International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Challenges and Issues on Technology Used in Teacher Education

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Abstract:
Use of technology has become an integral part of today's life, shaping the way we communicate, acquire knowledge and perform everyday tasks. The same holds true in the field of education, where technology contributes significantly in enhancing teaching and learning process. However, no area of education is devoid of challenges or barriers, of any type. Facilities enabled by technological advancements also comes with its own set of challenges or barriers. The present study aimed at finding out the challenges of using technology in education by the pupil-teachers. The study found multiple challenges in using technology in education faced by the pupil-teachers of secondary teacher education institutes. They reported that using technology was burdensome. Moreover, they strongly agreed on not having sufficient emphasis on the utilisation of technology during their internship. Also, there were positive responses like the pupil-teachers were in favour of technology enabled classroom, etc. The findings of the study will benefit the secondary teacher education institutes to improvise themselves so that the future teachers go hand-in-hand with the recent demands in the educational field.

Keywords: Challenges; Issues; Technology; Teacher education.

1.0.Introduction

The landscape of modern education is profoundly undergoing, driven by the rapid evolution of ICT. As we move deeper into 2026, the integration of Artificial Intelligence (AI), Virtual Reality (VR), and adaptive learning platforms has moved from the edge of the classroom to its very core. However, the success of this digital transformation does not rest solely on the sophistication of the hardware or software, but on the preparedness of the educators who flourish them. Teacher education is the foundational process of preparing pre-service and in-service educators and it is currently at a pivotal stage.

While technology offers unparalleled opportunities for personalized and inclusive learning, its implementation in teacher training programs is filled with complex external and internal barriers. Many educators possess technical literacy but lack the digital pedagogical competence to integrate these tools meaningfully into their curriculum; and also, despite the availability of tools, sometimes integration is failing due to specific barriers. The present paper deals with the challenges, issues and barriers on technology in education faced by the student-teachers.

1.1.Background of the study

The study was conducted in the secondary teacher education institutes of Assam. It explores issues like inadequate administrative support, lack of technological infrastructure facilities. Teachers are the

gatekeepers of the next generation's digital literacy. By analysing these barriers, this seminar paper seeks to provide a roadmap for more effective technology-enriched teacher training that moves beyond mere tool-use towards a holistic, technology-integrated instructional model.

1.2.Review of related literatures

Agyei (2013), made a study on technology integration in teacher education in Ghana. It provided an analysis of the pedagogical issues related to ICT use in teacher education. The results showed that not only the lack of availability of technological resources is a challenge but also, the shortage of skilled human resources and other institutional factors are also big challenges in ICT use in education.

Chaudhary (2014), studied the programme of audio-visual education in teachers' training colleges. The study showed that the financial and administration problems were the main hurdles and also there is need for great efficiency in developing simple and cheaper audio-visual material. The fund provided audio-visual education was not adequate.

Alda et al. (2020), made a study on teacher education institutes in the area of faculty, teaching and learning, infrastructure and research. The study found that the administrators and faculty are neither skill full in using the learning management system and using the augmented reality, etc. The findings also attributed to the unavailability and inaccessibility of digital infrastructure and virtual laboratories in most of the institutes.

Kumari (2021), studied the attitude of pupil-teachers towards information and communication technology and ICT competence. The study found that most of the pupil-teachers found it difficult to use ICT devices and believed it is complicated and preferred traditional methods of teaching to technology-based teaching.

Kaminskieneet al. (2022), studied on how teacher education is being challenged by technology. The study focused on how technology have created new skill gaps in teacher training and how the traditional forms of teacher education being affected.

Zehra (2022), Studied the integration of ICT in two-year teacher education programme and found that the maintenance and accessibility of the ICT resources in the institution were not up to the standard norms. There is insufficient use of ICT in teaching, and the strategies adopted in the teacher education programme were ill-fitted for the all-round development of the students.

Baruah, S. &Mohalik, R. (2022), studied on status of ICT integration in teacher education institutes and discovered that most of the teacher educators occasionally used ICT for professional development and teaching learning assessments and also, majority of trainees did not use a variety of ICT devices applications for teaching-learning during their internship.

Devi &Suhane (2023), found in their study that there is lack of ICT resources in the schools, poor digital infrastructure, lack of knowledge about how to integrate technology with content and pedagogy during internship.

2.0.Objective:

To find out the challenges or barriers of using technology in education in the private and government secondary teacher education institutes.

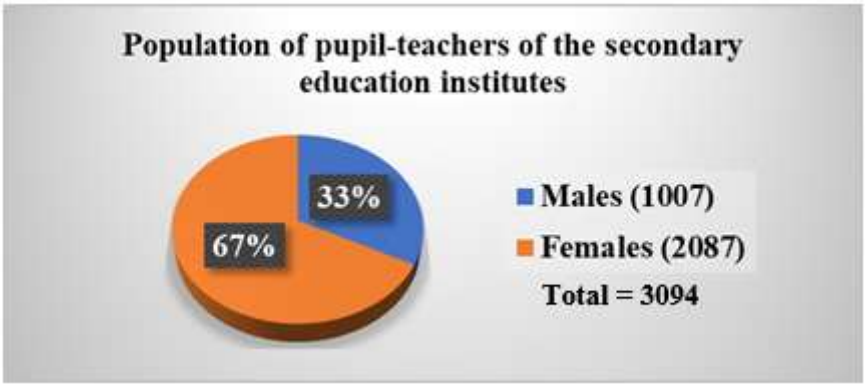
3.0.Research question:

What issues and challenges affect the use of technology in teaching-learning process?

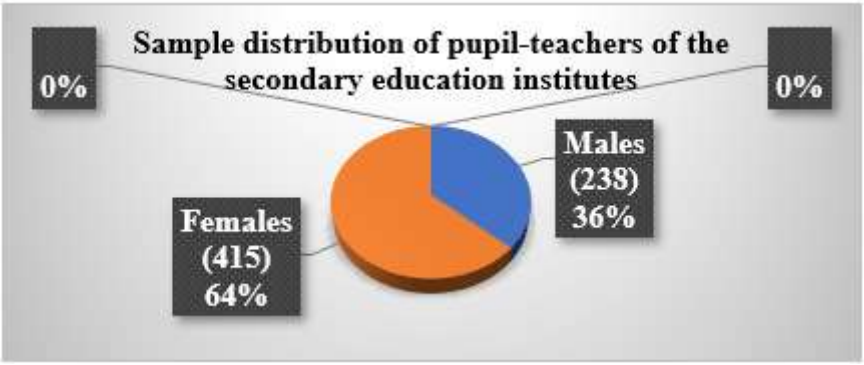
4.0.Methodology

4.1.Research design: Descriptive survey research design was applied for the study. The research design is used to provide an accurate, comprehensive picture of the population.Tools were prepared for survey to be conducted on student-teachers of secondary teacher education institutes.

4.2.Population: The population of the study is 3094 pupil-teachers of the secondary teacher education institutes, out of which 1007 are males and 2087 females.



4.3.Sample: The sample was selected using simple random technique. And, the sample consists of 238 male and 415 female pupil-teachers.



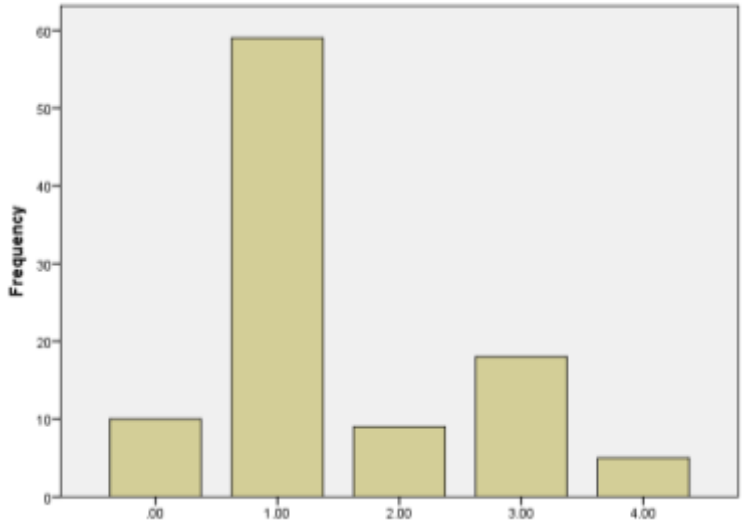
4.4.Tool of the study: A self-developed attitude scale consisting of 20 items was used to collect data. The tool was developed on the basis of 5-point Likert scale. In the first stage, item- analysis was done for the tool, it was found that all the items were highly significant at 0.01 level of significance and thus, were included in the final tool. In the second stage, reliability of the tool was found to be as 0.72 on Split- Half Co-efficient and the result showed that it is moderately high reliable.

4.5.Procedure of data collection: Data was collected primarily by visiting the secondary teacher education institutes and interacting with the teacher-trainees. The attitude scale was provided to the student-teachers to fill in their responses.

4.6.Statistical techniques: Mean, averages, one-sample t-test, standard deviation were used for the statistical analysis.

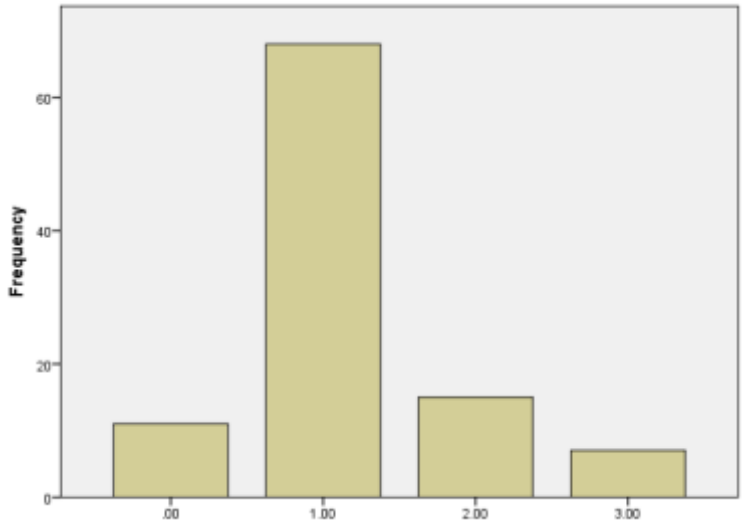
5.0.Data analysis:

Item 1. No emphasis on educational technology during internship.



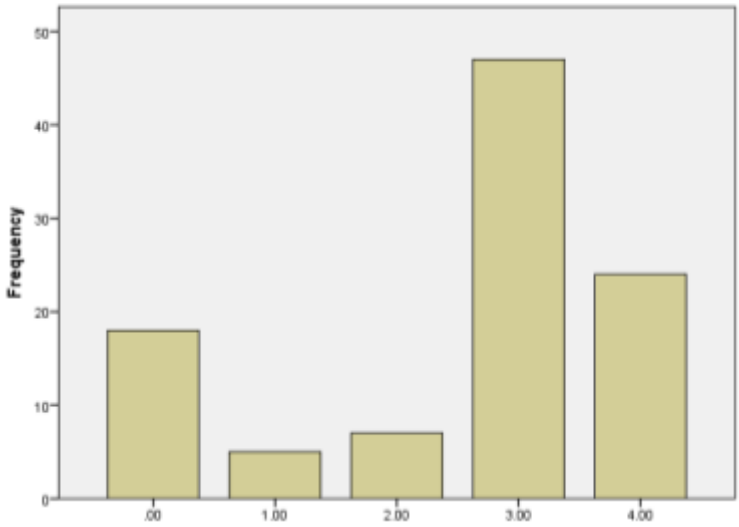
Interpretation: The graphical representation shows that majority of the students strongly agreed on not having emphasis on using technology during their internship period. And, the percentage score came up to be 44.2%, which shows the unfavourable attitude of the student-teachers towards the item.

Item 2. Acquired technologies are insufficiently practiced.



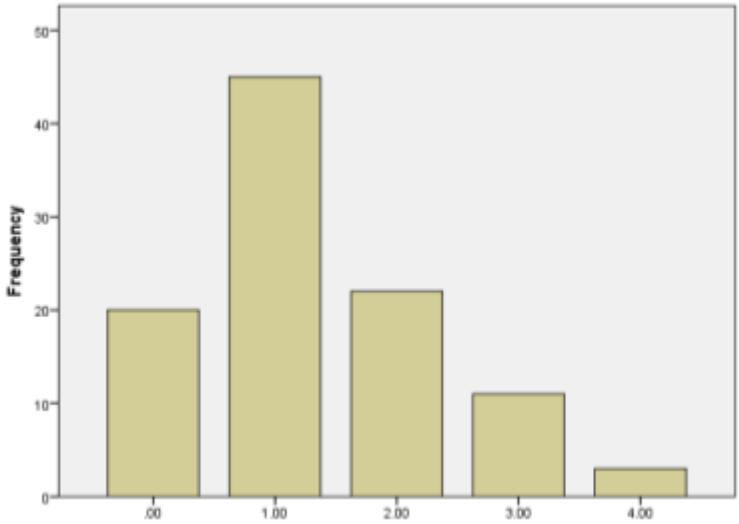
Interpretation: The graphical representation shows that the student-teachers strongly agreed on the fact that acquired technologies are insufficiently practiced during their internship period or in the institute. The scores when converted to percentage, it was 35.45%, which shows the unfavourable attitude of the student-teachers to the above question item.

Item 3. Educational technology is not time consuming.



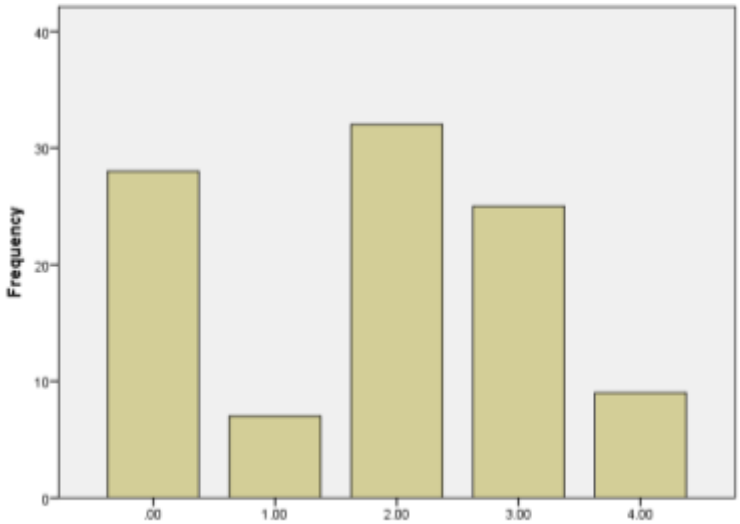
Interpretation: Most of the teachertrainees agreed that educational technology is not time consuming. And also, some of them strongly agreed to this; with a percentage score of 59.3%.

Item 4. Lack of support from college authorities.



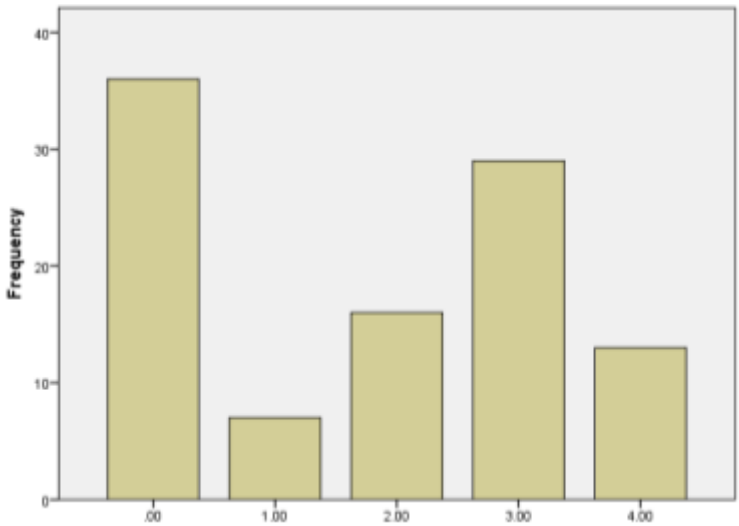
Interpretation: Teacher-trainees were asked their response on whether there is lack of support from college authorities on the use of technology, most of them responded to 'strongly agree', which shows the teacher-trainees doesn't get any support from the college authorities in the usage of technology. Many of the them were undecided on the fact which represents that they were not sure whether they get any assistance or not. And, the percentage score was 43.7%, which shows the unfavourable attitude of the teacher-trainees towards the particular question item.

Item 5. Proper facility for application of educational technology.



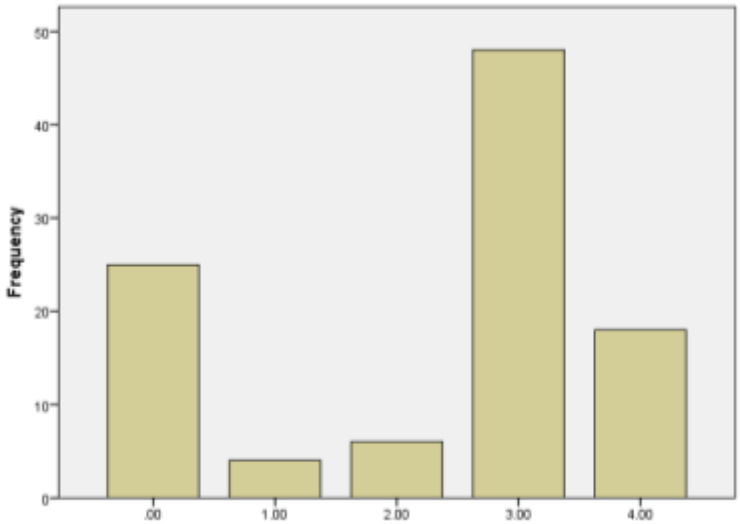
Interpretation: The objective of this question item was to find out if proper facility for application of educational technology is provided or not to the teacher-trainees. Here, mixed responses of the student-teachers were seen. Many of them agreed on the fact that there is proper facility for application of education technology, but at the same time many of them were undecided on and disagreed to the fact. The percentage score came out to be 54.05%, which shows a moderate favourable attitude on the part of the student-teachers.

Item 6. Constraint to apply technology in the exam dominated curriculum.



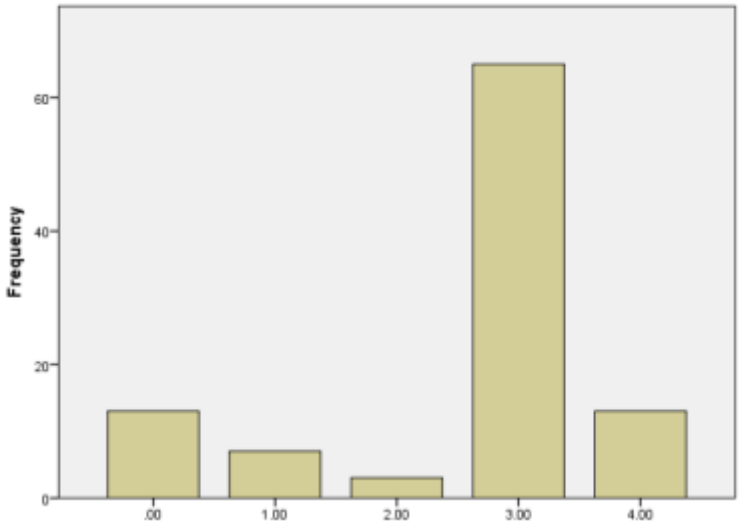
Interpretation: The student-teachers were asked if they find any constraint to apply technology in the exam dominated curriculum, majority of them were undecided on this and next to this response, majority of them disagreed to this, which can be interpreted from the above graphical representation. Here, the percentage score obtained was no that favourable one, which is 47.5%.

Item 7. Students are in favor of educational technology enabled classroom.



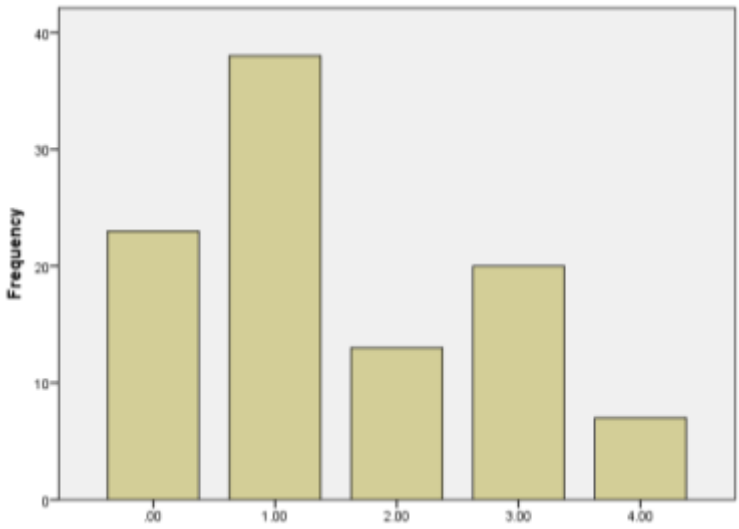
Interpretation: The above graphical representation shows that the students or the teacher-trainees are in favour of educational technology enabled classroom. Majority of them agreed to this fact. But also, many of them were undecided on this, which can be observed with the help of the above graphical representation. The percentage score was found to be 63.89%, which shows slight favourable attitude of the teacher-trainees.

Item 8. Educational technology is burdensome.



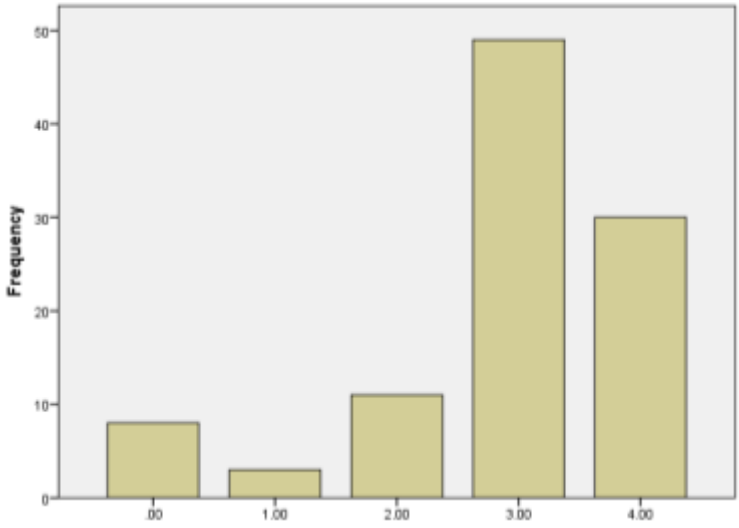
Interpretation: The student-teachers were asked if they find educational technology burdensome, majority of them disagreed to this, and some of them also strongly disagreed to this. Very few or negligible number of teacher-trainees agreed to the statement. The percentage score found was 58.34%.

Item 9. Insufficient time is allotted for educational technology.



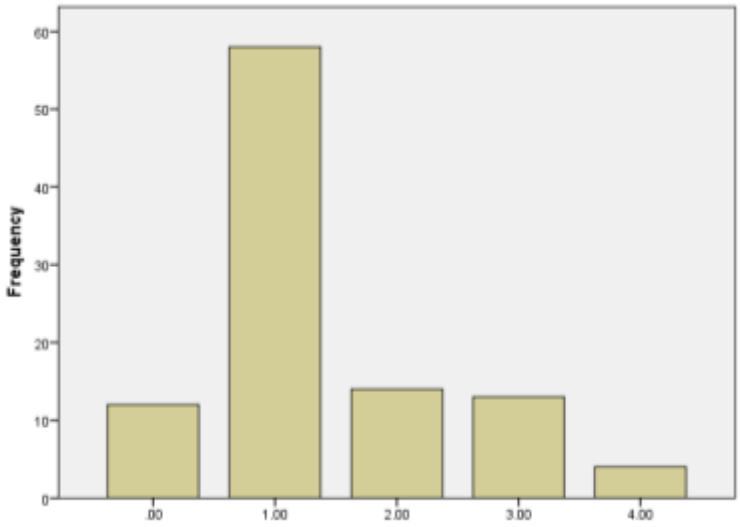
Interpretation: The student-teachers were asked if they find the time allotted for the use of educational technology insufficient, majority of them strongly agreed to the statement, also, some of them were undecided on this and some disagreed to the statement, which can be observed in the graphical representation. Here, the percentage score found to be 32.77%, which shows the unfavourable attitude of the student-teachers towards the statement.

Item 10. Educational technology is not a barrier.



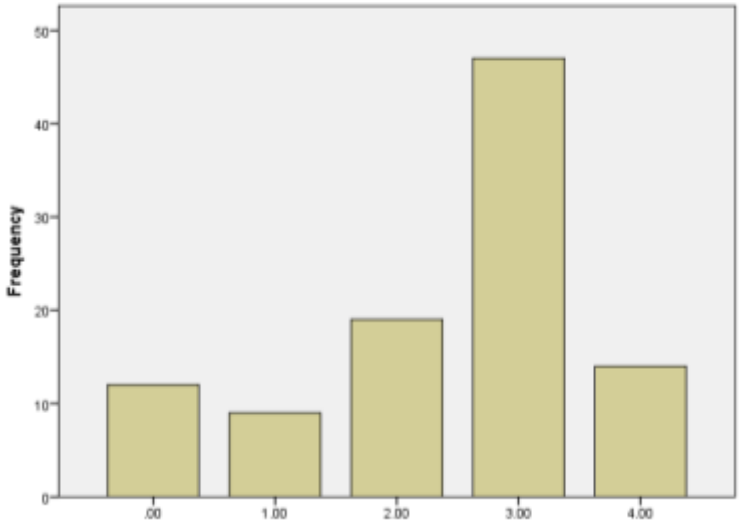
Interpretation: The objective of the statement was to find if the student-teachers finds educational technology as a barrier. The statement was given as- 'educational technology is not a barrier'. Majority of the student-teachers disagreed on this, which shows that they find educational technology as a barrier, but next to this response, the majority strongly agreed to the fact that educational technology is not a barrier. And, the percentage score found was 69.33%, Which shows moderately favourable attitude of the student-teachers.

Item 11. Lack of encouragement for technology utilization.



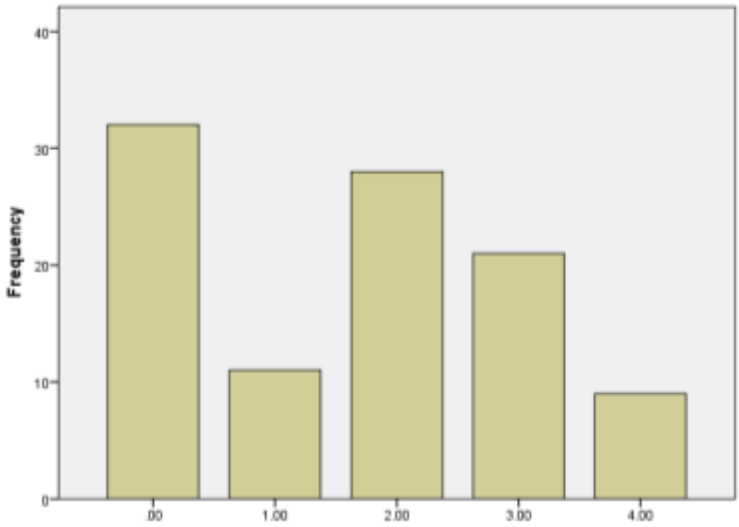
Interpretation: The student-teachers were asked if they find lack of encouragement for the utilization of technology and most of them strongly disagreed to this. This means they find encouragement for the utilization of technology.

Item 12. No lack of motivation among learners for using technology.



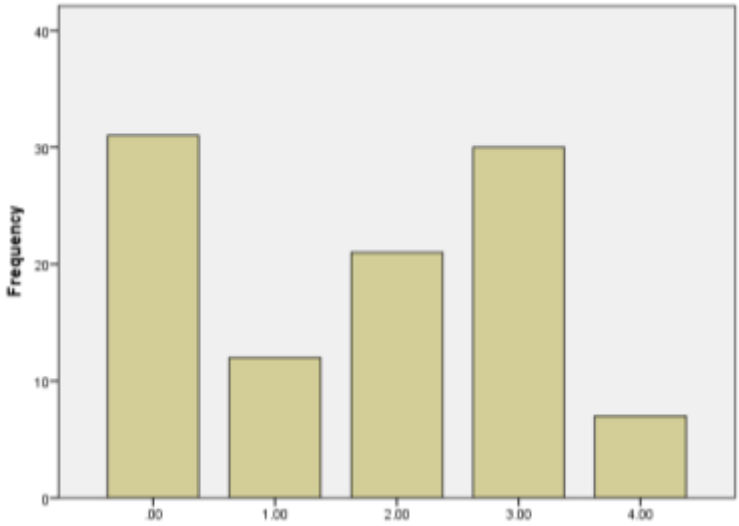
Interpretation: The statement aims to find is there lack of motivation among learners for using technology, majority of the student-teachers agreed that there is no lack of motivation among them for using technology. The percentage score obtained was 53.06%, which shows the student-teachers are moderately favourable towards this.

Item 13. Technological resources function properly.



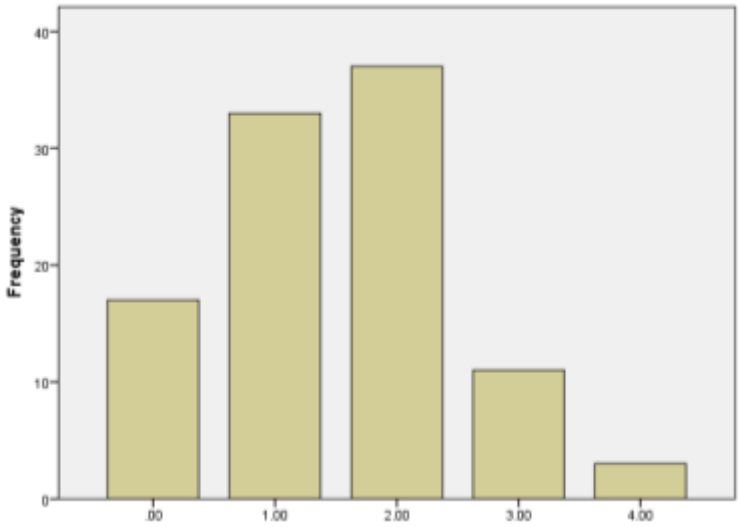
Interpretation: When the student-teachers were asked if the technological resources function properly, they were not sure or undecided over it and also many disagreed to this fact, this represents the technological resources in their institute doesn't function properly. And, the percentage score was found to be 53.7%.

Item 14. Hardware and software in the college computer lab are updated.



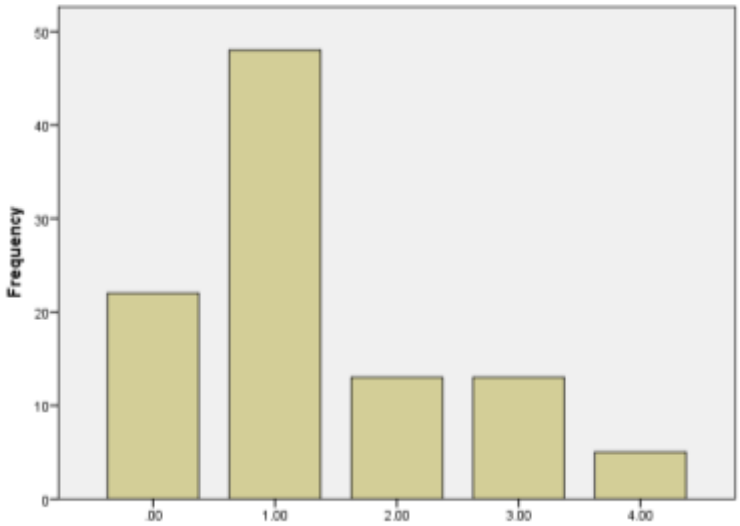
Interpretation: The item aimed to know if the hardware and software in the college computer lab are updated, majority of the student-teachers responded that they were undecided which tilts towards negative response, and at the same time some of the student-teachers agreed that hardware and software in the college computer lab are updated. Here, we found mixed responses of the student-teachers with a percentage score of 52.25%.

Item 15. No proper Wi-Fi or internet facility.



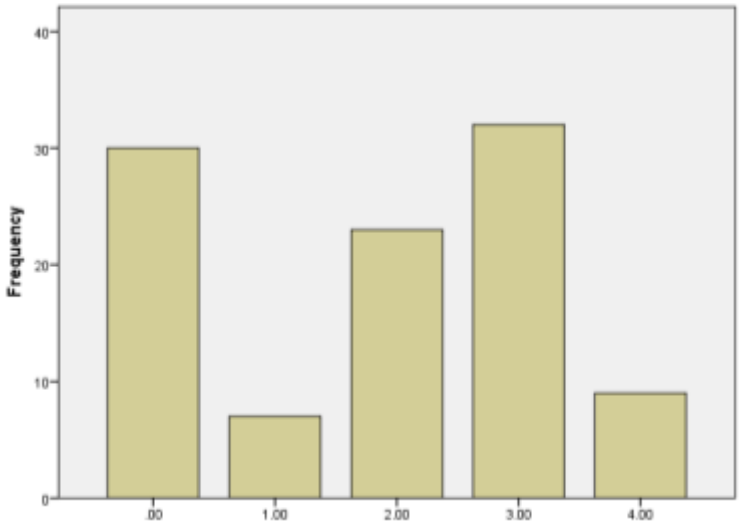
Interpretation: The graphical representation shows that majority of the student-teachers agreed to the fact that there is no proper wi-fi or internet facility in their institute, and also many of them strongly agreed to this fact. The percentage score also shows the unfavourable attitude of the student-teachers towards wi-fi or internet facility with 42.57%.

Item 16. No technical support to manage the system when problems arise.



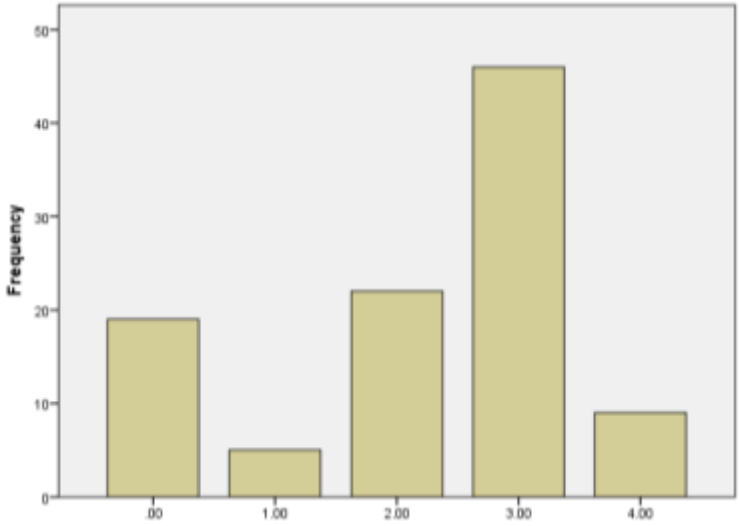
Interpretation: The student-teachers were asked if they are provided with technical support to manage the system, when problems arise, majority of the them strongly agreed that there is no technical support to manage the system when problems arise and next to this majority response, many of them were not decided on this. The percentage score found was 40.69%, which shows the unfavourable attitude of the student-teachers.

Item 17. Provisions to conduct workshops or conferences on educational technology.



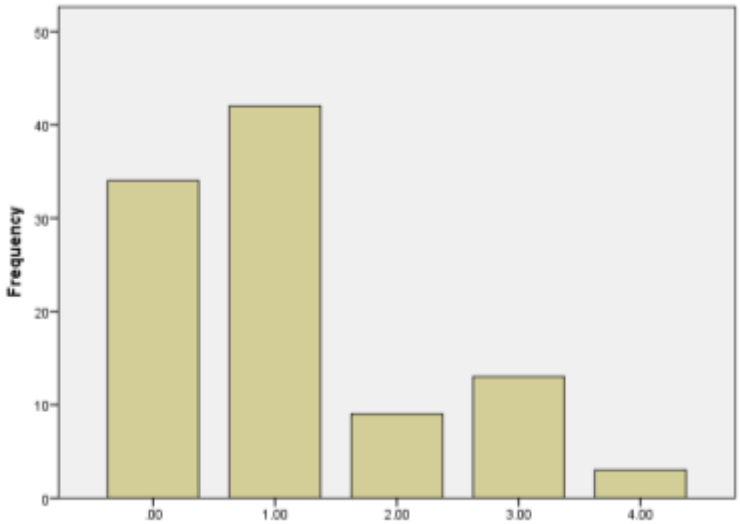
Interpretation: The graphical representation shows that majority of the student-teachers agreed that there are provisions by their institute to conduct workshops or conferences on educational technology, again very closely to this response majority, many of the student-teachers responded that they were undecided and disagreed to this. And, we got a mixed response with a percentage value of 54.82%.

Item 18. College initiates or creates provisions for general awareness on educational technology.



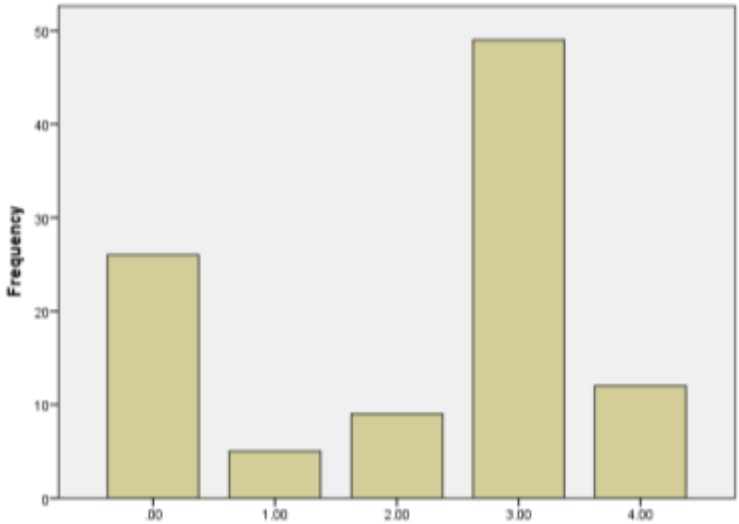
Interpretation: Majority of the student-teachers agreed to the fact that their college initiates or creates provisions for general awareness on educational technology. Here, the percentage score obtained was 56.08%, which shows a moderate favourable attitude of the student-teachers towards the statement. Also, we can see mixed responses of the student-teachers with the help of the graphical representation.

Item 19. Lack of infrastructural facilities for using technology.



Interpretation: The student-teachers were asked if there is lack of infrastructural facilities in their institute for using technology. Majority of the pupil-teachers strongly agreed to this statement that there is lack of infrastructural facilities in their institute for using technology, and also, many of the them were undecided on this, which again inclines towards negative response by them.

Item 20. Co-ordination among educators in sharing ideas related to educational technology.



Interpretation: The student-teachers were asked do they find co-ordination among educators in sharing ideas related to educational technology, to this, majority of them agreed. And, the percentage score found was 56%.

6.0.Findings of the study: The above study made the following findings:

- Majority of the student-teachers strongly agree on the fact of not having emphasis on using technology during their internship period.
- The student-teachers strongly agree that the acquired technologies are insufficiently practiced during their internship period or in the institute.
- When the student-teachers were asked if educational technology is not time consuming, most of them agreed to this.
- Majority of the student-teachers strongly agreed to the fact that there is lack of support from college authorities on the use of technology.
- A mixed response was gathered when the student-teachers were asked about proper facility of application of educational technology is provided to them or not. Many agreed on this and also, many of them were undecided on and disagreed to the fact.
- Majority of the students were undecided on and disagreed to when they were asked if they find any constraint to apply technology in the exam dominated curriculum.
- Majority of the student-teachers were in favour of educational technology enabled classroom.
- Majority of the student-teachers disagreed on finding educational technology as burdensome.
- For the statement, 'insufficient time allotted for the use of educational technology', majority of the student-teachers strongly agreed to this.
- Most of the student-teachers find educational technology as a barrier and also, many of them agreed that educational technology is not a barrier.
- The student-teachers strongly agreed that they find lack of encouragement for the utilization of technology.
- High number of student-teachers agreed that there is lack of motivation among learners for using technology.
- The student-teachers were not sure and many disagreed on when they were asked about proper functioning of technological resources in their institute.
- Mixed responses of the student-teachers were found when they were asked about the hardware or software in the college computer lab are updated or not.
- Majority of the student-teachers agreed to the fact that there is no proper wi-fi or internet facility in their institute.
- Majority of the student-teachers strongly agreed that there is no technical support provided to manage the system when problems arise.
- A mixed point of view or responses of agreement and disagreement were found on the part of the student-teachers when they were asked about the provisions by their institute to conduct workshops or conferences on educational technology.
- Majority of the student-teachers agreed that their college initiates or creates provisions for general awareness on educational technology.
- High number of student-teachers strongly agreed on that there is lack of infrastructural facilities in their institute for using technology.
- Most of the student-teachers agreed on finding co-ordination among educators in sharing ideas related to educational technology.

7.0.Suggestions

The secondary teacher education institutes could lay emphasis on using technology during the internship period of the student-teachers. Today's age is no devoid of use of technology in any field, so the future teachers should be able to use technology in the transaction of the curriculum. In the findings it is found that there is lack of support from college authorities in the use of technology; the institutes should focus on this and regular seminars, workshops can be organised for the student-teachers for the use of technology in the field of education. The institutes, both private and government should work on improving the technological infrastructure of the institute, the hardware and software tools should be updated time to time. The institutes should try to construct technology enabled classroom as the student-teachers are in favour of technology enabled classroom. Sufficient time should be allotted for the utilization of educational technology by the student-teachers; they should get encouragement and motivation for the use of technology in the field of education by the teacher educators of the secondary teacher education institutes. The institutes should look after the proper functioning of the available technological resources and provisions should be made for proper wi-fi or internet facility in the classroom. It was found that majority of the student-teachers strongly agreed that there is no technical support provided to manage the system when problems arise, this is a matter to be considered by the institutes.

8.0.Conclusion

In summary, the primary issues facing technology in teacher education raises from technological infrastructure, provisions for utilization, lack of encouragement, motivation. The gap between technological potential and classroom reality can only be bridged through a holistic approach that integrates technology into the very core of the teacher education curriculum. It has been identified that alone infrastructure cannot solve the problem, but also, it requires a robust support system, equitable access, and a reimagining of teacher roles. We must focus on using technology as a tool for teachers rather than a replacement. Fixing or addressing these issues today is essential for a modern, resilient school system. The study would be fruitful for the teacher education institutes as they create the future builders of the society.

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