

Assessment strategies and challenges of teachers in evaluating students during online learning

Hannah Joyce Agtarap¹ , Anna Carmela Januto¹ , Karl Alvin Aglibot¹ , Cathy Mae Toquero^{1*} 

¹ College of Education, Mindanao State University, General Santos City, PHILIPPINES

*Corresponding Author: cathymaetoquero@gmail.com

Citation: Agtarap, H. J., Januto, A. C., Aglibot, K. A., & Toquero, C. M. (2024). Assessment strategies and challenges of teachers in evaluating students during online learning. *Journal of Digital Educational Technology*, 4(2), ep2418. <https://doi.org/10.30935/jdet/14863>

ARTICLE INFO

Received: 09 Dec. 2023

Accepted: 16 Apr. 2024

ABSTRACT

Education was forced to modify face-to-face classes into three pedagogical approaches: synchronous, asynchronous, and blended learning, requiring teachers to change the grading system, assessment, and evaluation of student performance. This study aimed to determine the assessment tools, strategies, and challenges that teachers encounter during online learning. The researchers conducted an online and face-to-face survey that consisted of 75 questions to 50 online teachers who were selected through convenience sampling from seven public and private elementary schools. Findings indicate that most teachers apply traditional assessment strategies to evaluate students in online learning. Some online assessment applications like Edpuzzle, Google Classroom, Kahoot, and Quizzes are rarely used to assess student learning. Teachers, however, frequently utilized Facebook and Messenger in delivering assessments. They applied multiple assessment strategies in online learning to accommodate the learning styles of their students. However, data revealed that most teachers have difficulty ensuring the quality of participation, integrating authentic assessment into online learning, and using online assessment applications. It is recommended for teachers to provide their students with balanced assessment, timely communication, constructive feedback, group multimedia projects, appropriate instructional materials, and alternative online tools to enable meaningful learning.

Keywords: COVID-19, social media, applications, assessment strategies, assessment tools, online learning

INTRODUCTION

The COVID-19 pandemic has resulted in a global transformation of the educational landscape, leading to an education crisis (2020). The adoption of emergency remote teaching as a temporary measure (Bozkurt & Sharma, 2020) aimed to alleviate the impact of the pandemic on education. As a result, the closure of all educational institutions has caused a significant increase in the use of digital platforms like Facebook, Google Classroom, Google Meet, Zoom, and others (Quiamco et al., 2023; Toquero, 2021b). Nevertheless, difficulties persist in various educational facets with the implementation of emergency online learning. Winthrop (2020) confirmed that there are several difficulties related to equity gaps, learner security and safety, diminished learning quality, and unsatisfactory assessment outcomes.

Cahapay (2020) urged the development of strategies that will promote innovation of assessment practices. Teachers were delegated the responsibility of developing diverse and comprehensive techniques to assess and evaluate students' educational progress during the COVID-19 crisis. These approaches include both formative and summative assessment

methods, which aim to improve teachers' ability to closely monitor students' learning development and remediate any learning gaps that emerged during these difficult times (Guangul et al., 2020).

According to Jankowski (2020), 75% of teachers believed the modifications made to assignments and assessments, flexibility in assignment deadlines, adoption of pass or fail grading, and changes in assessment reporting deadlines would not have a detrimental effect on their institution's assessment culture. However, assessing students' learning outcomes through digital platforms poses various challenges to teachers due to insufficiency of essential resources, training, and lack of expertise (Nars, 2020). Bozkurt and Sharma (2020) also pointed out that comprehensive solutions are imperative that not only focus on delivering content but also prioritize the care and support of learners.

In the Philippines, despite the online or remote learning difficulties, teachers employ various assessment strategies and tools to accommodate their learners. The trial-and-error assessment practices of the teachers during the pandemic are composed of both standardized exams and performance-based assessments through utilizing online platforms, self-paced modules, and social media. Considering this abrupt transition

to remote learning, institutions meticulously strategize and enhance their evaluation methods (Ancheta & Ancheta, 2020). A comprehensive and genuine assessment of the country's preparedness to provide educational programs that exceed the conventional prerequisites is imperative (Joaquin et al., 2020) since assessment is the central aspect of the student experience and is likely the most significant factor in how students approach their learning (Rust et al., 2005). Thoughtfully crafted evaluation procedures have the potential to greatly improve learning outcomes by inspiring students' enthusiasm and fostering self-assurance in their capabilities (Amiri et al., 2021).

Assessment strategies should be constructed to be flexible and adjust to the circumstances of learners. It is crucial to keep students engaged in their learning by providing them with diverse assignments that go beyond the classroom curriculum and assessments. One way to do this is by incorporating assignments that relate the current COVID-19 crisis to a broader global and historical context (Daniel, 2020). Due to the prevalence of plagiarism, Hsiao and Watering (2020) advised implementing preventive methods during the assessment process and detection mechanisms after submission.

Moreover, instruction and assessment practices must demonstrate adaptability and customization in response to the needs inherent to remote learning setup. These encompass how instructors conduct formative and summative assessments to evaluate students' progress, how they distribute graded tasks across a course, and how they address the issues involved in providing effective feedback (Kearns, 2012). In addition, alternative assessment tools can allow for teachers and students to have comparable experiences as they engage in collaborative efforts, devise innovative resolutions, and exhibit a willingness to acquire knowledge from others and utilize conventional tools (Doucet et al., 2020).

Alternative learning tools can help students to cope with their missed classes and offer the options for self-paced learning at their place and can also cater to different learning styles (Toquero & Talidong, 2020). Therefore, the alternative learning models implemented during the pandemic must be based on a meticulously crafted technical and logistical implementation plan (Dayagbil et al., 2021). Assessing students in remote learning situations is challenging, but many of the conventional assessment strategies teachers adopt during the pandemic prove to be beneficial (Bentley, 2021).

This study features the critical actions that teachers undertake in assessing the learning progress of the students throughout the COVID-19 pandemic. It offers results in the assessment strategies of teachers for evaluating student learning during remote instruction. Teachers employ several assessment methodologies to accommodate the diverse learning preferences of students. Hence, this study aimed to determine what assessment strategies and tools were applied to evaluate student learning despite the challenges associated with remote instruction during the pandemic.

This study answered the following questions:

1. What are the assessment strategies of teachers during remote instruction?

2. What are the assessment tools utilized by teachers during remote instruction?
3. What are the challenges encountered by online teachers in assessing student learning during remote instruction?
4. What are the recommendations of online teachers in assessing student learning during remote instruction?

METHODS

Research Design

The study was conducted to determine the assessment strategies and assessment tools that online teachers have utilized during remote instruction, as well as the challenges encountered and recommendations of the online teachers in assessing student learning during remote instruction. The study used a quantitative research design to determine the assessment strategies, tools and challenges the teachers encountered in assessing the students' learning during remote instruction. The researchers employed a descriptive design to determine teachers' assessment methodologies for measuring student learning during remote education and recommended effective use of them.

Respondents

The respondents of the study were 50 teachers selected from seven elementary schools in South Cotabato, Mindanao, Philippines who engaged in online teaching during the COVID-19 pandemic. Using convenience sampling, these respondents were chosen from seven elementary schools situated in South Cotabato, Mindanao, Philippines. The schools were selected as these utilized various strategies in assessing student learning during online or instruction. Half of the respondents are aged 20-25 years old (52%). The majority are female teachers (82%), single (70%), and are culturally affiliated as Hiligaynon/Ilonggo (90%) native speakers. 64% have teaching experience of one-five years. They handle grade levels one to six elementary learners. The collection of data was conducted through a combination of face-to-face and online platforms such as Google Meet and Zoom.

Instrument

The researchers developed and prepared a questionnaire, which was then tested in a pilot study. The contents of the rating scale comprised four parts. The first part was the assessment tools; the second part was the assessment strategies of teachers during remote instruction, while the third part was the challenges of the teachers in assessing student learning during remote instruction. Lastly, the fourth part included recommendations for teachers in evaluating the students during remote education. The researcher-made questionnaire proves its validity through a reliability test using Cronbach's alpha with the result of 0.911 interpreted as excellent reliability. The survey questionnaire was distributed via Google Forms and conducted in person, depending on the respondents' availability and preference. The respondents were provided with enough time to complete the survey, and the confidentiality of their responses was rigorously upheld to

Table 1. Assessment strategies of teachers in evaluating students during online learning

Statements	WM	DS*
I use appropriate strategies designed to accommodate the varied talents and skills of my students.	4.28	SA
I use standardized tests as part of my assessment.	4.18	A
I use a modular approach with adopted instructional designs such as Universal Design for Learning, and Merrill's.	3.68	A
I use intermittent class dialogue to instruct difficult tasks and lessons in remote classes.	3.68	A
I use authentic assessments to test the performance of the students.	4.12	A
I use rubrics in giving a score to my students.	4.46	SA
I use effective strategies and techniques that actively engage students in the learning process such as team problem-solving, in-class writing, analysis, synthesis, and evaluation instead of passive lectures.	4.22	SA
I encourage my students to ask questions before and after the class.	4.40	SA
I encourage my students to participate in debate in Google Meet.	3.30	NA/D
I encourage learning through group interaction.	3.82	A
I encourage my students to participate in occasional webinars on mental health, self-care, and COVID-19 plans.	3.84	A
I encourage my students to make educational videos such as their research works and upload them on YouTube or TikTok.	3.30	NA/D
I encourage my students to use the Virtual Learning Environment (VLE) in submitting their assignments and requirements.	3.52	A
I allow my students to use smartphone apps for converting, editing, and submitting class assignments.	3.54	A
I allow my students to watch movies or films and critique them.	3.34	NA/D
I allow my students to conduct online field, research and expert interviews with professionals, children, and parents.	3.30	NA/D
I let my students judge their learning with my guidance.	3.52	A
I let my students work on project-based learning.	3.86	A
I assess my students' background knowledge of my lesson.	4.04	A
I extend my student's experience beyond online classrooms.	4.02	A
I personalized communication with an instructor for serious personal, familial, and academic issues and concerns.	3.86	A
I encourage my students to ask questions during the daytime and weekdays.	3.90	A
I am willing to respond to my students' questions and concerns about our lesson via group chat.	4.22	SA
I give extra time on tests/quizzes to my students.	4.18	A
I give an online exam to my students with a limited time frame.	3.74	A
I provide timely, constructive feedback to students about assignments and questions.	4.12	A
I provide student-centered lessons and activities that are based on concepts of active learning and that are connected to real-world applications.	4.12	A
I provide a summative exam at the end of the semester to assess and evaluate my student learning.	4.40	SA
I let my students brainstorm or have warm-up conversations about the topic I have discussed.	4.00	A
I let my students review my previous lesson by giving them a short quiz to evaluate their understanding.	4.22	SA
Overall mean	3.91	A

Note. WM: Weighted mean; DS: Description; 1.00-1.80: Strongly disagree; 1.81-2.60: Disagree; 2.61-3.40: Neither agree nor disagree; 3.41-4.20: Disagree; & 4.21-5.00: Strongly agree

safeguard their rights. Subsequently, the collected data were encoded and analyzed through descriptive statistics.

FINDINGS

The success of remote online teaching and learning is often linked to the quality of the online teaching environment and the proficient utilization of tools and resources such as Google Meet, Padlets, Zoom, and others, in a manner that is both effective and efficient (Afrianto, 2016; Quiamco et al., 2022). Assessment plans in the module design help to improve student learning and to effectively achieve the learning outcomes of the students.

Table 1 indicates that most of the online teachers strongly agree with the items using rubrics in giving a score to the students with a mean result of (mean [M]=4.46). The instructional process involved before and post-class questioning, as well as a comprehensive end-of-semester examination, to gauge and appraise students' learning obtained a mean result of (M=4.40). Online teachers also strongly agree that they are willing to respond to the student's concerns about the lesson through a group chat. Therefore, most online teachers let their students review previous studies

by giving them a short quiz to evaluate their understanding that gathers the mean result (M=4.22).

However, encouraging students to participate in a debate in Google Meet and allowing students to conduct online field research and expert interviews with professionals, children, and parents gathered the mean result of 3.30, which is described as neither agree nor disagree. Students and teachers have challenges in online education, including difficulties in adapting, limited contact and motivation, and internet and technological problems (Almahasees et al., 2021).

Regarding the assessment tools utilized by online teachers in evaluating student learning during remote instruction (**Figure 1**), the data found that online teachers always used social media such as Facebook, Messenger, Telegram, and Twitter to communicate with the students (M=4.54), followed using Google Meet or Zoom in conducting a synchronous class to monitor students' performance (M=4.10), which describe as often used.

Assessment tools serve as a weapon to make remote instruction possible and practical. The result shows that teachers have difficulties in using educational applications to deliver assessments due to a lack of training and knowledge about the specific applications. Moreover, the assessment tools utilized by online teachers in assessing student learning

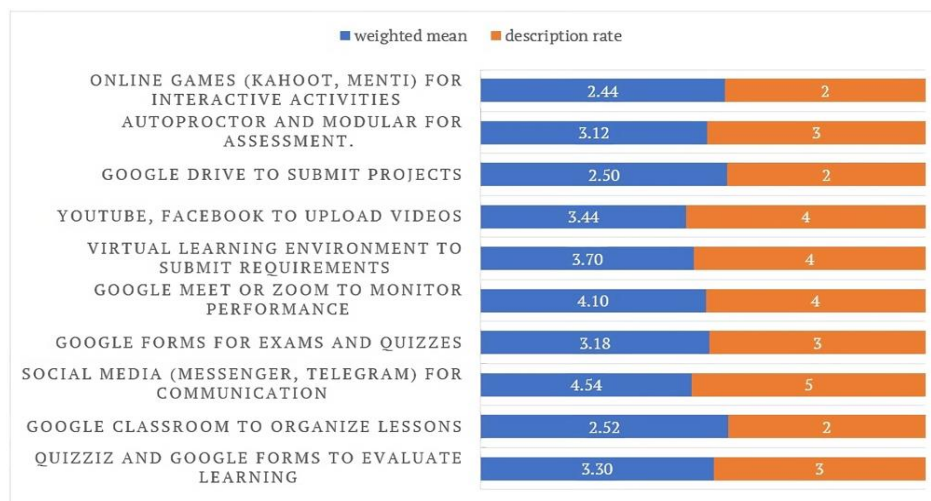


Figure 1. Assessment tools utilized by online teachers in evaluating student learning during online learning (1.00-1.80: Never used [1]; 1.81-2.60: Rarely used [2]; 2.61-3.40: Sometimes used [3]; 3.41-4.20: Often used (4); 4.21-5.00: Always used [5]) (Source: Authors)

during remote instruction are the use of social media such as Facebook, Google Meet, and Zoom (Afrianto, 2016; Quiamco et al., 2022; Toquero, 2021a).

The use of various applications like Google Forms and Quizizz assess and evaluate students learning ($M=3.30$), the use of Google Forms in administering exams and quizzes ($M=3.18$), and the use of alternative applications like AutoProctor and modular just in case there's trouble in accessing the application that used for assessment ($M=3.12$) are described as sometimes used.

Most of the online teachers are not familiar with some online applications like Google Forms and Quizizz due to the limitation of gadgets and pieces of training in introducing an educational application that makes remote learning

accessible, effective, and beneficial for both the teacher and students. Some of them also used their school's modality in assessing students' learning during remote instruction such as Microsoft Teams or virtual learning environment.

Quizizz is a cost-free and user-friendly online evaluation tool that teachers can utilize to facilitate students' learning (Permana & Permatawati, 2020). Nevertheless, technological challenges promptly emerged, including the absence of a dependable internet connection and a designated workstation (Flaherty, 2020). Benefits and problems have been found based on how the apps are utilized.

Based on the findings above, **Table 2** shows that some of the online teachers encountered moderate difficulty, particularly in some items such as difficulties in delivering

Table 2. Challenges of teachers in evaluating student learning during online learning

Statements	WM	DS*
I find it difficult to deliver the assessment online because some of my students do not have any gadgets to use (e.g., tablets, cellphones, laptops, and computers).	2.72	MD
I find it difficult to assess and evaluate students' learning remotely.	2.72	MD
I find it difficult to deliver the assessment to my students because I have encountered technical issues in my online class.	2.76	MD
I found it difficult to deliver my assessment because some of my students were not able to attend synchronous classes.	3.16	MD
I find it difficult to adapt the face-to-face assessment into an online assessment.	3.10	MD
I find it difficult to manage my time in giving assessments to all the blocks or sections that I handled.	2.38	SD
I find it difficult to find an alternative way of delivering my assessment.	2.36	SD
I find it difficult to assess my students who are already left behind in my lessons.	2.72	SD
I find it difficult to integrate interactive activities with my students.	2.64	MD
I find it difficult to evaluate my student's behavior while taking summative and formative assessments.	2.74	MD
I find it difficult to evaluate student's comprehension by giving assessment essays or research papers because most of them tend to plagiarize some words, phrases, and sentences they search on the internet.	2.90	MD
I find it hard to develop assessments remotely that are more applicable to the content of my lesson.	2.58	SD
I have a n unstable internet connection in delivering online assessments to my students.	2.64	MD
I have difficulty in giving a group activity to my students.	3.06	MD
I have limitations in giving standardized assessments to my students.	2.52	SD
I find it difficult to use online applications like Canva, Slack, Zoom, instructor websites, & text websites in giving activities.	2.44	SD
I find it difficult to use the AutoProctor application during the examination.	3.16	MD
I find it difficult to accommodate the needs of my students.	2.64	MD
I find it difficult to adapt the face-to-face assessment to an online setting.	2.82	MD
I find it difficult to ensure the quality of participation of my students whenever I am giving an oral assessment online.	2.76	MD
Overall mean	2.74	MD

Note. WM: Weighted mean; DS: Description; 1.00-1.80: Not difficult; 1.81-2.60: Slightly difficult; 2.61-3.40: Moderately difficult; 3.41-4.20: Very difficult; & 4.21-5.00: Extremely difficult

webinar to motivate teachers to use blended learning	train teachers to utilize modern technology	appropriate mechanisms of student assessment	webinars on online assessment	provide reliable internet access
promote active facilitation and support (including feedback)	design framework for online learning	enhance communication and collaboration	provide student's equipment for online assessment	explicit strategy to provide tailor-made academic expertise
guide safe use of gadgets and online tools	in-service training for teachers	provide spaces for educational institutions to meet their challenges	use assessment applications like Kahoot or Menti	alternative delivery for assessing students

Figure 2. Recommendations of online teachers in assessing students during online learning (Source: Authors)

assessments to the students and using AutoProctor applications both obtained the ($M=3.16$), also adapting of face-to-face assessment into online assessment ($M=3.10$) and difficulties in evaluating students comprehension through giving of assessment essays or research paper because most of them tend to plagiarize ($M=2.90$). Therefore, the majority conceded at least some difficulty, noting inadequate levels of preparedness on the part of the faculty and the students.

Additionally, the teachers encountered some difficulties such as developing remote assessments that are more applicable to the lessons ($M=2.58$), limitations in giving standardized assessments ($M=2.52$), difficulties in using online applications such as Canva, Zoom, etc. ($M=2.44$), managing time in assessing all the class handled ($M=2.38$) and lastly difficulties to find an alternative way in delivering assessment ($M=2.36$).

While it was asserted that the transfer was successful given the conditions, only a tiny percentage of respondents did not encounter any problems, including concerns over administering final exams. Hattami (2020) asserted that teachers need to undergo training to become proficient in utilizing technological devices. This training should include several aspects such as the e-assessment process, the accessibility of technical tools, and the challenges posed by the internet when incorporating technology into the classroom for formative assessment.

Overall, the challenges encountered by online teachers are moderate. Teachers find ways to communicate, particularly with students who need motivation. Hence, teachers need to adapt how they impart knowledge because of the changes in the educational process. The absence of in-person communication has a significant effect on the acquisition of knowledge for both students and learners (Cerezo et al., 2020; Ekici, 2017; Farhan et al., 2017; Lee et al., 2017). Furthermore, the assessment heavily relies on the exchange of information and communication between teachers and students (Fernandez et al., 2018; Hussain et al., 2018; Sit & Brudzinski, 2017).

Figure 2 shows the recommendations of online teachers in evaluating student learning during remote instruction. Training activities can include online training that teachers may do at their leisure. In enhancing students' learning

experience online, the teachers have a vital role in overseeing the online discussions, facilitating the students' inquiries, and providing prompt feedback. Butler (2015) illustrated that online simulations can be created efficiently and offer various potential solutions. Thus, they are multidimensional and require input from the teacher in addition to the online simulation. Gegenfurtner and Ebner's (2019) meta-analysis and systematic review revealed that webinars are superior to asynchronous learning management systems and face-to-face classroom training in terms of effectiveness.

In light of the growing popularity of blended learning, it is important to establish and adhere to effective methods. This entails more than just incorporating technology into current teaching practices; it involves transforming the way teaching and learning occur by utilizing online resources and multimedia in today's e-learning environment (Lieser et al., 2018). In addition, Toquero and Talidong (2020) propose that webinars can be used as a supplementary tool to traditional conferences and training programs for enhancing skills and knowledge, particularly in times of a pandemic.

DISCUSSION

Many online teachers utilize diverse assessment strategies to evaluate student learning during remote instruction. Based on the findings, they highly use rubrics in giving scores to the students for assessing student learning during remote instruction to set a standard and guide what the students need to do in response to the teacher's criteria. Teachers utilize the rubrics since they asked students to answer self-learning modules or conduct projects. Since the modules may incorporate activities such as essays, reflections, or instructions for group projects, rubrics make grading the modules, projects, and other tasks manageable for teachers. Cockett and Jackson (2018) provide evidence that the implementation of assessment rubrics can promote uniformity in comments and maintain consistency among markers and student submissions.

Assessment strategies of online teachers are mostly through providing summative exams, quizzes, and feedback, using rubrics, asking questions, and responding to students' questions. This indicates that most assessment strategies of

the teachers in online learning are traditional-based assessments since teachers do not have enough training on the use of performance-based or authentic assessments that are applicable to online or remote instruction. Their assessment tools facilitate the monitoring of student progress and evaluation through the utilization of quizzes and the rubric-based grading of submitted tasks (Chetri & Pokherl, 2021). The teachers can discern the difficulties associated with the course and assignment (Ali et al., 2021). Nonetheless, learners are motivated to actively engage in online education when there is a system of grading, awarding certificates of appreciation, offering rewards for group performance, providing timely constructive feedback, and including self-assessment rubrics. (Zayapragassarazan, 2020).

Teachers sometimes use assessment tools to evaluate student learning during remote instruction. They use assessment tools such as Google Forms, Quizizz, and other alternative applications to evaluate student learning during remote instruction. However, social media platforms like Facebook and Messenger were mostly employed to engage in communication with the learners and oversee their educational progress. This finding is supported by the research of Tadesse and Muluye (2020), which revealed that many teachers in private schools utilize Facebook and Google Classroom to disseminate assignments, books, and reading materials to their pupils. Social media is a communication platform that allows teachers and students to interact using various online learning apps while following social distancing guidelines (Vordos et al., 2020). Additionally, these tools enable the monitoring of students' educational progress and evaluation (Kaup et al., 2020). Jacques et al. (2020) noted that additional tools for creating multimedia content, such as films, radio podcasts, and online courses, were also distributed through social networks such as Facebook and Twitter.

Moreover, online teachers faced difficulties in some areas of evaluating students' learning during remote instruction such as evaluating students' essays and research output because some students submitted plagiarized content. Teachers also have difficulty with using AutoProctor during exams, giving group activities, and adapting face-to-face assessments to online assessments. The availability of the students is also a challenge for the teachers because some are not able to attend synchronous classes due to unstable internet connections. Ali et al. (2021) highlighted that while online assessments provide convenience and cost-effectiveness compared to physical examinations, they nevertheless face numerous infrastructural obstacles. As per Kinoti (2020), although there are fast-developing intervention applications, teachers are facing difficulties in overseeing and evaluating the standard of remote learning due to the lack of technology and connectivity that would enable online assessments for students. Hence, educators must discover a method of communication, particularly for students who require teacher-driven motivation in situations, where in-person interaction is unfeasible. When it comes to assessment, it is necessary to use a very flexible approach in designing, creating, and using assessments that can be adjusted to various situations (Hodges & Babour, 2021). In addition, teachers encounter challenges stemming from their limited exposure to online teaching methods (Toquero & Talidong,

2020), insufficient technological resources at home, limited opportunities for interaction, and inadequate and expensive internet connectivity.

The findings also emphasized the challenges faced by educators in conducting remote instruction through platforms such as Google Classroom and Zoom. Similarly, Noor et al. (2020) delineated a range of obstacles faced by teachers, including expensive internet subscriptions, uncooperative students, low student attendance, teachers' lack of faith in technology, limited educational resources, insufficient knowledge of information and communication technology (ICT), and inadequate network infrastructure. Schools implemented pertinent technologies, organized learning, and staff resources, developed systems and infrastructure, implemented new teaching protocols, and adapted their curricula (Barrot et al., 2021). Amidst the COVID-19 problem, governments must offer teachers training in technology-driven education (Toquero & Talidong, 2020). Redecker (2017) emphasized the importance of enhancing teachers' digital competencies at all age levels through workshops and training courses.

CONCLUSIONS & IMPLICATIONS

Teachers primarily use assessment strategies such as rubrics to grade students' outputs. Rubrics help the teacher evaluate and offer student feedback, aid in sound assessment, and are a valuable data source for activity improvement. Most online teachers rarely use Google Classroom, Google Drive, and online educational games such as Edpuzzle, Kahoot, Mentimeter, and Quiziz in evaluating students' learning. The teachers believed that Facebook gave them a simple way to communicate with their students and preferred Facebook as a learning platform, especially those far-flung areas, so most online teachers are not mindful of other online assessment tools. This study underscores the importance of online teachers to adapt their pedagogical approaches and methodologies to the online learning environment. It is vital for teachers to recognize the importance of differentiated assessment with ICT integration to cater to students' diverse learning needs even in remote learning.

Online teachers experienced moderate difficulty in assessing student learning during remote instruction, particularly in the use of standardized exams and online applications in class activities. However, finding alternative ways of delivering assessments through authentic-based activities such as research works, debates, and use of emerging technologies for real-life tasks challenged the teachers in evaluating student learning. Hence, professional development in assessment strategies and practices is essential for teachers, along with an appropriate balance of traditional and non-traditional assessments. They should explore and integrate various online assessment tools into their teaching practices to broaden their assessment strategies. On the other hand, school administrators should provide training in using educational technology to digitize instruction using assessment applications or game-based learning such as Kahoot, Mentimeter, and other emerging educational technologies. Educational institutions should prioritize

allocating budget for teacher training programs, adopting innovative assessment tools, and continuously improving online education delivery. An online curriculum should incorporate interactive materials, multimedia resources, digital technologies, and content that fosters student engagement and understanding in online classes. Lastly, the challenges identified in the study can guide technology providers in improving their applications' usability, functionality, effectiveness, while ensuring the safety and privacy of online users.

Author contributions: HJA & ACJ: writing-original draft; CMT & KAA: writing-review & editing; & CMT: conceptualization, methodology, & visualization. They all agree with the results and conclusions.

Funding: No external funding is received for this article.

Ethics declaration: The authors declared that the study adhered to the highest practices of scientific publishing. The authors further declared that they ensured informed consent, privacy, confidentiality, and voluntary participation of the participants.

Declaration of interest: The authors declare that they have no competing interests.

Availability of data and materials: All data generated or analyzed during this study are available for sharing when appropriate request is directed to corresponding author.

REFERENCES

- Afrianto, A. (2016). Using Google Hangouts for teaching English online. *Proceedings of ISELT FBS Universitas Negeri Padang*, 4(1), 89-96.
- Ali, L., Hamid, N. A., & Al Dmour, H. (2021). The shift to online assessment due to COVID-19: An empirical study of university students, behavior and performance in the Region of UAE. *International Journal of Information and Education Technology*, 11(5). <https://doi.org/10.18178/ijiet.2021.11.5.1515>
- Almahasees, Z., Khaled, M., & Omar. (2021). Faculty and students' perceptions of online learning during COVID-19. *Frontiers in Education*, 6, 638470. <https://doi.org/10.3389/educ.2021.638470>
- Amiri, A., Wang, J., Slater, N., & Visak, V. N. (2021). Enhancement of process modeling and simulation evaluation by deploying a test for assessment and feedback individualisation. *Education for Chemical Engineers*, 35, 29-36. <https://doi.org/10.1016/j.ece.2021.01.001>
- Ancheta, R., & Ancheta, H. (2020). The new normal in education: Challenge to the private basic education institutions in the Philippines? *International Journal of Educational Management and Development Studies*, 1(1), 1-19. <https://doi.org/10.53378/345960>
- Barrot, J. S., Llenares, I. I., & Del Rosario, L. S. (2021). Students' online learning challenges during the pandemic and how they cope with them: The case of the Philippines. *Education and Information Technologies*, 26(6), 7321-7338. <https://doi.org/10.1007/s10639-021-10589-x>
- Bentley, K. (2021). Teacher-created assessments during remote learning. *Government Technology*. <https://www.govtech.com/education/k-12/teacher-created-assessments-during-remote-learning.html>
- Bozkurt, A., & Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to coronavirus pandemic. *Asian Journal of Distance Education*, 15(1), i-vi. <https://doi.org/10.5281/zenodo.3778083>
- Butler, M. (2015). Measures of student engagement in computer science. In *Proceedings of the 2015 ACM Conference on Innovation and Technology in Computer Science Education* (pp. 242-247). ACM.
- Cahapay, M. B. (2020). Reshaping assessment practices in a Philippine teacher education institution during the coronavirus disease 2019 crisis. *Pedagogical Research*, 5(4), em0079. <https://doi.org/10.29333/pr/8535>
- Cerezo, R., Bogarín, A., Esteban, M., & Romero, C. (2020). Process mining for self-regulated learning assessment in e-learning. *Journal of Computing in Higher Education*, 32(1), 74-88. <https://doi.org/10.1007/s12528-019-09225-y>
- Chetri, R., & Pokherl, S. (2021). A literature review on impact of COVID-19 pandemic on teaching and learning. *SAGE Journal*, 8(1), 133-141. <https://doi.org/10.1177/2347631120983481>
- Cockett, A., & Jackson, C. (2018). The use of assessment rubrics to enhance feedback in higher education: An integrative literature review. *Nurse Education Today*, 69, 8-13. <https://doi.org/10.1016/j.nedt.2018.06.022>
- Daniel, S. J. (2020). Education and the COVID-19 pandemic. *Prospects*, 49, 91-96. <https://doi.org/10.1007/s11125-020-09464-3>
- Dayagbil, F. T., Palompon, D. R., Garcia, L. L., & Olvido, M. M. J. (2021). Teaching and learning continuity amid and beyond the pandemic. *Frontiers in Education*, 6, 678692. <https://doi.org/10.3389/educ.2021.678692>
- Doucet, A., Netolicky, D., Timmers, K., & Tusciano, F. J. (2020). *Thinking about pedagogy in an unfolding pandemic*. UNESCO.
- Ekici, D. I. (2017). The use of Edmodo in creating an online learning community of practice for learning to teach science. *Malaysian Online Journal of Educational Sciences*, 5(2), 91-106.
- Farhan, M., Aslam, M., Jabbar, S., Khalid, S., & Kim, M. (2017). Real-time imaging-based assessment model for improving teaching performance and student experience in elearning. *Journal of Real-Time Image Processing*, 13(3), 491-504. <https://doi.org/10.1007/s11554-016-0662-3>
- Fernandez, J. M., Santos, G. L. M., & Javier, W. C. (2018). An assessment of e-learning system for instructors and students of Panpacific University. *Asian Higher Education Chronicles*, 1(1), 63-70. <https://doi.org/10.9744/ahec.1.1.63-70>
- Flaherty, C. (2020). *Inside higher education*. <https://www.insidehighered.com/news/2020/04/21/early-journalsubmission-data-suggest-covid-19-tanking-womens-researchproductivity>

- Gegenfurtner, A., & Ebner, C. (2019). Webinars in higher education and professional training: A meta-analysis and systematic review of randomized controlled trials. *Educational Research Review*, 28, 100293. <https://doi.org/10.1016/j.edurev.2019.100293>
- Guangul, F. M., Suhail, A. H., Khalit, M. I., & Khidhir, B. A. (2020). Challenges of remote assessment in higher education in the context of COVID-19: A case study of Middle East College. *Educational Assessment, Evaluation and Accountability*, 32, 519-535. <https://doi.org/10.1007/s11092-020-09340-w>
- Gyimah, N. (2020). Assessing technological innovation on education in the world of coronavirus (COVID-19). *Annal Immunology & Immunotherapy*, 4(1), 000158. <https://doi.org/10.2139/ssrn.3670389>
- Hattami, A. (2020). E-assessment of students' performance during the e-teaching and learning. *International Journal of Advanced Science and Technology*, 29(8), 1537-1547.
- Hodges, C. B., & Barbour, M. K. (2021). Assessing learning during emergency remote education. *Italian Journal of Educational Technology*, 29(2), 85-98. <https://doi.org/10.17471/2499-4324/1208>
- Hsiao, Y. P., & Watering, G. A. (2020). *Guide for choosing a suitable method for remote assessment considerations and options*. <https://www.utwente.nl/uc/ffaea9b660102d86e5500968eb70138724d87765be38900/Guide%20for%20choosing%20a%20suitable%20method%20for%20remote%20assessment.pdf>
- Hussain, M., Zhu, W., Zhang, W., & Abidi, S. M. R. (2018). Student engagement predictions in an e-learning system and their impact on student course assessment scores. *Computational Intelligence and Neuroscience*, 2018, 6347186. <https://doi.org/10.1155/2018/6347186>
- Jacques, S., Ouahabi, A., & Lequeu, T. (2020). Remote knowledge acquisition and assessment during the COVID-19 pandemic. *International Journal of Engineering Pedagogy*, 10(6), 120-138. <https://doi.org/10.3991/ijep.v10i6.16205>
- Jankowski, N. A. (2020). *Assessment during a crisis: Responding to a global pandemic*. National Institute for Learning Outcomes Assessment.
- Joaquin, J. J. B., Biana, H. T., & Dacela, M. A. (2020). The Philippine higher education sector in the time of COVID-19. *Frontiers in Education*, 5, 576371. <https://doi.org/10.3389/feduc.2020.576371>
- Kaup, S., Jain, R., Shivalli, S., Pandey, S., & Kaup, S. (2020). Sustaining academics during COVID-19 pandemic: The role of online teaching-learning. *Indian Journal of Ophthalmology*, 68(6), 12201221. https://doi.org/10.4103/ijo.IJO_1241_20
- Kearns, L. R. (2012). Student assessment in online learning: Challenges and effective practices. *MERLOT Journal of Online Learning and Teaching*, 8(3). <https://doi.org/10.5040/9798400639401.ch-004>
- Kinoti, T. (2020). COVID-19 adaptation: Challenges in assessing learning in marginalized communities. *Humanitarian Education Accelerator*. <https://www.ukfiet.org/2020/covid-19-adaptations-challengesin-assessing-learning-in-marginalised-communities/>
- Lee, J. M., Jo, E. B., Li, H. Y., & Rha, J. Y. (2017). A study on university students' use and assesment with digital devices and services for realizing smart campus. *Journal of Digital Convergence*, 15(7), 27-39.
- Lieser, P., Taff, S. D., & Murphy-Hagan, A. (2018). The webinar integration tool: A framework for promoting active learning in blended environments. *Journal of Interactive Media in Education*, 2018(1), 7. <https://doi.org/10.5334/jime.453>
- Nars, N. (2020). Teachers as students: Adapting to online methods of instruction and assessment in the age of COVID-19. *Journal for Research in Science & Mathematics Education*, 24(2), 168-171.
- Noor, S., Isa, F., & Mazhar, F. F. (2020). Online teaching practices during the COVID-19 pandemic. *Educational Process: International Journal*, 9(3), 169-184. <https://doi.org/10.22521/edupij.2020.93.4>
- Permana, P., & Permatawati, I. (2020, March). Using Quizizz as a formative assessment tool in German classrooms. In *3rd International Conference on Language, Literature, Culture, and Education (ICOLLITE 2019)* (pp. 155-159). Atlantis Press.
- Quiamco, M. S., Abocado, S. M., & Toquero, C. M. (2022). Zoom engagement of pre-service teachers during emergency remote classes. *Asian Journal of Distance Education*, 17(2).
- Redecker, C. (2017). European framework for the digital competence of educators: DigCompEdu. In Y. Punie (Ed.), *EUR 28775 EN*. Publications Office of the European Union.
- Rust, C., O'Donovan, B., & Price, M. (2005). A social constructivist assessment process model: How the research literature shows us this could be best practice. *Assessment and Evaluation in Higher Education*, 30, 23140. <https://doi.org/10.1080/02602930500063819>
- Sit, S. M., & Brudzinski, M. R. (2017). Creation and assessment of an active e-learning introductory geology course. *Journal of Science Education and Technology*, 26(6), 629-645. <https://doi.org/10.1007/s10956-017-9703-3>
- Tadesse, S., & Muluye, W. (2020). The impact of COVID-19 pandemic on education system in developing countries: A review. *Open Journal of Social Sciences*, 8, 159-170. <https://doi.org/10.4236/jss.2020.810011>
- Toquero, C. M. D. (2021a). Academic silver linings in a Philippine State University amid the early stages of pandemic cases. *Journal of Learning for Development*, 8(2), 448-455. <https://doi.org/10.56059/jl4d.v8i2.498>
- Toquero, C. M. D. (2021b). Digital ethnography on students' authentic engagement in social media platforms during the global online experiment. *Journal of Digital Educational Technology*, 1(1), ep2104. <https://doi.org/10.21601/jdet/11310>
- Toquero, C. M. D., & Talidong, K. J. (2020). Webinar technology: Developing teacher training programs for emergency remote teaching amid COVID-19. *Interdisciplinary Journal of Virtual Learning in Medical Sciences*, 11(3), 2-5. <https://doi.org/10.30476/ijvllms.2020.86889.1044>

- Vordos, N., Gkika, D. A., Maliaris, G., Tilkeridis, K. E., Antoniou, A., Bandekas, D. V., & Mitropoulos, A. C. (2020). How 3D printing and social media tackles the PPE shortage during COVID-19 pandemic. *Safety Science, 130*, 104870. <https://doi.org/10.1016/j.ssci.2020.104870>
- Winthrop, R. (2020). Top-10 risks and opportunities for education in the face of COVID-19. *Brookings*. <https://www.brookings.edu/blog/education-plus-development/2020/04/10/top-10risks-and-opportunities-for-education-inthe-face-of-covid-19>
- Zayapragassarazan, Z. (2020). COVID-19: Strategies for engaging remote learners in medical education. *Online Submission, 9(273)*, 1-18.