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Study of innovative educational technologies used for online teaching by pre-service teachers

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Abstract:

Technology has disrupted all areas of our life and education is no different. When the COVID-19 virus reached pandemic levels, shuttering schools the world over, it left educators facing a massive challenge to keep students learning and engaged without the face-to-face closeness and comfortable daily routine of a classroom. Online teaching came as a resolution for making the education borderless, creative and context driven innovation, dynamic and adaptable to anybody, any place and any situation. In this context on line teaching has made education system from local to global, one to many and tradition all to modern and has become borderless.

This paper explores the various innovative educational technologies solutions used by the preservice teachers for on-line teaching in schools of Delhi and NCR at elementary level. It also explores the advantages and challenges faced by them in implementing these technological solutions in the Indian scenario.

Keywords: Educational technologies; online-teaching; advantages; disadvantages; pandemic ; Pre-service teachers

INTRODUCTION

Educational technologies is widely used in our everyday life, and its need is ever-growing in the education sector. Images, audios, videos, presentations, or a combination of these used for teaching constitute educational technologies in education. So, educational technologies in education meaning would be using information and communication to improve the delivery of education in every way.

Schools use a diverse set of educational technologies tools to communicate, create, disseminate, store, and manage information. In some contexts, educational technologies has also become integral to the teaching-learning interaction, through such approaches as replacing chalkboards with interactive digital whiteboards, using students' own smartphones or other devices for learning during class time, and the "flipped classroom" model where students watch lectures at home on the computer and use classroom time for more interactive exercises.

When teachers are digitally literate and trained to use educational technologies, these approaches can lead to higher order thinking skills, provide creative and individualized options for students to express their understandings, and leave students better prepared to deal with ongoing technological change in society and the workplace.

One of the key goals of educational technologies is to assist students in becoming proficient and confident users who can use their fundamental knowledge and abilities in their everyday life. It is also meant to prepare pupils for the world of the future. Its goal is to assist students in developing an open and flexible thinking. Its essential

objective is to empower students to "build up the skills, abilities, and attributes that will lead them to turn out to be effective and productive not only in their space but also at a global level.

METHODOLOGY

The present research was an exploratory research. This research made an attempt to provide a significant insight to the phenomenon under study. The population of the study were the pre-service teachers of a private university of Noida. During their school internship program they were deputed in the government and private schools of Delhi and NCR. The pre-service teachers used on-line teaching method to teach the students of elementary schools using various apps for course transaction and evaluation during the Covid pandemic. Purposive sampling method was adopted to select fifty pre-service teachers. Survey method was used to collect data using Google forms. The reliability of the tool was established by test-retest method. The scores were correlated, and the reliability coefficient was positive and high. The validity of the tool was established using a panel of nine experts from the field and field testing of the tool was done before administering the tool.

OBJECTIVES: The objectives for the present study are as follows:

1. To find the subjects taught by pre-service teachers in government and private schools at elementary level
2. To study the various apps used by pre-service teachers for on-line teaching.
3. To study the various apps used by pre-service teachers for on-line evaluation.
4. To find the views of pre-service teachers on advantages of using these apps for online teaching.
5. To find out the challenges encountered by pre-service teachers in using the apps for on-line teaching.

RESEARCH QUESTIONS: The research questions for the present study are as follows:

- Q1. What are the various subjects taught by pre-service teachers in government and private schools at elementary level?
- Q2. What are the various apps used by pre-service teachers for on-line teaching?
- Q3. What are the various apps used by pre-service teachers for on-line evaluation?
- Q4. What are the views of pre-service teachers on advantages of using these apps for online teaching.
- Q5. What are the challenges encountered by pre-service teachers in using the apps for on-line teaching.

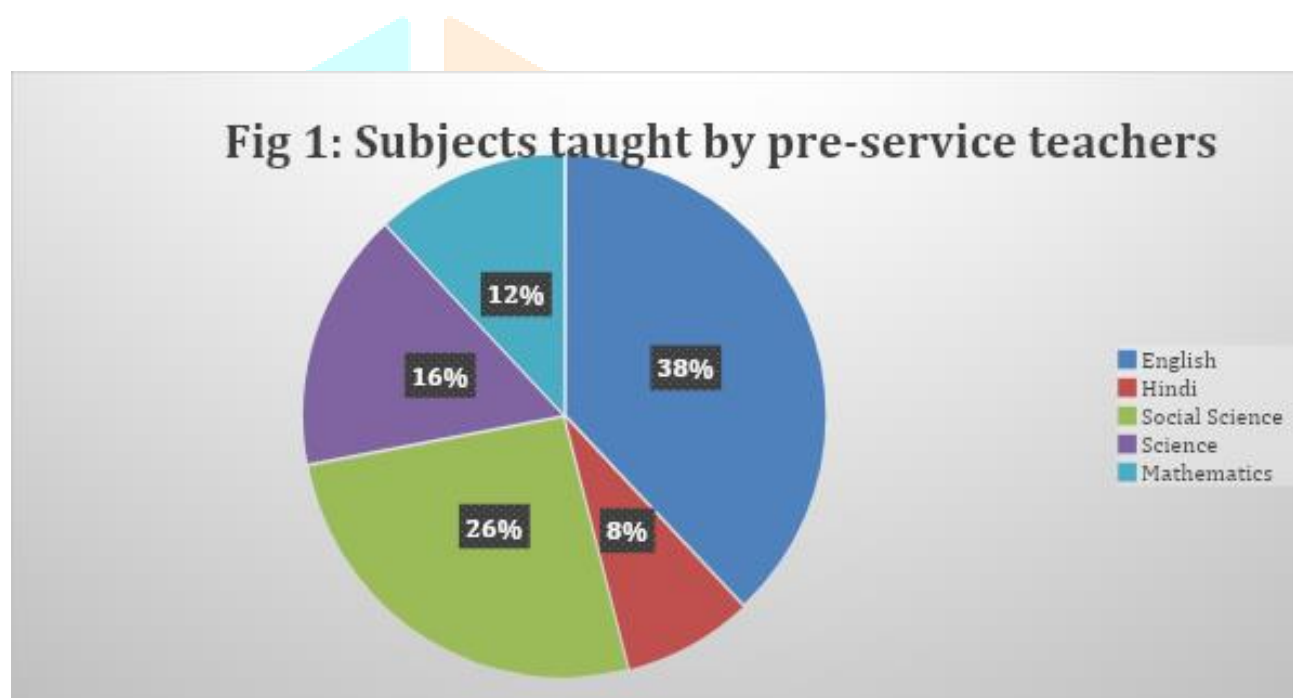
ANALYSIS AND INTERPRETATION: The data was analyzed using simple statistics and is presented below:

Objective1: To find the subjects taught by pre-service teachers in government and private schools at elementary level

Pre-service teachers had taught various subjects in government and private schools of Delhi and NCR. The study investigated the various subjects taught by the pre-service teachers at the elementary level. The pre-service teachers were administered the google form their responses were analyzed and the same has been graphed in Table 1.

Table 1 Subjects taught by pre-service teachers in government and private schools at elementary level

Subjects taught	No of pre-service teachers	Percentage
English	19	38
Hindi	4	8
Social Science	13	26
Science	8	16
Mathematics	6	12
Total	50	100



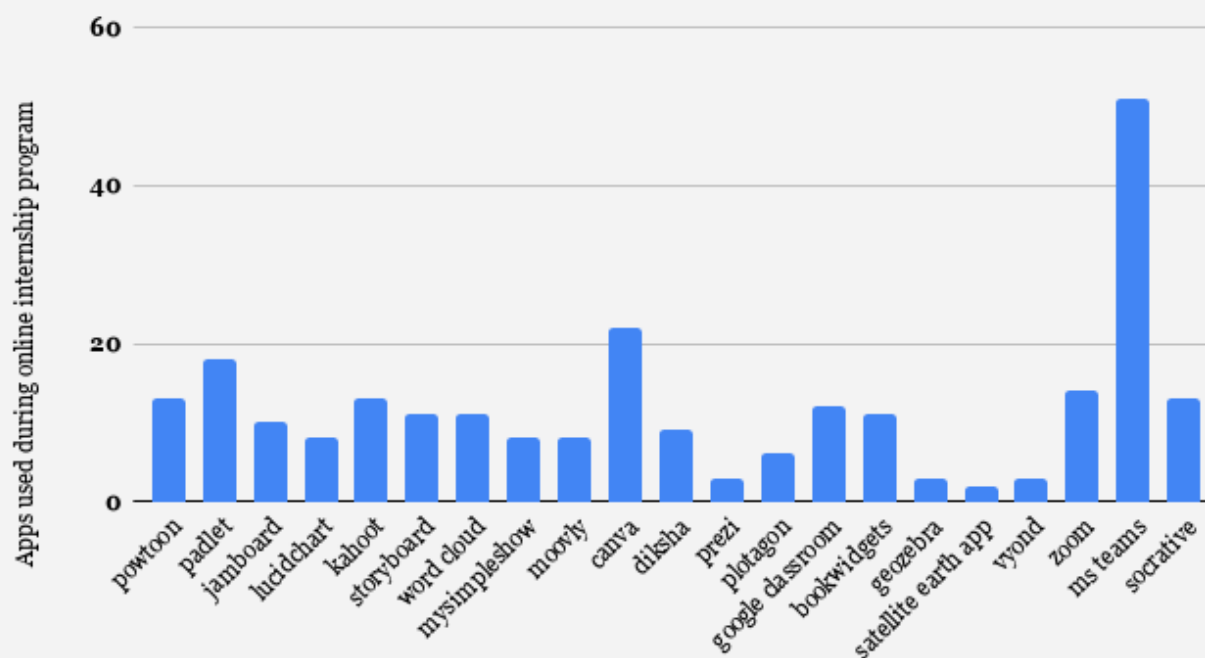
Interpretation: It was observed from Figure 1 that 38% of teachers are teaching English while 26% are teaching social science where as 16% Science, 12% Mathematics and only 8% are teaching Hindi to the students of elementary schools at Delhi and NCR.

Objective2: To study the various apps used by pre-service teachers for on-line teaching

The pre-service teachers used several applications for online teaching during their internship program in various schools in Delhi NCR which created better opportunities for interaction with the students. It also helped teachers make their sessions more interactive and engaging. The responses of the apps used by the pre-service teachers for teaching are given in the Table 3.

Table 3: Apps used for teaching by pre-service teachers

Name of the app used for teaching by pre-service teachers	Number of pre-service teachers using the app
Powtoon	13
Padlet	18
Jamboard	10
Lucidchart	8
Kahoot	13
Storyboard	11
Wordcloud	11
Mysimpleshow	8
Moovly	8
Canva	22
Diksha	9
Prezi	3
Plotagon	6
Google classroom	12
Bookwidgets	11
Geozebra	3
Satellite earth app	2
Vyond	3
Zoom	14
MS Teams	51
Socrative	13

Fig 2. Apps used during online internship program

Interpretation: It was observed from Fig 3. That 50% pre-service teachers use MS teams, Kahoot, padlet, powtoon, canva, zoom's usage is between 10%-20%. Apps such as geozebra, vyond, satellite earth, prezzi are used by very few pre-service teachers.

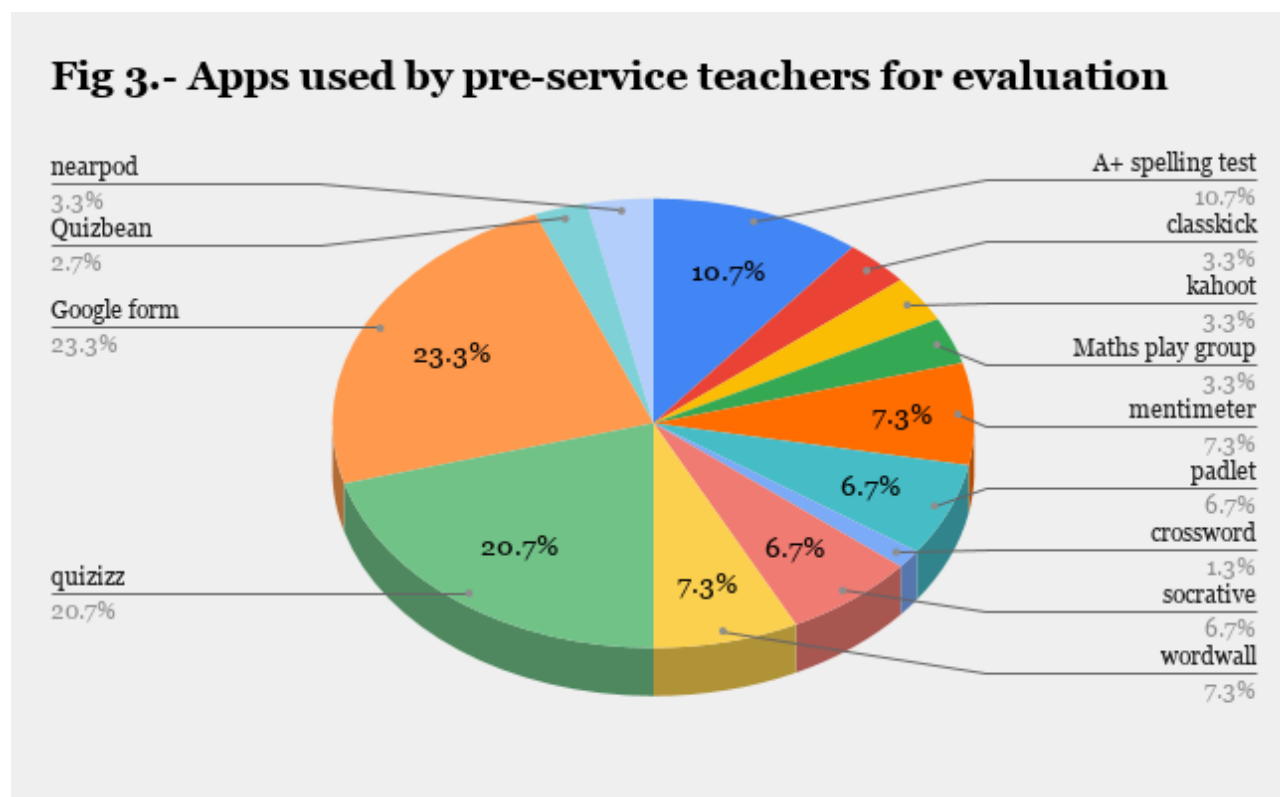
Objective 3: To study the various apps used by pre-service teachers for evaluation

The pre-service teachers used various apps for evaluation in private and government schools assigned to them in Delhi NCR. The use of these apps made evaluation more environment friendly, easier and flexible. The responses of the apps used by the pre-service teachers are administered in the given table:

Table 3: Apps used by pre-service teachers for evaluation during on-line teaching

Name of Apps used for evaluation	Number of pre-service teachers using the app
A+ spelling test	16
classkick	5
kahoot	5
Maths play group	5
mentimeter	11
padlet	10
crossword	2
socrative	10
wordwall	11

quizizz	31
Google form	35
Quizbean	4
nearpod	5



Interpretation: It was observed from fig 3 that 23.3% of pre-service teachers are using google forms for evaluation whereas 20.7% are using quizizz. Mentimeter and wordwall are used by 7.3% teachers wherein 6.7% teachers are using socrative and padlet for evaluation purpose. Also, 3.3% teachers are using nearpod, kahoot, classkick, maths play group each.

Objective 4: To find the views of pre-service teachers on advantages of using these apps for on-line teaching

The objective of this study was to know the views of pre-service teachers on advantages of using these apps for online teaching. The advantages of using apps for on-line teaching as responded by pre-service teachers are as enlisted below:

- Proper orientation and guidance is needed for all the students as well as teachers who are not so tech savvy. Some apps are difficult to operate as teachers and students are not familiar with that app.
- Due to network issues sometimes it is difficult to engage all the students at the same time on the same platform.
- Time consuming as it needs time to develop the content and explore the apps. Teachers also need to have a backup plan.
- Use of too many apps can lead to extraneous load on the students.
- During assessment students can take help from siblings or parents.
- Some of the applications were on free trial so they had limited time basis and access.

Objective 5: To find out the challenges encountered by pre-service teachers in using the apps for on-line teaching

The objective of this study was also to know the views of pre-service teachers regarding the challenges encountered by them in using the apps for on-line teaching. The challenges of using apps for on-line teaching as responded by pre-service teachers are as enlisted below:

- The use of applications makes lesson planning less cumbersome, engages teachers and students and variety of content as well as various assessment techniques.
- It engages students in an interactive and interesting manner there is always active participation.
- These apps increase creativity, gains the attention of the students and reduces boredom caused by black and white teaching.
- The apps save time and provide results instantly in assessments.
- There is no use of paper which is very environment friendly. The students are evaluated online and are taught online the overuse of papers for assignments decreases.
- The recorded data of attendance, assessment results can be analysed with graphical representation easily.

CONCLUSION

The classrooms of the 21st century are rapidly changing with the help of technology. ICT has revolutionized the way the education industry functions. But while it is extremely beneficial, the proper use of ICT is also equally important. During Covid pandemic the different parts of the world are rapidly networked and globalized through internet and on-line processes. The demand is not to develop the individual having limited knowledge and thinking for self-growth and development but to contribute as a whole to the society, country and globe at large. The focus of the traditional system was to support for the economic and social development of the individual whereas the borderless education ensures overall development including technological, economic, political, social and cultural, where they can learn from world class teachers, experts, peers and best materials from any part of the world, getting lifelong exposures any time and every time. Every innovations and advancement bring with it, its own advantages and limitations, it depends upon the individual to use it to the best of his ability for the up-liftment of the society.

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