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A Study Of Online Learning Strategies And Their Effectiveness In Teacher Education

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INTRODUCTION

Faculty and students' perceptions of the barriers to effective online learning are referred to as perceived challenges. This involves the ability to consider multiple views on situations, as well as the ability to identify impediments that make one hesitant to take chances. The type of online learning technology utilized, infrastructure availability (internet and computers), and the employment of multiple learner management systems (LMSs) at higher education institutions are all likely to influence perceived difficulties. Assessment of Perceived usefulness, benefits, acceptance, and challenges is essential to plan for the strategies to strengthen the online learning status and minimize the obstacles. Also, the effectiveness of online learning in education is heavily dependent on instructors' attitudes toward technology (Avidov-Ungar & Eshet-Alkakay 2011; Salmon 2011; Teo 2011; Teo & Ursavas 2012). According to Liaw, Huang, and Chen (2007), "no matter how modern or powerful the technology is, its effective implementation is dependent on users' favorable attitude toward it." (Page 1069) Early research on teachers' attitudes toward technology development, adoption, and implementation defines attitudes toward technology as an effective (i.e., an experience of feeling or emotion) or evaluative assessment regarding the technology in issue (Davis, Bagozzi, & Warshaw, 1989). Thus, is the extent to which a person observes technology with the desire to use it (Barki & Hartwick, 1994). People are more likely to have a good attitude toward technology if they feel it is both essential and personally relevant (Rogers 2003; Teo 2011).

STATEMENT OF PROBLEM

A Study of Online Learning Strategies and Their Effectiveness in Teacher Education

OBJECTIVES OF THE STUDY

1. To identify various online learning strategies used in teacher education,

2. To assess the status of learning online in teacher education,

3. To study the effectiveness of online learning strategies as perceived by teachereducators,

4. To study the effectiveness of online learning strategies as perceived by studentteachers,

5. To find out the attitude of teacher-educators and student-teachers towards online learning.

OPERATIONAL DEFINITIONS

Online Learning: Online learning is learning with the support of the internet and a personal computer. Online learning can be fully online, hybrid/blended (partial) or Web supported learning and it can take place through any resource available on the internet, such as videos, audio, HTML documents, research papers, articles, blogs, discussion forums, online course platforms, etc.

Online Learning Strategy: Online learning strategies are the combination of various resources to achieve the desired objective. It generally involves deploying different methods and tools to execute the actions and realizing the expected goals of learning.

Effectiveness: Effectiveness is the extent to which objectives are achieved and the targeted problems are resolved in terms of necessary skills and learning outcomes and learning experiences.

Status: Status refers to the current facilities in terms of institutional readiness which comprises infrastructure, skilled faculty, professional development initiatives, and technical support.

Attitude: Attitude is the way of thinking and feeling about something. Teachereducator student-teachers benefits, and challenges as perceived by them

Teacher Education: Teacher Education refers to a programme of education, research and training of persons to teach from pre-primary to higher education level.

DELIMITATION OF STUDY

The study will be delimited to teacher education institutions in Jamshedpur.

The study will be delimited to teacher education in the Indian context.

The study will be delimited to secondary pre-service teachers.

The study will be delimited to fully online, and web-supported learning strategies for studying the effectiveness.

1. Accessibility and Digital Divide

- **UNESCO (2020)**: Reported that the COVID-19 pandemic highlighted significant disparities in access to online learning, with students from low-income families and rural areas facing challenges in accessing necessary technology and internet connectivity.
- **World Bank (2021)**: Discussed how online learning can exacerbate existing inequalities, with marginalized groups having limited access to digital tools, which can widen the educational gap.

2. Effectiveness of Online Learning

- **Means et al. (2010)**: Conducted a meta-analysis comparing online and face-to-face instruction, finding that students in online learning conditions performed modestly better on average than those receiving face-to-face instruction.
- **Xu & Jaggars (2013)**: Examined community college students' performance in online versus face-to-face courses, concluding that students were more likely to withdraw from or fail online courses, particularly those from disadvantaged backgrounds.

3. Student Engagement and Learning Outcomes

- **Dumford & Miller (2018)**: Found that online learning environments can result in lower levels of student engagement compared to traditional classroom settings, particularly in terms of interaction with instructors and peers.
- **Bernard et al. (2009)**: Conducted a meta-analysis on blended learning, indicating that a combination of online and face-to-face instruction can lead to improved learning outcomes due to the flexibility and varied instructional methods.

4. Challenges of Online Learning

- **Hodges et al. (2020)**: Differentiated between emergency remote teaching and planned online learning, noting that many institutions were unprepared for the sudden shift to online learning during the pandemic, leading to varied quality in instructional delivery.
- **Aristovnik et al. (2020)**: Surveyed students across the globe during the COVID-19 pandemic, finding that many struggled with motivation, concentration, and lack of interaction in online learning environments.

5. Trends in Online Learning

- **Allen & Seaman (2017)**: Discussed the growing trend of online learning in higher education, noting that a significant proportion of college students were taking at least one online course, a trend that has continued to grow.
- **OECD (2020)**: Reported on the increasing integration of digital technologies in education, predicting that online learning will continue to expand even after the pandemic, with more hybrid models becoming common.

DESIGN OF THE STUDY

Method:

Descriptive Survey method was followed

Population

Population is the group of individuals from which a statistical sample is derived for a study. The population for this study was all teacher education institutions, teacher-educators and student-teachers of M.Ed. and B.Ed. from Jamshedpur Region.

Sample and Sampling Technique

When a researcher performs research on a large group of individuals, it is nearly impossible to collect data from each individual in the entire group. Instead, a representative sample is therefore chosen, which refers to the small group of people who will take part in the study. A representative sample of the group is helpful in drawing meaningful inferences from the results and to generalize the findings. Purposive sampling technique was used to choose the sample for this study. The sample was thus drawn from teacher education institutions. Initially, 36 teacher education institutes in Jamshedpur were chosen for the purpose of research, with 33 of them eventually participated which included government funded (fully or partially) and self-financed teacher education institutions from both rural and urban areas. A sample of 60 teachereducators and 530 student-teachers was drawn from 33 teacher education institutes. Sample of teacher-educators and student-teachers was classified based on setting, funding and
gender.

TOOLS OF THE STUDY

Tool 1: Online Learning Strategies in Teacher Education Questionnaire
Tool 2: Status of Learning Online Questionnaire
Tool 3: Effectiveness Scale for Online Learning Strategies
Tool 4: Attitude Scale towards Online Learning

DATA COLLECTION

The objective of collecting data was to acquire high-quality information that could be analyzed to yield realistic and believable answers to the questions that were posed in the present study.

DATA ANALYSIS

Microsoft Excel was used to analyze the quantitative data. The responses to the questions were coded and saved in spreadsheets. However, qualitative data were manually evaluated using the tools' dimensions and sub-dimensions. Descriptive statistical technique was utilized by the researcher. Mean, Standard deviation, Standard error, minimum, maximum, and percentage were employed by the researcher. T-test was used for analyzing the data on the basis of demography. The procedure of scoring is discussed in full below.

SUMMARY

Online learning has proved to be one of the best means for teaching as well as learning. Inthis digital age, it is vital to focus on the concept of non-electronic learning with the support of books and lectures, but the significance and effectiveness of technology-based teaching and learning cannot be moderated. The study attempted to identify online learning strategies being used in teacher education and their effectiveness as perceived by teachereducators and student-teachers. This study also explored the attitude of teacher-educators and student-teachers towards online learning. The researcher used mixed research methods for the present study. To address the vital research objectives, this study utilized both qualitative as well as quantitative methods and integrated the data from both primary and secondary sources. The qualitative approach helped the quantitative data analysis and documenting of the results and findings. This study was carried out in three phases, and it employed an Ex-post-facto research design to study the strategies, status, and effectiveness of online learning in teacher education institutions. Frequencies, percentages, mean, standard deviation and t-tests were used to analyze the data. The key findings are presented in the subsequent sections

FINDINGS OF THE STUDY

1) Findings related to online learning strategies

i) Most (80%) student-teachers have used online learning, with only a few using blended face-to-face learning modes. Significant numbers of student-teachers utilized multiple modes of learning, including those who used more than one and those who used all the modes of learning.
ii) Student-teachers preferred online learning methods in Teacher Education Institutions. According to the data, one-third of the respondents have participated in fully online learning, which includes SWAYAM, COURSERA, EduX, Zoom, Google Classroom, and other similar platforms. In terms of the method used by student-teachers for learning, web-supported strategies such as YouTube, open educational resources, video content, repositories, and so on, and blended learning strategies i.e., fully online/web-supported learning combined with face-to-face learning have a nearly equal number (17% and 15% respectively) of responses. Fewer people (13%) have tried both fully online and web-supported learning techniques. Significant (19%) student-teachers used many forms of learning, including those who used more than one method and those who used all of the methods indicated by the study.

2) Results Concerning the Condition of Online Education

i. Hardware, software, and other facilities were available, accessible, and used as infrastructure facilities. The majority of teacher educators (87%) stated that their institution has hardware facilities; however, only a lesser percentage (16%) of teacher educators thought these facilities were easily accessible. For useable responses only, a further decrease in response percentage (11%) was noted. Relatively fewer teacher-educators (12%) said that hardware facilities were both useable and accessible.

ii. While the majority of teacher-educators (94%) approved of the availability of software resources, just a small percentage (21%) thought that the resources were only accessible and not useful, and even fewer (15%)

responded that the resources were useful. However, 14% of teacher-educators reported that their institution's software resources were both useable and accessible.

iii. The majority of teacher-educators (91%) reported that although these facilities were provided, only a small percentage (18%) of them thought they were easily accessible. There was an additional drop in responses (13%) for "usable ones only." Furthermore, just 14% of teacher-educators believed that the extra facilities were both usable and accessible.

iv. A sizable portion of student instructors (89%) said that their institution had hardware facilities, but only 17 percent of them reported that they were accessible. Only 7% of student-teachers reported that the hardware was usable. There were also fewer student-teachers (9%) who said that the hardware facilities that were supplied were both useable and accessible.

v. A greater percentage of student-teachers (91%) reported knowing about the software facilities' availability. Relatively fewer (17%) responses were for software facilities that were only accessible, and even fewer (9%) responses were for facilities that were only useful. A smaller percentage of student-teachers (11%) concurred that the software resources were both usable and accessible.

vi. When asked about extra resources like an institutional website, YouTube channel, internet/Wi-Fi connection, etc., the majority of student teachers (90%) said that these were readily available, but only the accessible ones were mentioned by a smaller percentage of student teachers (16%). A mere 7% of student-teachers responded to those that were deemed usable. Less (11%) student-teachers agreed that there should be more accessible and useful facilities.

vii. Student teachers responded more positively to the overall infrastructure provided than did teacher educators, but fewer of the student teachers' reports of usable infrastructure were made. Teachers and student educators responded nearly equally to accessible resources and those that were both useful and accessible.

viii. When security and bandwidth were combined, it was found that most teacher-educators supported strong internet security and connectivity in their schools, whereas student-teachers rated both security and bandwidth as "moderate." Thus, in order to facilitate online learning, student-teachers felt that the institution's internet bandwidth and general security needed to be improved.

ix.The PCs were deemed suitable for use by both teacher educators and student teachers. Technology was very accessible because teacher-educators had unrestricted access to computers and the internet. The limited access to computers and the internet experienced by student-teachers resulted in their overall technology accessibility score falling into the moderate category.

x. According to teacher-educators, technology is utilised virtually everyday in all teacher education institutions, placing the overall average score of technology use in the high category. Teachers also use the internet and technology to help students' learning with high frequency. Student-teachers indicated that although teachers used technology to enhance students' learning with great rigour, students limited their use of computers and the internet. In contrast, teachers claimed that their frequency of usage and internet usage was moderate. As a result, there was an increase in technology use overall.

xi.Overall technical competence of teacher-educators was good to implement online learning in teacher education institutions; the results showed that the teacher-educators are familiar with good basic skills while the advanced skills fall into the moderate category. The results demonstrated that the student-teachers had a

reasonable level of familiarity with fundamental abilities. Additionally, the advanced skills fell into the mediocre range. The overall technical competency of student teachers was found to fall within the good category; that is, in order for teacher education institutions to integrate online learning, student instructors must enhance their fundamental technological skills.

xii. It was discovered that there was good technical support for both student teachers and teacher educators. Instructor-trainers and student-teachers advocated for faculty members to be trained through online resources and skilled technical personnel.

xiii. The majority of teacher-educators had participated in institutional and self-initiated professional development programs. Large numbers of people responded favourably to every option except enrolling in online courses.

xiv. There was no statistically significant difference found among teacher-educators based on gender or setting, although there was a statistically significant difference regarding institutional funding. Comparably, there was no statistically significant difference observed among student-teachers based on gender or setting; nevertheless, the difference was found to be statistically significant depending on the institution's funding.

3) Results Concerning the Efficiency of Online Learning Techniques

i) According to the results of the interviews with teacher educators and student teachers, the teacher educators thought that the fully online learning strategies were only somewhat successful in producing the desired learning outcomes and offering suitable learning opportunities. For totally online learning, the reported effectiveness of the learning experiences and learning outcomes by teacher educators and student teachers was also modest.

ii) The findings showed that the teacher-educators thought web-supported learning strategies were a passable way to attain the desired learning goals and appropriate learning opportunities. Web-supported online learning was seen by student-teachers as having fairly positive learning experiences and moderately successful learning outcomes.

4) Results Concerning Perceptions of Online Education

i) The results showed that teacher educators had a neutral view. They have no strong opinions or unfavourable ones on online education. However, the outcome showed that the student-teachers had a favourable attitude. That is, students were willing to support the implementation of online learning in teacher education institutes.

ii) The results showed that attitudes about the value of online learning were neither positive nor negative for teacher educators or student teachers.

iii) The outcomes of the teacher-educator and student-teacher surveys showed that both groups thought online learning was advantageous.

iv) Both teacher educators and student teachers believed that online learning was a viable option for education.

v) The mean score indicated that both teacher educators and student teachers had an impartial opinion of the difficulties associated with online learning.

vi) There was no statistically significant difference in the attitudes of teacher-educators towards online learning based on gender or setting, but there was a statistically significant difference regarding institutional funding at the 0.05 level of significance. Similarly, there was no statistically significant difference in the attitudes of

student-teachers towards online learning based on gender or status, but there was a significant difference based on setting.

RESULTS OF THE RESEARCH

The goal of the current study was to determine which online learning methodologies are used in teacher education programs and to assess their efficacy. Finding out how teacher educators and student teachers felt about online learning was another goal of the study. The researcher looked into both fully online and web-supported learning methodologies.

Compared to teacher educators, student teachers showed greater interest in online learning. Both teacher educators and student teachers favoured online learning, given that their institution offers it and they have adequate access to it. Both teacher educators and student instructors must improve their technical skills in order to succeed in an online learning environment. Online learning strategies were only moderately effective since they lacked clear learning objectives and desirable learning experiences, although teachers' and students' views towards it were positive. Additionally, there was a good attitude among teacher-educators regarding online learning.

Regarding the state of online learning, there was no statistically significant variation among teacher-educators based on gender or setting; nevertheless, there was a statistically significant difference regarding the institution's funding. Comparably, there was no statistically significant difference observed between student-teachers based on gender or setting; however, depending on the institution's funding, there was a statistically significant difference observed at both the 0.01 and 0.05 levels of significance.

Regarding gender and environment, there was no statistically significant difference in the teacher-educators' attitudes towards online learning; nevertheless, when it came to institutional funding, the difference was found to be statistically significant at the 0.05 level of significance. While there was a significant difference seen based on setting, there was no statistical difference observed in the attitudes of student-teachers on online learning based on gender or status.

IMPLICATIONS FOR EDUCATION

i) It is advised that in order to facilitate online learning, a robust digital infrastructure and a technological barrier should be built.

ii) A major legislative drive to establish a system where students can earn credits for finishing online courses may be initiated, turning learning into a more student-centered experience. In lieu of following a conventional learning approach, students' credits may be used to their overall grades.

iii) In order for the educational system to adapt to the changing demands of technology, model teacher education institutions should hold accreditation from the NCTE, NAAC, UGC, and MHRD for taking online courses and MOOCs.

iv) More online learning platforms, like SWAYAM, ought to be introduced to aid professionals and dropouts by offering online degrees and certifications.

v) To close the infrastructure gap, educational institutions need to raise private money for initiatives related to online learning infrastructure.

vi) Support and training from teachers are additional essentials for a successful online learning environment. Training and assistance are required when switching jobs as an online instructor. Programs for faculty development can assist educators in making the switch from in-person to online learning.

RECOMMENDATIONS FOR MORE RESEARCH

Every study that is conducted in a certain field has limitations. Therefore, no study is exhaustive in and of itself. Owing to time and financial limitations, the investigator narrowed the scope of her work and was unable to cover every aspect of the subject. Consequently, the present study's findings lead to the following recommendations for additional research:

• To give a comprehensive understanding of online learning practices, a comparable study might be conducted with a larger sample size, in different regions, and in different states.

• Only a sample of B.Ed. and M.Ed. students was used in this study. Students at different levels, such B.El.Ed. and D.El.Ed., can also use it.

• Only student teachers and teacher educators are included in this study. Therefore, by include principals, heads, and directors in the sample, a complete image of online learning methodologies may be developed. Thus, additional researchers may soon perform a study with a sample of administrators as well as teacher-educators and student-teachers.

• The focus of this study was on learning methodologies that are totally online or aided by the web. One may conduct a study akin to this one on mixed online learning approaches.

• Although the sample for this study was restricted to teacher education, it might be expanded to include engineering, management, and other areas.

• Future research can address comparative studies pertaining to the variables examined in this study.

• While analysing and interpreting the efficacy of online learning tactics, the current study did not take demographic data into account; this is a gap that can be filled by future studies.

•By giving the study variable more dimensions, similar research can be carried out.

The suggestions made above are not only pertinent, but also helpful in that they point the way for further research. There are a tonne of unexplored regions in this field, and it could be fruitful to pursue these studies.

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