Perceptions and Challenges of Remote Assessment: A Scoping Review on Research Methodology

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ABSTRACT

Due to Pandemic Covid-19, there has been a major shift in the education system where schools are moving from physical learning to online learning. This has significantly affected the process of examining and assessing students on their learning. Thus, the purpose of this scoping overview is to provide empirical evidence on the perception of educational stakeholders on remote assessment and the challenges they face to conduct remote assessment. A total of 50 papers were evaluated in detail, with the following findings: (1) The selected remote assessment studies have a fair distribution of the design they chose to examine the perception on the usage of remote assessment and the challenges they face; (2) Most of the remote assessment studies focus on tertiary level students learning in universities. Collectively, these findings reflect the heterogeneous nature of this area and imply that remote assessment is often feasible. This review also identified a number of interesting but under-researched areas, as well as discussions on their implications for future research. Intervention experimental research design is suggested to be employed for future research as the design is less implemented, revealed from this study findings. Furthermore, it is also suggested that future studies could focus on investigating younger learners' (primary and secondary school students) perceptions of remote assessment.

Keywords: remote assessment; online assessment; e-assessment; Covid-19

INTRODUCTION

The recent outbreak of Covid-19 pandemic has brought a major impact into the lives of the people around the world. It has affected people regardless of their nationality, background, social economic status, level of education, age or gender. Consequently, many sectors are closed to break the chain of the disease, and education is no exception. Due to this circumstance, the lockdown in response to Covid-19 had interrupted conventional schooling nationwide. The educational paradigm has shifted its course towards online mode where the use of technology and innovation take place (Moorhouse, 2020). This imposes an impact towards students' learning and teachers' ability to measure students' achievement.

The use of a website or an application to assess students' learning is known as online assessment. (Marisa Yoestara, Zaiyana Putri, Meta Keumala and Zahratul Idami, 2020). Weleschuk, Dyjur and Kelly (2019) further define online assessment as a technique of evaluating students' performance, providing feedback, and pushing them forward in their learning process in an online setting. Teachers conduct online assessment without the actual presence of the students through a myriad of means including online quiz, presentation, assignment, portfolio and so forth.

Commonly, there are two types of assessment being conducted in teaching and learning settings which are summative and formative (James, 2010). Summative assessment usually being conducted at the end of a learning program (Vagholkar, 2019). It is concerned with summarizing students' achievement and becoming a report at the end of a study program. Meanwhile, formative evaluation is recognized as being the core of a teaching programme with the goal of determining students' learning capacities and comprehension. (Yilmaz, 2017). The main aim of formative assessment is to monitor students' learning, and it provides ongoing feedback that can be useful to the teachers in improving the teaching and learning experiences. Remote assessment is considered relatively new to the field of education. Students are used to learning and being assessed in the classroom with the presence of the teachers. Additionally, since it is considered new, education institutions do not have defined policies or norms in place for online instruction. (Zhang, 2020). Thus, several questions arose, including what to teach, how to teach, what the teacher and student's roles should be, the teacher's workload, the teaching environment, and the implications for educational equity, among others. The other issue related to COVID-19 is assessing students remotely. Assessment serves three key goals in higher education: (1) to facilitate learning, (2) to execute accountability, and (3) to provide certification, progress, and transfer (Archer, 2017)

This scoping review will focus on the methodology adopted in the 50 studies on the perceptions and challenges of online assessment. This will include the search terms, article selections criteria, participants, location, research design, research instrumentation and data analysis.

RESEARCH QUESTIONS

1. What are the research designs employed for the studies on the perceptions and challenges of online assessment?
2. Who are the most targeted participants used for the studies on the perceptions and challenges of online assessment?

LITERATURE REVIEW

Changing the learning course to online settings poses particular challenges. One of the challenges is to find a suitable way to assess the students' learning. The rapid switch from invigilated tests face-to-face to online exams throughout the world as a result of the COVID-19 pandemic in 2020 had an influence on higher education (UNESCO, 2020). In every educational setting, assessing students' learning is critical, especially in an online setting. Online assessments are intended to be used as an alternative to face-to-face tests; as a result, adopting an assessment procedure that relies on electronic versions of exams necessitates extensive planning (Sarrayrih & Ilyas, 2013). Teachers are expected to track students' progress and provide additional content and material by administering regular tests via online platforms.

PERCEPTIONS ON REMOTE ASSESSMENT

Understanding students' and teachers' perception on remote assessment is essential in making effective decisions regarding teaching and learning process. This enables teachers to modify and make alterations on their current teaching practice to suit the students' needs and preferences. Previous studies show that the acceptance of remote assessment among teachers and students varies. In Petrisor et al. (2016) study, the main finding was that the majority of students chose online assessment techniques over other types of assessments as they are exposed to the online evaluation method over a long period of time. This could become a factor

in their decision. On the other hand, Rosa Amalia (2008) revealed that students have both positive and negative perceptions toward online assessment.

According to Maslawati, Naiman and Harwati (2018), teacher's perception on the online assessment might vary because it depends on the individual on their acceptance whether to use the technology in their lesson or not. Based on the TAM theory, there are a variety of factors that can influence a teacher's decision to not use ICT in their classroom. Besides, ICT skills are crucial because there are no benefits if they can't use it to its maximum potential. Another issue is experience, as most seasoned teachers prefer the traditional technique versus employing ICT (Demetriadis, 2003).

CHALLENGES OF REMOTE ASSESSMENT

Astuti (2020) stated that several previous studies on online testing in English classes at the tertiary education level have been conducted since 2020. The studies include the benefits, challenges and perception of teachers and students regarding online assessment. One of the challenges asserted by Astuti (2020) is regarding students' integrity (Astuti, 2020). The inability to regulate a student's environment while taking tests has been a significant issue for remote assessment, particularly at the university level. (Rodchua, Tiadom-Boakye & Woolsey, 2011). Traditional ways to ensure integrity are conceptually different to digital examinations. The failure of educational institutions to monitor and apply cheating regulations is clearly linked to a rise in the number of acts of dishonesty. Students succumb to dishonesty highly due to available opportunities like internet availability. Additionally, they also show a tendency in studying collision and plagiarism (Garg & Goel, 2022). Academic dishonesty among students may lead to unfair evaluations. Hollister and Berenson (2009) agreed and stated that academic dishonesty and misconduct is the most typically identified challenge in online assessment.

Rosa Amalisa (2018) found other challenges regarding online assessment including time constraint and poor network connection. This instability of internet connection may hinder the effectiveness of online assessment. Bellini (2015) documented negative replies from students and professors that are showing a dislike for online examinations due to connectivity challenges and technical computer problems that might occur at any time. The heavy reliance on technological equipment in online learning, as well as the provision of such equipment, presents a substantial challenge to students, institutions, professors, and teachers. Students with poor internet connections may be denied access to online assessment. Significantly, with obsolete technology gadgets, instructors and professors may strive to maintain some technical requirements of online learning, which may make it difficult to assess students online. Two of the most important elements to consider when preparing for online tests are availability and accessibility (Rahim, 2020). It includes the availability and accessibility of internet speed, web connections and electronic devices in conducting exams online. Thus, strong and reliable connection to the internet is the most critical issue for students in online exams.

Hricko and Howell (2006) explored the challenges of remote assessment on the teachers. They discovered the challenges include selecting the appropriate questions, designing and developing effective assessment strategies and posing relevant questions. These challenges may affect the effectiveness of online assessment. For teachers, preparing and generating online quizzes and exams for each subject requires time and a lot of creativity. Considerations need to be taken, not only on the items tested but, on the platform, and mode that are suitable for the online assessment to be carried out. Nonetheless, educators must evaluate the methods and their impact on students' learning outcomes.

MATERIALS AND METHODOLOGY

SEARCH TERMS

The initial perusal of the search terms suggested that the search strategy had picked up a substantial number of studies that were considered irrelevant. Thus, given the purpose of this review, a few sets of keywords were developed: (a) Assessment related: online assessment, remote assessment, e-assessment, and digital assessment; (b) Scope: Education; (c) Timeframe: Covid-19. These sets of search terms were run in combination with Boolean operators, with the AND operator used between the sets and the OR operator used within the set.

SELECTING THE ARTICLES

INCLUSION AND EXCLUSION CRITERIA

The inclusion and exclusion criteria are the most important part of the scoping review. Particularly, the studies are selected or rejected on the basis of this criteria. We develop parameters for the inclusion and exclusion of studies as follows:

Subject: The selected study must belong to online exams or assessment substantially. Studies dealing with e-learning as a whole but discussing online exams marginally should be discarded. _Description:_ In this SLR, online assessment or remote assessment is the major subject. Therefore, the study should only be included where the perception and challenges on online assessment is the major concern. In fact, there are several studies discussing challenges of e-learning. Such studies are excluded as online assessment is a major area of research for this review.

Publication Year: This scoping review only considers studies, which are published from 2018 to 2021. _Description:_ Generally, this review is discovering the trend of online assessment during pandemic Covid-19. Although online assessment has been established and used in previous years, the selection of articles is based on the current situation which are the recent years.

Field: This scoping review considers studies in the educational field regardless of the course. _Description:_ Substantially, this review is focusing on the trend of online assessment in the field of education only. The term assessment refers to formative and summative assessment that is being utilized in the higher education, secondary and primary level.

FINDINGS AND DISCUSSION

TABLE 1. Summary of Empirical Studies

No.	Author	Year	Location	Research Design	Sample	Instruments	Data Analysis
1	Noradila Iskandar, Nishantini Ganesan & Nur Shafiqah Eleena Ahmad Maulana	2021	Malaysia	Mixed method	50 university students	Questionnaires, open-ended questions	Numeration formula and Thematic analysis
2	Astri Yulia, Nor Azilah Husin, Faiz I. Anuar	2019	Malaysia	Qualitative: quasi-experimental design	86 university students	Four types of formative assessment	Descriptive statistics and T-test.
3	Santosh Kumar Mahapatra	2021	India	Qualitative: multiple case study	3 ESL teachers	Classroom observations, interviews & document analysis.	Thematic discussions
4	Fiseha M. Guangul & Adeel H. Suhail1 & Muhammad I. Khalit & Basim A. Khidhir	2020	Oman	Quantitative	50 college students	Questionnaires	Numeration formula
5	Muhammad Mujtaba Asad , Raja Bahar Khan Soomro ,Atefeh Shamsy Prathamesh Churi	2021	Pakistan	Quantitative	100 students aged 14-18	Survey questionnaire & open-ended questions	Descriptive and inferential statistical, posttest analysis
6	Selma Şenel, Hüseyin Can Şenel	2021	Turkey	Mixed method	486 university students	Survey questionnaire & open-ended questions	Descriptive statistics & content analysis
7	Selma Şenel, Hüseyin Can Şenel	2021	Turkey	Qualitative: case study	43 undergraduates	Questionnaire	Thematic discussions
8	Maya Defianty, Didin Nuruddin Hidayat, Ummi Kultsum, Agus Sufyan, Imam Subchi, Sururin	2021	Indonesia	Quantitative: survey	193 university students	Survey questionnaire & open-ended questions	Formative assessment
9	Khitam Shraim	2019	Palestine	Mixed Method	342 undergraduate students	Survey questionnaire & interviews	Descriptive Statistics & Thematic Analysis
10	Fatma Gizem, KARAOĞLAN-YILMAZ	2020	Turkey	Qualitative: Case study	35 university students	Questionnaire & semi-structured interviews	Content analysis

11	Cong Zhang, Xun Yan, Junju Wang	2021	China	Qualitative	6 teachers in a Chinese university	Semi-structured interviews	Thematic analysis
12	Zaitun; Rochmiyati; Pargito	2021	Indonesia	Qualitative	100 English teachers	Questionnaire and interview	Not mentioned
13	Furqon Edi Wibowo, Umi Novita Sari	2021	Indonesia	Qualitative	25 Tenth Grade Students, 3 English Teachers	Questionnaire, interview & documentation	Data Analysis
14	Komilie Situmorang, Dwi Yulianto Nugroho, Santa Maya Pramusita	2020	Indonesia	Quantitative (Descriptive Method)	105 nursing students	Questionnaire	Descriptive statistic formula
15	Siti Zuhriyah, Bambang Widi Pratolo	2020	Indonesia	Qualitative (Case Study)	6 university students	Semi-structured interview	Thematic analysis
16	Halise Sibel	2018	Turkey	Mixed Method	23 elementary school students, 1 teacher	Questionnaires	Descriptive analysis, thematic analysis
17	Nurhadianti, Bambang Widi Pratolo	2020	Indonesia	Qualitative (Phenomenological Study)	8 students aged 23-28 years old	Semi-structured interview	Thematic analysis
18	Truc T.T. Tran et al.	2021	Vietnam	Quantitative	201 University students	Questionnaire (Google survey platform)	Descriptive statistics, independent t-test
19	Nur Aisyah et al.	2020	Indonesia	Descriptive Mixed Method Design	140 high school students	Questionnaire, open-ended question.	Descriptive statistics, thematic analysis
20	Fedelis Remmi, Harwati Hashim	2021	Malaysia	Descriptive Mixed Method Design	100 Primary school English teachers	Questionnaire, open-ended question.	Descriptive statistics, thematic analysis
21	Nurfarahin Adawiah Mohd Jalani, Harwati Hashim	2020	Malaysia	Quantitative (Quasi Experimental)	30 primary school pupils	Pre-test and post-test, questionnaire	Descriptive statistics
22	Paul Joyce	2018	Japan	Quantitative	145 university students	Formative and summative assessment	Descriptive statistics
23	Suleyman Nihat Sad, Niyazi Ozer	2020	Turkey	Mixed Method (Case Study)	88 university student, prospective teachers	Questionnaire with close and open-ended questions	Descriptive statistics, thematic analysis

24	Euis Nursifa Laila Nugraha, Salsabila, Tassya Salsabila Ramadhiani	2021	Indonesia	Qualitative (Phenomenological Study)	20 university students	Classroom observation, Questionnaire	Thematic Analysis
25	Magdalena Kartikasari et al.	2020	Indonesia	Quantitative	66 university students	Test using Quizizz and Google Form	Descriptive statistics
26	Ima Fitriyah, Miftahul Jannah	2021	Indonesia	Mixed Method Case Study (Quantitative and Qualitative)	36 university students, 3 EFL teachers	5-point Likert scale Questionnaire, interview	Descriptive statistics, topological analysis
27	Zilal Meccawy, Maram Meccawy, Aisha Alsobhi2	2021	Saudi Arabia	Descriptive mixed method study	547 undergraduate students, 213 faculty members	Survey questionnaire, open-ended questions	Descriptive analysis, thematic analysis
28	Norkhairi Ahmad, Ina Suryani Ab Rahim, Salawati Ahmad	2021	Malaysia	Qualitative	21 language academicians	Interview	Thematic analysis
29	Hanadi S. Mirza	2021	Lebanon	Qualitative	10 university teachers	Interview	Theoretical sampling
30	Moh. Arif Mahbub	2020	Indonesia	Mixed Method Sequential Explanatory Study	21 undergraduate students	5-point Likert scale Questionnaire, interview	Descriptive analysis, thematic analysis
31	Thuy Thi Thanh Nguyen, Takashi Yukawa	2019	Vietnam	Mixed Method Case Study	20 teachers, 20 university students	Questionnaire, interview	Descriptive analysis, thematic analysis
32	E R Saputra, N Rusmana	2021	Indonesia	Mixed Method	60 college freshman	Questionnaire, interview	Descriptive analysis, thematic analysis
33	Cong Zhang, Xun Yan Junju Wang	2021	China	Qualitative	6 lecturers	Semi-structured interview	Thematic Analysis
34	Nasim Ghanbari, Sima Nowroozi	2021	Iran	Qualitative	20 Iranian English language teachers	Semi-structured interview	Thematic Analysis

35	Roumiana Peytcheva-Forsyth, Lyubka Aleksieva	2021	Bulgaria	Quantitative	1111 bachelor and master degree students	Questionnaire with close and open-ended questions	Descriptive statistics
36	Agus Husein As Sabiq, Muhammad Ikhsanul Fahmi	2020	Indonesia	Qualitative	1 English language teacher, 36 students	Interviews, open-ended questionnaires, documentation	Miles and Huberman model (1994)
37	Dinda Firly Amalia	2020	Indonesia	Quantitative	20 students of Dynamic English Course	5-point Likert scale Questionnaire	Score interpretation
38	Zohre Mohamadi	2018	Iran	Quantitative	130 university students	Electronic writing forum	Descriptive statistics
39	Alhanouf Saleh Alharbi, Amal Abdullah Alhebshi, Zilal Meccawy	2021	Saudi Arabia	Mixed Method	354 secondary school students, 24 female teachers.	Questionnaire, interview	Descriptive statistics, thematic analysis
40	Mariana Cernicova-Buca, Gabriel-Mugurel Dragomir	2021	Romania	Mixed Method	15 university students	Online Questionnaire	Descriptive statistics, thematic analysis
41	M. S. Darmawan, F. Daeni, P. Listiaji	2020	Indonesia	Quantitative	23 university students	Online test, questionnaire	Descriptive statistics
42	Ajwaad Aljohani et al.	2021	Saudi Arabia	Mixed Method	49 female EFL students	Survey questionnaire, interview	Descriptive statistics, thematic analysis
43	Liaqat Ali, Nidal Abidal Hamid Hmoud Al Dmour	2021	UAE	Mixed method	312 undergraduates students	Questionnaire, semi-structured interview	Descriptive analysis, thematic analysis
44	Laily Fazlin Khairil, Siti Eshah Mokshein	2018	Malaysia	Quantitative	100 UPSI students	Test on Kahoot Platform	Inferential statistics
45	Dr. Elham T. Hussain, Dr. Hussam Alrabaiah, Dr. Sumya Daoud, Amjad K. Owais	2020	UAE	Quantitative	305 university students	Online survey with a section for open-ended response	Descriptive and inferential statistical analyses

46	Sarah Khan, Rashid Azim Khan	2018	UAE	Qualitative	41 university students	A semi-structured interview	Thematic analysis
47	Rami A. Sa'di, Ahmad Abdelraziq, Talha A. Sharadgah	2021	Jordan	Quantitative	83 faculty members	Survey questionnaires	Descriptive statistics
48	Liaqat Ali, Nidal Abidal Hamid Hmoud Al Dmour	2021	UAE	Mixed Method	312 undergraduate university students in UAE	Questionnaire, semi-structured interview	Descriptive analysis, thematic analysis
49	Mariam Yousef Abduh	2021	Saudi Arabia	Mixed Method	26 EFL university teachers	Survey questionnaire, interview	Descriptive statistics
50	Dedy Yulianto, Nito Majid Mujtahid	2021	Indonesia	Qualitative Case Study Design	12 English teachers	Interviews, open-ended questionnaire	Framework proposed by Miles et al. (2014)

LOCATION

TABLE 2. Location

Location	Frequency
Malaysia	6
India	1
Indonesia	16
Middle East	19
Pakistan	1
China	2
Japan	1
Vietnam	2
Bulgaria	1
Romania	1

Based on Table 2, out of the 50 selected articles, it is found that most of the studies were carried out in the Middle East (n=19). There are 5 studies from Turkey, 4 studies from the United Arab Emirates, 4 studies from Saudi Arabia, 2 studies from Iran and 1 study each from Oman, Palestine and Lebanon. There are also a considerable number of studies from Indonesia (n=16). From 50 of the articles, it is found that 6 studies were from Malaysia. The studies either focus on educators' perceptions or the students' perceptions. There are also some studies that focus on the perceptions of both educators and students.

According to Sad and Niyazi (2019), undeniably, online learning is becoming more common nowadays with the widely available internet access to most people. The pandemic also has forced almost all educators and students to migrate from traditional face-to-face learning to a fully online and digital learning environment and this includes remote or online assessment. Therefore, from Table 1, it could be observed that there are at least 1 or 2 studies from other countries such as Pakistan, Japan and Romania that are intended to examine the perceptions from the students or educators on online assessment. It is predicted that there will be more studies in the future from countries around the world as online learning and online assessment are becoming more common as our world is moving to digitalization.

RESEARCH DESIGNS

TABLE 3. Research Designs

Research Design	Frequency
Mixed Method	18
Qualitative	18
Quantitative	15

As shown in Table 3, there is an almost fair distribution of research designs between mixed method, qualitative and quantitative research designs from the selected 50 articles. The most applied research design is mixed method and qualitative research method (n=18) and the least used (n=15) is quantitative research design. According to Creswell and Guetterman (2019), qualitative research design allows the researchers to obtain a thorough comprehension of a major phenomenon. Furthermore, rather than a numerical analysis of data, Ary, Jacobs and Sorenson (2010) describe the goal of a qualitative research is to gain a thorough understanding of a phenomenon. Since the articles that were selected for this review aim to explore the perceptions of the remote assessment, qualitative data will provide rich data for researchers to explore the opinions and thoughts from the respondents. Thus, qualitative research design is the most used among the 50 articles as most researchers aim to understand the respondents' points of view regarding remote assessment.

On the other hand, quantitative research design is applied when researchers intend to analyze trends, comparing groups or relating variables by collecting numerical data. Ary, Jacobs and Sorensen (2010) added that quantitative research is divided into two types: experimental and nonexperimental. Experimental research involves a study of the effect of a systematic manipulation of one variable on another variable. While in nonexperimental quantitative research, the researcher may look for relationships among them. Among the 50 articles that were selected for this study, there are a few studies that applied experimental research where the researchers used a few types of online assessment from different platforms such as Quizziz, Kahoot! and Google Form to examine their effectiveness as well as their perceived preferences on those online assessment platforms. Quantitative data outcomes are clearly represented by statistics and numbers, making it easier for researchers to answer their research questions (Creswell & Guetterman, 2019).

Next, mixed method research design is a method for collecting, analyzing, and "mixing" quantitative and qualitative methodologies in one or more studies to better comprehend a research problem (Creswell & Plano Clark, 2018 as cited in Creswell & Guetterman, 2019). Although mixed method research design was found to be quite controversial in the earlier years when it was introduced, the design has proved to be a strong research design and is able to provide an in-depth understanding of a research problem. This is because the design requires researchers to mix and merge both quantitative and qualitative data to obtain more detailed and

specific information which will strengthen the study (Creswell & Guetterman, 2019; Ary, Jacobs & Sorensen, 2010).

PARTICIPANTS

TABLE 4. Participants

Participants	Frequency
Primary school students	1
Secondary school students	2
Tertiary education students	28
Teachers	11
Combination of teachers and students	8

Based on table 4, the participants in the study are mostly from the tertiary education students (n=28), followed by teachers (n=11), primary school students (n=1) and secondary school students (n=2). There are also studies that combine participants among teachers and students (n=8). Findings gained as per the purpose of the study emphasize on how the students in the university viewed the online assessment and the challenges they are facing in completing and attempting the assessment at the university level. Several research on student perceptions of online assessment were undertaken after the Covid-19 outbreak prompted universities around the world to adopt remote learning (Mirza, 2021). Several universities have had success offering online courses by mixing educational technology with existing teaching practices.

Tertiary level students have been learning online since the early pandemic, thus it would be more convenient to explore their thoughts and responses towards being assessed remotely. Moreover, to gather the thoughts and perceptions of adult learners would be more advantageous as they can express their insights better. This can relate to the research design where qualitative and mixed method designs are mostly used. However, perceptions and challenges on online assessment faced by school students shouldn't be neglected as these students are also undergoing online learning and assessment.

RESEARCH INSTRUMENTS AND DATA ANALYSIS

TABLE 5. Research Instruments and Data Analysis

Types of Data	Frequency	Data Analysis
Survey questionnaires	36	Descriptive Analysis/ Inferential Analysis
Interviews	33	Thematic Analysis
Tests	6	Descriptive Analysis
Observations	2	Thematic Analysis

Based on Table 6, studies that employed quantitative design collected data from survey questionnaires (n=36) and tests (n=6). The survey questionnaires that were used in the studies were either close-ended questionnaires or Likert Scales. These studies typically reported descriptive analysis or inferential analysis on the perceptions and challenges on remote assessment. On the other hand, qualitative studies employed interviews (n=33) as the research instrument where the researchers either provided the respondents with semi-structured interviews or open-ended questionnaires. It is also found that there are 2 studies that adopted classroom observations to collect qualitative data to investigate the perceptions and challenges of remote assessment from the respondents. Both of these data types typically used thematic

analysis to analyze the data obtained from the research. For mixed method research design, the studies adopted a mix of qualitative and quantitative research instruments such as survey questionnaires with interviews/open-ended questionnaires or tests with interviews/open-ended questionnaires.

CONCLUSION

This scoping review on the perceptions and challenges of remote assessment reveals two major findings that answer the research questions. Firstly, the selected studies have a fairly equal distribution of the research design employed to examine the perceptions on the remote assessment implementation in the education context and the challenges of the implementation. Secondly, the study also reveals that most of the research papers aim to examine the perceptions of university students and the challenges they face when they utilize online applications for their graded assessment.

However, there are two limitations that apply to this study. The analytical results may be restricted to the research papers which are within the search terms. This review only includes article journals that are within the scope of education in addition to the within five years publications. Therefore, it is possible that there may be other papers that are suitable for the topic chosen for this review but are not selected due to the limitations of the search terms. This review also did not have specific types of journal selection. The authors used the Google Scholar search engine to obtain the selected articles without choosing any specific journal publications.

From the limitations mentioned above, there are a few suggestions that transpired from the analysis of the current study. Firstly, researchers may narrow the scope of the research within the ESL context only rather than having 'education' as the bigger scope, this will result in a more focused scoping review paper. Next, researchers may also have a more selective academic source or publications when selecting the articles and balance the number of the articles between the sources (such as papers from Scopus and ScienceDirect).

As mentioned, from the data analysis, it is found that the three types of research design employed by the selected studies are almost equally distributed. Mixed method and qualitative research methods were the two most opted research designs among the selected studies. Mixed method is one of the most utilized research designs and it may be due to its ability to provide an in-depth understanding on the research problem. Moreover, the selected studies aimed to examine the perceptions of educators and students toward remote assessment, therefore most researchers opted for qualitative research design as it enables researchers to obtain rich data from respondents thus allowing them to achieve better and reliable results.

From the data collected from the current study, most of the studies that employed mixed methods research design utilize survey questionnaires (to collect quantitative data) with interviews or open-ended questionnaires (to collect qualitative data) as research instruments because the instruments unquestionably provide clear and strong results and are able to answer the research questions. However, in the future, it is suggested that researchers could implement an intervention study to investigate how online or remote assessment affect students' participation or performance (to collect quantitative data) and to follow up with an interview session with the respondents to examine their perceptions on remote assessment (to collect qualitative data). Researchers may also observe if there are any relations between those variables.

The findings of this review also revealed that the least opted participants among the 50 selected studies are primary and secondary school students. Therefore, moving forward, it is hoped that there will be more studies on examining the perceptions of younger learners in school on online or remote assessment and the challenges that they face during the

implementation. The geography or location of the school may also be varied (urban, suburban or rural) where researchers can compare the results. In addition, their views and perceptions towards remote assessment might differ from university students as they are less independent in learning. Thus, it is believed that the results could add to the body of literature for the topic.

In conclusion, the findings revealed and suggestions for future research that transpired from this study are hoped to be useful and able to serve as a guide for future studies on the perceptions of students or teachers and the challenges they face as the implementation of remote assessment in education becomes more common as we move towards a digitalized world.

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