Chapter 4 Data Analysis and Interpretation

4.1 Introduction

This chapter presents the analysis and interpretation of the data collected during the course of the study. The primary objective of this section is to systematically examine the responses and observations gathered through questionnaires and to derive meaningful insights in relation to the research objectives and hypotheses.

Data analysis is a crucial part of the research process as it helps transform raw data into relevant findings that answer the research questions. It involves organizing the data, applying statistical or qualitative techniques and interpreting the results in the context of the theoretical framework and literature reviewed in earlier chapters.

4.2 Data Analysis and Procedure

In the present study, the researcher had developed self-constructed tool in order to measure the attitude of the secondary school teachers. For the purpose of collection of the data total 32 different government school were selected from Ranchi District of Jharkhand with the help of random sampling technique. A total number of 32 mathematics teachers of the secondary stage were chosen. Out of them, 6 female and 26 males teachers were selected and data were collected with the proper consent of the teacher.

To analyse the attitude of mathematics teachers towards the DIKSHA app descriptive statistical treatment was undertaken. Statistical treatments such as mean, median, mode and standard deviation were calculated for each of the 20 items of the questionnaire. The items were grouped into three core dimensions: **Effectiveness** (Items 1–7), **Usefulness** (Items 8–14), **Practical Application** (Items 15–20) and 5 open ended question related to all of them.

Table1: Descriptive Analysis of Data

Dimensions	SI No.	Mean	Median	Mode	Standard Deviation
Effectiveness	1.	4.47	5.00	5	.671
	2.	4.09	4.00	4	.641
	3.	3.91	4.00	4	.777
	4.	3.94	4.00	4	.716
	5.	4.03	4.00	4	.897
	6.	4.00	4.00	4	.880
	7.	3.78	4.00	3	.975
Usefulness	8.	3.69	4.00	4	.998
	9.	4.13	4.00	5	.871
	10.	4.13	4.00	4	.833
	11.	3.84	4.00	4	.954
	12.	4.00	4.00	4	.803
	13.	3.91	4.00	4	.856
	14.	4.06	4.00	4	.669
Practical Application	15.	3.94	4.00	5	.948
	16.	3.88	4.00	3	.942
	17.	3.78	4.00	4	.832
	18.	3.84	4.00	4	.808
	19.	3.94	4.00	4	.840
	20.	3.91	4.00	4	.818

4.2.1 Effectiveness of DIKSHA App

The responses in this category showed a clearly positive attitude among teachers. Item 1 had the highest mean 4.47 which means that most of the teachers strongly agreed that the DIKSHA app helps them in their teaching. Other items of this dimension (item 2, item 5 and item 6) also had high mean between 4.00 and 4.09. However, item no. 7 was a bit lower with mean of 3.78, which shows that 75.6 percentage of teachers were less

certain about that particular aspect. The standard deviation values which ranged from 0.641 to 0.975 shows that 57.16 percentage teachers had similar opinions and 75.6 percentage of teacher had different or mixed views especially for Item 7. Still, all the items had a median value of 4.00, meaning that 71.42 percentage of teachers agreed on the usefulness of DIKSHA app. Overall data reveals that mathematics teachers find that the DIKSHA app is most helpful and effective in improving their teaching.

4.2.2 Usefulness of DIKSHA App

The responses on usefulness of DIKSHA app received positive feedback from teachers. Items 9 and 10 had the highest mean value 4.13 which show that many teachers agreed the app offers helpful resources and content. However, Item 8 had the lowest mean value 3.69 and the standard deviation values which ranged from 0.669 to 0.998 which shows the highest variation in responses. These values suggested that teachers had mixed opinions possibly due to differences in access to digital tools or how well they know the app. Still, the median value for all items was 4.00. It means that 85.71 percentage of teachers had a positive view even with some variation.

4.2.3. Practical Application

The responses of this section shows that teachers have generally positive views about usability and applicability of DIKSHA app, however their agreement was a bit less strong as compared to other areas like effectiveness and usefulness. The mean value of items from 15-20 is ranging from 3.78 to 3.94. It is showing that most of teachers agreed the app was usable. However, the standard deviation values which ranged from 0.808 to 0.948 indicate that there are differences in individual experiences. Even these differences in the median score for all items is still 4.00. Which shows that 66.66 percentage of teachers agreed on the practical value of the DIKSHA app.

4.3 Open Ended Questions

Open-ended questions are such type of questions that allows respondents to response in own way and provide detailed descriptions about the questions/statements rather than choosing from predefined options. Unlike closed-ended questions that gives freedom about simple yes or no responses or multiple-choice selections. Open-ended questions/statements encourage individuals to elaborate on their thoughts, experiences, and feelings. These questions often begin with prompts such as how, why, what, or

describe and are particularly valuable in qualitative research, where understanding personal perspectives and the reasoning behind certain behaviours is essential.

Open Ended Item -1

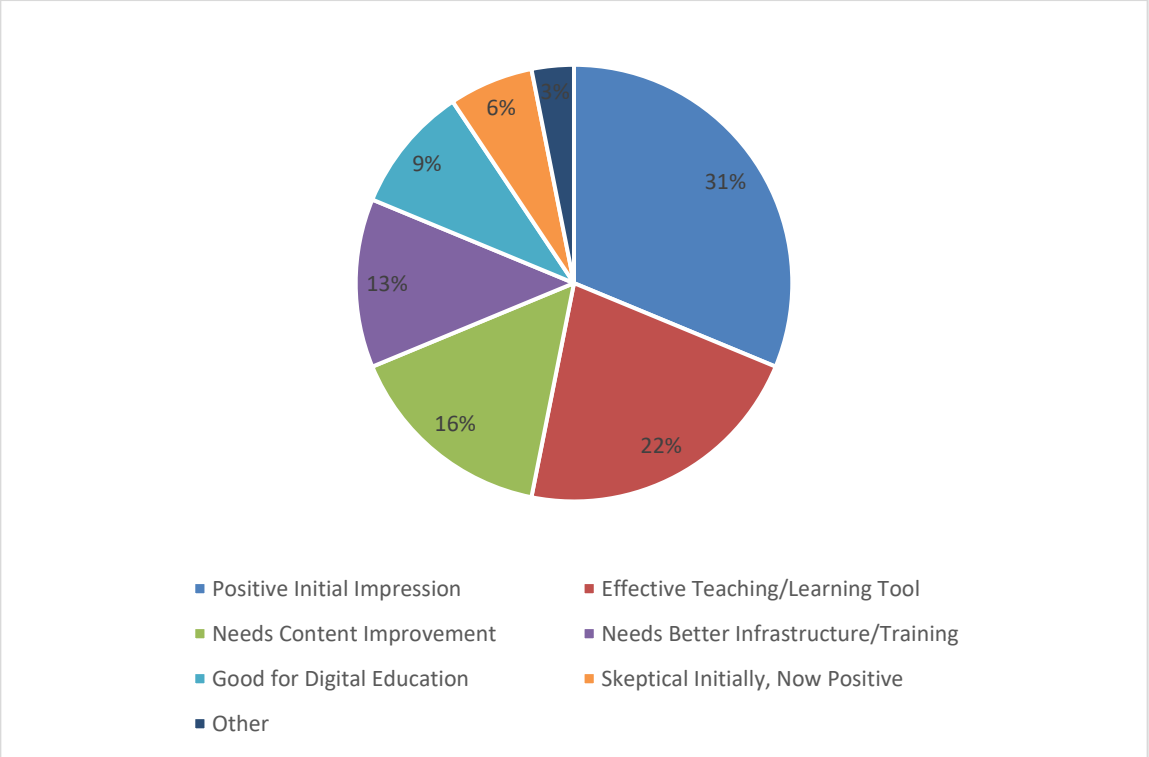

Fig 1: Initial impression of the DIKSHA App and their perception changed over time.

Figure -1 shows the responses of teachers related to initial impression of the DIKSHA App and their perception changed over time. The responses were received through open ended format and interpreted through qualitative method. After analysing data we found that 31, 22, 16, 13, 09, and 06 percent teachers have positive initial impression, effective teaching and learning tool, need for content improvement, need for better infrastructure and training, good for digital education, skeptical initially now positive respectively.

Open Ended Item -2

Fig 2: Features of Diksha App which were helpful for Mathematics Teacher.

Data was taken through open ended questions and interpreted through qualitative methods. Figure -2 shows the responses of teachers regarding features of DIKSHA App which were helpful for mathematics teacher and analysed data reveals that 16, 14, 11, 11, 11, 08, 08, 05, 05, 03, 03 and 05 percent teachers said Videos/Simulations, Interactive Materials/Visual Tools, Quizzes/Assessment/Progress Tracking, Extra Content/Topic Knowledge, General Content Variety, Supplementary Learning materials, Textbooks, Bilingual/Multilingual Content, Real-Life examples, Audio/Visual presentation, User Interface/Usability and negative/neutral feedback respectively were helpful.

Open Ended Item - 3

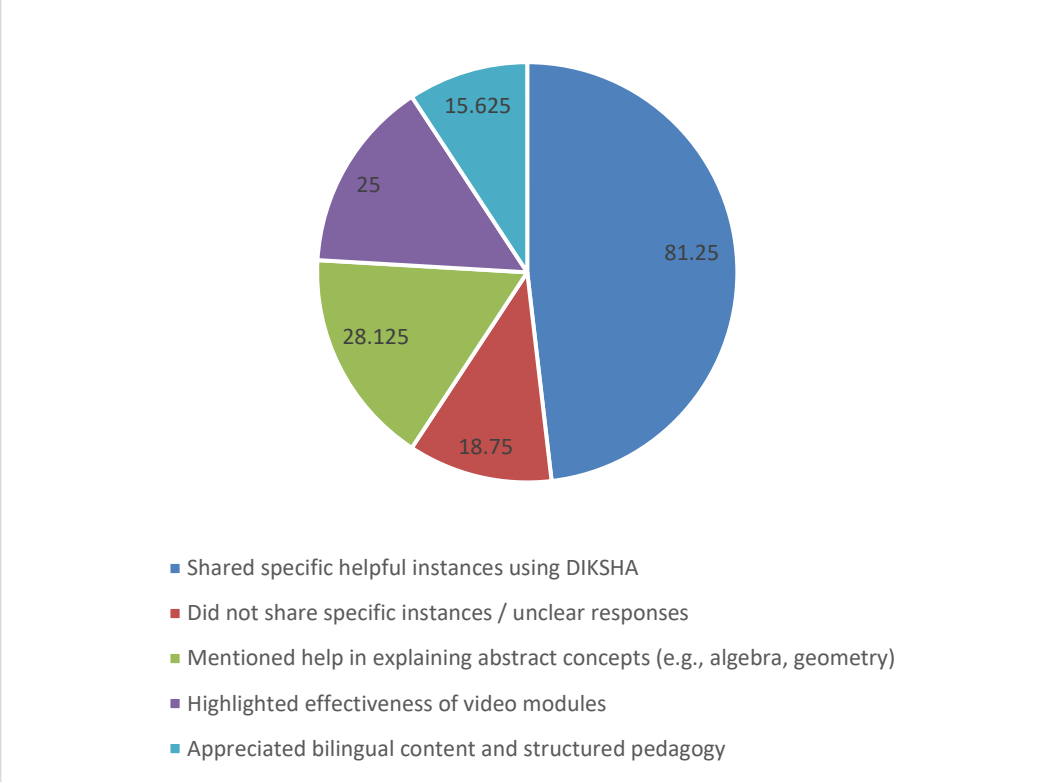

Fig 3: Specific instances regarding DIKSHA App which helped to solve a problem or innovative the teaching.

Data was taken through open ended questions and interpreted through qualitative methods. Figure -3 shows the responses of teachers regarding Specific instances regarding DIKSHA App which helped to solve a problem or innovative the teaching and analysed data reveals that 81.25, 18.75, 28.15, 25 and 16.25 percent teachers have shared specific helpful instances using DIKSHA app, did not share specific instances/unclear responses, mentioned help in explaining abstract concepts (e.g., algebra, geometry), highlighted effectiveness of video modules and appreciated bilingual content and structured pedagogy respectively.

Open Ended Item - 4

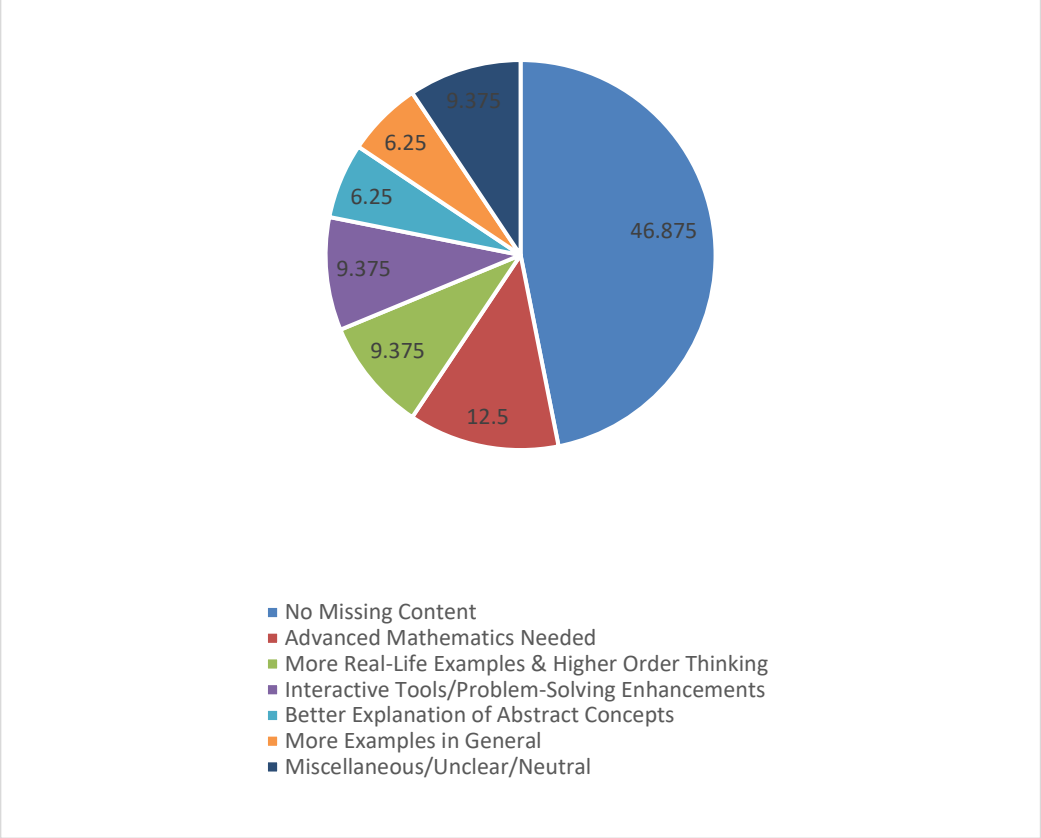

Fig 4: Topics or resources feeling missing or inadequate.

Data was taken through open ended questions and interpreted through qualitative methods. Figure -4 shows the responses of teachers regarding topics or resources feeling missing or inadequate and analysed data reveals that 46.875, 12.5, 9.375, 9.375, 6.25, 6.25 and 9.375 percent teacher have no missing content, advanced mathematics needed, more real-life examples & higher order thinking, interactive tools/problem-solving enhancements, better explanation of abstract concepts, more examples in general and miscellaneous/unclear/neutral.

Open Ended Item -5

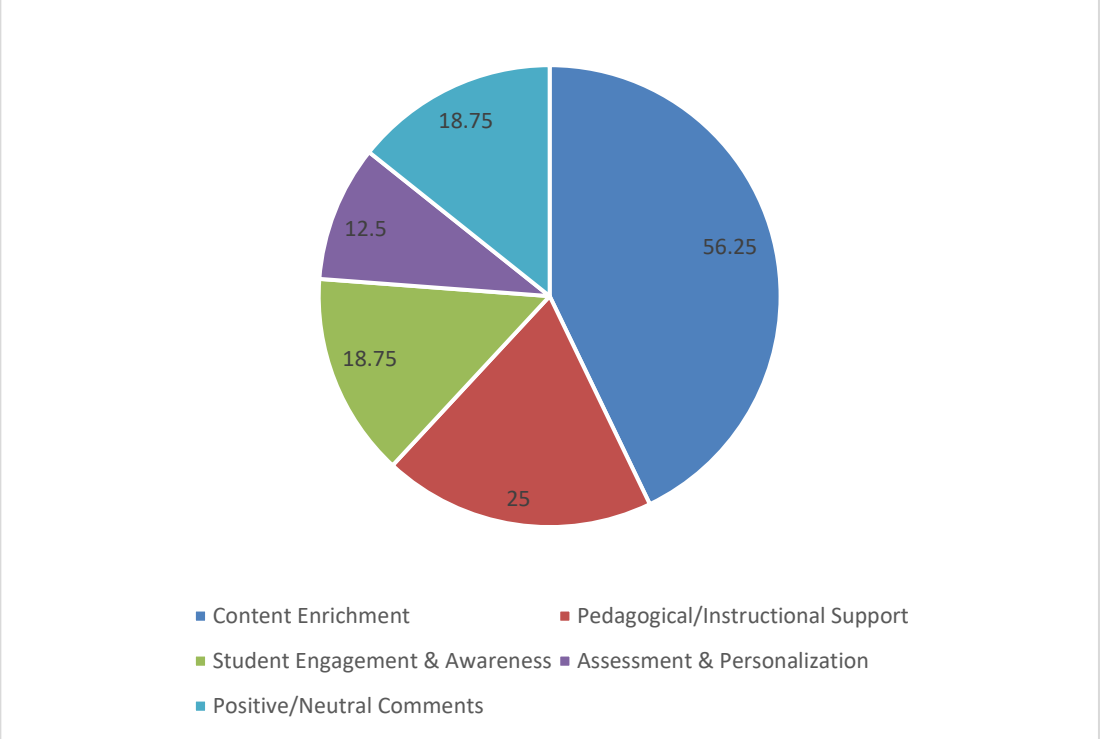

Fig5: Suggestion for further improvement.

Data was taken through open ended questions and interpreted through qualitative methods. Figure -5 shows the responses of teachers regarding Suggestion for further improvement and analysed data reveals that 56.25, 25, 18.75, 12.5 and 18.75 percent teacher have content enrichment, pedagogical/instructional support, student engagement & awareness, assessment & personalization and positive/neutral comments.

Conclusion

The responses from mathematics teachers in Ranchi district indicate a generally positive attitude toward the DIKSHA app with many recognizing its potential to enhance teaching and learning. A significant number of teachers appreciated its video modules, interactive tools, and bilingual content particularly in explaining abstract

mathematical concepts. However, areas for improvement were also highlighted including content enrichment, advanced-level materials, better infrastructure, and increased teacher training. These findings suggest that while DIKSHA is a valuable digital resource, its impact can be further strengthened through targeted content development, pedagogical support, and improved digital readiness among educators.