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Educational Technology in Use: Insights from a Comparative Study of Government and Private B.Ed. Colleges

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ABSTRACT:
The present study show that almost in every sphere, government secondary teacher education institutes proved to be better than the private secondary teacher education institutes. With respect to both hardware and software technology infrastructure, the government secondary teacher education institutes are found to be better. In the use of e-learning system, the government secondary teacher education institutes are better equipped in comparison to private institutes. The pupil-teachers responded that their teachers sometimes make use of educational technology as teaching aids. The number of awareness programs or seminars conducted by the institutes on the use of educational technology ranges from only '0 to 2'. The results showed that government secondary teacher education institutes find technology more helpful in comparison to private institutes. The achievement test results of the pupil-teachers of private secondary teacher education was found to be better than the achievement test results of government institutes on their knowledge on technology in education. The use of technology regarding classroom management by the teacher educators was found to be satisfactory. The government secondary teacher education institutes are better on the level of confidence and knowledge of using technology during internship among pupil-teachers in comparison to private secondary teacher education institutes. The achievement percentage of pupil-teachers on their knowledge on ICT was interpreted as 'very high'.

Keywords: Educational, Technology; Insights; Comparative; Government; Private; B.Ed.; Colleges.

1.0.Introduction

Plato termed education as a 'lifelong process starting from the first years of childhood and lasting to the very end of life'. In Rigveda, education is that 'which makes a man self-reliant and self-less'. Our country's productivity and prosperity depend on our education system's ability to meet the challenges of the 21st century. India, being a major fastest-growing economy in the world, has adopteda plethora of initiatives across various sectors digitally empowering its citizens economically, socially, politically, and educationally. To meet the challenges, the academic course work must go beyond the convention of brick-and-mortar schools by delivering rigorous curricula to students by adopting innovations. Indian students must master advanced technical skills and solve complex

The word 'technology' has been derived from the Greek words 'techne' which means art or craft and 'Logia' which mean systematic study. The term "technology" describes the scientific understanding and tools required for a specific business, etc. It is the use of conceptual information, particularly in a

reproducible manner, to achieve practical objectives. The products of such attempt or venture can be termed as technology, comprising both ethereal (like software) and material (like machines or utensils) instruments. Technology is essential to everyday living, science, and engineering.

2.0 Need of the Study

There has always been a genuine recognition of the noble and pious role that teachers play in the process of establishing a nation. As they work with young brains in the classroom, teachers in this vocation occasionally face both accomplishments and many challenges. Technology ensures active involvement of the learners in the learning process. Different tools builds-up our natural abilities: books expand the mind, videos extend vision, audio enhances hearing, and audio-conferencing combines thought and speech. Computers amalgamates the power of the mind, hands, and eyes, while satellites extend our reach, and networks promote collaboration. E-content should be designed to stimulate learners effectively, helping them maximize their learning potential (Vijayakumari, 2011). Education leaders agree that all new teachers must graduate from teacher education programs with the knowledge and skills that will allow them to integrate technology easily and effectively into their daily teaching, whatever the setting.

In today's digital era each and every field demands integration and adequate knowledge of technology. Teachers are also not remained untouched, especially after the COVID-19 break out. In today's world to match with the students, the school teachers should have adequate technological knowledge, without which their job would be difficult. Now-a-days government also launch different in-service training programs for school teachers in online mode. There is digital app like DIKSHA, online platform like SWAYAM, e-Pathshala which provides online training in different subjects. Philosophy of educational technology includes personalized learning, respecting the diversity of all learners and providing opportunities for learning through discovery. It is a tool that affords the opportunity to differentiate teaching to best meet the needs of students in a learner centered environment. The study will find out how much the future teachers are comfortable with the ongoing technology in the field of education, what kind of difficulties do they find and how much useful they find technology in the field of education for themselves, their development.

Many studies have been done comparing private and government schools but none can be seen comparing the private and government teacher education institutes especially in terms of using technology in education. Teachers are the builder of the nation. Many students who want to become future teachers take admission into teacher training institutions. In government teacher training institutes, the fee is low and for this the competition is tough to get admission into. So, rest of the students take admission into private institutes where the fee is comparatively high. The entire education system depends strongly upon ambitious, resourceful and effective teachers. In the present-day context in India, to sustain with changing demands of a future generation, people must have to pay consciousness towards the effectiveness and efficiency of teachers. School teachers occupy a place of crucial importance. It is impossible to manage any educational institution without the efficient performance and innovativeness of teachers. The study is significant as it will facilitate the process of professional development of the teacher trainees. The study is also concerned with the obstacles, difficulties faced by the teacher trainees regarding technology in education. It will explore the implementation of technology in education in teacher education institutes under Gauhati University, as it is a university of notable importance because it is the oldest university in Northeast India. Many students

from different parts of the state compete hard to get admission into its teacher training colleges. The study will help the authority and policy makers to do the needful in this regard. Research in teacher education helps to understand the educational phenomenon and transform it. Teacher education is an important field of research since the quality of teacher education has been regularly questioned. And, in today's digital-age where no field is left behind in terms of using technology, the status, implementation, availability, knowledge, challenges of using technology in education by the teacher trainees has to be found out. The outcome of the study will contribute to Gauhati University in knowing the current status of technology in education in its teacher training institutes, it will get a clear picture of the private and government teacher training institutes affiliated to it. Gauhati University is very prominent not only in Assam but in the whole northeast India, so a study conducted on it will be fruitful for the authority and policy makers.

3.0 Objectives

The objectives undertaken for the study based on the nature of the research are formulated as follows-

- To identify the availability of resources and technological infrastructure in the secondary teacher education institutes under Gauhati University.
- To compare the availability of resources and technological infrastructure between the private and government secondary teacher education institutes under Gauhati University.
- To find out and compare the status of using e-learning system in private and government secondary teacher education institutes under Gauhati University.
- To find out the difference in the mean scores of private and government secondary teacher education institutes regarding classroom management with the help of technology.
- To find out the challenges or barriers of using technology in education in the private and government secondary teacher education institutes.
- To compare the level of confidence and knowledge of using technology during internship among pupil-teachers of private and government secondary teacher education institutes under Gauhati University.
- To measure the level of ICT knowledge among the student teachers in the secondary teacher education institutes under Gauhati University.
- To suggest some measures in technology in education.

4.0 Hypotheses

- Based on the tentative research questions, the following hypotheses has been constructed -
- **$H_0$1:** There is no significant difference between the private and government secondary teacher education institutes under Gauhati University with respect to the availability of resources and technological infrastructure.
- **$H_0$2:** There is no significant difference in the status of using e-learning system in private and government secondary teacher education institutes under Gauhati University.
- **$H_0$3:** There is no significant difference in the mean scores of private and government secondary teacher education institutes regarding classroom management with the help of technology.

- **H_04:** There is no significant difference in the level of confidence and knowledge of using technology during internship among pupil-teachers of private and government secondary teacher education institutes under Gauhati University.
- **H_A5:** There is high level of ICT knowledge among the pupil-teachers in the secondary teacher education institutes under Gauhati University.

5.0 Research Design

The study applies descriptive survey research design. It is an approach of descriptive research that blends quantitative and qualitative data to provide relevant and accurate information. Descriptive research studies are designed to obtain pertinent and precise information concerning the current status of phenomena and, whenever possible, to draw valid general conclusions from the facts discovered. They are restricted not only to fact finding but may often result in the formulation of important principles of knowledge and solution of significant problems. Descriptive studies are more than just a collection of data; they involve measurement, classification, analysis, comparison, and interpretation.

5.1 Population and Sample

The population for the study were the final year teacher trainees of secondary teacher training institutes, both private and government, under Gauhati University of Assam. There are total **36** secondary teacher training colleges under Gauhati University, among which 30 are private institutes and 6 are government institutes. There are total **3094** teacher trainees in the final year in the institutes among which **1007** are male and **2087** are female. The population has been collected by visiting the colleges personally and from the admission records of the colleges of 2022-23 session affiliated to Gauhati University.

The sample for the study was selected by using simple random proportionate technique wherein **20 percent** of the population. The sample came out to be as **619.** As per availability **653** respondents' data was collected.

5.2 Tool of the Study

For objective 1, a checklist was developed comprising 'Yes' and 'No'.

For objective 3, a self-developed **questionnaire** was made comprising **Yes/No** questions and multiple-choice questions.

For objective 4, a self-developed **questionnaire** for Teacher educators, a self-developed questionnaire for Pupil-teachers and an achievement test was constructed and developed.

For objective 5, an attitude scale was developed comprising of five points (Strongly Agreed, Agreed, Undecided, Disagreed, Strongly Disagreed).

Objective6 was assessed with the help of five-point Likert attitude scale (Strongly Agreed, Agreed, Undecided, Disagreed, Strongly Disagreed).

For objective 7, an ICT knowledge test was adapted from the study made by RuwndarLastny Anal on "Practice of Information and Communication Technology (ICT) in Teacher Education Programme in Manipur" and modified to cater the need of the objectives.

5.3 Procedure of Data Collection

The researcher personally visited the secondary teacher education institutes under Gauhati University and interacted with the teacher trainees in their respective colleges to collect information and data.

5.4 Statistical Techniques

The collected data were analyzed in the following manner-

- Item analysis would be done with the help of one-sample t-test

- Standard Deviation, Mean, Percentage would be calculated
- Data would be presented through charts, tables, figures, etc.

6.0 Major Findings

The major findings of the study are as follows:

- The present study has found out that the government secondary teacher education institutes are better equipped in hardware technology infrastructure facilities with the mean score 38.04 in comparison to private secondary teacher education institutes with the mean score 35.05. In 2005, Nagarkoti made a study on status of hardware aspects of educational technologies in teacher training institutions of UP and Uttranchal, and contrary to the present study's findings, Nagarkoti found that the status of hardware educational technologies was in a pitiable condition in the government teacher training institutes.
- The software technology infrastructure facilities also, the government secondary teacher education institutes are better equipped with a mean score of 38.55 in comparison to private secondary teacher education institutes with the mean score 34.62. The present study's finding is not replicating in any of the reviews given in the review of related literature, and so, the present finding is a unique finding in the present study.
- Technological infrastructure in the secondary teacher education institutes under Gauhati University is 76.24%, and was interpreted in the 'very good' range. The study is in lined with Alda et al. (2020), which was conducted in Philippines in different areas including infrastructure. And, the findings attributed to the unavailability and inaccessibility of digital infrastructure and virtual laboratory in most teacher education institutes.
- The Government secondary teacher education institutes are better equipped in the use of e-learning system with mean value, 17.50, in comparison to private secondary teacher education institutes with mean value of 16.39. This finding is not replicating in any of the reviews given in the review of related literature, and so, the present finding is unique in the present study.
- The status of using e-learning system in the secondary teacher education institutes under Gauhati University in percentage value is 69.69% which was interpreted as 'very good'.
- The findings of the present study indicate government secondary teacher education institutes find technology more helpful for classroom management with a mean score of 17.73, in comparison to private secondary teacher education institutes with mean score, 16.46.
- The status of private and government secondary teacher education institutes regarding classroom management with the help of technology is 84.21%, and interpreted as 'excellent'.
- The achievement test result of the pupil-teachers (private secondary teacher education institutes) regarding their knowledge on technology in education is found to be 82.79%, which has been interpreted as 'excellent'.
- The achievement test result of the pupil-teachers (government secondary teacher education institutes) regarding their knowledge on technology in education is found to be 73.64%, which has been interpreted as 'very good'.
- The achievement test results of the pupil-teachers of both private and government secondary teacher education institutes regarding their knowledge on technology in education is found to be 80.06%,

which has been interpreted as 'very good'. This finding is unique in its own way as it is not in line to any of the findings in the review of related literature.

- The use of technology regarding classroom management by the teacher educators is found to be 68%, which indicates satisfactory level use of technology by them. Baruah, S & Mohalik, R. (2022), found out in their study that majority of teacher educators occasionally used ICT for professional development and teacher-training assessments.
- The findings of the study indicate that there are more challenges or barriers of using technology in private secondary teacher education institutes with mean value of 37.66 in comparison to government secondary teacher education institutes with mean value of 44.46. This finding is not replicating in any of the reviews given in the review of related literature, and so, the present finding is unique in the present study.
- It is found out that 49.61% of pupil-teachers of both the private and government secondary teacher education institutes finds challenges or barriers of using technology in education, and is interpreted as 'medium' level of challenges. Collis (1994), found out in his study that there has been little substantial symbiosis between the educational technology and teacher education. Online provision of new forms of teacher education offers additional challenges to the mainstream teacher education community. Kleiner et al. (2007), reported in their study challenges such as limited faculty time, insufficient training, and weak technology infrastructure. Studies conducted by Agyei (2013), Chuaungo (2017), Zehra (2022), found various challenges in the integration of technology in education.
- The government secondary teacher education institutes are better with a mean score of 43.08 on the level of confidence and knowledge of using technology during internship among pupil-teachers in comparison to private secondary teacher education institutes, with a mean value of 39.50.
- The level of confidence and knowledge of using technology during internship among pupil-teachers of private and government secondary teacher education institutes is found to be 67.62%, and was interpreted as 'very good'. This finding is in line with Kumari (2021), had found out that98.5% pupil-teachers found ICT useful during their practice teaching.
- The achievement percentage of the pupil-teachers of private secondary teacher education institutes regarding their knowledge on ICT is found to be 86%, and interpreted in the 'very high' range of interpretation, and thus, it is found to be satisfactory.
- The achievement percentage of the pupil-teachers of government secondary teacher education institutes regarding their knowledge on ICT is found to be 79.28%, and interpreted as 'high' in the range of interpretation, and thus, it is found to be satisfactory.
- The achievement percentage of the pupil-teachers of both the private and government secondary teacher education institutes regarding their knowledge on ICT is found to be 84%, and interpreted as 'very high' in the range of interpretation. Marqerum-Leys, J. & Marx, R. (2002), conducted a case study on teacher knowledge of educational technology and found that the field has been impacted by a broader understanding of the nature of educational technology knowledge. Anal (2021), found out that majority of student teachers (78.26%) have the average level of ICT knowledge.

7.0 Suggestions

The suggestions for private secondary teacher education institutes are as follows:

- The institutes must have high-speed internet or Wi-Fi facility in the whole campus.

- The institutes must have digital classroom.
- There is a need for proper ICT lab, so that the pupil-teachers can learn efficiently.
- The digital infrastructure of the institutes should be developed from the traditional one.
- The institutes can encourage and adopt blended learning method.
- Investment can be made in smart classrooms by the institutes.
- There can be smart board in each of the classrooms.
- Provision for E-library by the institute is very important.
- The teacher-educators should be trained to use technology-based laboratory.
- The institutes must take e-attendance of the pupil-teachers and smart ID cards should be provided to them.
- ICT based assignments should be given so that the pupil-teachers can confidently and efficiently use ICT in their service period.
- ICT classes can be conducted regularly in the institutes.
- The institutes must give emphasis on educational technology, provision for e-books should be made.
- There can be plenty number of computers in the institutes as per requirement.
- The teacher-educators need to upgrade their teaching methods by using advanced educational technology to make their lectures more efficient.
- There may be professional ICT instructor in the institutes.
- Regular inspection of the computers can be done; whether functioning properly or not, is there any malfunction or virus, etc. should be monitored.
- Availability of projector is important in every class.
- Speakers can be used by the teacher-educators while delivering lecture to a big class.
- Projector can be used in the class, if the number of students is more than 50.
- Online resources can be made available in the class supplemented by face-to-face instruction.
- Provision for interactive displays should be made.
- Google classroom can also be used sometimes, so that the trainees become familiar with online classes.
- The institutes can have a feedback system on the college website, where the pupil-teachers can provide reviews or suggestions for the evaluation of effectiveness of technology.
- Examinations can also be conducted on online platform.
- Both the teacher-educators and pupil-teachers should be encouraged to use educational technology.
- A committee can be established in the institute to monitor the integration of educational technology.
- Virtual and Augmented Reality should be used in the institute.
- Platforms like MOODLE, google classroom can be used for organizing class materials, assignments and feedback in one place.

The suggestions for government secondary teacher education institutes are as follows:

- There can be high-speed internet and Wi-Fi facility in the institutes.
- The institutes can emphasis on adequate use of e-learning.
- There is need of sufficient number of computers in the institutes.
- There can be a phonetic lab in the institutes.
- The institutes can facilitate smart classroom.

- Assignments can be given on online platforms.
- The institute can make a change or transit from traditional method of textbook teaching to teaching through digital resources.
- There is need of digital teaching aids in the institutes.
- The institutes can have provision for proper ICT classroom and trained ICT instructor.
- The infrastructure of the institutes can be developed so that use of educational technology becomes feasible.
- Use of educational technology can be increased in the institutes.
- There can be internet access in the library.
- Projectors can be used to make learning effective and conducive.
- There can be provision for regular workshops and training for teacher-educators and administrative staff on the latest technological trends, and the best practices will ensure efficiency.
- The technological tools in the institutes can be upgraded and monitored from time to time.
- Emphasis can be given on e-books.

7.0 Conclusion

The present study discusses a very current issue or topic, as technology is an integral part of our day-to-day life, where education doesn't remain untouched. For making the students updated with the current trends or innovations, firstly, the teacher has to have knowledge of technology and this study focuses on the utilization of technology in the field of teacher education; how technology can help in the build-up of teachers. The findings of the study will be helpful to the institutions, academicians to frame policies for the upliftment of their courses, pattern and methodology. The present study is unique in its own way as no review of related literature has been found in many aspects.

The study also focused on the challenges and barriers faced by the pupil-teachers in the utilization of educational technology. 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. Infrastructure alone cannot solve the problem, it requires a robust support system, equitable access, and a reimagining of teacher roles. Focus should be made 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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