

## CHAPTER IV

### DATA ANALYSIS AND INTERPRETATION

#### 4.0.0 INTRODUCTION

The methodology of the study was described in detail in chapter three, which provided an exhaustive description of the data collection process and tools used. Once the data is collected the researcher's job is to analyse the data. The data collected with the help of the tools in the study are raw in form and do not provide any connotation unless they are analysed and meaning is given to them. The meaning given to data is its actual interpretation. When the researcher analysed the data it not only gives a strong identity to the data but also helps in testing the hypothesis. It generally helps the researcher in accepting or rejecting the hypothesis. Analysis of data helps to achieve the objectives of the study. Once the data is analysed the inference can be made from the sample to the population and the generalization can be done. It's important to take into account the nature and type of data while analysing the data and to choose the correct statistical techniques. This chapter deals with data analysis techniques and the interpretation of data collected through the reaction scale, achievement test and interview schedule.

Details about the achievement of objectives one and two are presented in Chapter III those dealing with the development of MOOC on Research Methodology for Student Teacher Educators and the implementation of the developed MOOC. In order to achieve objective three of the present study i.e. To study the effectiveness of the MOOC in terms of the achievement of Student Teacher Educators in Research Methodology and to test the null hypothesis a comparison of the post-test scores of the experimental and control group in achievement test was done. To achieve objective four of the present study i.e. To study the effectiveness of the designed MOOC in terms of reactions of students, a 5-point Likert-type reaction scale was used. The data collected through the scale was analysed using frequency, percentage and intensity index. To achieve objective five of the study i.e. to study the experiences of Student Teacher Educators in learning through MOOC an interview schedule was used. The data collected through the interview schedule was analysed using content analysis. Detailed data analysis is done in this chapter objective-wise as follows.

#### 4.1.0. EFFECTIVENESS OF MOOC IN TERMS OF ACHIEVEMENT OF STUDENT TEACHER EDUCATORS

The present study was an experimental research and the design adopted was quasi-experimental i.e. pre-test post-test non-equivalent control/comparison group design. Quasi-experimental designs are those designs where the researcher is not able to control all the extraneous variables. Here the independent variable was manipulated but a random assignment of individuals was not carried out. In such designs, the purpose of the pre-test was to make both the control and experimental groups equivalent before the experiment is conducted. Before making the group equivalent there were 51 Student Teacher Educators in the experimental group and 46 in the control group. After making the group equivalent the number of individuals in each group was 40. As the study was quantitative, quantitative techniques were used to analyse the data. The researcher used mean, standard deviation, standard error of mean and Mann-Whitney U test to analyse the data obtained through the achievement test. As the sampling technique used was convenience sampling, the assumption of parametric statistics cannot be used for the collected data. Therefore, the researcher employed the non-parametric Mann-Whitney U-Test for the data analysis.

#### 4.2.0 COMPARISON OF EXPERIMENTAL AND CONTROL GROUP

Table 4.1 shows the summary of the results after applying descriptive statistics on the post-test scores of the achievement test on the experimental group and control group in the Research Methodology.

**Table 4.1: Distribution of Mean, Standard Deviation (SD) and Standard Error of Mean (SE) of post-test scores of Experimental Group and Control group in Research Methodology.**

Groups	N	Mean	SD	SE
Control	40	26.00	5.18	0.82
Experimental	40	29.88	3.12	0.49

The scores of the post-test in the Research Methodology of the experimental group and control group were compared in Table 4.1. It was found from Table 4.1 that the mean achievement score of the experimental group and control group in Research Methodology were 29.88 and 26.0 respectively. The mean achievement score of the experimental group

was found more than that of the control group in Research Methodology. The standard deviation of the experimental group and control group mean were found to be 3.12 and 5.18 respectively. Comparing the standard deviation of the experimental group and control group, it was found that the experimental group was more homogenous in comparison to the control group in terms of the achievement in the Research methodology. Standard error was also found to be less in the experimental group as compared to the control group. The more mean score of the experiment group in the post-test and the less standard deviation could be due to the implementation of MOOC. To find whether the difference in the mean scores was significant or by chance and to test the null hypothesis i.e. “There will be no significant difference in the post-test mean achievement score of the control and experimental group in Research Methodology” non-parametric statistic Mann-Whitney U-test was used. The detailed summary of the Mann-Whitney U-test is given in Table 4.2 which is followed by the analysis.

**Table 4.2: Summary of Mann-Whitney U- Test for Achievement in Research Methodology of Experimental and Control group with Sample Size (N), Sum Ranks ( $\Sigma R$ ), U- Value, z- Value and significance level**

Groups	N	$\Sigma R$	U- Value	z- Value	Significance Level
Experimental	40	2036.00	1216.00	4.018	0.000
Control	40	1204.00			

As seen in Table 4.2 it can be seen that the sum of the ranks of the group taught through MOOC and the control group taught through the conventional method were 2036.00 and 1204.00 respectively with 40 Student Teacher Educators comprised in each group. The Z-value was 4.018 and the u value was 1216.00. Referring to the table for normal probability (Table A of Sigel, 1956) under null Hypothesis ( $H_0$ ) of z, for  $z \leq 4.018$ , the two-tailed probability was found to be 0.000 which was lesser than our decided significance level ( $\alpha$ ) i.e. 0.01. Therefore the null hypothesis i.e. “There will be no significant difference in the post-test mean achievement score of the control and experimental group in Research Methodology” was rejected and it could be believed that the group who studied through MOOC and the group who were taught through a conventional method different significantly in terms of their mean achievement test score in Research Methodology.

Moreover, also referring to Table 4.1 it can be seen that the mean achievement score of the experimental group is higher than the mean achievement score of the control group which can be due to the teaching of the experimental group through MOOC. Thus it can be concluded that the MOOC in Research Methodology was found to be effective in enhancing the achievement of Student Teacher Educators in Research Methodology.

#### **4.3.0 EFFECTIVENESS OF THE MASSIVE OPEN ONLINE COURSE IN TERMS OF THE REACTIONS OF THE STUDENT TEACHER EDUCATORS**

To study the effectiveness of the MOOC in terms of the reaction of student-teacher educators, a reaction scale was implemented consisting of 35 statements. These statements of the reaction scale were then divided into eight components which included overall effectiveness, course structure and planning, video lessons, additional e-resources, discussion forum, assessment, instructors' support and feasibility of the MOOC. The researcher first found the Intensity Index of individual statements in each of the components and then found the average Intensity Index of that component. Finally, the average Intensity Index of all eight components was calculated.

The reaction scale was a 5-point Likert type of scale which was analysed using frequency, percentage, and Intensity Index(II). In a Likert scale, the Intensity Index specifies the exact point of intensity chosen by the sample for each item. It is simple to make a judgment regarding the participants' response to the given statement by converting the data into a single number (Chaudhari, 2016; Khirwadkar. A & Chaudhari. P, 2019; Kothari. C. R, 2004; Lakhera 2017; Kumar, 2016 cited in Lakshmi, 2020). The reaction of respondents was measured towards different components related to the development and implementation of MOOC.

#### **4.3.1 The reaction towards the Overall Effectiveness of the MOOC**

Eleven statements of the reaction scale focused on the reaction of Student Teacher Educators towards the overall effectiveness of MOOCs. The intensity of each statement along with percentage and frequency is given in Table 4.3.

**Table 4.3: Frequency-wise (F), Percentages (%), and Intensity Index-wise (II) reaction (Strongly Agree-SA, Agree-A, Undecided-UD, Disagree-D, and Strongly Disagree- SD) of Student Teacher Educators towards Overall Effectiveness of the MOOC.**

Sr. No.	Statements	SA (F, %)	A (F,%)	UD (F,%)	D (F,%)	SD (F,%)	II
1	Learning Research Methodology through a MOOC was interesting.	32 80.0	08 20.0	0	0	0	4.80
2	The MOOC was well structured and planned.	31 77.5	08 20.0	0	01 2.5	0	4.72
3	The instructions provided in every lesson were elaborate.	27 67.5	10 25.0	1 2.5	2 5.0	0	4.55
4	The MOOC helped me to achieve the given course objectives.	25 62.5	15 37.5	0	0	0	4.62
5	The time duration of the course was appropriate.	23 57.5	12 30.0	03 7.5	02 5.0	0	4.40
6	MOOC promotes self-paced learning	30 75.0	9 22.5	01 2.5	0	0	4.72
7	I would like to learn other topics of Research Methodology through MOOC	24 60.0	13 32.5	01 2.5	01 2.5	01 2.5	4.45
8	The MOOC was flexible to learn at my own preferred time.	26 65.0	14 35.0	0	0	0	4.65
9	The MOOC was mobile-friendly.	25 62.5	14 35.0	0	0	01	4.55
10	This course has increased my interest in online learning.	29 72.5	9 22.5	01 2.5	01 2.5	0	4.65
11	I would highly recommend this course to other Student Teacher Educators.	30 75.0	08 20.0	02 5.0	0	0	4.70
<b>Average</b>							4.62

For statement one, 80 per cent and 20 per cent of Student Teacher Educators reacted strongly agree and agree respectively. The Intensity Index of 4.80 for the statement showed that most of the student teacher educators found it interesting to learn Research Methodology through MOOC. 77.5 per cent, 20 percent, and 2.5 percent of Student Teacher Educators reacted strongly agree, agree, and disagree respectively to statement

two. The Intensity Index of 4.72 for the statement showed that most of the student teacher educators found the MOOC well-structured and well-planned.

For statement three, 67.5 percent, 25 percent, 2.5 percent and 5.0 percent of Student Teacher Educators reacted strongly agree, agree, undecided and disagree respectively. The Intensity Index of 4.55 for the statement showed that the instructions provided in the lesson were elaborate. 62.5 percent and 37.5 percent reacted strongly agree and agree respectively to statement four. The Intensity Index of 4.62 for the statement showed that most of the student teacher educators found MOOC course objectives achievable.

For statement five, 57.5 percent, 30 percent, 7.5 percent and 5.0 percent of Student Teacher Educators reacted strongly agree, agree, undecided and disagree respectively. The Intensity Index of 4.40 for the statement showed that the time duration was appropriate. 75.0 percent, 22.5 percent and 2.5 percent reacted strongly agree, agree and undecided respectively to statement six. The Intensity Index of 4.72 for the statement showed that most of the Student Teacher Educators found the course self-paced. For statement seven, 60.0 percent, 32.5 percent, 2.5 percent, 2.5 percent, and 2.5 percent of Student Teacher Educators reacted strongly agree, agree, undecided, disagree and strongly disagree respectively. The Intensity Index of 4.45 for the statement showed that Student Teacher Educators preferred learning other topics also through MOOC. 65.0 percent and 35.0 percent reacted strongly agree and agree respectively to statement eight. The Intensity Index of 4.65 for the statement showed that most of the Student Teacher Educators found the course flexible.

For statement nine, 62.5 percent and 35.0 percent of Student Teacher Educators reacted strongly agree and agree respectively. The Intensity Index of 4.55 for the statement showed that Student Teacher Educators found the MOOC user-friendly. 72.5 percent, 22.5 percent, 2.5 percent, and 2.5 percent reacted strongly agree, agree, undecided and disagree respectively to statement ten. The Intensity Index of 4.65 for the statement showed that MOOCs increased student interest in online learning.

For statement eleven, 75.0 percent, 20.0 percent and 5.0 percent of Student Teacher Educators reacted strongly agree, agree and undecided respectively. The Intensity Index of 4.70 for the statement showed that Student Teacher Educators will recommend such a course in the future to others.

The average Intensity Index of 4.62 towards the overall effectiveness of MOOC indicates that the MOOC was found overall effective in terms of the positive reaction of student-teacher educators.

#### 4.3.2 The Reaction Towards the Course Structure & Planning of MOOC

Five statements of the reaction scale focused on the reaction of Student Teacher Educators towards the course structure and planning of MOOC. The intensity of each statement along with percentage and frequency is given in Table 4.4.

**Table 4.4: Frequency-wise (F), Percentages (%), and Intensity Index-wise (II) reaction (Strongly Agree-SA, Agree-A, Undecided-UD, Disagree-D, and Strongly Disagree- SD) of Student Teacher Educators towards course structure and planning of the MOOC.**

Sr no	Items	SA (F, %)	A (F,%)	UD (F,%)	D (F,%)	SD (F, %)	II
12	The course was delivered as outlined in the syllabus.	25 62.5	14 35.0	0	0	1 2.5	4.55
13	The introduction (learning objectives, instructor information, target group, etc.) given at the beginning of this MOOC was clear to me.	30 75.0	8 20.0	2 5.0	0	0	4.70
14	The manual provided to use the MOOC was easy to understand.	27 67.5	10 25.0	1 2.5	2 5.0	0	4.55
15	Badges at the end of each module motivated me to learn more content through MOOC.	27 67.5	9 22.5	4 10.0	0	0	4.57
16	The new platform developed to host MOOCs was well-designed.	27 67.5	12 30.0	1 2.5	0	0	4.65
<b>Average</b>							<b>4.60</b>

For statement 12, 62.5 percent and 35.0 percent of Student Teacher Educators reacted strongly agree and agree respectively. The Intensity Index of 4.55 for the statement showed that most of the Student Teacher Educators found the course was delivered as per the outline. 75.0 percent, 20 percent, and 5.0 percent of Student Teacher Educators reacted strongly agree, agree, and undecided respectively to statement 13. The Intensity Index of 4.70 for the statement showed that most of the Student Teacher Educators found instruction

clear and lucid. For statement 14, 67.5 percent, 25.0 percent, 2.55 percent, and 2.55 percent of Student Teacher Educators reacted strongly agree, agree undecided and disagree respectively. The Intensity Index of 4.55 for the statement showed that most of the Student Teacher Educators found the manual easy to understand. 67.5 percent, 22.5 percent, and 10 percent of Student Teacher Educators reacted strongly agree, agree and undecided respectively to statement 15. The Intensity Index of 4.57 for the statement showed that most of the student teacher educators found badges motivating. For statement 16, 67.5 percent, 30.0 percent, and 2.5 percent of Student Teacher Educators reacted strongly agree, agree and undecided respectively. The Intensity Index of 4.65 for the statement showed that most of the student teacher educators found the platform well designed.

The average Intensity Index of 4.60 towards the course structure indicates the effectiveness of course structure in the MOOC in terms of the positive reaction of student-teacher educators.

### 4.3.3 The reaction towards the Video lessons provided in the MOOC

Three statements focused on the reaction of Student Teacher Educators towards the video lessons in MOOC. The intensity of each statement along with percentage and frequency is given in Table 4.5.

**Table 4.5: Frequency-wise (F), Percentagewise (%), and Intensity Index-wise (II) reaction (Strongly Agree-SA, Agree-A, Undecided-UD, Disagree-D, and Strongly Disagree- SD) of Student Teacher Educators towards video lessons in MOOC**

Sr no	Items	SA (F, %)	A (F, %)	UD (F, %)	D (F, %)	SD (F, %)	II
17	Examples used in the videos were relevant to the topics.	34 85.0	5 12.5	1 2.5	0	0	4.82
18	The length of the videos used in this MOOC was appropriate.	20 50.0	18 45.0	1 2.5	1 2.5	0	4.42
19	Interactive videos used in all courses were fun and made the content engaging.	20 50.0	18 45.0	2 5.0	0	0	4.45
20	The language used in the video was simple and easy to understand.	30 75.0	10 25.0	0	0	0	4.75
<b>Average</b>							<b>4.61</b>

For statement 17, 85 percent, 12.5 percent and 2.5 percent of Student Teacher Educators reacted strongly agree, agree and undecided respectively. The Intensity Index of 4.82 for the statement showed that most of the Student Teacher Educators found examples in videos relevant. 50 percent, 45 percent, 2.5 percent and 2.5 percent of Student Teacher Educators reacted strongly agree, agree, undecided and disagree respectively to statement 18. The Intensity Index of 4.42 for the statement showed that most of the Student Teacher Educators found the length of videos appropriate. For statement 19, 50 percent, 45 percent and 5.0 percent of Student Teacher Educators reacted strongly agree, agree and undecided respectively. The Intensity Index of 4.45 for the statement showed that most of the Student Teacher Educators found interactive videos engaging. 75 percent and 25 percent of Student Teacher Educators reacted strongly agree and agree respectively to statement 20. The Intensity Index of 4.75 for the statement showed that most of the Student Teacher Educators found the language used in videos easy.

The average Intensity Index of 4.61 towards the video lessons indicates the effectiveness of video lessons in the MOOC in terms of the positive reaction of student-teacher educators.

#### 4.3.4 The reaction towards the Additional E-resources given in the MOOC

Two statements focused on the reaction of Student Teacher Educators towards the additional resources in MOOC. The intensity of each statement along with percentage and frequency is given in Table 4.6.

**Table 4.6: Frequency-wise (F), Percentagewise (%), and Intensity Index-wise (II) reaction (Strongly Agree-SA, Agree-A, Undecided-UD, Disagree-D, and Strongly Disagree-SD) of Student Teacher Educators towards additional resources in MOOC.**

Sr no	Items	SA (F, %)	A (F, %)	UD (F, %)	D (F, %)	SD (F, %)	II
21	The course was supported by adequate additional E-resources in the form of YouTube, PDF documents, and articles.	22 55.0	16 40.0	1 2.5	1 2.5	0	4.47
22	All additional resources provided in the course were relevant to the topic.	26 65.0	14 35.0	0	0	0	4.65
<b>Average</b>							4.56

For statement 21, 55 percent, 40 percent, 2.5 percent and 2.5 percent of Student Teacher Educators reacted strongly agree, agree and undecided respectively. The Intensity Index of 4.47 for the statement showed that most of the Student Teacher Educators found adequate additional resources in the course. 65 percent and 35 percent of Student Teacher Educators reacted strongly agree and agree respectively to statement 22. The Intensity Index of 4.65 for the statement showed that resources were relevant to the topic of course.

The average Intensity Index of 4.56 towards the E-resources indicates the effectiveness of E-resources in the MOOC in terms of the positive reaction of student-teacher educators.

#### 4.3.5 Reaction towards the Discussion Forums in the MOOC

There was one statement that focussed on the reaction of Student Teacher Educators towards the discussion forums in MOOC. The intensity of each statement along with percentage and frequency is given in Table 4.7.

**Table 4.7: Frequency-wise (F), Percentagewise (%), and Intensity Index-wise (II) reaction (Strongly Agree-SA, Agree-A, Undecided-UD, Disagree-D, and Strongly Disagree- SD) of Student Teacher Educators towards discussion forums in MOOC.**

Sr no	Items	SA (F, %)	A (F,%)	UD (F,%)	D (F,%)	SD (F,%)	II
23	The discussion forum used in MOOC helped me in collaborating with my peers.	14 35.0	18 45.0	6 15.0	1 2.5	1 2.5	4.07
<b>Average</b>							<b>4.07</b>

For statement 23, 35 percent, 45 percent, 15.0 percent, 2.5 percent and 2.5 percent of Student Teacher Educators reacted strongly agree, agree, undecided, disagree and strongly disagree respectively. The average Intensity Index of 4.07 towards the discussion forum indicates the effectiveness of the discussion forum in the MOOC in terms of the positive reaction of student-teacher educators.

#### 4.3.6 Reaction towards the Assessment Components of MOOC

Three statements focused on the reaction of Student Teacher Educators towards the assessment in MOOC. The intensity of each statement along with percentage and frequency is given in Table 4.8.

**Table 4.8: Frequency-wise (F), Percentagewise (%), and Intensity Index-wise (II) reaction (Strongly Agree-SA, Agree-A, Undecided-UD, Disagree-D, and Strongly Disagree- SD) of Student Teacher Educators towards assessments in MOOC.**

Sr no	Items	SA (F, %)	A (F,%)	UD (F,%)	D (F,%)	SD (F,%)	II
24	Practice multiple-choice questions in each of the courses helped me in revising the content.	24 60.0	15 37.5	1 2.5	0	0	4.57
25	There were adequate quizzes given in each course.	24 60.0	12 30.0	2 5.0	2 5.0	0	4.45
26	Lessons in the form of activities made the course engaging	29 72.5	11 27.5	0	0	0	4.72
<b>Average</b>							4.58

For statement 24, 60 percent, 37 percent and 2.5 percent of Student Teacher Educators reacted strongly agree, agree and undecided respectively. The Intensity Index of 4.57 for the statement showed that most of the Student Teacher Educators found MCQ beneficial to revising the content. 60 percent, 30 percent, 5.0 percent and 5.0 percent of Student Teacher Educators reacted strongly agree, agree undecided and disagree respectively to statement 25. The Intensity Index of 4.45 for the statement showed that most of the Student Teacher Educators found quizzes adequate in the course. For statement 26, 72.5 percent and 27.5 percent of Student Teacher Educators reacted strongly agree and agree respectively. The Intensity Index of 4.72 for the statement showed that most of the Student Teacher Educators found that activities made the course.

The average Intensity Index of 4.58 towards the assessment indicates the effectiveness of assessment in the MOOC in terms of the positive reaction of student-teacher educators.

#### 4.3.7 Reaction towards the Instructors' Support in MOOC

Five statements focused on the reaction of Student Teacher Educators towards the instructor's support in the implementation of MOOC. The intensity of each statement along with percentage and frequency is given in Table 4.9.

**Table 4.9: Frequency-wise (F), Percentagewise (%), and Intensity Index-wise (II) reaction (Strongly Agree-SA, Agree-A, Undecided-UD, Disagree-D, and Strongly Disagree- SD) of Student Teacher Educators towards instructor's support in MOOC.**

Sr no	Items	SA (F, %)	A (F, %)	UD (F, %)	D (F, %)	SD (F, %)	II
27	As the instructor was always available to help student-teacher educators, I never felt lost in the course.	35 87.5	5 12.5	0	0	0	4.87
28	The daily progress report shared by the instructor on WhatsApp made me complete the course on time.	39 97.5	1 2.5	0	0	0	4.97
29	Enrolment deadlines and course deadlines (start and end date) were informed in advance.	34 85.0	5 12.5	1 2.5	0	0	4.82
30	Feedback was given by the instructor on the final graded assignments.	18 45.0	17 42.5	5 12.5	0	0	4.32
31	All my queries were answered through WhatsApp by the instructor.	27 67.5	12 30.0	1 2.5	0	0	4.65
<b>Average</b>							<b>4.72</b>

For statement 27, 67.5 percent and 12.5 percent of Student Teacher Educators reacted strongly agree and agree respectively. The Intensity Index of 4.87 for the statement showed that most of the Student Teacher Educators found the instructor always available to help student-teacher educators. 97.2 percent and 2.5 percent of Student Teacher Educators reacted strongly agree and agree respectively to statement 28. The Intensity Index of 4.97 for the statement showed that most of the student teacher educators found daily progress reports help them complete the course. For statement 29, 85 percent, 12.5 percent and 2.5 percent of Student Teacher Educators reacted strongly agree, agree and undecided

respectively. The Intensity Index of 4.82 for the statement showed that most of the Student Teacher Educators viewed that deadlines were conveyed in advance. For statement 30, 45 percent, 42.5 percent and 12.5 percent of Student Teacher Educators reacted strongly agree, agree and undecided respectively. The Intensity Index of 4.32 for the statement showed that most of the Student Teacher Educators got feedback on final graded assignments. For statement 31, 67.5 percent, 30 percent and 2.5 percent of Student Teacher Educators reacted strongly agree, agree and undecided respectively. The Intensity Index of 4.65 for the statement shows that all of the queries of Student Teacher Educators were answered through WhatsApp.

The average Intensity Index of 4.72 towards the instructors' support indicates the effectiveness of instructors' support in the MOOC in terms of the positive reaction of student-teacher educators.

#### 4.3.8 Reaction towards the Feasibility of MOOC

Four statements focused on the reaction of Student Teacher Educators towards the feasibility of MOOC. The intensity of each statement along with percentage and frequency is given in Table 4.10.

**Table 4.10: Frequency-wise (F), Percentagewise (%), and Intensity Index-wise (II) reaction (Strongly Agree-SA, Agree-A, Undecided-UD, Disagree-D, and Strongly Disagree- SD) of Student Teacher Educators towards feasibility in MOOC.**

Sr no	Items	SA (F, %)	A (F,%)	UD (F,%)	D (F,%)	SD (F,%)	II
32	The final graded assignments were long and took a lot of my study time.	2 5.0	2 5.0	2 5.0	21 52.5	13 32.5	4.02
33	There were lots of disturbances in the audio used in the content video of the MOOC.	0	0	2 5.0	22 55.0	16 40.0	4.35
34	Too much workload was given during each week.	2 5.0	2 5.0	5 12.5	5 12.5	26 65.0	4.27
35	I did not face any major technical difficulties while navigating through the MOOC.	20 50.0	18 45.0	0	1 2.5	1 2.5	4.37
<b>Average</b>							<b>4.25</b>

For statement 32, 52.5 percent, 32.5 percent, 5.0 percent, 5.0 percent and 5.0 percent of Student Teacher Educators reacted strongly disagree, disagree, undecided, agree and strongly agree respectively. The Intensity Index of 4.02 for the statement showed that most of the Student Teacher Educators did not find assignments too long. 40 percent, 55 percent and 5.0 percent of Student Teacher Educators reacted strongly disagree, disagree and undecided respectively with statement 33. The Intensity Index of 4.35 for the statement showed that most of the student teacher educators did not find any disturbances in the audio and it was clear. For statement 34, 65 percent, 12.5 percent, 12.5 percent, 5.0 percent and 5.0 percent of Student Teacher Educators reacted as strongly disagree, disagree, undecided and agree respectively. The Intensity Index of 4.27 for the statement showed that most of the Student Teacher Educators did not find much workload in the course. For statement 35, 50 percent, 45.0 percent, 2.5 percent and 2.5 percent of Student Teacher Educators reacted strongly agree, agree, disagree and strongly disagree respectively. The Intensity Index of 4.37 for the statement showed the majority of Student Teacher Educators faced no technical difficulties.

The average Intensity Index of 4.25 towards the feasibility indicates the feasibility of the MOOC in terms of the positive reaction of Student Teacher Educators.

As the 35 statements of the reaction scale were divided into eight components, the average Intensity Index of all the individual components along with the average Intensity Index of the reaction scale is given below in Table 4.11.

**Table 4.11: Average Intensity Index (II) of all the components of the reaction scale.**

Sr. No.	Components	Intensity Index ( II)
1	The reaction towards the Overall Effectiveness of the MOOC	4.62
2	The reaction towards the Course Structure and Planning of MOOC	4.60
3	The reaction towards the Video lessons provided in the MOOC	4.61
4	The reaction towards the Additional E-resources given in the MOOC	4.56

5	The reaction towards the Discussion forums in the MOOC	4.07
6	The reaction towards the Assessment Components of MOOC	4.58
7	The reaction towards the Instructors' Support in MOOC	4.72
8	The reaction towards the Feasibility of MOOC	4.25
<b>Average Intensity Index (II)</b>		4.50

The average Intensity Indices of all the eight components of the MOOCS were found to be 4.62, 4.60, 4.61, 4.56, 4.07, 4.58, 4.72 and 4.25 which showed the effectiveness of MOOCS in all these eight components. The average intensity index of all these eight components was found to be 4.50 which showed the effectiveness of the MOOC in terms of the positive reaction of Student Teacher Educators.

#### **4.4.0 ANALYSIS OF THE DATA COLLECTED THROUGH INTERVIEW**

After the implementation of the MOOC, a follow-up interview was conducted with the Student Teacher Educators to get their responses on experiences in learning through MOOC, challenges faced and suggestions for future instructors and Student Teacher Educators who may enrol in a MOOC in future. The investigator selected 12 Student Teacher Educators randomly from the experimental group and conducted a telephonic interview with them. All the interviews lasted for around 30 minutes and an inbuilt application of a Mac laptop was used to record their voices. The entire interview was recorded with the prior intimation and later transcribed manually for qualitative analysis using content analysis.

Out of 12 Student Teacher Educators interviewed eleven were female Student Teacher Educators and one was a male student. The majority of the Student Teacher Educators were having teaching experience, whereas only four Student Teacher Educators were having no experience in teaching. Out of 12 student-teacher educators, only four had bachelor's degrees while eight Student Teacher Educators were having a master's background other than Education subject. The majority of the student teacher educators never had experienced MOOC in past, although two student teacher educators did try their hands on MOOC and two were familiar with online courses on diksha, but not on MOOC. Seven out of twelve Student Teacher Educators did have a little knowledge of Research

Methodology, and five Student Teacher Educators had never studied Research Methodology in past.

It was important to know the experiences of Student Teacher Educators on their learning through MOOCs developed in the [techtor.in](http://techtor.in) platform. Most of the Student Teacher Educators felt that it was an interesting medium to learn Research Methodology. Some described MOOC as an important course for anywhere and anytime learning. Others felt that this course made them aware of a new platform to learn Research Methodology. The feature that makes this platform important for Student Teacher Educators is that there are shorter videos, the option to revise videos, and no burden of carrying books. One student-teacher educator said that her fear of online learning was removed by this course. One interviewee commented,

*“When you introduced us on the first day of the course, I was very afraid of it because this is a new technology. I thought I would not be able to do it. Never did I do an online course. But eventually, I got interested in the course. The language was very easy. Now I have learnt in college about MOOC, I become aware of such a course, so I will make such a course in science and social science for school students”.*

It was important to know the challenges faced by the Student Teacher Educators on the platform where they enrolled to learn through MOOCs. Some felt that there were no major challenges faced while others listed some challenges like forgetting their password while enrolling and confusion between registering for the course and logging in. In all the cases respondents reported that the manual helped them to avoid confusion. One interviewee opined that fonts in a few videos needed to be bigger than it was.

When asked about the features of an ideal video in MOOC, a common view among the interviewees was that the videos should have a duration of less than ten minutes. Anywhere more than that duration student teacher educators lose interest and concentration. The majority of participants opted for video-embedded pop-ups in the videos as it helps in self-evaluation, and constant feedback acts as a guide and helps in revision. Opinions differed as to whether instructor presence should be therein videos or not. Some interviewees argued that it is a distractor while others considered that it gives credit to the instructor and it should be a must.

The next section of the interview was concerned with the most and least interesting features of the MOOC, majority of the student teacher educators responded that the video-embedded pop-ups in between the videos excited them the most while learning in MOOC. For a small number of student-teacher educators, the activities and games in each module made them enjoy the content of the course. On the other hand, when they were inquired about the least interesting feature some interviewees argued that fixed duration and additional resources after every video were too much to grab and felt unnecessary sometimes.

When student teacher educators were asked about the benefits of MOOC in general, the interviewees on the whole demonstrated that MOOCs are flexible and self-paced and it gives a scope to revise the concepts while learning through MOOCs and all materials are available in one place. One interviewee quoted that

*“ I think we can learn at our own pace and we can revise whenever we want. When we learn through videos so we visualise it it’s a good way to learn. The test is there, activities, games are there so I’s interesting it’s not boring and it’s fun to learn through MOOCs ”.*

Later when the student teacher educators were asked whether MOOCs will ever replace traditional classrooms, there was a mixed reaction. While some opined that it may happen in the future and the future is digital, others felt that instructors’ absence makes it a weak medium to learn. A small number of respondents felt that both MOOCs and traditional learning are equally important and more than the mode the instructor is more important for any course, be it any medium. One interviewee also responded that blended mode will be preferred where MOOC can be used as a learning resource. When asked about the future of MOOC for Student Teacher Educators and whether it will decline or bloom, the majority of the learners opined that it will bloom in the future as it is flexible and suitable for independent learners.

When the Student Teacher Educators were asked what are their recommendations for future learners of MOOC, a small number of those interviewed suggested that learners should make a plan and set their deadlines in advance. Some felt that learning through MOOC initially gives a culture shock as it’s a unique medium to learn a course without any instructor, but later they will enjoy it. There were some suggestions that Student Teacher

Educators should make notes while studying and read all the additional resources provided. One interviewee reported that,

*“I will tell them that focus and watch all videos and also make notes, because after all its technology and if future the platform is lost or deleted, what will a student teacher educator do, so make notes, that stay forever”.*

On the same line when Student Teacher Educators were asked what are their recommendations for developers of the course in the future, some of them suggested that more real-life examples in videos be added, and technical terms explanation should be more. A few of them suggested the instructors have their presence in the videos for Student Teacher Educators to know who are the instructors. One of the interviewees suggested including such a course at the school level with more games features in it.

When asked about their preference of mode in future to learn Research Methodology and why, the majority of Student Teacher Educators preferred to learn through MOOCs as it is self-paced and flexible, but few Student Teacher Educators favoured the traditional method of learning and argued that MOOC will only be preferred if interaction with the teacher is more. One of the Student Teacher Educators was in favour of a blended mode of learning where MOOC is a part and not the whole. The interviewee quoted

*“I will prefer both, first through physical learning because, I would want to know and get connected to the teacher then learn through MOOC. I feel classes of research should be blended it will help student teacher educators a lot”.*

In the final part of the interview when Student Teacher Educators were asked about what should be added to the MOOC in future, to make it more engrossing, few Student Teacher Educators reported that there should be doubt-solving after every specialised MOOC. Whilst a minority mentioned that more of a discussion forum be added after every module. One student teacher educator shared a few features like Nearpod, an option to download videos and a course map.

Based on this analysis and interpretation of data, the findings and interpretation are done in Chapter V of the present study.