline to encourage extensive reading. Due to this most of the student-teachers largely depended on the lecture note for information. But most of these lecture notes were not having adequate information to mitigate the course objectives.

Looking closely at the data presented above, it can be said that the BTE curriculum has adopted the outcome-based model of transaction. This model specifies the expected learning outcomes viz., knowledge acquisition, mastery of skills and attitude

development are critical after every engagement with the student-teachers. As some of these expectations are general and may not specifically reflect in some of the courses, it was thought that EPS 312A would be used to benchmark in establishing the standard of every assessment that tutors and student-teachers would be conducting. But the data further indicate that most of the contents were inappropriate for providing precision in ensuring that student-teachers would be able to achieve all the expected learning outcomes in the classroom. To prepare effective teachers, this phenomenon must be reconsidered.

4.7.4.1 Teaching Methods used by BTE Tutors for teaching EPS 312A

The BTE tutors were asked to tick-mark to judge teaching methods on a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.179.

Table-4.179: Appropriateness & Relevance of Teaching Methods used in Teaching EPS 312A

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	10 (100%)	-	-	-	-
2	Collaboration	-	-	-	6 (60%)	-
3	Demonstration	-	5 (50%)	-	-	-
4	Mentoring	-	-	4 (40%)	-	-
5	Role play	-	-	-	5 (50%)	-
6	Lecture	7 (70%)	-	-	-	-
7	Project	-	-	-	-	5 (50%)
8	Debate	-	-	-	-	8 (80%)
9	Brainstorming	-	6 (60%)	-	-	-

It can be seen from table-4.179 that most often, the BTE tutors used teaching methods such as Lecture (70 per cent), Discussion (100 per cent), frequently used Brainstorming (60 per cent), and Demonstration (50 per cent) to teach EPS 312A in the classroom. It can be said that the teaching methods used here are attempts been made to achieve learning objectives without using learning material. Here, the learning experience is arranged logically and tutors remained facilitators in guiding student-teachers to appreciate educational assessment principles, methods, and practices necessary for basic school teachers.

4.7.4.2 Assessment of learning outcomes in EPS 312A

To assess learning outcomes of student-teachers, modes of assessment used in EPS 312A include formative and summative. The assessment tools used for conducting internal assessment are written assignment, mid-semester test, and class attendance whereas end-of-semester examination was used for conducting the summative assessment.

4.7.4.2.1 Modality for Conducting Formative assessment in EPS 312A

To find out how the formative assessment was conducted, data were collected from EPS tutors which revealed that the formative assessment of student-teachers in EPS 312A was done in the BTE colleges. This section involves a written assignment whereby every student-teacher was mandated to write a minimum of one assignment comprising three compulsory unstructured questions (2 to be answered) for 10 marks. Also, the mid-semester assessment comprised five unstructured (3 to be answered) and 20 compulsory structured questions for all the student-teachers for 20 marks. These assessments are based on the nature of assessment, purpose, and principles of assessment, types of assessment, and characteristics of a good assessment. A minimum of 21 days of mandatory class attendance of student-teachers (recorded daily in a class register) was considered for 10 marks per student-teacher. The details of the findings are presented in table-4.180.

Table-4.180: Modality for Conducting Internal Assessment in EPS 312A

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	3 (2 to be answered)	1	10
2	Mid-semester test	Structured	20	1	20
3	Class attendance	N/A	N/A	21 days minimum	10

4.7.4.2.2 Modality for Conducting Summative Assessment in EPS 312A

To evaluate how summative assessment in this section, data were collected from tutors who revealed that the Institute of Education, UCC was fully in charge of this assessment in the BTE colleges. Activities performed by them include preparation of questions for the end-of-semester examination, supervision, and marking of scripts

was regulated by the Institute of Education, UCC. This institute hires and contracts the tutors in the BTE colleges to prepare questions, supervise, and mark the scripts of the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (3 to be answered) for 60 marks. The questions were based on topics such as the nature of assessment, purpose, and principles of assessment, types of assessment, characteristics of a good assessment, planning and constructing classroom assessment and interpretation of assessment scores. The duration of this paper is one and a half hours because it is one credit hour.

4.7.4.3 Modification of ESP 312A Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics via frequencies as presented in the table-4.181.

Table-4.181: Needed Suggestions for Modification of ESP 312A Contents

Sr. no	Suggestion	Frequency	Percentage
1	Perspective on portfolio assessment should be incorporated for student-teachers to learn holistic assessment of basic school student	1	10
2	There is a need to increase the number of credit hours from one to two to contain the contents	5	50
3	The contents should be spread across two semesters as a lot of learning activities have been incorporated	1	10
4	No suggestion	3	30

Suggestions presented in the table-4.181 show that portfolio assessment should be incorporated for student-teachers to learn holistic assessment of basic school student (10 per cent), there is a need to increase the number of credit hours from one to two to contain the contents (50 per cent), and the contents should be spread across two semesters as a lot of learning activities have been incorporated (10 per cent).

Also, the researcher had a group discussion with final year student-teachers which emanated suggestions for modification of ESP 312A (see the details in appendix E-6). The suggestions that emerged are presented as follows;

- a. An adequate reading list should be provided as per the course objectives to encourage extensive reading
- b. The BTE colleges should be given autonomy to allow the tutors to take control of the holistic assessment of their student-teachers.

It can be concluded that; 1) the objectives were adequate and relevant for describing educational assessment principles, methods, and practices necessary for basic school teachers, 2) the contents were appropriate in terms of introducing student-teachers to educational assessment principles, methods, and practices necessary for basic school teachers, 3) the contents about analysis and interpretation of test scores for further teaching was not properly accomplished, 4) teaching methods like a Lecture, Discussion, Brainstorming, and Demonstration, were appropriate for achieving instructional objectives, and 5) the modes of assessments were appropriate for determining learning outcomes of student-teachers, and 6) The one-credit hour was not appropriate.

4.7.5 Research Methods in Education (EPS 312B)

Research Methods in Education is a mandatory course offered by all the student-teachers in the fifth-semester. It is designed for one credit hour. To judge the appropriateness of the contents, needed data were collected from ten randomly selected Education tutors who are Department Heads (one from each of the ten BTE colleges) and 320 final year student-teachers on out-campus teaching practice in four zones. They were requested to judge the relevance of course objectives as stated in the BTE curriculum (2014), how the contents are appropriate for equipping student-teachers with knowledge and pedagogy, teaching methods used for teaching the course in BTE colleges, assessment of learning outcomes, and provide suggestions for modification. The objectives of this course state that the student-teachers will be able;

- i. To state and explain the Characteristics of research.
- ii. To state and explain the Characteristics of Scientific Inquiry
- iii. To state and explain the Sources of the research problem
- iv. To explain the importance of research in Education
- v. To explain the characteristics of a good research problem.
- vi. To state and explain the purposes or importance of reviewing related literature.
- vii. To explain the sources of literature with relevant examples.

- viii. To explain Descriptive Research Design with related examples
- ix. To identify the steps involved in Descriptive Research Design.
- x. To prepare and organize Data for their research Work
- xi. To represent Data using Histogram, Pie-Chart, and Bar-graph

It can be seen from table-4.182 that the objectives of EPS 312B are adequate in determining the standard of the selected contents (80 per cent). Also, the objectives are relevant in terms of incorporating essential learning activities about the application of scientific inquiry into educational issues (50 per cent). Some of these activities would be discussed in the next paragraph. The details of the analysis are presented in table-4.182.

Table-4.182: Appropriateness and Relevance of Contents and Objectives of EPS 312B

Sr. no.	Items	Judgment		
		Appropriate	Uncertain	Inappropriate
1	Adequacy of course content as per given objectives	8 (80%)	2 (20%)	-
2	The course objectives expose student-teachers to the application of scientific inquiry to educational issues	5 (50%)	4 (40%)	1 (10%)
3	Identify the steps in scientific inquiry	6 (60%)	2 (20%)	2 (20%)
4	Planning and conducting of the different types of researches in education	3 (30%)	2 (20%)	5 (50%)
5	Application of scientific inquiry to solve the problem in education	6 (60%)	3 (30%)	1 (10%)
6	Perspective on data preparation, organization, and analysis	5 (50%)	4 (40%)	1 (10%)
7	Perspective on representation of data	5 (50%)	4 (40%)	1 (10%)
8	Significance of one credit hour of the course	2 (20%)	3 (30%)	5 (50%)
9	Significance of the reading list	2 (20%)	1 (10%)	7 (70%)

It can be seen from table-4.182 that the contents of EPS 312B are appropriate in terms of introducing student-teachers to the steps in scientific inquiry are appropriately conceptualized for preparing student-teachers (60 per cent). Here, student-teachers were introduced to five basic steps viz., 1) problem identification, 2) questioning, 3) making a hypothesis, 4) data collection and analysis, and 5) concluding. These steps are critical for enhancing problem-solving in the field of education. Also, the contents are appropriate in terms of preparing student-teachers capable of using an appropriate statistical tool like mode, mean media, histogram, and bar chart for data representation (50 per cent). Here, it is also possible to transfer prior knowledge of Mathematic (statistic and probability) to facilitate data collection and data representation processes.

However, the contents are inappropriate in terms of preparing student-teachers to plan and conduct different types of researches in education (50 per cent). According to them, more emphasis was placed on action research than other types of researches like Survey, Case-Study, and Experimental. It can be thought that this imbalance is because the student-teachers require skills in solving immediate problems that may sprout in schools. In this regard, almost all the student-teachers were charged to write their dissertations in action research. Also, one credit hour is inappropriate to contain the contents (50 per cent), and the reading list is inappropriate to encourage extensive reading (70 per cent).

The researcher also collected judgments from final year student-teachers about the contents EPS 312B as stated in chapter III of this study, through group discussion (see the details in appendix E-6). Though the researcher was not having a checklist, it was ensured that the following themes were covered;

1. Interest of student-teachers
2. Strengths and weakness of the contents

The points that emanated from the group discussion are presented as follows;

- a. The contents are in proper order which helps them in identifying the ways of knowing as in personal experience, authority, and scientific inquiry.
- b. Also, the contents provide a conceptual understanding of basic scientific steps that can be followed in solving problems that may arise in education. Of course, the weightage between conceptual knowledge and practical skills is

duly balanced as there is an opportunity for writing a dissertation about any educational related problem of choice.

- c. The contents are overloaded compelling tutors to rush over topics to complete the course outline. In most of the cases, essential concepts are been skipped which is inappropriate for preparing student-teachers.

Based on the data presented above, it can be said that EPS 312B is designed to equip student-teachers with research knowledge and skills capable of solving problems in the education setting. Therefore, attention is placed on an action research design which is a prerequisite for the attainment of this goal.

4.7.5.1 Teaching Methods used by BTE Tutors for teaching EPS 312B

The BTE tutors were asked to tickmark to judge teaching methods on a 5-point Likert scale. The collected data were subject to descriptive statistics by using frequencies and percentages. The details of the analysis are presented in table-4.183.

Table-4.183: Appropriateness and Relevance of Teaching Methods used in Teaching EPS 312B

Sr. No.	Teaching Methods	Responses				
		Most frequently	Frequently	Some time	Rarely	Not at all
1	Discussion	10 (100%)	-	-	-	-
2	Collaboration	-	-	-	-	6 (60%)
3	Demonstration	-	-	5 (50%)	-	-
4	Mentoring	-	3 (30%)	-	-	-
5	Role play	-	-	-	5 (50%)	-
6	Lecture	8 (80%)	-	-	-	-
7	Project	10 (100%)	-	-	-	-
8	Debate	-	-	-	-	9 (90%)
9	Brainstorming	-	6 (60%)	-	-	-

It can be seen from the table-4.183 that most often, the BTE tutors used teaching methods such as and Discussion (100 per cent), Project (100 per cent), and Lecture (80 per cent), and frequently used Brainstorming (60 per cent) to teach EPS 312B in the classroom. Here it can be said that these teaching methods can help student- teachers to participate in the research procedures in education. The student-teachers have an opportunity to address a problem of choice by using action research. Also,

tutors and student-teachers can interact and share information to promote understanding and experience.

4.7.5.2 Assessment of Learning Outcomes in EPS 312B

It was found that formative assessment and summative assessments were the two modes of assessments through which learning outcomes of student-teacher were assessed in ESP 312B. And for formative assessment tools like written assignment, mid-semester test, and class attendance were used while the end-of-semester examination was used for conducting the summative assessment. The details are presented in the next subsection.

4.7.5.2.1 Modality for Conducting Formative assessment in EPS 312B

Data were collected from EPS tutors to evaluate the formative assessment of EPS 312B which found that tutors were in charge of conducting this form of assessment. For the written assignment, student-teachers were mandated to write a minimum of one assignment comprising three compulsory unstructured questions (2 to be answered) for 10 marks. Also, the mid-semester assessment comprised five unstructured (3 to be answered) and 20 compulsory structured questions for all the student-teachers for 20 marks. These assessments are based on scientific inquiry, sources of the research problem, research in education, research problem, and review of related literature. A minimum of 21 days of mandatory class attendance of student- teachers (recorded daily in a class register) was considered for 10 marks per student- teacher. The details of the findings are presented in table-4.184.

Table-4.184: Modality for Conducting Internal Assessment in EPS 312B

Sr. No.	Assessment tool	Question type	Number of questions	Frequency	Marks
1	Written assignment	Unstructured	3 (2 to be answered)	1	10
2	Mid-semester test	Structured	20	1	20
3	Class attendance	N/A	N/A	21 days minimum	10

4.7.5.2.2 Modality for Conducting Summative Assessment in EPS 312B

In this form of assessment, data from tutors revealed that it was fully managed by the Institute of Education, UCC. This institute prepared questions for the end-of-semester

examination, supervised and marked the scripts. To prepare the questions, tutors from the BTE colleges were hired at the end-of-semester examination. It was further revealed that there were 40 structured questions and 5 unstructured questions (3 to be answered) for 60 marks. The questions were based on the instructional objectives covered. The duration of this paper is one and a half hours because it is one credit hour.

4.7.5.3 Modification of ESP 312B Contents

To modify the contents, needed data were collected from BTE tutors for modification of the areas of the contents they felt necessary. The collected data from tutors were analyzed by using descriptive statistics viz., frequencies, and percentages as presented in the table-4.185.

Table-4.185: Needed Suggestions for Modifications of ESP 312B Contents

Sr. no	Suggestions	Frequency	Percentage
1	Ample contents of different types of research in education are needed to equip student-teachers with broad knowledge	1	10
2	Regular workshops should be provided in the colleges regularly in respect of research project supervision to hone the skills of supervisors	3	30
3	Perspective on external project supervision should be incorporated in this course to improve the quality of research conducted by student-teachers in schools	1	10
4	No suggestion	5	50

Suggestions are thereby given in table-4.185 that ample contents of different types of research in education are needed to equip student-teachers with broad knowledge (10 per cent), regular workshops should be provided in the colleges regularly in respect of research project supervision to hone skills of supervisors (30 per cent), and external project supervision should be incorporated in this course to improve the quality of research conducted by student-teachers in schools (10 per cent). They explained that provision should be made in the BTE curriculum in that researches conducted by

student-teachers can pass through external supervisors for final assessment and suggestions.

Also, the researcher had a group discussion with final year student-teachers which emanated suggestions for modification of ESP 311B (see the details in appendix E-7).

The suggestions that emerged are presented as follows;

- i. For tutors to cover all the topics in this course, it should be spread across two semesters preferably semester four and semester five.
- ii. Pertinent books on research methodology in education should be purchased and kept in the libraries for reference purposes. This will provide relevant information to align the course outline.

It can be concluded that; 1) the objectives were adequate and relevant for incorporating essential learning activities about the application of scientific inquiry to educational issues, 2) the contents were appropriate for providing research knowledge and skills for prospective teachers to identify and manage educational issues that they would be confronted with in schools for improvement, 3) the content weightage between conceptual understanding and practice was duly balanced, 3) the teaching methods like Discussion, Project, Lecture, and Brainstorming were appropriate for achieving instructional objectives, 4) the modes of assessments were appropriate for determining learning outcomes of the student-teachers, and 5) the one credit hour was not appropriate.

4.7.6 On-Campus Teaching Practice (EPS 313)

On-campus teaching practice is a mandatory course offered by all the student-teachers. It is designed for three credit hours. To judge its appropriateness, needed data were collected from analysis of BTE curriculum document (2014) and BTE tutors about the approaches through which it is transacted in the colleges in equipping student-teachers with knowledge and pedagogy (see the details in appendix A). Also, the procedure for assessment of student-teachers who participate in the on-campus teaching practice has been examined and analyzed qualitatively. The details of the collected data are presented as follows;

4.7.6.1 Activities of EPS 313

The points that emerged from the analysis of the BTE curriculum document (2014) are presented as follows;

- a. Instructional objectives were not set by the curriculum designers to regulate the operation of this paper
- b. Second-year student-teachers are subject to teach their peers.
- c. Each student-teacher had the opportunity to teach a minimum of two lessons.
- d. The student-teachers have the opportunity to plan a lesson on any topic of choice.
- e. Each lesson lasted for 45 minutes.
- f. The entire session would last for a maximum of 3 months. It was revealed that this session is simultaneously run with other learning activities in the colleges until the end of the session.

4.7.6.2 Assessment of EPS 313

The collected data from the BTE tutors about the assessment of on-campus teaching practice are presented as follows;

- a. One supervisor would sit in the classroom as a mute observer while the student-teacher teaches the lesson. It would be difficult for only one supervisor to determine the teaching competencies of a class of student-teachers.
- b. Before the lesson, the supervisor checks the lesson plan on how activities, TLM, and evaluation are planned to achieve instructional objectives.
- c. The supervisor observes presentation, and classroom management strategies that the student-teachers would adopt to manage situations created by the peers in the classroom behaving like school children.
- d. After every session, both the supervisor and student-teachers would discuss the feedbacks and highlight some strengths and weaknesses of the lesson for improvement.
- e. The marks obtained by each student-teacher are used for grading at the end of the semester.

4.7.6.3 Needed Suggestions for Modification of On-Campus Teaching Practice

The suggestions that emerged from the data collected from the tutors are presented as follows;

- a. The two lessons were not sufficient to determine the teaching competencies of student-teachers. They should be allowed to teach all the school subjects to develop their confidence and competencies in all.

- b. The three months for conducting this session should be extended to six to prepare effective teachers. This would help each of every student-teacher to prepare adequately to deliver a lesson in a full time (45 minutes) in achieving the instructional objectives.
- c. On-campus teaching practice should be conducted every semester for all year groups. This would adequately prepare student-teacher in pedagogical skills to be effective in the classroom.

In consideration of the data presented above, it can be said that on-campus teaching practice plays a major role in enhancing the teaching skills and competencies of student-teachers. Notable skills viz., lesson planning, classroom management, and instructional strategies of the student-teachers were of great concern. This assertion is in agreement with Bonneyi et al (2018). These authors investigated the perception of student-teachers towards on-campus teaching practice at the Holy Child College of Education in Ghana and found that on-campus teaching practice has helped in developing several skills of the student-teachers such as lesson preparation, presentation, and class control. Therefore, it can be concluded that the On-campus teaching practice is appropriate for providing practical teaching experience to student-teachers. But two lessons of choice taught by each student-teacher are not adequate to improve the teaching competencies of prospective teachers (generalist) in all the basic school subjects and it must be reconsidered.

It can be concluded that; 1) the curriculum designers did not set objectives for this course which was a challenge for implementation, 2) two lessons were not sufficient to determine teaching competencies of student-teachers, 3) the three months duration of this course was not sufficient for student-teachers to teach sufficient lessons, 4) One supervisor would sit in the classroom as a mute observer while the student- teachers teach the lessons. It would be difficult for only one supervisor to determine the teaching competencies of a class of student-teachers, 5) discussing feed-back was appropriate to know the strength and weaknesses of the prospective teachers.

4.8 Sixth-Semester

The sixth-semester courses in the BTE curriculum comprise two mandatory courses for a total of 6 credit hours. The courses and their respective course codes and credit hours are presented in table-4.186.

Table-4.186: Course Title, Course Code & Credit Hours of Sixth-Semester Courses

Sr. No	Course Code	Course Title	Credit Hours
1	EPS322	Out-Program teaching practice	3
2	EPS 321	Project Work (dissertation)	3
Total			6

Source: Institute of Education, UCC (2014)

4.8.1 Out-Program Teaching Practice (EPS 321)

Out-program teaching practice is a mandatory course offered by all the student-teachers in the sixth-semester. It is designed for three credit-hours. To judge its appropriateness, needed data were collected from analysis of BTE curriculum document (2014) and BTE tutors about the approach through which it is transacted in the colleges in equipping student-teachers with knowledge and pedagogy (see the details in appendix-A). Also, the procedure for assessment of student-teachers who participate in it has been examined and analyzed qualitatively. The details of the collected data are presented as follows;

4.8.1.1 Activities of EPS 321

To study the activities involved in out-campus teaching practice, the BTE curriculum document (2014) was analyzed and the emerged points are presented as follows;

- a. Objectives of the Out-Program teaching practice was not stated by the curriculum designers.
- b. Third-year student-teachers are mandated to undertake out-program teaching practice in cooperate schools
 - a. Selection of schools is based on the availability of qualified school teachers (mentors) to supervise the final year student-teachers' teaching
 - b. The duration of this session is sixteen weeks and transacted for three credit hours. Although the credit hours were appropriate as per the activities, the duration was not appropriate due to interferences of other activities like the writing of project work, preparation for the final examination in other papers (Guidance and Counselling, Statistics and probability).
- c. Within the sixteen weeks, the student-teachers would swap classrooms every two weeks to be able to plan and teach lessons in almost all the basic school subjects under the supervision of different mentors

- d. Each student-teacher is mandated to teach and be supervised for a minimum of five lessons in the sixteen weeks.
- e. They have the opportunity to develop classroom management techniques, school-community relationships, disciplinary procedures in schools, school-community relationships, and a variety of teaching methodologies adopted by their mentors to achieve their instructional objectives.
- f. They are of liberty to explore the communities by visiting historical and geographical places of interest such as; shrines, mosques, churches, palaces, waterfalls, mountains, and other tourist sites for educational purposes.

4.8.1.2 Assessment of EPS 321

To understand how EPS 312 was assessed, data were collected from tutors and review of BTE curriculum document (2014). The emerged points are presented as follows;

- a. In a discussion session with tutors, it was revealed that they visit the final year student-teachers in schools (twice monthly) to supervise and assess their lessons and progress of work. It was reported that a number of the visit was not appropriate for the supervision and correction of student-teachers.
- b. The tutors (one per student-teacher) revealed that they sit in the classrooms as mute observers while the lesson is going on. The number of teachers was not appropriate as one supervisor was not enough for judging a student-teacher.
- c. In the curriculum document, it was revealed that assessment is based on a 5-point rating scale as per the following items;

1. Lesson plan	9. Teacher behavior
2. Instructional objectives	10. The pace of lesson delivery
3. Introduction to lesson	11. Mastery of subject matter
4. Presentation	12. Students' participation
5. Teaching & learning activities	13. Use of chalkboard
6. Core points	14. Closure
7. Pedagogy	15. Assessment of student learning
8. Classroom management	
- d. The score obtained by each student-teacher in this session is subsequently submitted to the Institute of Education, UCC for grading.

4.8.1.3 Needed Suggestions for Modification of Out-Campus Teaching Practice

The needed modifications points about the out-campus program are listed below after the careful analysis of collected data from the tutors.

- i. Qualified and committed school teachers should be identified to mentor the student-teachers
- ii. Separate roles should be spelled out for mentors, student-teachers, tutors, and Head schools in this stage to achieve the goal
- iii. School Heads should be trained to supervise and assess student-teachers at this stage to safe tutors from abandoning lessons in colleges because of supervision
- iv. Colleges' time table should be adjusted for student-teachers to complete all their papers in the colleges before embarking on out-program with full concentration and commitment to teaching.
- v. Provision should be made in this stage for student-teachers to organize sensitization programs to educate members of the communities against anti-social activities, outmoded cultural practices, and health-related issues.

Based on the data presented above, it can be said that; 1) this teaching practice was appropriate for introducing student-teachers to learning experiences and first-hand knowledge in the teaching fraternity, 2) the final year student-teachers have the opportunity to plan a lesson, deliver a lesson, and assess learning outcomes of students under the guidance of mentors, 3) Student-teachers have community exposure and interact with students from the different socio-economic background, 4) The six-week duration was inappropriate for practice teaching. This is because most of the time was spent on other activities like dissertation writing and preparation for the final examination, and 5) Most of the mentors at the basic schools were lacking training on mentorship which makes them unqualified to mentor student-teachers.

4.8.2 Project Work (EPS 321)

Project Work (dissertation) is a mandatory course offered by all the student-teachers in the sixth-semester. It is designed for three-credit-hour. To judge its appropriateness, needed data were collected from analysis of BTE curriculum document (2014) and

BTE tutors about the approach through which it is transacted in the colleges. Also, the procedure for assessment of student-teachers who participate in it has been examined and analyzed qualitatively. The details of the collected data are presented as follows;

4.8.2.1 Activities of EPS 321

To study evaluate how the EPS 321 was conducted, data were collected from tutors through discussion sessions and review of BTE curriculum document (2014) and analyzed qualitatively. The emerged points are presented as follows;

- a. Objectives of EPS 321 was not stated by curriculum designers
- b. Each student-teacher conducts action research and writes project work (dissertation) under the supervision of a supervisor who was qualified and having more than ten years' experience.
- c. Project topics are restricted to the field of education which was appropriate for prospective basic school teachers.
- d. The supervisors guide on selecting a topic, expert advice, suggestions, corrections, and scoring of the project as per the guideline given by the Institute of Education, UCC (2014).

4.8.2.2 Assessment of EPS 321

To understand the assessment of EPS 321, a closed review of curriculum documents designed by the Institute of Education, UCC was conducted. The documents were used for this course. The points that were revealed are presented as follows;

- | | |
|---------------------------------|------------------------------|
| 1. Abstract | 7. Result |
| 2. Statement of the problem | 8. Discussion |
| 3. Review of related literature | 9. Contribution to knowledge |
| 4. Research questions | 10. Language style |
| 5. Research design | 11. References |
| 6. Data collection | |

- a. There are a set of close-ended questions in each category of the items presented above for rating the dissertation
- b. The score obtained by each student-teachers in this session is subsequently submitted to the Institute of Education, UCC for grading.

4.8.2.3 Needed Suggestions for Modification of EPS 321

The needed modifications points about EPS 321 are listed below after the careful analysis of collected data from the curriculum document.

- i. The use of other research design like Survey and Experimental should be encouraged in studying and understanding issues in schools
- ii. The duration (sixteen weeks) to conducts action research and writes project work should be extended to one year for adequate data in understanding issues.
- iii. The management of the BTE colleges should provide regular training and workshops for project supervisors to refresh their knowledge and skills in supervision.
- iv. Assessment of dissertations should involve viva-voce to develop the confidence of the student-teachers.

Looking at the data presented above, it can be said that; 1) three credit hours were appropriate as per this course, 2) the course objectives were not stated by the curriculum designers to determine learning outcomes, 3) student-teachers were assigned to project supervisors (tutors) who were experienced and having more than ten years' experience, 4) the supervisors guide them to select their topics, gave expert advice, suggestions, corrections, and scoring of the project, and 5) Project Work topics were restricted to the field of education to make student-teachers have insight in this field.

4.8.3 Conclusion

It can be concluded here that the contents of the BTE curriculum have been designed to enhance knowledge acquisition and skills development in different subject areas for pre-service teachers of basic schools in Ghana. This is to make student-teachers (generalist teachers) competent in using appropriate subject matter and pedagogies to deliver lessons in all subject areas at the basic school. As the organization of school curriculum in Ghana has taken the form of Mathematics, Science, Language Vocational and Liberal studies, it is required of a trained teacher to be able to organize learning experiences to align with the contents of these subject areas. Therefore, the above contents have attempted to address these concerns by incorporating courses under three broad areas as follows; 1) Educational and Contemporary Studies, 2)

Curriculum and Pedagogic Studies, and 3) Value Added Courses for all-round development. The courses involved in the category of Educational and Contemporary Studies address issues in contemporary Ghanaian society and helping student-teachers to understand the needed educational requirements for meeting societal needs and aspirations. Also, courses under Curriculum and Pedagogic Studies are aligned with the various subjects of the basic school curriculum which are meant to prepare student-teachers to be effective in the classroom. The inclusion of Value Added Courses such as Pre-Vocational Skills, ICT, Music and Dance, and Physical Education are also intended to prepare the student-teachers to be innovative, skillful, and healthy for effective handling of the subjects at the basic level. The transaction of the curriculum in the BTE colleges, therefore, takes three years duration spanning six semesters. There are 29 courses with a total of 62 credit hours distributed across the semesters. While the contents of most of the courses are appropriate for preparing student-teachers, there are imbalances between conceptual understanding and pedagogical skills in some of the courses. Looking at the Educational and Contemporary Studies, for instance, it can be learned that equal weightage eludes some critical courses like Psychology of Education, Philosophy of Education, and Sociology of Education. These are foundational courses that cannot be overlooked and must be reconsidered. To design a viable BTE curriculum for preparing effective teachers, the curriculum designers need to consider the suggestions provided in the present study for the modification of the contents.

SECTION-III: RELEVANCE OF CO-CURRICULAR AND EXTRA-CURRICULAR ACTIVITIES

4.9 Introduction

This section is about how the Co-Curricular and Extra-Curricular activities are planned in BTE colleges to help student-teachers in their holistic development. It is a known fact that planning of these activities in colleges largely depends on facilities which have been featured under this section. To collect the needed data, tools viz., questionnaire (close-ended and open-ended), group discussion, and unstructured interview were used and focused on the experts (Regional Directors of Education, BTE principals, BTE tutors) and final year student-teachers. The collected data were about 1) Co-Curricular activities and Extra-Curricular and 2) accessible facilities. The collected data through the questionnaires were subject to descriptive analysis by using frequencies and percentages. The details of the analysis are presented in the next subsection.

4.9.1. Co-Curricular Activities

To evaluate the appropriateness of Co-Curricular activities in the BTE Colleges, data were collected from final year student-teachers by using group discussion (see the details in the appendix-N1). Since the student-teachers were the direct beneficiaries of these activities, it was thought that they would provide the needed data to judge its appropriateness. Although the researcher was not having structured questions, it was ensured that the following themes were covered;

1. Availability of Co-Curricular activities
2. Issues arising from the conduct of Co-Curricular activities
3. Suggestions for modification

The points that emanated from the group discussion are presented as follows;

- a. Many Co-Curricular activities were available in the BTE colleges. Examples of the activities that emerged are; 1) Quiz competition, 2) Debate competition, 3) Student Representation Council, 4), Field trip, 5) Students-Tutors meeting, 6) annual functions like the Independence Day Celebration, 7) students' politics
- b. The activities were not having an allotment in the colleges' timetable to ensure full participation of the student-teachers.

- c. Most of the student-teachers were showing interest in participating in these activities. But it was found that due to a lack of motivation from the BTE tutors and management, some student-teachers would shy away from participating in these activities.

4.9.1.1 Suggestions for Modification

- a. Different types of activities should be incorporated to avoid boredom and attract the interest of the student-teachers to participate.
- b. The BTE colleges should make participating in the activities compulsory so that every student-teachers will be obliged to join.
- c. To ensure full participation of student-teachers in these activities, credit hours (2) should be given for them to earn by the time of completing the program.
- d. The management of the BTE should educate the student-teachers by talking about the importance of these activities to motivate them to participate.

4.9.2 Extra-Curricular Activities

Here, data were collected from final year student-teachers by using group discussion (see the details in the appendix-N2). Even though the researcher was not having structured questions, it was ensured that the following themes were covered;

1. Availability of Extra-Curricular activities
2. Issues arising from the conduct of Extra-Curricular activities
3. Suggestions for modification

The points that emanated from the group discussion are presented as follows;

- a. Many Extra-Curricular activities were organized by BTE colleges to ensure trainees' development. The activities that were revealed from this study include; 1) Soccer, 2) Volleyball, 3) Athletics, 4) Table tennis, 5) Fitness club, 6) Christians societies and 7) Muslim societies, 8) Cultural festivals, 9) college choir, 10) Red Cross Society, and 11) Drama troop.
- b. These activities were found appropriate for the all-round development of the student-teachers.
- c. In most of the BTE colleges, student-teachers' participation in these activities was limited to 1) Soccer, 2) Volleyball, 3) Athletics, 4) Table tennis, 5) Christian societies and 6) Muslim societies, due to facilities problems, time constrain and poor supervision.

- d. It was found that most of the student-teachers were not enthused to participate in these activities. However, those that took delight in participating in these activities were regarded as weak students by their peers or as having a high inclination in pursuing a career outside academies.

4.9.2.1 Suggestions for Modification

- a. The needed sporting kits and ultra-modern sporting facilities should be provided in all the BTE colleges to facilitate ex-curricula activities.
- b. The BTE colleges should collaborate with local sports and organizations for the exchange of expert knowledge and resources.
- c. To motivate student-teachers who actively participate in these activities, incentives, and motivational packages viz., cash, certificate, and the trophy should be presented to them at the end of every academic year.

4.9.3 Accessible Teaching and Learning Facilities in the BTE Colleges

Data were collected about the extent to which teaching and learning facilities were available for facilitating teaching and learning in BTE colleges. The teaching and learning facilities that emerged from the review of related literature of this study, were the basis upon which the judgment was given. These are; course material, library, laboratory, and workshop for practical courses. The details of the analysis are presented in the next subsection.

4.9.3.1 Course Material for Student-Teachers

To collect the needed data, experts judged the appropriateness of the Course Material in the BTE Colleges on a five-point Likert scale as ‘strongly agree’, ‘agree,’ cannot say, ‘strongly disagree’, and ‘disagree’. The collected data were subject to descriptive statistical analysis by using frequencies and percentages as presented in table-4.187.

Table-4.187: Appropriateness of Course Material in the BTE Colleges

Sr. No.	Response	Directors (N=10)	Principals (N=10)	Tutors (N=120)	Total Frequency	Percentage
1	Strongly Agree	2	4	9	15	10.7
2	Agree	7	5	82	95	67.8
4	Cannot say	-	-	-	-	-
5	Disagree	1	-	22	23	16.4
5	Strongly Disagree	-	-	7	7	5
Total		10	10	120	140	-

It can be seen from table-4.187 that experts (67.8 per cent) agreed with the statement that student-teachers were given course material such as storybooks, syllabi, and textbooks in BTE colleges. These course materials served as supporting documents that were required for the successful training of prospective teachers in the context of knowledge acquisition and development of professional skills.

4.9.3.2 Equipped Library in BTE Colleges

Here, the experts judged the appropriateness of equipped libraries in the BTE Colleges on a five-point Likert scale as ‘strongly agree’, ‘agree,’ cannot say, ‘strongly disagree’, and ‘disagree’. The collected data were subject to descriptive statistical analysis by using frequencies and percentages as presented in table-4.188.

Table-4.188: Appropriateness of Equipped Libraries in the BTE Colleges

Sr. No.	Response	Directors (N=10)	Principals (N=10)	Tutors (N=120)	Total Frequency	Percentage
1	Strongly Agree	-	-	6	6	4.2
2	Agree	3	7	37	47	33.5
4	Cannot say	1	-	4	5	3.5
5	Disagree	4	3	65	72	51.4
5	Strongly Disagree	2	-	8	10	7.1
Total		10	10	120	140	-

It can be seen from table-4.188 that experts (51.4 per cent) disagreed with the statement that BTE colleges were having equipped libraries to facilitate teaching and

learning. A library facility is a basic requirement for any education establishment. In BTE colleges, many student-teachers may prefer to use the library for studies and research. But the libraries were not equipped with relevant books, lacked electronic library facilities and space to accommodate many student-teachers at the same time. Of course, library facilities must be adequate and functional as providing relevant books and a conducive learning environment for the student-teachers.

4.9.3.3 Equipped Laboratory for Science Courses in BTE Colleges

In this subsection, the experts judged the appropriateness of equipped Science Laboratories in the BTE Colleges in a five-point Likert scale as ‘strongly agree’, ‘agree,’ cannot say, ‘strongly disagree’, and ‘disagree’. The collected data were subject to descriptive statistical analysis by using frequencies and percentages as presented in table-4.189.

Table-4.189: Appropriateness of Equipped Science Laboratory in the BTE Colleges

Sr. No.	Response	Directors (N=10)	Principals (N=10)	Tutors (N=120)	Total Frequency	Percentage
1	Strongly Agree	-	-	3	3	2.1
2	Agree	2	4	21	27	19.2
4	Cannot say	2	-	-	2	1.4
5	Disagree	4	5	84	93	66.4
5	Strongly Disagree	2	1	12	15	10.7
Total		10	10	120	140	-

It can be seen from table-4.189 that experts (66.4 per cent) disagreed with the statement that BTE colleges were having equipped science laboratories to facilitate teaching and learning of science courses. The Science courses here refer to Biology, Chemistry, Physics, and Agriculture. For effective teaching and learning of science courses in BTE colleges, the equipped laboratory for all these courses cannot be underestimated. This implies that the science laboratories for all these branches of science were not spacious to accommodate many student-teachers at a time, lacked functional equipment in facilitating practical activities. Consequently, student-

teachers could not conduct scientific investigations on phenomena to draw useful conclusions.

4.9.3.4 Equipped Workshop for Practical Courses in BTE Colleges

Here also, the experts judged the appropriateness of equipped Workshops for Practical courses in the BTE Colleges in a five-point Likert scale as ‘strongly agree’, ‘agree,’ cannot say, ‘strongly disagree’ and ‘disagree’. The collected data were subject to descriptive statistical analysis by using frequencies and percentages as presented in table-4.190.

Table-4.190: Appropriateness of Equipped Workshops for Practical Courses

Sr. No.	Response	Directors (N=10)	Principals (N=10)	Tutors (N=120)	Total Frequency	Percentage
1	Strongly Agree	-	-	2	2	1.4
2	Agree	2	3	17	22	15.7
4	Cannot say	1	-	-	1	0.7
5	Disagree	5	2	63	74	52.1
5	Strongly Disagree	2	5	38	45	32.1
Total		10	10	120	140	-

It can be seen from table-4.190 that experts (52.1 per cent) disagreed with the statement that the BTE colleges were having equipped workshops to facilitate teaching and learning of practical courses. As far as practical courses are concerned in the BTE curriculum, rooms containing relevant and functional tools and equipment for practical activities are essential. This suggests that the experts have noticed that student-teachers were not having the opportunity to demonstrate their practical skills in subjects like Pre-vocational skills, Music and Dance, and Technical Skills as equipped workshops were inadequate.

4.9.3.5 Accessible Internet Facilities in BTE Colleges

In this subsection, the experts judged the appropriateness of accessible internet facilities in the BTE Colleges in a five-point Likert scale as ‘strongly agree’, ‘agree,’ cannot say, ‘strongly disagree’ and ‘disagree’. The collected data were subject to descriptive statistical analysis by using frequencies and percentages as presented in table-4.191.

Table-4.191: Appropriateness of Accessible Internet Facilities

Sr. No.	Response	Directors (N=10)	Principals (N=10)	Tutors (N=120)	Total Frequency	Percentage
1	Strongly Agree	-	-	-	-	-
2	Agree	-	1	7	8	6
4	Cannot say	-	-	-	-	-
5	Disagree	3	2	41	46	33
5	Strongly Disagree	7	7	72	86	61
Total		10	10	120	140	-

It can be seen from table-4.191 that experts (61 percentage) strongly disagreed with the statement that the BTE colleges were having access to internet facilities to facilitate teaching and learning. To have access to internet facility means to be connected to the internet in BTE colleges and be able to use it to search for relevant information for writing dissertations and assignments. However, this statement here was strongly refuted by the experts because most of the student-teachers were not having access to the internet in BTE colleges for their studies.

Also, data were from student-teachers by using group discussion to judge facilities in the BTE colleges (see the details in the appendix-N3). Though the researcher was not having a checklist, the following themes were covered;

1. Course material
2. Equipped library
3. Equipped laboratory for Science course
4. Equipped workshop for practical courses
5. Accessible internet facilities³

The point that emanated from the group discussion is presented as follows;

Course material: The final year student-teachers revealed that some study materials were given in the first year of their study. For example, the material given includes storybooks and professional development books which were useful for their professional development. They also revealed that subject tutors often released their personal ‘hand-outs’ for them to make a photocopy for themselves. And in some of

the cases, textbooks prepared by the tutors were sold to them by the teachers at affordable prices.

Equipped library: The student-teachers admitted that there were libraries in their colleges. However, the libraries were having challenges that needed immediate attention to producing quality basic school teachers. Some of them said the libraries were not spacious, have archaic and irrelevant books whereas others revealed a lack of E-library facilities which is the need of the 21st-century student-teachers.

Equipped laboratory for Science courses: It was revealed that there were laboratories for teaching and learning of the following stream of Science courses; Chemistry, Physics, Biology, and ICT. They also revealed that student-teachers were not restricted from accessing the laboratories. But the laboratories were lacking some basic apparatus namely; safety equipment like hand gloves, chemicals, and test tubes. Also, computers were not sufficient in the laboratories as per a class size of 50 student-teachers. They further stated that the laboratories were not airy, and having insufficient and expired chemicals which were a problem for studying Integrated Science and ICT in BTE colleges.

Equipped workshop for practical courses: Issues emanated from the group discussion that there were no workshops built-in colleges for teaching practical courses such as Music and Dance, and Pre-Vocational skills courses. They stated that a few types of equipment meant for these courses were kept in dilapidated buildings and consequently depreciating and losing value and usability due to rusting. Therefore, student-teachers have no access to practical lessons. This suggests that many of them would not be capable of teaching practical subjects at the basic level.

Accessible internet facilities: Findings emanating from the student-teachers revealed inaccessible internet facilities at the BTE colleges. They said the colleges were having a 'Wi-Fi' system but were not freely accessible due to technical problems and irregular electricity supply in most of the cases. To have access to the internet, the student-teachers would have to pay more for their service providers which were not favorable in their case as student-teachers.

Based on the above analysis, it can be said that the teaching and learning resources available in the BTE colleges were inadequate. Tutors and student-teachers were not getting access to most of the facilities to achieve targets. Also, it was found that

Science laboratories, computer laboratories, and libraries were unequipped with needed facilities, equipped workshops were not built to provide the first-hand experience to student-teachers in respect of practical and creative subjects. This is aligned with studies conducted in Ghana by (Vidergor, Hava, Noga, and Salman, 2018; Filson and Agyekum, 2014; Agyei and Douglas, 2013). These authors revealed that lack of instructional resources had negative effects on the mode of transaction of curricular in many levels of education. For this reason, the curriculum designers must reconsider the resources in the BTE colleges to prepare effective teachers.

It can be concluded that; 1) Management of BTE colleges frequently supply course material like storybooks, syllabi, and textbooks to student-teachers, 2) the libraries at the BTE colleges are not equipped with relevant books, and lacking electronic library facilities and space to accommodate many student-teachers at the same time, 3) the Science laboratories at the BTE colleges are not spacious to accommodate many student-teachers at a time, and lacking functional equipment in facilitating practical activities, 4) the BTE colleges are lacking equipped workshops to facilitate teaching and learning of practical courses like Pre-vocational skills, Music and Dance and Technical Skills, and 5) internet facilities at the BTE colleges are not freely accessible by student-teachers.

4.10 Conclusion

In this chapter, the judgments of the experts, basic school teachers, and final year student-teacher concerning the relevance and appropriateness of the BTE curriculum objectives, curriculum contents, and methods of teaching, assessment, and relevance of Co-Curricular activities and Extra-Curricular have been analysed. Some of the major findings that emanated from the study are; 1) BTE curriculum objective-I is irrelevant for producing generalist teachers and must be modified while the curriculum objective-II, objective-III, and objective-IV are relevant yet, modifications are required to produce effective prospective teachers, 2) the contents of BTE curriculum courses are appropriate in terms of equipping student-teachers with the subject matter. But the weightage between conceptual understanding and pedagogy in most of the courses is an imbalance as some alumni of the BTE curriculum are incapable of using relevant teaching aids to facilitate teaching and learning in some basic school subjects like Mathematics, Integrated Science, and ICT, 3) Most of the Education and Professional Studies courses (except Educating the Individual with

Learning Disabilities) are appropriate for addressing the professional needs of student-teachers. But some critical courses like Educational Psychology and Educational Philosophy which lay the foundation for teacher preparation are not properly featured in the curriculum, 4) modes of transacting the BTE curriculum in the colleges were affected by inadequate facilities. Assessments of learning outcomes in practical courses like Agriculture, Biology, Chemistry, Physics, and ICT do not emphasize practical skills as colleges are not having college farms and equipped laboratories, 5) provision was made in the BTE curriculum for student-teachers to undertake practice teaching. However, supervision was given less priority in the three stages of practice teaching viz., on-campus stage and out-campus stage and 6) many extra-curricular activities and co-curricular activities are available in BTE colleges but the participation of student-teachers in some of the activities was constrained by inadequate infrastructure facilities. This suggests that it will be difficult for student-teachers in Ghana to develop their pedagogical skills and innovative skills. Looking at the previous presentation of teacher education curricula in countries like Finland, Japan, and India, it can be learnt that concepts like Educational Psychology, innovation, and knowledge of entrepreneurship are essential for teacher preparation. It can be said that these courses including infrastructure facilities required urgent attention in the BTE colleges in Ghana to produce competent teachers. The policymakers need to consider this as needs of the prospective teachers to incorporate relevant course with appropriate contents and facilities to enhance teacher preparation in the BTE colleges. Also, the findings about the modes of transacting the BTE curriculum in colleges is essential for the curriculum designers, the BTE principals, and the subject tutors. It would help to determine the extent to which the facilities available in BTE colleges have facilitated teaching and learning of the courses as well as helping in organizing Co-Curricular and Extra-Curricular activities. The suggestions and the implications emanated from the findings would help to modify the BTE curriculum to prepare effective teachers as per the needs of the society.

