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Examining the Impact of Technology Integration on Student Engagement

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Abstract

This study explores how technology affects student engagement, participation and academic performance. A survey of 50 students and 6 teachers found that most prefer technology-integrated or mixed learning over traditional methods. Students reported that technology helps them stay focused, participate actively and improve academically. Teachers found it useful for explaining complex topics and keeping students engaged. However, challenges like limited training, poor internet and lack of proper devices were major barriers. The study highlights the need for better training, infrastructure and resources to maximize technology’s benefits in education.

Introduction

The integration of technology in education has transformed student engagement and academic performance, improving learning outcomes and participation. It fosters better collaboration between teachers and students, leading to improved results (Salehi & Salehi, 2012). In today’s digital world, technology shapes education, communication, and socio-economic development (Heiberger & Harper, 2008). However, in Bangladesh, integrating technology faces challenges, particularly due to educators' limited skills and knowledge, which can hinder its effective use (Nisar, 2011; Nwigbo & Madhu, 2016). Parvin (2013) emphasizes the importance of sharing innovative teaching practices to maximize technology’s potential in education. Policymakers globally stress that technology should drive meaningful improvements in teaching and learning (Jimoyiannis & Komis, 2007).

Methodology

This study used a quantitative approach to examine technology’s impact on student engagement. The questionnaire explored:

- Participants' preferences for technology-integrated learning methods compared to traditional methods.
- The advantages and challenges of using technology in education.
- The impact of technology on student engagement, participation and academic performance.

The collected data were analyzed using descriptive statistics, percentages and frequencies, to identify relationships. Graphs and tables were used to present the findings visually. Responses were compared for a comprehensive understanding.

Data Source

Data were collected through structured questionnaires distributed online using Google Forms. The questionnaires included both close-ended and Likert-scale questions to gather numerical data on participants' preferences, usage patterns and perceptions regarding technology in education. The study involved a total of 56 respondents, consisting of 50 students and 6 teachers. Both of the group included individuals from various educational levels.

Data Analysis

Our analysis on the questionnaire responses explored the relationship between technology integration and student engagement. Figure-1 illustrates that most of the students (96%) either preferred technology integrated learning method or a mix of both. In contrast, only 4% students favored traditional learning method. Furthermore, it shows that none of the teacher favored traditional learning method. They suggested either technology integrated learning method or a mix of both methods.

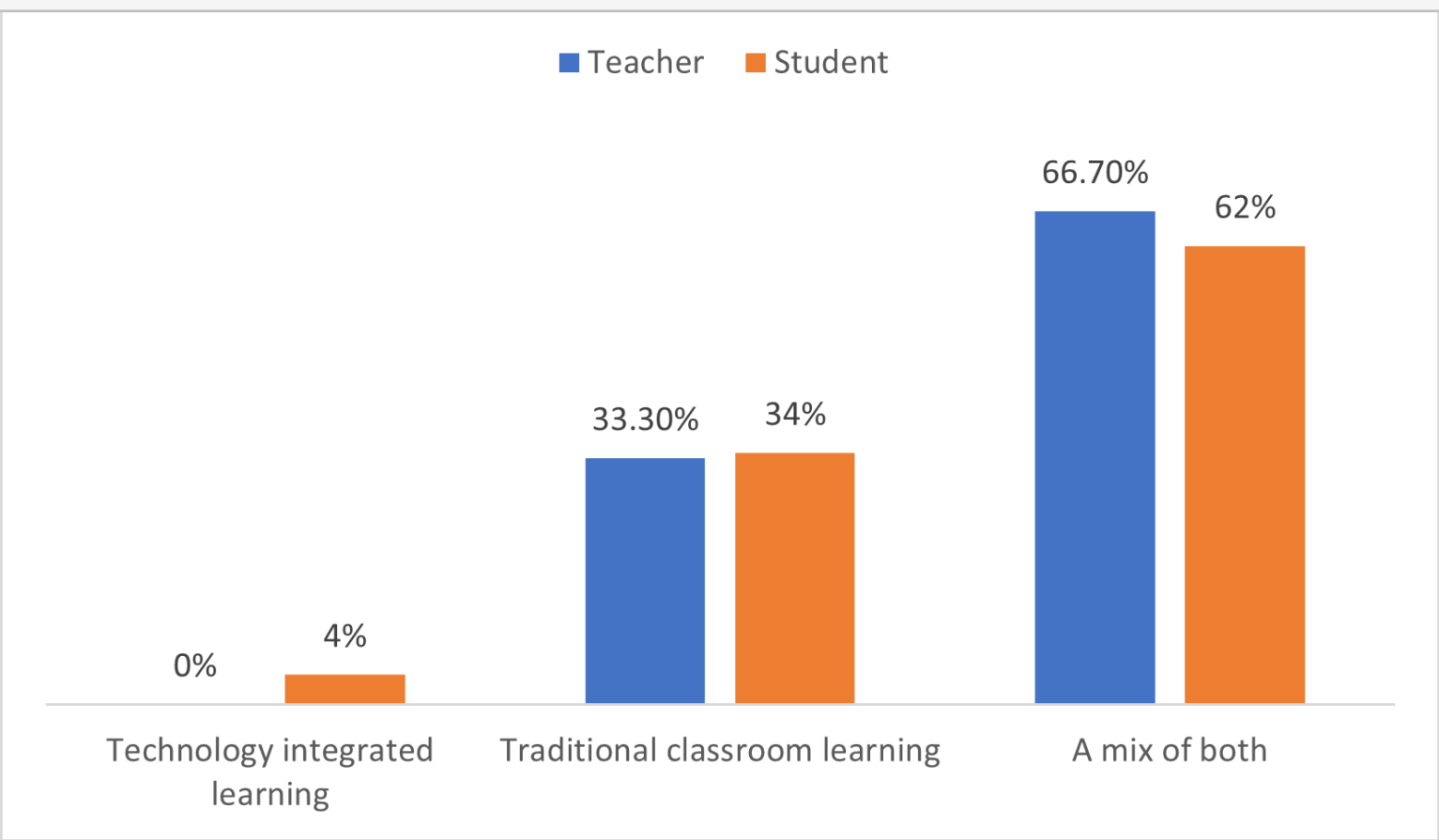


Fig-1: Preference of students and teachers

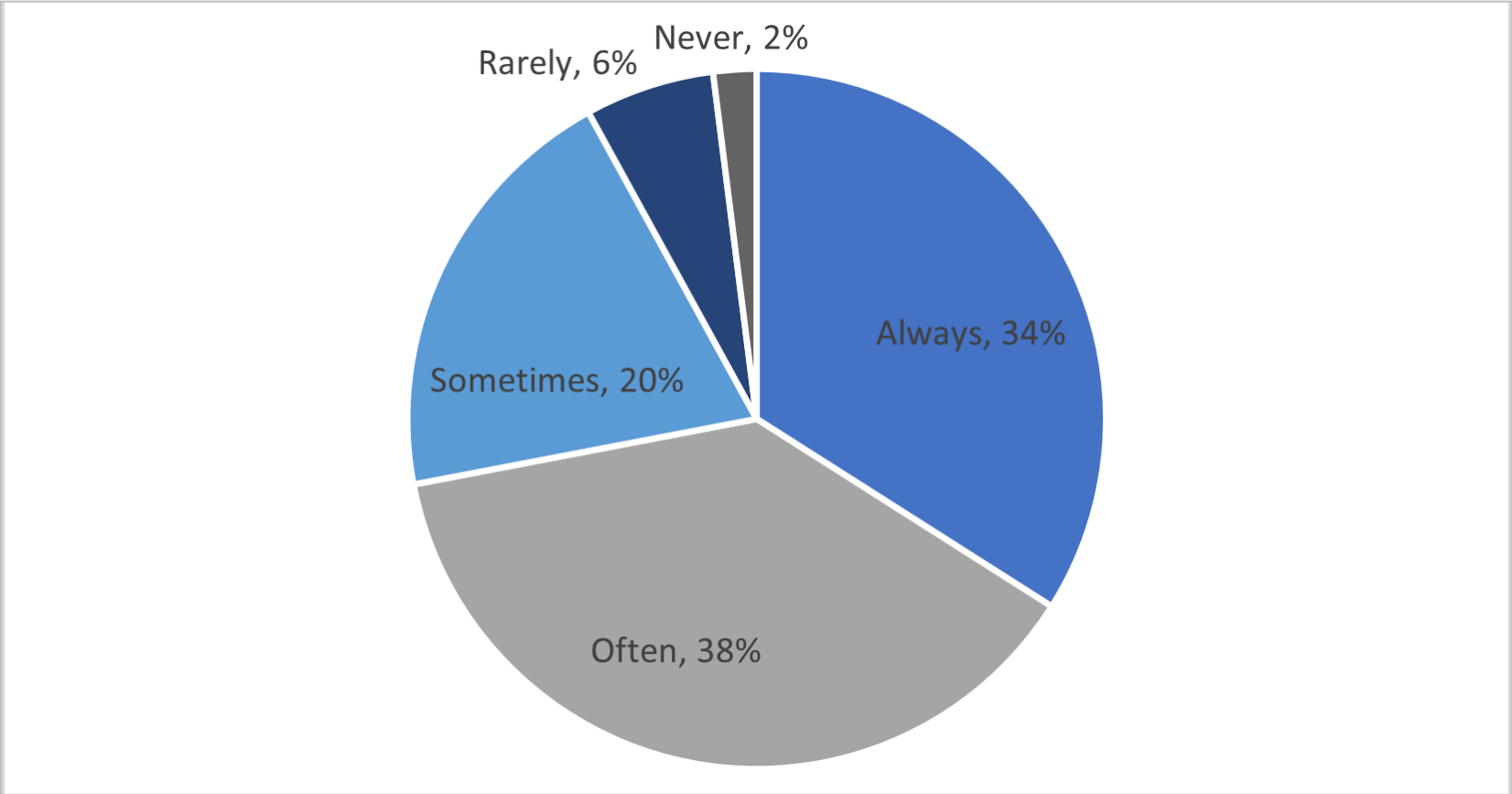


Fig-: Assigning tasks that require technology

Students prefer technology in education due to frequent use and familiarity. Figure 2 shows 34% always and 38% often receive tech-based assignments, while Figure 3 highlights their familiarity with learning platforms. Table 1 presents teachers' views on the benefits of technology in the curriculum, and Figure 4 showcases the technologies they use, supporting their preference for integration.

Table-1: Advantages of integrating technology in education

Statements	Positive response	Frequency
Improve student engagement	83.3%	5 out of 6
Students being more active during tech enabled class	83.3%	5 out of 6
Technology makes it easier to explain complex topic	66.7%	4 out of 6
Improve learning outcomes	83.3%	5 out of 6

Figures 5 and 6 show that 60% of students believe technology improves focus, and 80% participate more actively in tech-based activities. However, 12% feel it doesn't aid focus, 28% are neutral and only 2% reported a negative impact on participation, with 16% remaining neutral. Also, 80% of the students responded that technology make it easier to communicate with their classmates which is illustrated in figure 8.

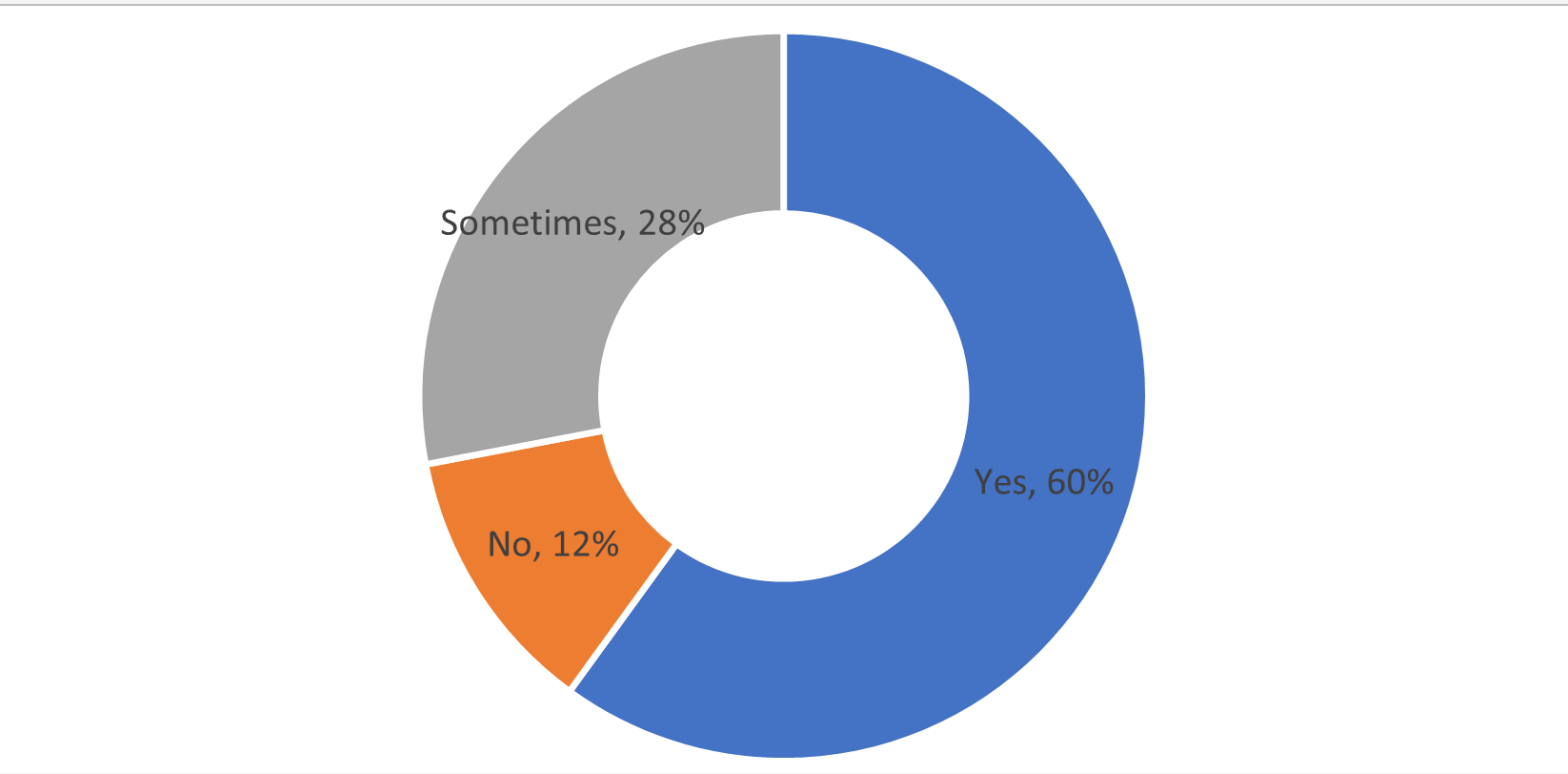


Fig-5: Technology help to stay more focus

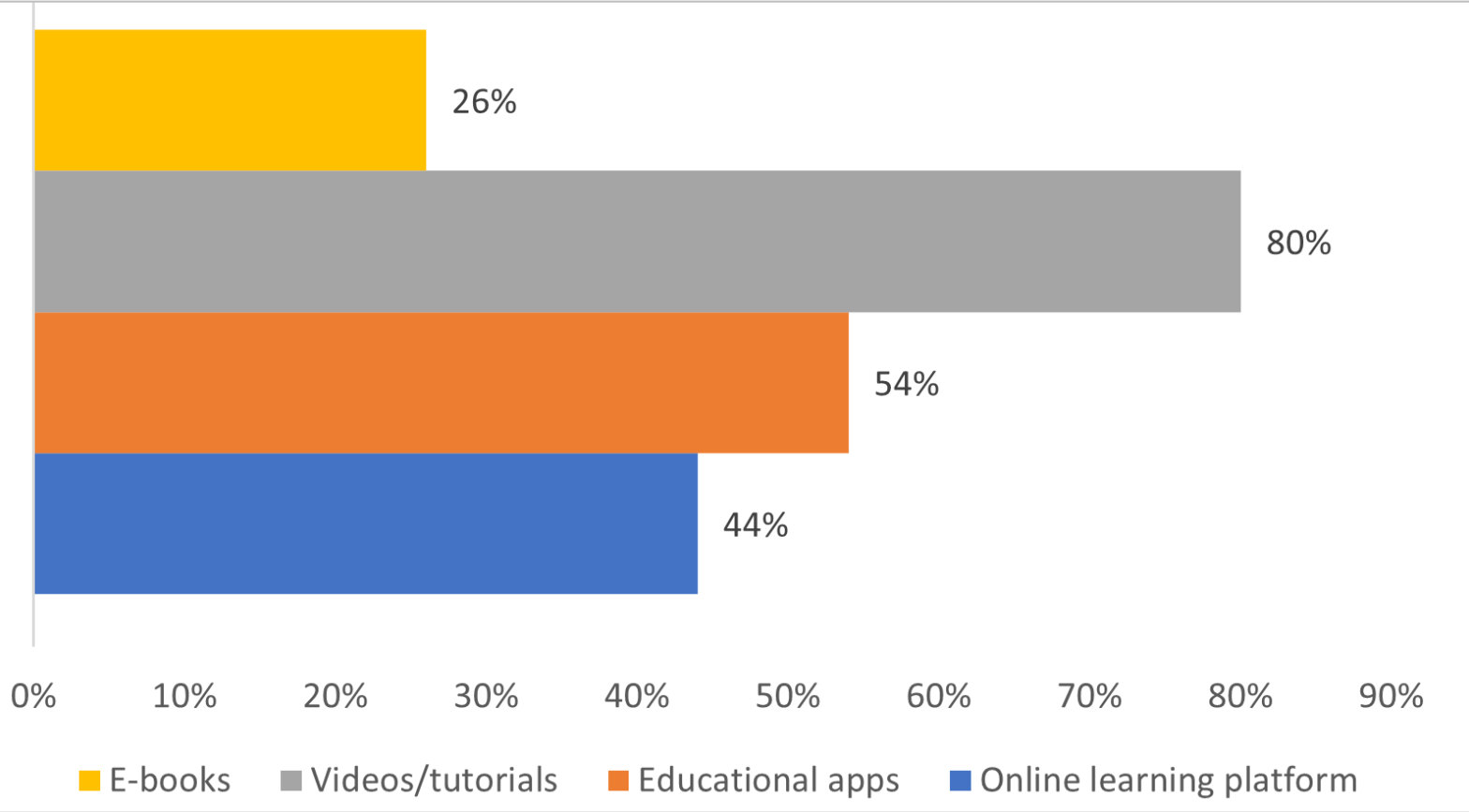


Fig-3: Uses of technologies by students

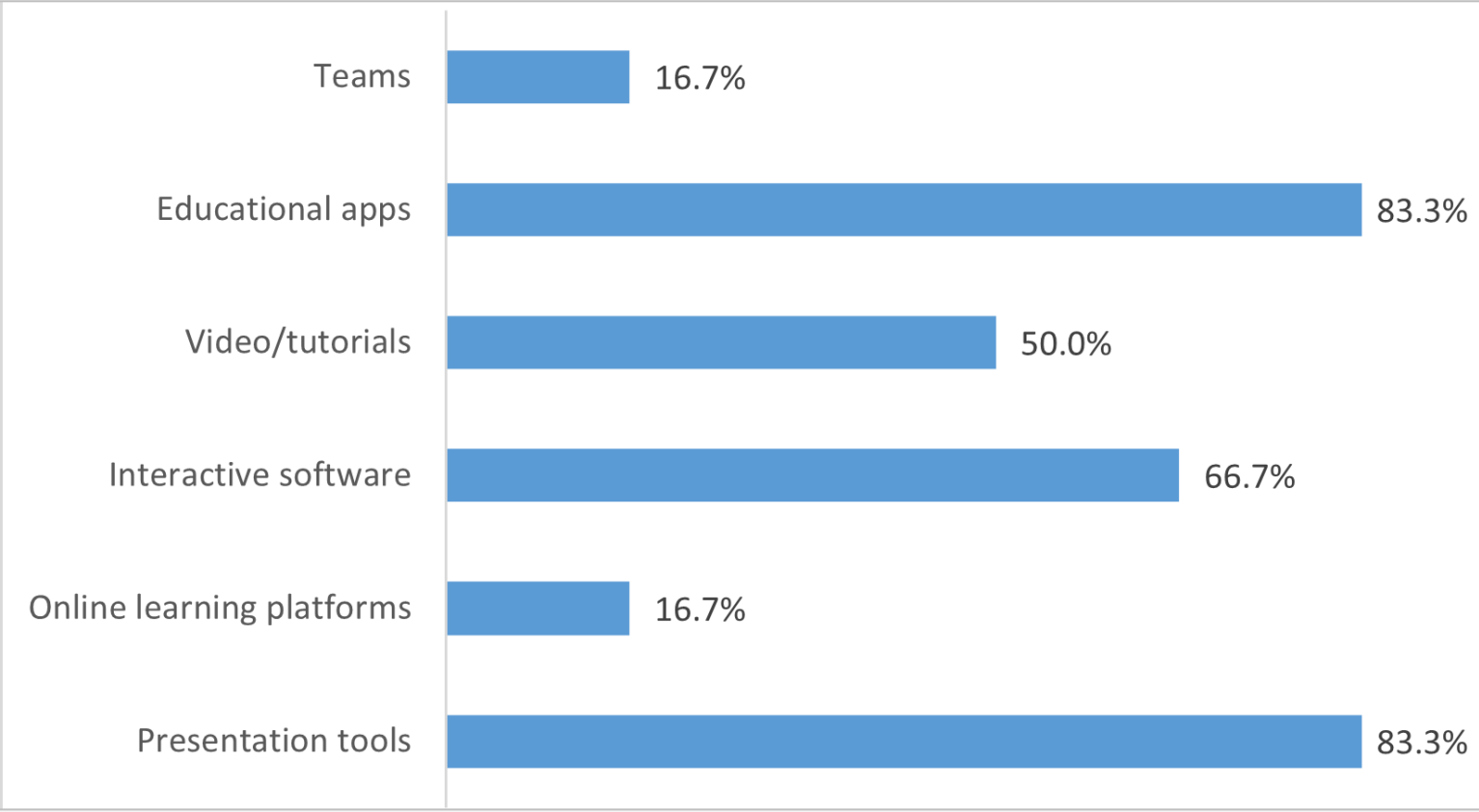


Fig-4: Use of various technology by teachers

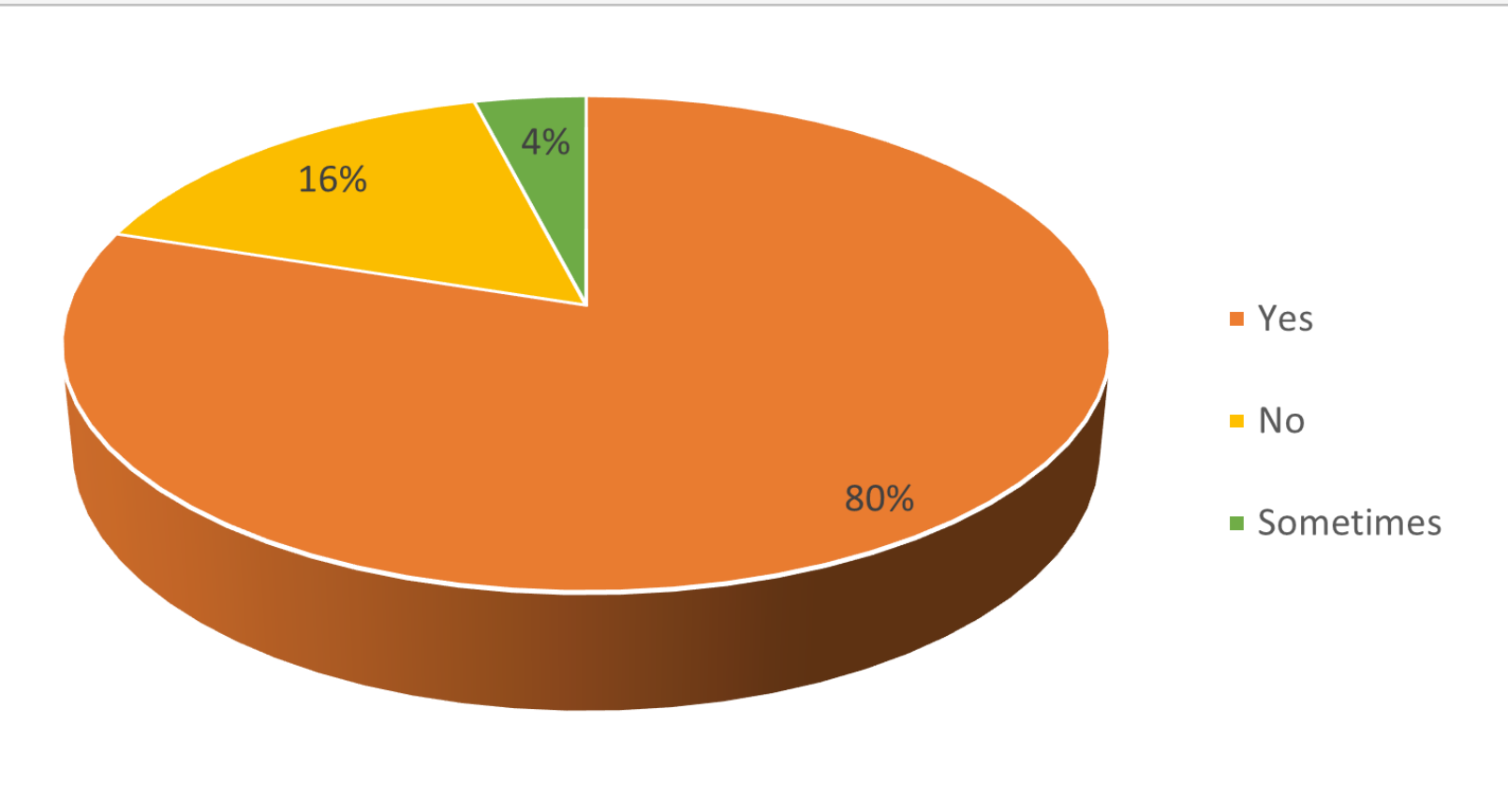


Fig-6: Active participation in tech-based activities

Figures 7 show technology's impact on academic performance. According to the survey, 86% of students felt technology improved their performance, while only 2% disagreed and 12% were neutral. Additionally, 94% stated that digital resources help them understand concepts more easily.

Challenges and Barriers of Current Technology:

Table 2 highlights challenges in using technology. All teachers complained about insufficient training. Additionally, 50% reported a lack of proper devices and poor internet. Among students, 62% faced internet issues, 44% lacked proper devices and 34% had outdated devices

Table-2: Challenges face with technology used for learning or teaching

Statements	Teachers	Students
Insufficient training or support	100%	16%
Internet connectivity issue	50%	62%
Lack of proper device	50%	44%
Outdated software or device	16.7%	34%

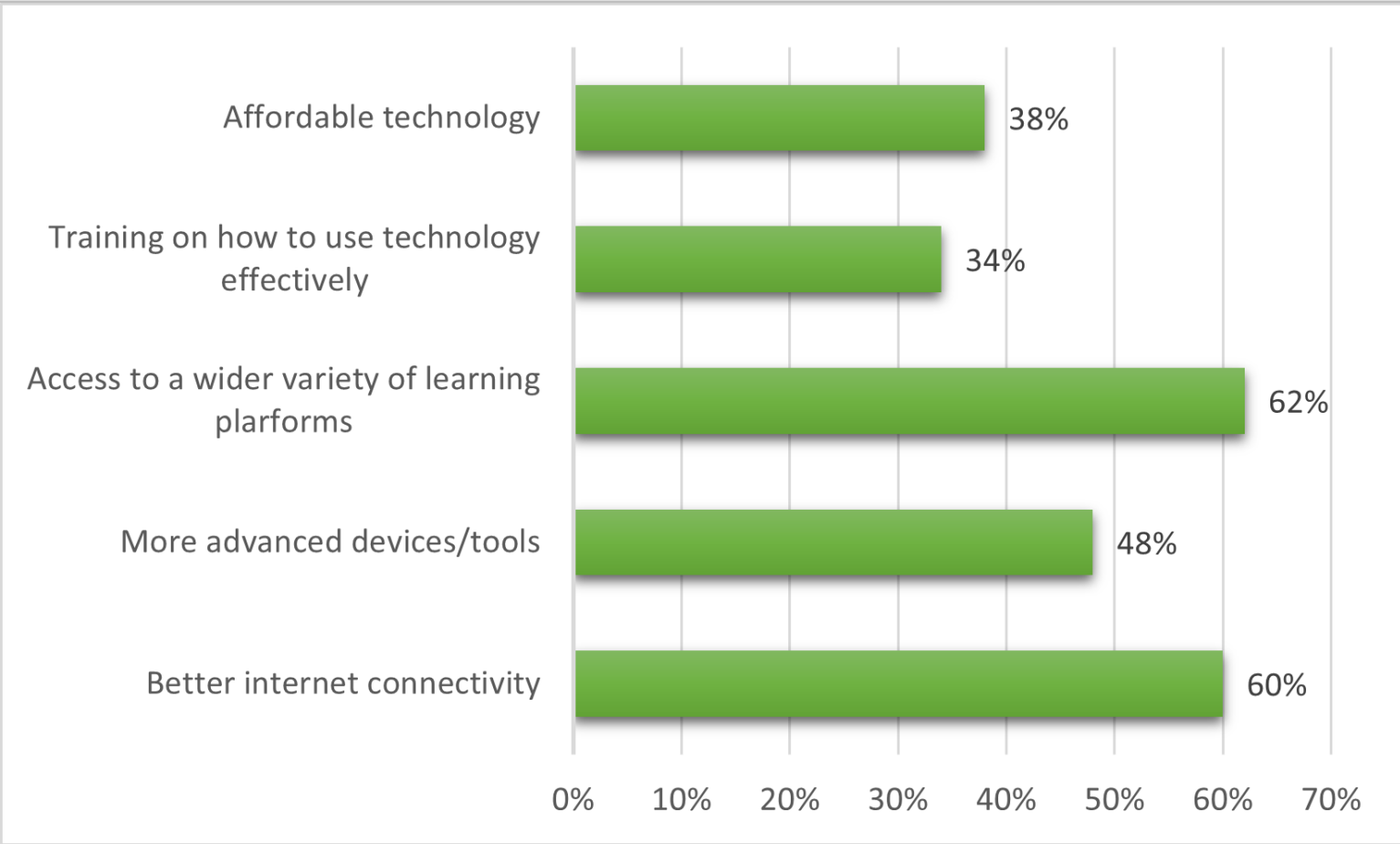


Fig 13: Suggestion given by students

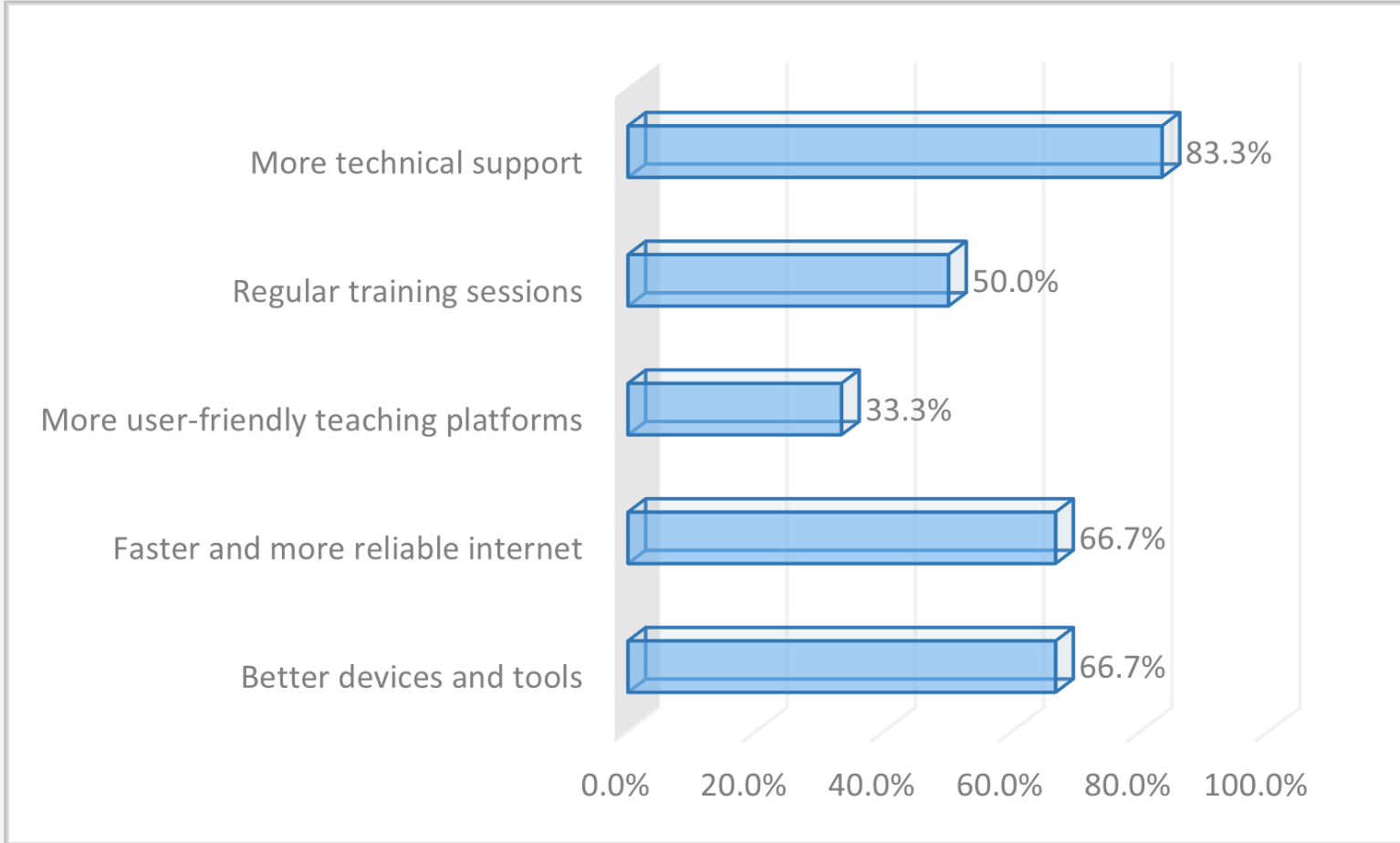


Fig 14: Suggestion from the teachers

Figure 13 highlights student and teacher suggestions for improvement. Among students, 60% requested better internet, 48% advanced devices, 31% access to more learning platforms, 38% affordable devices, and 34% training. Teachers suggested more training or technical support (83.3%), better devices and faster internet (66.7%), regular training sessions (50%), and user-friendly teaching platforms (33.3%).

Conclusion:

The findings of this study provide valuable insights into the current state, challenges and potential of technology integration in improving student engagement. The survey gathered meaningful perspectives from both teachers and students about their experiences, opinions and suggestions regarding the use of technology in the classroom. The results show that teachers recognize the significant benefits of using technology, such as increased student participation, better focus and improved academic performance. However, they also face notable challenges, including insufficient training, limited access to devices and unreliable internet connectivity. Similarly, students identified issues like outdated devices, lack of resources and the need for better support systems. It emphasizes the importance of addressing these challenges to use the full potential of technology in creating engaging and effective learning environments. By investing in proper training, improving infrastructure and ensuring access to modern technology, educators and policymakers can help overcome these obstacles.

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