Research Article

Pedagogy

# PERCEIVED POTENTIAL OF E-ASSESSMENT STRATEGIES: AN INNOVATIVE PEDAGOGICAL APPROACH

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COVID-19 is a pandemic threat through which the entire planet is affected, and at the same time, everything went through tremendous changes, including education. E-learning has become the sole method of knowledge transfer, even in developing countries, and e-assessment has become more and more crucial in this digital transformation of education. To fully utilize its potential to improve students' learning demands, however, it must be understood how deeply and how far it has ingrained itself in teachers' minds. This paper aims to examine the perception of teachers regarding e-assessment strategies in the teaching-learning process as well as the challenges they faced while using e-assessment techniques. For this purpose, the researchers employed a self-constructed tool on a sample of 200 school teachers who are presently working in different institutions across the country. By using appropriate statistical techniques, the findings of the present research work discovered a significant difference in perceived usefulness, compatibility, self-efficacy, and resource facilitation as four important domains of e-assessmentwith respect to the gender of teachers at the school level, it is also observed that no significant difference among teachers as per their gender in awareness, and perceived ease of use and ITsupportsthe domain of e-assessment.On the basis of the findings, it is recommended that there is a need for such training programs and capacity-buildingprograms for school teachers that will increase the self-efficacy and compatibility among them regarding the effective usage of e-assessment and evaluation strategies to create an optimal learning environment in the classroom.

**Keywords:** E-Assessment, Perception, Learning, Teaching

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## Introduction

Assessment is one of the most important parts of educational institutions as it helps in figuring out a student's skills, knowledge, understanding, and powers helps them learn, and makes sure they meet the learning goals. Assessment has a big effect on how students learn and study and how they see their learning setting (Ramsden, 1992; Marton and Saljo, 1997). One of the approaches established to deal with some of the significant aspects of a conventional assessment is an evaluation based on the ICT; this type of assessment is known as an "e-assessment." Direct results and feedback from e-assessment have been shown to be effective in reducing tutor time and effort, improving student performance, and measuring problem-solving skills (Crews & Curtis, 2011; Ridgway et al., 2004; Gilbert et al., 2011; Sorensen, 2013).

For students and academic courses, e-assessment offers a number of benefits. For starters, e-assessment enables prompt, even instantaneous, feedback (Rolim & Isaias, 2019; Daly et al., 2010; Spector et al., 2016). Using technology for evaluation allows instructors to be more flexible when offering feedback. Feedback, for example, can be scaffolded by providing multiple sorts of feedback or concentrating on distinct material (Nikou & Economides, 2018; Cayton-Hodges et al., 2015). This multi-modal and just-in-time feedback method helps raise students' motivation and self-awareness. Due to the fact that e-assessment collects data electronically, it may be used to monitor student development and perhaps even aid in the detection of underperforming pupils (Rolim & Isaias, 2019). Despite these benefits and advantages, educational institutions have just lately begun to adopt e-assessment (Nikou & Economides, 2018). Thus, by conducting this study, we can better understand the challenges faced by educators when implementing such an e-assessment and emphasize the many benefits of adopting such a system. It will provide us with the opportunity to work on the gaps in the system as well as the components of the system that need to be worked on and improved in order to ensure a more widespread acceptance and to make the learning process simpler.

## Analysis of Related Research

E-learning fundamentals (Buzzetto-More, Pinhey, 2007), computer simulation and modeling in professional training (I. Teplytskyi, V. Soloviov, S. Semerikov, O. Teplytskyi, 2019), and computer-based evaluation approaches (Miller et al., 2012) are among the topics covered in scholarly papers. According to the researchers, online testing represents a significant technology innovation that should be included into the educational system in order to enhance the current student evaluation process. The researchers look into the effects of e-assessment on education, provide educators advice on how to create e-tests and e-assessments (Abdelkader et al. 2014; Koneru, 2017), and look into the attitudes of educators towards the use of e-assessment. Despite the substantial quantity of research that has been done, no methodological recommendations on how to organize e-assessment in higher education have been made. According to research that has been published in academic journals on the topic, e-assessment offers a number of advantages. According to M. Wald, N. Alruwais, and G. Wills (2018), students prefer online assessment because it gives them greater control over the process and the interfaces are simpler to use. In comparison to paper-based examinations, an additional advantage of e-assessment is rapid feedback. The result is an increase in the children's motivation. Students can show they have a thorough understanding of a subject as well as the capacity to take it to a higher level of thought by participating successfully in online debates (Alruwais et al., 2018). As a consequence, students in remote locations are better able to learn and assess their progress (Bachman, 1996). E-assessment is dependable and secure, and it helps to reduce deception among students (Bachman, 1996). E-assessment provides universities with the opportunity to enroll more students; e-assessment reduces the expense of assessing students because less time is needed; and e-assessment saves institution money.

E-learning and e-assessment offer several additional benefits, including the ones listed below:

- the implementation of active learning strategies (Alruwais et al., 2018).

- Individualization strategies for the learning experience (Alruwais et al., 2018).

- Replicability and accessibility (Alruwais et al., 2018).

- A condensed knowledge management strategy (Alruwais et al., 2018).

## Hypotheses of the Study

On the basis of the framed objectives, the investigator formulated the hypotheses which are as follows:

01. There is no significant difference in the mean scores of male and female teachers regarding the awareness related to e-assessment tools and techniques.

02. There is no significant difference in the mean scores of male and female teachers regarding the perceived usefulness related to e-assessment tools and techniques.

03. There is no significant difference in the mean scores of male and female teachers regarding the perceived ease of use related to e-assessment tools and techniques.

04. There is no significant difference in the mean scores of male and female teachers regarding the Compatibility related to e-assessment tools and techniques.

05. There is no significant difference in the mean scores of male and female teachers regarding the peer influence & superior influence related to e-assessment tools and techniques.

06. There is no significant difference in the mean scores of male and female teachers regarding the self-efficacies related to e-assessment tools and techniques.

07. There is no significant difference in the mean scores of male and female teachers regarding resource facilitation related to e-assessment tools and techniques.

08. There is no significant difference in the mean scores of male and female teachers regarding the IT support related to e-assessment tools and techniques.

## Methods and Procedure

In order to collect the data from the target group, the researcher has opted for the Descriptive Survey Method in the present research work as per the need and requirement of the nature of the problem. For the selection of the sample from the target population that is teachers, the investigator has employed the simple random method by taking into consideration the fair chance of selection of the sample from the population.

**Sample**

About 200 teachers who are teaching in different educational institutes at different levels were taken as a sample in this research work.

**Tool Used**

For the collection of the data, the self-constructed perception scale was used by the researcher which contains closed-endeditems related to e-assessment techniques and approaches. The perception scale was made based on Eight different domains given by The Model of Acceptance and Usage of E-assessment (MAUE). A survey, according to Pinsonneault and Kraemer, is "a method of learning about the features, actions, or judgments of a large group of people." Furthermore, surveys can be used to determine what has to be done, what people want, and what the outcomes will be (Salant & Dillman, 1994). This self-constructed perception scale includes both positive as well as negative items on five-point Likert Scaling that is Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree.

**Procedure Adopted for Data Collection**

First of all, we have made the survey questionnaire i.e., perception scale in the form of online Google forms. The perception scale was made on the basis of domains given by The Model of Acceptance and Usage of E-assessment (MAUEA). Surveys can also be used to determine what has to be done, what people desire, and what the consequences will be (Salant & Dillman, 1994). The poll provides us with the information we need to determine how instructors feel about utilizing e-assessment, as well as the advantages and downsides of different approaches and how to utilize e-assessment most effectively. For two weeks, the form was made available online. The link to the prepared Google form was distributed to the instructors via various social media platforms (WhatsApp, Facebook groups, e-mail addresses, and so on). A user-friendly application programming interface (API) enables Google Forms "an integrated web-based application that makes it simple to create online surveys, questionnaires, and quizzes." by Haddad &Kalaani. So, the perception scale was placed on the Google Forms platform, which allows for immediate response, tracking of progress, and analysis of outcomes. This is the link: https://forms.gle/zYJupAyvBffsuokdA

. The research included 200 teachers in all. The participants were not given a copy of the response receipts, and each participant was restricted to one response. There were no incentives for responding to the poll.

## Analysis and Interpretation

The following is the analysis and interpretation of the obtained data:

Table 1: Depicting the t-value of awareness among teachers related to e-assessment tools and strategies w.r.t their gender

*Enclosed as Annexure 01*

Table 1 data indicated that the mean of teachers' awareness scores with respect to their gender was 19 & 18.98. Furthermore, the computed t-value was 0.04, which is less than the value at the significance level of 0.05, which was 1.96. As a result, even at the 0.05 level, the computed value of t is insignificant. Thus, hypothesis 1 is accepted, suggesting that there is no significant difference in the mean scores of male and female instructors in terms of awareness of e-assessment tools and approaches. In other words, both male and female teachers have equivalent degrees of understanding of e-assessment tools and strategies.

Table 2: Depicting the t-value of perceived usefulness related to e-assessment tools and strategies w.r.t their gender

*Enclosed as Annexure 02*

According to Table 2, the mean scores of instructors in perceived usefulness as one of the characteristics of e-assessment tools and techniques are 19 and 17.72, respectively. Furthermore, the computed t-value was 2.62, which is larger than the value at the 0.01 threshold of significance, which was 2.58. This also means that the estimated value of t is significant at the 0.01 level. As a result, hypothesis 2 of the study is rejected: there is no significant difference in the mean scores of male and female instructors regarding the perceived usefulness of e-assessment tools and approaches. According to the preceding view, male and female teachers have different perceptions of the effectiveness of e-assessment tools and strategies.

Table 3: Depicting the t-value of perceived ease of use related to e-assessment tools and strategies w.r.t their gender

*Enclosed as Annexure 03*

According to Table 3, the mean ratings of male and female instructors for perceived ease of use of e-assessment tools and techniques were 16.91 and 16.56, respectively. The computed value of t, on the other hand, is 0.92, which is less than the value at the 0.05 level of significance, which is 1.96. As a result, even at the 0.05 level of significance, the computed value of t=0.92 is not significant. As a result, hypothesis 3 of the study, that there is no significant difference in the mean scores of male and female instructors regarding the perceived ease of use connected to e-assessment tools and approaches, is shown to be correct. In other words, both male and female teachers are considered to have an identical degree of perceived ease of use when it comes to e-assessment tools and procedures.

Table 4: Depicting the t-value of compatibility related to e-assessment tools and strategies w.r.t their gender

*Enclosed as Annexure 04*

In Table 4, the mean compatibility ratings for e-assessment tools and techniques for male and female instructors are 15.35 and 14.79, respectively. The estimated t-value was 2.02, which is more than the value at the 0.05 level of significance, which was 1.96, but less than the value at the 0.01 level of significance, which was 2.58. As a result, the t value of compatibility scores about e-assessment in connection to their gender is shown to be significant at the 0.05 level of significance. This means that hypothesis 4 of the current study, which states that there is no significant difference in the mean scores of male and female instructors regarding compatibility with e-assessment tools and methodologies, has been rejected. This means that male and female teachers have different levels of compatibility with e-assessment technologies and procedures.

Table 5: Representing the t-value of peer influence and superior influence related to e-assessment tools and strategies w.r.t their gender

*Enclosed as Annexure 05*

As shown in Table 5, the mean value of male and female instructors in peer influence and superior influence as one of the areas of e-assessment tools and techniques is 15.55 and 15.52, respectively.

Similarly, the t-value was 0.82, which is less than the value at the 0.05 threshold of significance, which was 1.96. As a result, even at the 0.05 level of significance, the t-value for peer influence and superior influence is not significant. This indicates that hypothesis 5 is accepted, saying that there is no significant difference in the mean scores of male and female instructors regarding peer influence and superior influence connected to e-assessment tools and approaches. In other words, both male and female teachers lack peer and superior influence when it comes to e-assessment technologies and procedures.

Table 6: Showing the t-value of Self-efficacy related to e-assessment tools and strategies w.r.t their gender

*Enclosed as Annexure 06*

In Table 6, the mean self-efficacy ratings for e-assessment tools and techniques for male and female instructors are 20.40 and 19.46, respectively.  Furthermore, the computed t-value was 2.55, which is larger than the value at the 0.05 level of significance, 1.96, but less than the value at the 0.01 level of significance, 2.58. As a result, the t value of Self-efficacy as one of the domains of e-assessment with regard to their gender is determined to be significant at the 0.05 level of significance. This resulted in hypothesis 6 that there is no significant difference in the mean scores of male and female instructors on self-efficacy in relation to e-assessment tools and approaches being rejected. It also implies that male and female teachers have different levels of self-efficacy when it comes to using the e-assessment tool and procedures in the teaching-learning process.

Table 7: Depicting the t-value of resource facilitation related to e-assessment tools and strategies w.r.t their gender

*Enclosed as Annexure 07*

According to Table 7, the average resource facilitation scores for instructors, broken down by gender, were 15.36 & 14.60.  The estimated t-value for resource facilitation in relation to teacher gender came out to be 2.38, which is higher than the value at the 0.05 level of significance, which is 1.96, but lower than the value at the 0.01 level of significance, which is 2.58. As a result, it is clear that, at the 0.05 level of significance,

There is a substantial difference between male and female instructors with regard to the resource facilitation area of e-assessment. As a result, hypothesis 7 of the current study work was denied, claiming that there is no significant difference in the mean scores of male and female instructors in terms of resource facilitation connected to e-assessment tools and procedures. Furthermore, we can state that there is a gender difference in teachers' perceptions of resource facilitation provisions inside the institution connected to e-assessment tools and techniques.

Table 8: Depicting the t-value of IT Support related to e-assessment tools and strategies w.r.t their gender

*Enclosed as Annexure 08*

As shown in Table 8, the mean value of male and female instructors in IT assistance as one of the areas of e-assessment tools and techniques is 14.69 and 14.26, respectively. Similarly, the t-value was 0.87, which is less than the value at the 0.05 threshold of significance, which was 1.96. As a result, even at the 0.05 level of significance, the value of t for IT assistance is clearly insignificant. As a result, hypothesis 8 is accepted, suggesting that there is no significant difference in the mean scores of male and female instructors regarding IT support connected to e-assessment tools and procedures. This implies that both male and female teachers have equal perceptions of IT Support in terms of e-assessment tools and techniques.

## Findings & Discussions

The results of the study revealed that there is a positive perception regarding awareness and IT support and a negative perception regarding resource facilitation between male and female teachers related to e-assessment tools and strategies. Similarly, another study revealed that there were positive perceptions of Technology Enhanced Assessment (TEA) by teachers, acute shortage of funds, inadequate exposure of teachers to computer and online assessment process, insufficient access to computers and internet, poor technological infrastructure development, difficulty in scoring essay-type and open response questions, difficulty in assessing group project among others as the challenges militating against TEA(Judith &Idowu, 2021)

When it came to giving tests online, the teachers had to exert considerable effort; they also encountered numerous network access challenges and lacked the essential technological expertise. There was also plagiarism in student replies, as well as poor presenting skills and a lack of seriousness in taking the tests(Agarwala et al., 2016).

## Educational Implications Based on the Main Finding of the Study

Based on the main finding of the study following are some suggestive educational implications regarding the effective integration of e-assessment tools and strategies in the teaching-learning process:

- There is a need to provide such Capacity Building Programmes like workshops and training that will increase the self-efficacy among female teachers for using the e-assessment tools and strategies in classroom teaching.

- Both male and female teachers should provide equal opportunities within the institution so that they will be compatible in using technology-based assessment for the evaluation of their learners.

- Besides with the training for effective implementation of e-assessment tools and strategies, favourable attitude and motivation to be inculcated within the teachers irrespective of their gender regarding the usefulness of the technology in the classrooms.

- The continuous professional development programmes for effective integration of technology should be made mandatory for in-service teachers.

## Conclusion

This paper describes theperception of e-assessment from teachers at various educational institutions. The results obtained were very promising based on the responses obtained. The teachers were in favor of e-assessment activities due to the benefits that exist and agreed that new technologies open new opportunities for learning and assessment. Also, among the various challenges faced by the teacher's attitude and use intention towards a novel ICT application could be the most unpredictable and uncontrollable element. This could be made possible by proper awareness and training forteachers so that they will have favorableself-concepts

About their own while using it.The respondents agreed that e-assessment tools could provide immediate feedback, it is fast, easy to conduct, takes place at anytime and anywhere, it is flexible, and removes the burden of marking among others. However, they perceive that in spite of these potentials, there are multiple challenges associated with e-assessment which include: inadequate exposure of teachers to computer and online assessment processes and poor technical infrastructure development.

## Annexure

### Annexure 01

Table 1: Depicting the t-value of awareness among teachers related to e-assessment tools and strategies w.r.t their gender

**Table 1: Depicting the t-value of awareness among teachers related to e-assessment tools and strategies w.r.t their gender**

| Dimension | Variable | Mean | SD | SEM | t-value |
|-----------|----------|-------|------|------|---------|
| Awareness | Male | 19.00 | 2.89 | 0.40 | 0.04 |
|  | Female | 18.98 | 2.75 |  |  |

*Statistically significant at the 0.05 level

**Statistically significant at the 0.01 level

### Annexure 02

Table 2: Depicting the t-value of perceived usefulness related to e-assessment tools and strategies w.r.t their gender

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| Dimension | Variable | Mean | SD | SEM | t-value |
|-----------|----------|-------|------|------|---------|
| Perceived Usefulness | Male | 19.00 | 3.32 | 0.48 | 2.62** |
|  | Female | 17.72 | 3.54 |  |  |

*Statistically significant at the 0.05 level

**Statistically significant at the 0.01 level

### Annexure 03

Table 3: Depicting the t-value of perceived ease of use related to e-assessment tools and strategies w.r.t their gender

**Table 3: Depicting the t-value of perceived ease of use related to e-assessment tools and strategies w.r.t their gender**

| Dimension | Variable | Mean | SD | SEM | t-value |
|-----------|----------|-------|------|------|---------|
| Perceived Ease of Use | Male | 16.91 | 3.49 | 0.37 | 0.92 |
|  | Female | 16.56 | 1.05 |  |  |

*Statistically significant at the 0.05 level

**Statistically significant at the 0.01 level

### Annexure 04

Table 4: Depicting the t-value of compatibility related to e-assessment tools and strategies w.r.t their gender

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| Dimension | Variable | Mean | SD | SEM | T-Value |
|---|---|---|---|---|---|
| Compatibility | Male | 15.35 | 1.95 | 0.27 | 2.02* |
| | Female | 14.79 | 1.94 | | |

*Statistically significant at the 0.05 level

**Statistically significant at the 0.01 level

*Annexure 05*

Table 5: Representing the t-value of peer influence and superior influence related to e-assessment tools and strategies w.r.t their gender

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| Dimension | Variable | Mean | SD | SEM | t-value |
|---|---|---|---|---|---|
| Peer Influence and Superior Influence | Male | 15.55 | 1.91 | 0.27 | 0.82 |
| | Female | 15.32 | 2.04 | | |

*Statistically significant at the 0.05 level

**Statistically significant at the 0.01 level

*Annexure 06*

Table 6: Showing the t-value of Self-efficacy related to e-assessment tools and strategies w.r.t their gender

Table 6: Showing the t-value of Self-efficacy related to e-assessment tools and strategies w.r.t their gender

| Dimension | Variable | Mean | SD | SEM | T-Value |
|---|---|---|---|---|---|
| Self-efficacy | Male | 20.40 | 2.57 | 0.36 | 2.55* |
| | Female | 19.46 | 2.60 | | |

*Statistically significant at the 0.05 level

**Statistically significant at the 0.01 level

*Annexure 07*

Table 7: Depicting the t-value of resource facilitation related to e-assessment tools and strategies w.r.t their gender

Table 7: Depicting the t-value of resource facilitation related to e-assessment tools and strategies w.r.t their gender

| Dimension | Variable | Mean | SD | SEM | t-value |
|---|---|---|---|---|---|
| Resource Facilitation | Male | 15.36 | 2.23 | 0.32 | 2.38* |
| | Female | 14.60 | 2.29 | | |

*Statistically significant at the 0.05 level

**Statistically significant at the 0.01 level

*Annexure 08*

Table 8: Depicting the t-value of IT Support related to e-assessment tools and strategies w.r.t their gender

Table 8: Depicting the t-value of IT Support related to e-assessment tools and strategies w.r.t their gender

| Dimension | Variable | Mean | SD | SEM | T-Value |
|---|---|---|---|---|---|
| IT Support | Male | 14.69 | 3.49 | 0.48 | 0.87 |
| | Female | 14.26 | 3.35 | | |

*Statistically significant at the 0.05 level

**Statistically significant at the 0.01 level

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