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ORIGINAL ARTICLE

Investigating the tools and methods of virtual evaluation of students' learning during the outbreak of contagious disease

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ABSTRACT

the Covid-19 disease has taught us that virtual education and evaluation should be considered together with in-person education. Therefore, in this article attempts to examine the different tools and methods of virtual evaluation of student learning during outbreaks of infectious diseases. In this study uses a qualitative research method and the grounded theory method for data analysis. The research participants were selected through purposive sampling from among the professors of Payam Noor University of Khorasan Razavi Province, and after selecting 18 people, saturation was reached. After collecting data using a semi-structured interview method, the type and amount of tools were analyzed by entering them into the Max QDA software. In the next phase, using convenience sampling and an open-ended questionnaire, 6 experts in the field of virtual education were asked to state the advantages, disadvantages, and solutions for each of the evaluation categories. The findings indicate that virtual evaluation includes 2 main categories: exam-based and non-exam-based methods, with 11 subcategories, including formative assessment, multiple-choice tests, essay exams, unique multiple-choice tests, oral exams, self-assessment, attendance, class presentations, research projects, rewriting tasks, and assignment submission. The subcategories of attendance, multiple-choice tests, and research projects were the most frequently employed, whereas self-assessment and unique multiple-choice tests were the least utilized by professors. Overall, the non-exam-based category was more frequently implemented than the exam-based category in professors' evaluations

KEYWORDS

infectious disease, learning, virtual evaluation

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Extended Abstract

Introduction

Infectious diseases during the past centuries have always been one of the most threatening factors to human health. Ebola, SARS[1], and H1N1[2] influenza were among the infectious diseases that have affected human life in recent years, but since December 2019, the highly contagious and dangerous disease Covid-19 has spread rapidly around the world, affecting almost all countries and regions, forcing various countries to adhere to public health strategies including hand washing, wearing masks, physical distancing, avoiding gatherings, and closing public places including schools and universities (Sintema, 2020). According to the World Health Organization, this epidemic has created a global health emergency (Heidari, Yekta, and Barzegar, 2019). The lack of definitive treatment, the possibility of death, and the unknown effect of this virus on the human body have created critical conditions that have affected all aspects of social life, and education has not been an exception to this rule. Therefore, traditional education, which was conducted in person and in educational environments, was held virtually and outside the educational environment despite this disease. (Bakhshipour and Mohajer, 2021) Many universities and educational centers were initially forced to cancel their educational programs; but after a short time, they were able to move towards distance learning and virtual education. Although the challenges of implementing this educational system were significant at first, most universities were subsequently able to successfully implement this type of education (Jalehjoo, Arabi, Momeni et al., 2021). One of the reasons for this success was the existence of advanced information and communication technologies, which were able to be fruitful by entering the field of education, especially in increasing the learning experience and facilitating the provision of educational services (Sultanmehr, Bahrampour, Imani et al. 2019). With this description, the use of virtual education in universities has become more necessary in order to avoid interruptions in education and to continue the curriculum. (Chi 2022; Benisi, Tarfehnajed, and Tahai, 2022)

Virtual education, along with opportunities and advantages such as fast, unlimited, and always available transfer of course information (Hatami, Nikpi, and Farah Bakhsh, 2021), has limitations and challenges such as lack of skills among teachers and professors in the appropriate use of technologies (Kedkhoda and Nastizaei, 2022), lack of face-to-face communication between teachers and students, failure to attend virtual classes on time (Melgard, Momir, and Lasrado et al., 2022), procrastination in attending classes and virtual tests (Kearns, 2021; Kolar, 2020), lack of appropriate technological infrastructure, economic problems resulting from the provision of the Internet, mobile phones, and tablets (Yang and Yu, 2022), and also stress and aggression in students (Dalpati, Jena, Jain, et al., 2022). In this regard, how professors and teachers can correctly and effectively evaluate the performance of learners is also one of the other issues and challenges resulting from the expansion of virtual education. (Alipour, Ghasemi, and Salarsadeghi, 2023)

Evaluation is considered one of the most important and integral parts of the educational system, which affects other educational elements such as goals, content, learning activities, teaching methods, how teachers interact with learners, the work process of schools and their management (Saraji and Attaran, 2017). The term evaluation is simply referred to as determining the value of anything, or "value judgment". One of the important features of evaluation is determining quality. In the evaluation process, value judgment is made with respect to quality, and evaluation is the basis for decision-making for executive activities (Saif, 2019: 35). Evaluation of learning or evaluation of the academic progress of students refers to the process and judgment of their success in achieving educational and learning goals based on value. (Safavi, 2019: 92)

In recent years, with the outbreak of the contagious COVID-19 disease and the need to use virtual education in educational centers, the discussion of virtual evaluation of student learning has become one of the important components of education. Real evaluation of learning is a vital element in virtual and online

1. Severe acute respiratory syndrome
2. Influenza A virus subtype H1N1

courses that affects teaching and learning. The biggest concern of educational systems regarding evaluation in cyberspace is the issue of the effectiveness of evaluation tools and, as a result, fair judgment about the level of learning or acquisition of competencies by students. In cyberspace tests and evaluations, unlike in real space, due to its nature, i.e., less supervision and control by professors, the possibility of non-committal behaviors is much higher. Examples of these behaviors in the process of implementing tests in cyberspace can be asking for help from classmates, sharing answers between students in the same class in various ways, using educational materials and resources during the test, etc. Therefore, the purpose of this article is to examine the tools and methods of virtual evaluation of student learning during the outbreak of infectious diseases in order to provide the role and impact of each category to help professors achieve effective and realistic evaluation.

Literature Review

In the traditional view, the evaluation of the learner's learning is used solely to determine the grade, retention or promotion of the learner and is considered the end point of the teaching and learning process; however, in the new view and in virtual education, evaluation is a part of the learning process that links the teaching and learning process to each other. In this view, evaluation is used with the aim of helping to improve the learning process, modify the curriculum and strengthen teaching methods (Saraji and Attaran, 2017). In fact, educational evaluation in a virtual environment is a systematic process of collecting, analyzing and interpreting information in order to determine the level of student success in achieving educational goals. This process is based on judgments about individual and group abilities and learning talents of learners and is carried out in order to make decisions about teachers' educational activities and learners' learning efforts to determine the extent to which desired results are achieved. (Karimi and Amini, 2022)

Previous studies have paid less attention to examining the impact of evaluation tools used in virtual education and the reasons for their selection, but rather have discussed various types of online and remote evaluation tools. For example, a study titled Evaluation in e-learning has been conducted, and it also refers to some evaluation tools such as self-evaluation tests and peer assessments including participation, assignments, and projects (Ranjbargol and Karami, 2015). Another study titled "An Overview of Assessment Tools and the Use of Mixed Assessment as an Innovation" has also described some evaluation tools in e-learning such as written exams, oral questions, practical tests of various types of objective and subjective questions, etc (Saki and Mousavi, 2015). Abbasi Kasani, Morgani, Seraji et al. (2019) have listed the most important methods of evaluating students in e-learning as written, oral, practical, multiple-choice, short-answer, true-false, and projects tests, electronic portfolios, chats and online discussion groups, interviews, telephone evaluation, synchronous audio and video communication, peer assessment, essay writing, collaborative group assignments, self-evaluation, written assignments, and e-mail. Rezaei (2020) has also examined methods of evaluating students' learning during the Corona era: challenges and solutions.

A number of researchers have also addressed various issues related to assessment tools. Herdian, Mildaeni, and Wahidah (2021) found in their research a number of dishonest behaviors of students in virtual education and assessment, including downloading friends' answer files with their usernames and passwords, imitating classmates' work instead of trying to answer questions, and using virtual groups such as WhatsApp to collaborate in cheating. Mirza Vaziri and Karimpour (2021 believe that assessment with feedback not only enables the evaluation of students' academic progress but also significantly contributes to their academic improvement during the assessment process. Entehaei, Vasefian, Hassani, and colleagues (2021) accordingly suggest that instructors in education should use the strategy of integrating assessment and teaching through the development of process feedback to develop and establish deeper assessment. Amzalag, Shapira, and Dulu (2022) reported a lack of mutual trust between students and professors during online

assessments, a profound mistrust that is likely to persist even after the COVID-19 crisis.

In another study, virtual assessments conducted during the coronavirus outbreak resulted in improved student performance compared to traditional assessments, demonstrating the effectiveness of virtual methods in education. (Wag, Devin, King-in et al., 2022) The findings of another study suggest that integrating virtual reality and gamification into virtual assessments had a positive impact on student learning and application of course content (Gerber & Fishti, 2022). Georgescu and Berchet (2022) in their research identified the most important and feasible key measures to detect and prevent or reduce (to some extent) cheating during online exams.

The fundamental challenge of evaluation in virtual education is the quality and effectiveness of each evaluation tool in determining the level of student learning; therefore, this article attempts to examine various evaluation tools for students' learning in the virtual space in order to determine the role and impact of each in providing effective solutions to professors in virtual evaluation.

Research Methodology

In order to achieve the research objectives, a qualitative research method was used and the grounded theory method was used to analyze the collected data. Initially, 54 professors from Payam Noor Universities in Khorasan Razavi Province who used virtual evaluation during and after the outbreak of Covid-19 and between the years 2021-2022, 2022-2023, and 2023-2024,were selected using purposive sampling. Data collection was carried out using a semi-structured interview method. In the written interview, participants were asked: Given the replacement of in-person education with virtual education, what appropriate methods and tools do you use to evaluate student learning? After a few days of sending written interviews via Eitaa and WhatsApp software, the results obtained from the content analysis of the interviews with 18 participants reached saturation.

Subsequently the researcher then divides the collected interviews into smaller conceptual components and enters the data into the Max QDA software. This process, which is the first step in data analysis, is called coding. The coding steps in the grounded theory method have three stages: open, axial, and selective coding (Bahadori, 2018). In open coding, the interview text is read several times and its main sentences are extracted and recorded as codes, then similar codes are placed in categories. In axial coding, codes are linked to their subcategories, concepts are made more specific, and initial categories in open codes are compared with each other, and those that are similar to each other are placed around a common axis to provide more accurate explanations (Deymon and Holloway, 2002). The relationship of each category with its subcategories is determined by grouping and merging concepts a number of categories are extracted, In the selective coding stage, the identified categories are refined and linked together (Bahaduri, 2018). For the validity and reliability of the data a member checking method was employed, in which the interview text and codes extracted from the interviews were shared with the participants, and Additionally, to further enhance the validity, feedback was obtained from experts in distance education.

In the second phase of the research, using a purposive sampling and a closed-ended questionnaire, 6 experts or graduates in the field of virtual and distance education who had teaching, academic, and career experience in this field were asked to send the advantages, disadvantages, and solutions of the methods and tools used by professors in virtual evaluation to the researcher in writing or orally. After data collection, to ensure the reliability and credibility of the obtained data, four criteria—credibility, confirmability, dependability, and transferability—were employed (Guba & Lincoln, 1994). In this study, to achieve the validity of the research, the technique of member checking was used. Experts and specialists in the research are the most justified people to determine the reliability; this happened through checking by the members. Confirmability, or objectivity, was also confirmed by reviewing the results of the faculty members' opinions by 6 experts in the field of virtual education. To ensure dependability in this research, the initial data were preserved throughout the research process and were controlled to ensure necessary accuracy. In this study, the use of the opinions of professors and specialists in the field of distance education can be a strong reason for the

transferability of the research results.

Research findings

In the first phase of the research, after completing the interview, all the tools and methods of virtual evaluation of the learning of Payam-e-Noor Khorasan Razavi students that were used by the professors of the Department of Educational Sciences and Psychology were collected and coding was done based on the analysis of qualityative data and their comparison with theoretical foundations. (Table 1)

Table 1. Methods and Tools Used for Virtual Evaluation of Students' Learning by Professors of Payam Noor Universities in Khorasan Razavi from 2020 to 2023

Extracted Open Codes	Axial Coding (Subcategories)	Selective Coding (Main Categories)
Conducting quizzes throughout the academic term (formative). Asking questions in each virtual class session.	Formative assessment	exam-based Methods
same multiple-choice exam with a limited number of questions and a time limit in the LMS. "A multiple-choice examination with a relatively adequate time limit. Midterm multiple-choice evaluation.	Multiple-choice Exam	
Designing questions and evaluating responses by students themselves. Book self-assessment solution.	Self-assessment	
An oral examination with the student's own voice within a suitable time duration. Evaluation through voice call.	Oral Exam	
Designing unique multiple-choice questions for each student with a time constraint. Designing Unique Multiple-Choice Questions. Creating a bank of multiple-choice questions in large numbers	Unique Multiple-choice Exam	
Essay exam requiring handwritten responses within a suitable time frame. Designing essay-based exams in LMS. Essay exam with a limited number of questions	Essay Exam	
Utilization of Attendance Monitoring. Attendance tracking based on login time.	Attendance	Non-exam Methods
Classroom Conference. Participation in Classroom Discussions and Social Network Groups. Voluntary Classroom Presentation.	Classroom presentations	
Requesting students to write research papers. Request for Academic articles. Request for Critique Writing	Research & Investigation	
Request for Summarizing a Section of a Book. Writing a Section of Book Content and Delivering It in PowerPoint Format. Complete Handwritten Transcription of a Section of a Book. Typed Transcription in Word Format.	Rewriting	
Assignment Submission in LMS. Conducting Exercises in a Virtual Classroom. Receiving Feedback or Suggestions on Educational Content.	Assignment Submission	

As shown in Table 1, approximately 31 open codes were extracted from the interview texts. Each of these codes corresponds to an evaluation tool that was used at least once by the interviewee during the virtual learning process. Subsequently, the researcher categorized these codes into 11 sub-categories based on semantic proximity and related components, which include the following :

1. Formative Assessment, which involves administering quizzes throughout the academic term and asking questions in each virtual classroom session. The reason for developing such a category is the continuous nature of

assessments by professors, either written or oral, throughout the academic term .

2. Multiple-Choice Tests, which include standardized multiple-choice exams with a limited number of questions and a limited time duration in the LMS, multiple-choice exams with a relatively adequate time allocation, and midterm multiple-choice assessments. The condition for including open codes in this category is the formulation of multiple-choice questions in a written format for evaluation.

3. Self-Assessment, where participants referred to concepts related to learners' self-evaluation. Two codes were extracted for this category: one involves the professor asking questions and the student answering and evaluating them, while the other refers to solving self-assessment exercises in the textbook.

4. Oral Exam, which includes two codes: answering questions orally by the student within an appropriate time frame, and evaluation through voice calls with the student.

5. Unique Multiple-Choice Tests**, which correspond to codes such as designing personalized multiple-choice questions for each student with a limited time frame, creating unique multiple-choice questions, and developing a large question bank for multiple-choice tests. The condition for inclusion in this code is electronic multiple-choice exams that are, as much as possible, provided uniquely to each student, minimizing the possibility of collaboration or sharing answers among students.

6. Essay Exam, which includes codes such as: handwritten essay exams by the student within an appropriate time frame, the creation of essay exams in the LMS, and written exams with a limited number of questions. Essay exams refer to questions that do not have short answers, and the test-taker is free to explain and convey the concept in their own words.

7. Attendance, another tool some professors used for virtual evaluation, was mentioned in interviews under the titles "use of attendance" and "consideration of students' class attendance time."

8. Class Presentation, or the more commonly used term "conference," is another tool that professors use as a factor for evaluating and grading students. This category, in addition to classroom conferences, also includes participation in classroom discussions, social network group involvement, and voluntary presentations in class.

9. Research & Investigation, also considered one of the common tools for student evaluation in distance and virtual education systems, includes three codes from the interviews: request for writing research, request for academic article writing, and request for critique writing.

10. Rewriting, this category includes the following extracted codes: request for summarizing a section of the book, writing a part of the book content and delivering it in PowerPoint, complete handwritten transcription of a section of the book, and typed transcription in Word.

11. Assignment Submission, this category is derived from the following open codes: assignment submission in LMS, conducting exercises in a virtual classroom, and receiving feedback or suggestions on educational content. The common feature of the evaluation tools in this category is responding to exercises or assignments within a long and specific time frame.

In the next stage, the researcher, in order to integrate the subcategories and systematically relate them to each other, categorizes them into two main categories: exam and non-exam. exam (academic progress) are used to measure the level of mastery of individuals over a course content or what individuals have learned in various fields and are used for diagnostic, formative and summative assessment. therefore, any test/exam whose content represents a sample of a subject matter and has content validity, and is used to measure an individual's current knowledge, is considered a exam (Bazargan, 2023: 198-196). In this study, the term exam refers to objective/subjective questions, whether written or oral, while non-exam refers to the evaluation tools used by professors that fall outside of these definitions. As shown in Table 1, categories one to six relate to exam, and categories seven to eleven fall under the non-exam category. diagram 1 shows the frequency of open codes in the axial code category (subcategories).

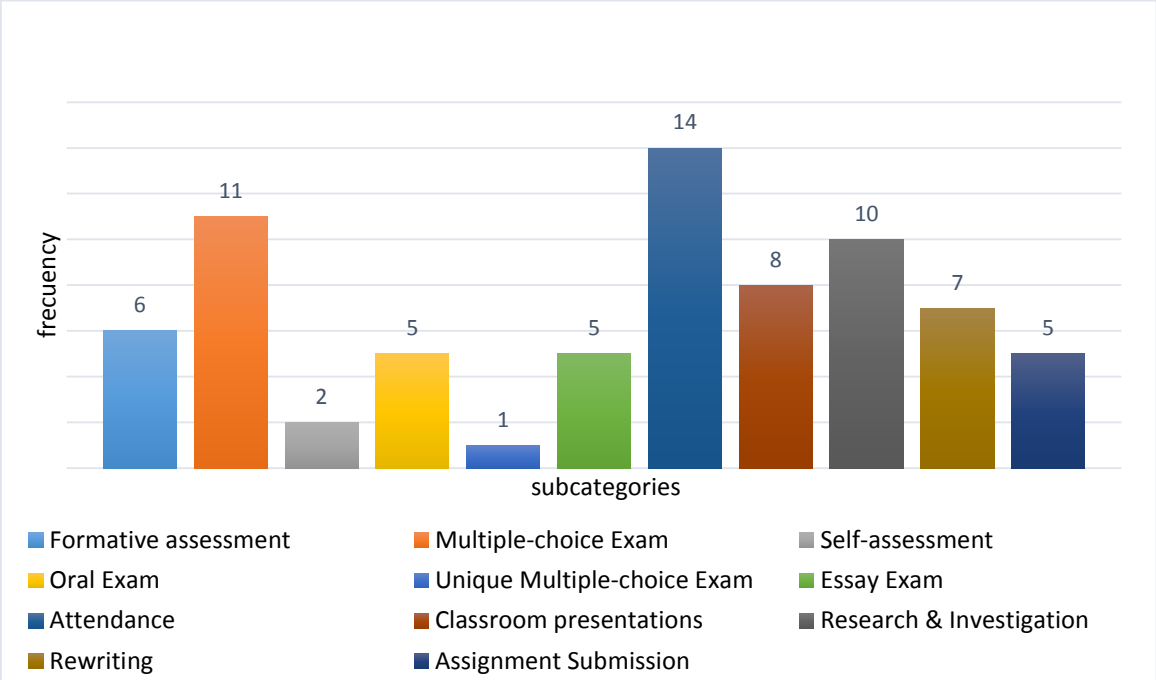

Diagram 1: Frequency of subcategories in interviews

In diagram 1, all the evaluation tools that were used at least once by the professors in the sample (18 participants) are displayed. As can be seen, the use of evaluation tools related to the sub-categories "Attendance," "Multiple-Choice Tests," and "Research & Investigation" was the most common among the professors in the study. On the other hand, the tools in the categories "Self-Assessment Test" and "Unique Multiple-Choice Tests" were used the least by the professors.

The ratio of professors' use of evaluation tools categorized into the two main categories, exam and Non-exam, is also shown in diagram 2.

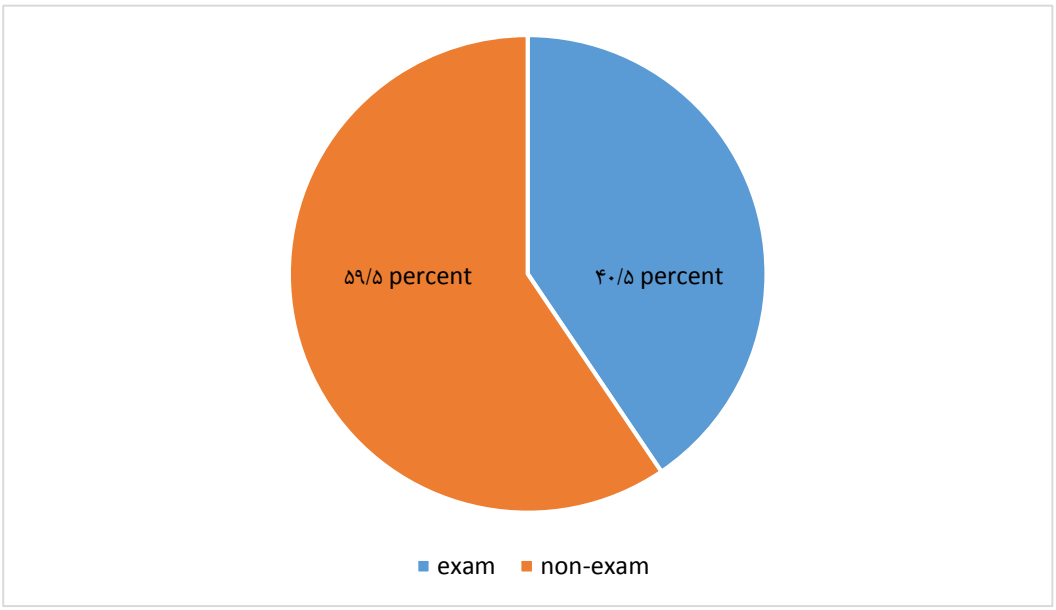

Diagram 2: Frequency of Professors' Use of Exam and Non-Exam Evaluation Tools (Main Categories) in Virtual Evaluation

In Diagram 2, the comparison between the use of exam and non-exam evaluation tools is shown. As indicated, the use of non-exam evaluation tools (59.5%) is higher than the use of exam tools (40.5%) in virtual evaluation.

In the Next phase, using purposive sampling and an open-ended questionnaire, 6 experts and specialists in the field of distance education (virtual education) were asked to outline the advantages, disadvantages, and strategies for using virtual evaluation tools in the form of sub-categories. (Table 2)

Table 2. Virtual evaluation components and tools; advantages, disadvantages, and solutions

Formative assessment	**Advantages:** Continuous assessment and guidance of students throughout the course rather than at a specific time, reduction of stress and anxiety during multiple exams, improvement and refinement of teaching methods, and reduction of academic failure rates. **Disadvantages:** Possibility of cheating and copying from classmates, time-consuming nature of this type of evaluation, the need for a significant amount of time for teachers to review and provide feedback to students, and lack of complete accuracy in these evaluation. **Solutions:** Emphasizing the importance of these exams and accurately recording them in the evaluation log, enhancing electronic and virtual technologies to improve the quality of these exams.
Multiple-choice Exam	**Advantages:** Coverage of a large portion of the content, ease of correction and grading, time and cost efficiency, randomization of questions, and ease of implementation. **Disadvantages:** A limited number of questions may not comprehensively assess the entire lesson or content, increased stress due to the time constraint, failure to assess higher-level objectives, the possibility of someone else taking the exam for the student, internet and power outages during the exam, poor internet connection in certain areas, and searching for key words in the exam source material. **Solutions:** Use of short-answer and multiple-choice questions, displaying each question on a separate page, randomizing questions and answer choices, and formulating questions with synonymous terms from the textbook (to prevent keyword searching).
Self-assessment	**Advantages:** Students become aware of their academic status and receive feedback, it enhances responsibility in students, and helps foster independent learning. **Disadvantages:** There is a possibility that students may report unrealistic results in their self-assessment, and if the self-assessment questions are at higher levels of learning, providing feedback to the student may become difficult. **Solutions:** Ensure that self-assessment questions cover all levels of learning.
Oral Exam	**Advantages:** Ensures that the student themselves respond and are assessed, serves as an effective tool for tracking students' academic and psychological progress, provides a good means of evaluating students' abilities, reasoning skills, expression, and self-confidence. This evaluation method closely resembles real-life and workplace environments, keeps the class active, encourages student participation, and prevents monotony in the classroom. **Disadvantages:** Time-consuming, especially for large classes, associated costs, increased teacher fatigue, and the possibility of assigning different grades to identical responses. Unequal distribution of questions among students, anxiety in responding, and the tendency for students questioned later to receive higher grades. **Solutions:** Utilize free voice call features of mobile applications, design multiple short-answer questions with equal difficulty levels.
Unique Multiple-choice Exam	**Advantages:** In addition to all the benefits of multiple-choice exams, there is a high possibility of each student having unique questions, which helps prevent cheating and increases confidence in the fairness of the evaluation. **Disadvantages:** Besides the drawbacks of multiple-choice exams, the distribution of question difficulty may not be well-balanced among students. Creating unique questions can be time-consuming and exhausting. Grading and correcting the exam is also time-consuming, and there is an increase in anxiety due to the time constraints. **Solutions:** Design questions at consistent difficulty levels, and utilize short-answer and multiple-choice questions.

Essay Exam	**Advantages:** No limitations on the amount of response to questions, assessment of higher levels of learning, enhancement of critical thinking, problem-solving, and creative thinking skills in students, and ease of question formulation. **Disadvantages:** Limited coverage of course content, time-consuming for students to respond, subjective and biased grading and correction, time-consuming to read scanned answers and grade the exam. **Solutions:** Increase the number of questions to cover more content, set a limited and appropriate time for submitting answers, and grade questions without considering the students' names to ensure unbiased evaluation.
Attendance	**Advantages:** Emphasizes the importance of punctual attendance in class and the evaluation process, encourages the use of classroom materials, and serves as a criterion for students to earn grades. **Disadvantages:** Time-consuming, especially if attendance is recorded manually, students may attend only for the sake of earning points without paying attention to the lesson, and frequent attendance messages during virtual classes can distract other students. **Solutions:** Utilize automated attendance bots, conduct attendance checks consistently and systematically, and ask numerous questions to ensure students' cognitive engagement in the class.
Classroom presentations	**Advantages:** Understanding students' perspectives and academic level, assessing higher levels of learning, fostering constructive competition among students, enhancing public speaking skills, boosting self-confidence, and helping students overcome anxiety and shyness. **Disadvantages:** Lack of face-to-face interaction, time constraints may prevent all students from participating in discussions or presentations, discussions or presentations may deviate into unrelated topics, students might resort to mere reading instead of engaging, potential internet speed issues or disconnections, and audio noise disturbances. **Solutions:** Ensure discussions and presentations remain course-related, consider participation in discussions as an academic requirement, maintain ongoing discussions throughout the semester, use presentations as a complementary method alongside other approaches, and enable video interaction during presentations.
Research & Investigation	**Advantages:** Students learn through research and article writing, and they can benefit from academic recognition and rewards if their paper is accepted. **Disadvantages:** The work may not be the student's own, students may lack knowledge of research principles and academic writing, limited time for evaluating all students' work, and grading may be somewhat subjective. **Solutions:** Ensure that the research and article are genuinely the student's work, and require students to demonstrate some level of conceptual engagement and interpretation in their writing.
Rewriting	**Advantages:** Transcribing provides a review of textbook content, helps students become familiar with note-taking and fast-learning techniques, and allows for a quick review of the material before exams. **Disadvantages:** The handwriting may not be the student's own, it is not a reliable criterion for academic evaluation, and the details of copied content are often not reviewed by the instructor. **Solutions:** Use this method alongside other evaluation techniques, and encourage students to create summaries in the form of concept maps rather than mere transcription.
Assignment Submission	**Advantages:** Students have sufficient time to complete assignments, deeper learning of course materials and activities, flexibility in completing assignments at different times and locations, increased self-monitoring and self-management, independence in learning, responsibility, and enhanced motivation and self-confidence. **Disadvantages:** Possibility of copying from classmates, time-consuming nature of this assessment method, and the need for instructors to dedicate significant time to reviewing and providing feedback. **Solutions:** Assignments should be purposeful, results should be recorded in the evaluation log, and feedback should be provided to students.

Conclusion and Recommendations

The objective of this study was to compile the tools and methods used in virtual evaluation (distance evaluation) by professors and instructors at Payam Noor University in recent years, particularly during the COVID-19 and post-COVID-19 periods. To achieve this, a purposive sampling method was used to select professors, and through semi-structured interviews, all evaluation tools and methods

were identified. Data collection reached saturation with 31 open codes, which were then categorized based on conceptual similarity. As a result, 11 axial codes (subcategories) and 2 selective codes (main categories) were identified. Subsequently, the frequency and percentage of usage for each tool were determined. In the next phase, using convenience sampling and an open-ended questionnaire, experts in this field were asked to provide insights on the advantages, disadvantages, and solutions for each virtual evaluation tools.

The analysis of the extracted categories showed that Payam Noor University instructors have relied more on non-exam-based tools for virtual evaluation of students' learning. These tools include: attendance, class presentations, research & investigation, rewriting, and assignment submissions, which account for approximately 60% of the evaluation tools used by professors and instructors. In contrast, exam-based tools such as formative exam, multiple-choice exams, essay exams, unique multiple-choice exams, oral exams, and self-assessment collectively make up about 40% of the evaluation tools utilized by professors and instructors.To explain this, it can be said that professors and instructors' trust and reliance on test-based tools have diminished. However, this does not necessarily indicate an inherent weakness in exam tools, as many experts and specialists have highlighted the advantages and recommendations for improving these tools. (Table 2)

One of the reasons for the decreased use of exam-based tools by instructors is the weakness in the structures and technologies of virtual teaching and evaluation. This finding is consistent with the studies of Zamani, Parhizi, and Kavyani (2014), Kapoor (2020), Ebrahimi and Dehghani (2020), and Iran Nejad, Yaghoubi, and Parasteh (2023). The weakness in the infrastructure and resources of virtual technology can be attributed to several factors, including internet connectivity issues and the lack of support for learning management systems, as well as the limitations of students' mobile phones. Despite these ongoing challenges, which are frequently reported by students, instructors are seeking alternative methods of evaluation to replace traditional exams. Another reason for the reduced use of exam-based tools in virtual evaluation could be the issue of academic dishonesty and the prevalence of cheating in online exams. This finding aligns with the results of the studies by Dandier and Maxwell (2020), Pehrel and Chhatri (2021), Herdian, Mildini, and Wahida (2021), and Shomali Ahmadabadi and Barkhordari Ahmadabadi (2023). To explain this finding, it can be pointed out that the formation of study groups on messaging platforms like Eitaa, Telegram, or WhatsApp, and the sharing of exam answers, as well as using textbooks during exams or conducting online searches, undermine the validity of the exam results. Under such circumstances, instructors are likely to consider alternative evaluation methods.

Another factor that may influence the choice of assessment tools is student procrastination in virtual evaluations. Procrastination refers to a situation where an individual, without any specific reason and entirely voluntarily, fails to complete a task they intended to do within the designated time or delays making timely decisions (Shamel, 2019). This phenomenon has been frequently observed in virtual evaluations among Payam Noor University students. After the exam period has passed, many students, citing various reasons that often indicate procrastination, request a rescheduled exam, the substitution of an alternative activity for the exam, or other means to obtain a grade. it is natural that, in such repetitive conditions, some professors seek alternative methods of student evaluation. The findings of Kearns (2021), Velandri, Fatima, and Suherman (2021), as well as Baradaran Haqir and Karamkhani (2022), align with this research finding. One of the other factors influencing professors' choice of evaluation tools is their ability to utilize them. In some cases, the technological infrastructure for virtual evaluation is available, but the instructor lacks the knowledge and skills to use it. in other instances, there is no motivation to employ such tools. Regarding the lack of motivation, one could point to the issue of salaries or compensation, especially for adjunct instructors, or even to the performance of students, who generally show weaker results in exams. the repetitive nature of this occurrence often leads Payame Noor instructors to turn towards alternative evaluation tools. Based on the discussions presented in this study, it can be concluded that all evaluation tools have benefits

that should be applied in their respective contexts. Solely relying on one tool and ignoring others will not guide us towards effective and genuine evaluation.

In line with the spread of the COVID-19 pandemic and the closure of universities, Payame Noor University began developing a Learning Management System (LMS) for students to facilitate both teaching and evaluation in an electronic platform. The system featured tools such as attendance tracking, various objective and subjective exams, exam preparation, assignment submissions, discussion rooms, and surveys. This initiative, at least in appearance, managed to partially contribute to the establishment of effective and authentic evaluation. In fact, after the end of the COVID-19 restrictions, the system continued its operations and is currently (in the 2023-2024 academic year) being used for midterm evaluations in theoretical courses. given that human social life is always at risk of the spread of dangerous viruses such as COVID-19, Ebola, SARS, and even unknown viruses in the future, the preparedness and strengthening of virtual teaching and evaluation systems has become a necessity. Additionally, factors other than pandemics, such as air pollution and extreme weather conditions, which in recent years have forced the closure of schools and educational institutions, also threaten face-to-face education. This highlights the increasing need for readiness in virtual teaching and evaluation.

One of the limitations of this study is the lack of cooperation from some professors in participating in the interviews. Additionally, the sample population for this research is limited to the faculty and instructors of the Department of Educational Sciences and Psychology at Payame Noor University of Khorasan Razavi. It is recommended that this study be conducted among professors from other universities and cities across the country to allow for broader generalization of the findings. Furthermore, it is suggested to strengthen the information and communication technology infrastructure at universities, ensure universal access to reliable internet and mobile phones, encourage greater commitment from professors towards evaluation, and highlight its impact on students' academic outcomes. Lastly, it is recommended to establish policies that emphasize the importance of ethics in evaluation. additionally, to increase instructors' and professors' familiarity with the benefits and functions of various evaluation tools, it is recommended to organize appropriate workshops and training courses. On the other hand, since human learning has multiple dimensions and each evaluation tool evaluates a specific aspect of learning, it is suggested that a combination of tools be used for evaluating learners to ensure a comprehensive and complete evaluation.

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