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Is it useful, acceptable, or controllable? Hong Kong primary school teachers' online assessment practices in changing time

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Abstract

Few studies have explored primary school teachers' classroom-based online assessment practices and underlying reasons. To fill this research gap, this study interviewed 48 Hong Kong primary school teachers to understand their online assessment practices and influencing factors when they were obliged to use it in their daily instruction under the influence of the COVID-19 pandemic. The findings revealed that the participants tended to use online tests/exercises for formative purposes instead of summative purposes. In addition, they tried online alternative assessment tasks, such as video or audio recordings, peer assessment and projects, and gave online feedback to students but less frequently than online tests/exercises. The school examination culture and the participants' perceived limited control over online test fairness may have restricted their summative use of online tests/exercises. Meanwhile, the participants' perceived positive usage norms, along with their favourable attitudes towards and confidence in using online tests/exercises probably enhanced their formative use of them. In addition, the participants' perceived neutral usage norms and limited external control of online alternative assessment tasks and feedback seemed to impede their use of them in classrooms.

Keywords: Online tests, Online alternative assessment, Online feedback, Theory of Planned Behaviour, Primary school teachers

Introduction

Although it is still unclear how deeply technology may transform educational practices, the advancement of technologies provides great opportunities for more engaging pedagogy and assessment in the 21st century. Classroom-based online assessment is the assessment conducted with any digital technologies for both formative and summative purposes in daily instruction and learning (Timmis et al., 2016). The scope of it includes "the online

submission of an assignment for marking by a human, the assessment of an e-portfolio or reflective blog, feedback delivered by audio files recorded on a computer and, most commonly, online computer-marked quizzes" (Jordan, 2013, p. 88). Accordingly, it can be classified into three types namely online tests/exercises, online alternative assessment tasks and online feedback.

Online assessment offers teachers increased variety and authenticity in the design of assessment tasks such as e-portfolios, simulations and interactive games and enables them to assess the skills that may not be easily assessed by other means (Joint Information Systems Committee, 2010). It can help schools maintain accountability by determining how much students learn after a period of time and teachers regularly monitor the learning process and provide ongoing individual learning support if necessary (Huber & Helm, 2020). Chen et al. (2023, p. 1) in their recent systematic review on the use of online assessment in over 30 countries demonstrate that online assessment enhances "measurement precision, interpretability, engagement, interaction, and teacher-parent communication". Despite the value of online assessment documented in the literature, online assessment is often regarded as an assessment innovation confined to lab settings and has seldom been used by teachers with many students in their real classrooms (Zhan & So, 2017). Teachers as classroom-based assessment designers and implementors play a very vital role in assessment change. Their online assessment practices and relevant decision-making can decide if it takes root in classrooms. To the best of the authors' knowledge, no studies have systematically explored teachers' classroom-based online assessment practices and the underlying reasons for these practices. This is the major research gap that the authors attempted to address in this paper. Two specific research questions are explored:

•RQ1: Which online assessment practices did Hong Kong primary school teachers conduct in their classrooms during school lockdowns caused by the COVID-19 pandemic?

•RQ2: What factors influenced Hong Kong primary school teachers' online assessment practices?

The study was situated in a primary school context during the COVID-19 pandemic considering two reasons. One reason is that the COVID-19 pandemic has facilitated the progress of online assessment at the classroom level. Before the pandemic, online assessments were typically used as a supplementary tool, while traditional paper-based exams were still the norm. However, with the sudden shift to online learning, educational institutions have had to rapidly develop and implement online assessment methods (Jimenez, 2020). As a consequence, teachers have accumulated considerable online assessment experience, which creates an opportune moment for researchers to investigate these recent experiences and seek an in-depth understanding of teachers' online assessment practices in real situations. The other reason is that the last three years have witnessed

increasing discussion of and studies on online assessment in classrooms under the influence of the COVID-19 pandemic. These studies predominate in higher education contexts (e.g., Kharbat & Daabes, 2021; Slade et al., 2022; St-Onge et al., 2022). Research on classroom-based online assessment at lower levels of schooling is especially needed because the assessment transition from offline to online mode has been more challenging for teachers in primary schools than those in higher educational institutions (Heikkilä & Mankki, 2023; Panadero et al., 2022). Primary school teachers may not have sufficient experience in using online systems, and their students are generally less mature and more dependent than adolescent and adult learners (Panadero et al., 2022). Primary school teachers may be the vulnerable group which worth particular research attention.

Literature review

Teachers' online assessment practices

Online assessment can be mainly used in three assessment scenarios in classrooms. The first scenario is that teachers convert traditional paper and pencil tests into an online version, which is usually found in the literature (Butler-Henderson & Crawford, 2020). Although online tests usually use standardised and multiple-choice question formats (Stödberg, 2012), they are easier to assess higher-order thinking than traditional ones via establishing virtual worlds and immersive environments (Hickey et al., 2009). The second scenario is that teachers conduct online alternative assessment tasks such as e-portfolios, blogs, wikis projects and forums other than online tests/exercises (Jordan, 2013). These online alternative assessment tasks are believed to enhance students' engagement, collaboration and reflection (Bennett et al., 2012; Zhan et al., 2021). The third scenario is that teachers can use digital tools to give students video, audio and written feedback (Zhan, 2023). Multimodal feedback can make teacher feedback more timely, accessible and detailed, thus helping teachers to continuously monitor students' e-learning (Zhan, 2023). This paper categorises teachers' online assessment practices into three types namely online tests/exercises, online alternative assessment tasks and online feedback based on the above-mentioned three major online assessment scenarios in daily instruction.

  A limited number of studies have explored school teachers' online assessment practices under the influence of the COVID-19 pandemic. Aslan et al. (2021) interviewed 18 secondary school teachers in Turkey and found they used only assignments, end-of-unit tests, and online course participation to evaluate students' online learning. Nilsberth et al. (2021) interviewed 42 secondary school teachers in Sweden and found that the participants needed to obtain learning evidence through various assignments, oral examinations and tests due to the pressure of national examinations, and had difficulties in providing students with online feedback. Drijvers et al. (2021) issued questionnaires to 1,719 secondary school

teachers in Belgium, Germany and the Netherlands to understand mathematics teachers' distance teaching practices, including assessment practices. They reported similar findings, as teachers had difficulty providing feedback to their students through digital tools. Sandvik et al. (2021) explored Norwegian secondary school students' perceptions of online assessment practices and reported that students were assigned more homework, received less feedback from teachers and engaged in less group work during the period of COVID-19 distance learning.

The abovementioned studies revealed that school teachers faced challenges in conducting e-assessment, especially online feedback, and tried to maintain their teaching routine by adapting their assessment practices to an online environment. To the best of the authors' knowledge, few empirical studies have focused on the online assessment practices of primary school teachers who teach the most vulnerable young learners. An exception is Panadero et al. (2022), who involved Spanish primary school teachers in their comparative study of the changes in classroom assessment practices caused by the COVID-19 pandemic. They found that compared with higher education instructors, primary school teachers made more substantial assessment changes by lowering their assessment standards, being more flexible in grading and decreasing the use of rubrics and feedback.

Factors influencing teachers' online assessment practices framed by the Theory of Planned Behaviour

To synthesise a variety of factors influencing teachers' online assessment practices, the Theory of Planned Behaviour (TPB) (Ajzen, 1991) might provide an appropriate conceptual framework. As explained by Minooei et al. (2020), the TPB is a systematic framework to explain human behavioural choices. According to this theory, humans' behaviour and intentions are explained by three types of factors, namely attitude, subjective norms and perceived behavioural control, which are discussed later. This theory has been applied to investigate the intentions and behaviours associated with teachers' acceptance of technology (e.g., Teo et al., 2016; van Twillert et al., 2020) and formative assessment (e.g., Yan & Cheng, 2015; Yan et al., 2021). Thus, the TPB could be used as an interpretive framework to explain the online assessment practices explored in this study.

Teachers' attitudes towards online assessment are closely related to their beliefs about the usefulness of online assessment for learning and/or teaching. Multiple studies have shown that if teachers perceive online assessment to be more useful, they are more likely to use it in their daily teaching. For example, Lee et al. (2012) found that American school teachers' positive attitudes towards online assessment were positively correlated with their implementation of it. Recently, Tang et al. (2022) echoed these findings in a study conducted in a Vietnamese school context.

Subjective norms concern perceived social pressure and the influence of others' opinions on one's decision to perform (or not perform) specific actions (Ajzen, 1991). Some scholars have found evidence that subjective norms influence teachers' assessment practices. Recently, Panadero et al. (2022) reported that compared with university instructors, primary school teachers in Spain faced less pressure to maintain accountability because of the Spanish government's loose policy of quality assurance in school education during the COVID-19 pandemic. As a result, primary school teachers graded more flexibly and lowered their assessment standards.

Perceived behavioural control considers both internal conditions (e.g., individual competency to undertake online assessment) and external conditions (e.g., the presence of factors that may facilitate or hinder online assessment) (Valle et al., 2005). Primary school teachers may need to improve their digital and assessment literacy to prepare for online assessment (Bai & Lo, 2018; Lau & Lee, 2021). In a recent study, Lau and Lee (2021) called for improving Hong Kong primary school teachers' digital competency to achieve effective online teaching and assessment. Both Aslan et al. (2021) and Drijvers et al. (2021) found that school teachers lacked confidence in conducting reliable and valid online assessment.

Switching to online assessment involves challenges and external barriers. Online assessment may cause public concerns about equity in education considering the variations in students' socioeconomic backgrounds, device availability, Internet connectivity, and learning spaces (Fuller et al., 2020). Meanwhile, online assessment is conducted without face-to-face supervision, which gives students the opportunity to cheat by referring to their notes, searching the Internet, teleconferencing with peers, and asking for help from their parents (Middleton, 2020; Nisbet & Shaw, 2022). Other challenges have been reported, such as heavy workload, insufficient training in online assessment techniques and student disengagement (e.g., Montenegro-Rueda et al., 2021; Ng et al., 2020; Neuwirth et al., 2021; Pan et al., 2022; Sandvik et al., 2021).

To the best of the authors' knowledge, TPB has been seldom used as a theoretical framework to explain teachers' online assessment practices. Although several influencing factors have been revealed by the literature, the specific causal relationships between these factors and types of online assessment practices are still unknown. This interview study formulates some hypotheses regarding the causal relationships between the identified factors and teachers' online assessment practices.

Methodology

Study background

Since the late 1990s, the Hong Kong government has shown its determination to promote e-learning by implementing four 'Information Technology in Education' strategies and launching a series of major initiatives, such as the Pilot Scheme on E-Learning in Schools, the Bring Your Own Device (BYOD) project, and the Community Care Fund Assistance Programme (Lee & Wang, 2019; Ng et al., 2020). These measures have enhanced schools' IT infrastructure and e-learning resources (Hong Kong Education Bureau, 2015) and are intended to minimise the digital divide among students from different socioeconomic backgrounds (Hong Kong Education Bureau, 2021a).

  Since 23 January 2020, Hong Kong has experienced five waves of COVID-19 infection and has adopted stringent restrictions to prevent the spread of the virus. There have been two large-scale school lockdowns, the most recent taking place in January 2022 at the outset of the fifth wave of the pandemic. To help teachers handle online teaching during the lockdowns, the government provided teachers with training webinars and teaching references (Hong Kong Education Bureau, 2021b), but it provided little guidance on how to assess students' e-learning. Schools and teachers had autonomy in how to assess students' e-learning and thus accumulated a great deal of new online assessment experience. Against this backdrop, this study explored the online assessment experiences of Hong Kong frontline teachers during the second large-scale school lockdown.

Participants

Twelve local schools were approached and invited to participate in the study via the established school networks by the authors and invitation letters. Nine schools accepted the invitations. In these schools, 48 teachers who had conducted online teaching during the school lockdowns consented to participate in individual interviews. The participants varied in terms of gender, subject taught (Chinese language, English language, maths, and general studies), grade taught, years of teaching and teaching position. Their demographic information is listed in Table 1. The participants' diversity generated rich data to answer the research questions (Creswell, 2012).

Data collection

The individual interviews were semi-structured and had two primary focuses. First, they sought to make sense of the primary school teachers' online assessment practices. As such, the interviewers asked the participants about the timing, frequency, and purposes of their online assessment practices. Sample interview questions are "What kind of online tests or exercises did you use in your teaching during school lockdowns? When and how often did

Table 1 Demographic information of participants

Demographic information		Number of participants
Gender	Male	17
	Female	31
Subject taught	Chinese language	10
	English language	14
	Math	15
	General Studies	9
Grade taught	Key stage 1	4
	Key stage 2	17
	Both	27
Years of teaching	1–5	12
	6–10	14
	11–15	6
	More than 15	16
Position	Vice-principal	5
	Subject head	13
	Teacher	30

you use them?" and "For what purposes did you use online tests or exercises in your teaching?". Second, the interviews sought to explore the factors facilitating or inhibiting the participants' online assessment practices. Sample interview questions are "What difficulties did you encounter when you implemented online tests or exercises in your lessons?" and "What factors do you think helped you to implement online tests or exercises effectively in your class?". The individual interviews were conducted in Cantonese through a videoconferencing tool (Zoom) and audiotaped. Zoom allowed the participants to share the assessment platforms and tasks they used with the first author to give a richer account of their online assessment practices (Archibald et al., 2019). The average time of interviews was half an hour.

Data analysis

The interview data were analysed using reflexive thematic analysis, as this approach can provide a rich yet complex account of patterns in data and generate unexpected ideas (Braun & Clarke, 2006, 2019). The data analysis followed the six steps: (1) familiarising with the data, (2) generating codes, (3) developing themes, (4) revising potential themes, (5) naming themes, and (6) writing up the report. Themes were 'produced at the intersection of the researchers' theoretical assumptions, their analytic resources and skill and the data themselves' (Braun & Clarke, 2019, p. 594).

The data were first open-coded by iterative reading. After open coding, the initial codes were categorised and condensed into subthemes and then themes according to research questions and relevant literature on online assessment practices and the TPB framework. For example, the various online assessment practices described by the teachers were open-

Table 2 Coding scheme of interview data

Themes	Subthemes	Categories	Open codes
Classroom-based online assessment practices (corresponding to RQ1)	Online tests/exercises	Online tests/exercises for summative purposes Online tests/exercises for formative purposes	Game-based e-quizzes, online homework, published e-exercises …
	Online alternative assessment tasks	Online alternative assessment tasks (individual-based) Online alternative assessment tasks (group-based)	Online group discussion, video recording, online peer assessment, online collaborative project …
	Online feedback	Online message Audio feedback	WhatsApp feedback, chatroom messages, Teams message …
Influential factors (framed by TPB) (corresponding to RQ2)	Teachers' attitudes towards online assessment	Attitudes towards online tests/exercises Attitudes towards online alternative assessment tasks Attitudes towards online feedback	Student engagement, enjoyment, enhanced interaction, assessing higher-order thinking skills, …
	Subjective norms of using online assessment	School's view Colleagues' view Parents' view Students' view	Students' interest, parents' acceptance, school encouragement …
	Perceived behavioural control of online assessment	Perceived external control Perceived internal control	Ability to design e-tests, ability to interpret score reports, tight teaching schedule, students' distraction …

coded and then categorised into three types of online assessment under the theme of 'classroom-based online assessment practices'. In another instance, all of the influencing factors were initially coded and then classified with reference to the TPB into three types under the theme of 'influencing factors'. All of the subthemes and themes were checked against the entire dataset iteratively. Table 2 presents the coding scheme of this study. The first author and a research assistant used NVivo 12 to store, range and code the interview data. Any disagreement in coding between the first author and the research assistant was resolved by discussion and participant confirmation.

Findings

Hong Kong primary school teachers' online assessment practices

The participants reported a variety of online assessment practices, which may be broadly categorised into three groups, namely online tests/exercises, online alternative assessment tasks and online feedback. It was found that the online tests/exercises for formative

purposes were most frequently used by the participants, while audio feedback was the least frequently used by them.

Online tests/exercises

Eleven of the participants mentioned that they had used platforms such as Google Forms and Microsoft Forms to implement summative examinations or asked students to finish time-limited paper-and-pencil tests in front of the camera and upload the finished papers to the school's learning platform. Although the teachers used these online tests for summative purposes, they did not enter the examination marks into students' transcripts. They used phrases such as "for reference", "to self-check teaching quality", and "to understand the status of student learning" to explain their usage of the online test results. The rest of the participants mentioned that their schools had cancelled or postponed summative examinations during the school lockdowns.

Interestingly, all of the participants adopted online tests/exercises for the formative purposes of previewing, monitoring, and consolidating students' e-learning. The participants used online exercises or assignments in three ways. Some used platforms such as Edpuzzle, Google Forms, Quizizz, and Nearpod to assign exercises as learning tasks before the lesson or homework to students. Others made use of the online exercise platforms that their schools had used prior to the outbreak of COVID-19, such as e-Smart, Planet II, and Chinese Reading Space, to assign students homework. All of the participants used learning management systems such as Google Classroom, Microsoft Teams, and E-Class to collect students' scanned paper-and-pencil homework.

Most of the teachers used game-based online quizzes (e.g., Kahoot!, Nearpod Time to Climb, and Wordwall) to enhance their students' online class participation and determine how well they were following the content taught. For example, Participant 30 said:

They [the students] were very happy when I used a Kahoot! Test to end the class. Kahoot! has background music and was very appealing to them. It also helped me to track their learning progress. After the students finished the Kahoot! Test, they became very excited when the winner's podium appeared on the screen.

Online alternative assessment tasks

The participants reported their usage of different types of online alternative assessment tasks. Twenty-nine participants reported using video or audio recording as an online assessment task. Most of these participants were Chinese or English language teachers. They asked their students to record their speech and upload the files to the learning platforms for evaluation. However, the participants reported that they only occasionally used video or audio taping. The following extract provides an illustrative example:

When I taught classical Chinese poems, I required the students to videotape their recitation of these poems. Sometimes, I also asked them to play the role of teacher themselves to teach writing strategies and videotape their teaching. They needed to upload the video clips to Flipgrid to receive feedback. I assessed their Chinese speaking ability accordingly. (Participant 19)

Online group discussion, peer assessment, and projects that required collaboration among students were used by fewer participants than video or audio recordings. When using these online alternative assessment tasks, the participants tended to use them with senior students and to simplify the assessment requirements. For example, they asked students to use emojis to 'like' a peer's work or to write short comments noting their appreciation on Padlet:

I encouraged my students to review others' work on Padlet. I told them that if they liked a peer's work, they could paste a 'like' icon or write short comments such as 'well done' and 'good job'. The student who received the most 'likes' was rewarded with a small gift. (Participant 11)

Online feedback

The use of online feedback was reported by almost half of the teachers. However, most of them wrote their feedback in chat rooms or the message areas of learning platforms, which the participants did not perceive to be a major change. For example, Participant 20 stated as follows:

The difference is that before the school lockdowns, we wrote the comments on students' exercise books, and now we use the Apple Pencil to write on an iPad or type on a laptop. The frequency of giving feedback to students did not change.

Only three participants mentioned that they tried to audiotape their comments and send the recordings to the students and their parents via social media. For example, Participant 3 said:

I recorded my comments and sent them to the student's parents via WhatsApp. Parents could have a conversation with me after they receive my comments. If I had time, I would do it more frequently.

Influencing factors

Teachers' attitudes towards online assessment

Teachers' attitudes towards online assessment were identified to be closely related to their perceived usefulness of different types of online assessment. When they mentioned the usefulness of online tests/exercises, all of the participants listed relevant advantages, such as time-saving due to automatic evaluation, timely automated feedback, colourful design, and student enjoyment of games. The following extract shows this point of view:

I conducted pre-test and warm-up activities and assigned homework using Kahoot! and Nearpod. These platforms offer entertainment for students and can also check their learning progress in real-time and give timely feedback to me. They are very convenient and useful. (Participant 13)

As for online alternative assessment, some of the participants mentioned its usefulness in engaging students and better assessing speaking ability or higher-order thinking skills such as problem-solving skills. Some of the participants mentioned that online feedback could be timely and accessible at any time and provide more details. For instance, Participant 1 said:

Students do not need to wait until they get their assignments back to receive my comments. They can read them online as soon as I write them. Parents can get access to my feedback at their convenience. Moreover, online feedback is more detailed because we do not have the chance to meet students face to face for explanations.

Subjective norms of using online assessment

Most of the participants mentioned the positive subjective norms of using online tests/exercises for formative purposes, especially students' fondness for game-based online tests. The following excerpt offers an example:

Our students belong to the digital generation and like to use the iPad to play games. As Kahoot! and Nearpod feature strong game elements, they like these game-based quizzes very much. To hold their attention online, I used Kahoot! Tests more frequently than other assessment tasks. (Participant 17)

As for online alternative assessment and online feedback, the participants reported that their schools seldom gave relevant guidance, and parents held neutral attitudes towards their use. For example, Participant 2 said:

Of course, parents want us to assign more tests or assignments to their children online. If we ask our students to do other kinds of online assessment tasks, such as peer assessment or projects, they do not object but may not be too supportive.

Interestingly, all the participants sensed their schools' hesitation to use online tests for summative purposes and parents' resistance to entering online test results into students' transcripts. For example, Participant 27 mentioned:

Our school postponed summative assessment and did not do it online. I think our school is concerned with examination fairness and technical problems. So are parents. They might object if we entered their children's online test marks in their transcripts. You know, parents attach great importance to examination marks.

Perceived behavioural control of online assessment

Most of the participants reported that they had confidence in using online assessment, especially online tests/exercises. Some of the older participants talked about their difficulties in designing and implementing online assessment when they started to use it. For example, Participant 16 said:

At the very beginning, I had a lot of difficulties in preparing for online assessment tasks because of my limited IT skills. I spent a lot of time catching up with my colleagues. Now, I feel more confident in using some common platforms like Kahoot! and Google Forms, but I still need to learn a lot to improve the effectiveness of my online assessment practice.

Overall, all of the participants reported feeling more confident and less anxious about conducting online assessment practices.

When remarking on the perceived external control of online assessment, most of the participants mentioned a greater number of situational constraints than enablers. Technology was a double-edged sword in the participants' eyes, as it allowed teaching and assessment practices to continue during school lockdowns but also constrained synchronous interactivity due to network and technical problems. Moreover, the participants expressed concern about students' equal access to online assessment despite the supporting measures taken by the government and schools to ensure that no child was denied access during school lockdowns. Equal access to online assessment was related not only to device availability, Internet connectivity, and learning space but also to parent supervision and guidance. The participants worried that students from families of lower socioeconomic status would fall behind academically, as illustrated below.

I observed that some junior students from lower-income families had great difficulties in handling online assessment. They need their parents' help badly. However, their parents usually lack the IT skills and time to help them. So, some students from low-income families are likely to lag behind. (Participant 18)

All of the participants mentioned that cheating was a significant threat to the fairness of online tests, especially when they were used for summative purposes. In particular, the participants expressed concern that they lacked effective measures to monitor students to prevent cheating. They thought that even if they trusted their students, the students might also have opportunities to cheat by looking for information online or in textbooks or by asking for help from older family members. In addition, the participants believed that maintaining the fairness of examination was extremely important to avoid parents' complaints, as parents attached great importance to examination marks due to the influence of Hong Kong's examination-oriented culture. Therefore, the cancellation and postponement of summative examinations during the period of the school lockdowns appeared to be the wise decision for a majority of participants. For example, Participant 45 said:

We could not control the situation if they had had online examinations at home. We would not have known if our students opened their textbooks or got hints from their parents or house helpers. If we cannot guarantee the fairness of examinations, we are likely to hear parents' complaints.

Students' disengagement from online assessment also affected the participants' perceived control of online assessment. More than half of the participants mentioned that students, especially junior students, lacked self-discipline and were easily distracted online. For example, Participant 42 mentioned:

Primary students are still young and less self-disciplined. For example, they might forget to submit their work online and do other things in breakout rooms or be idle while taking online tests. They rely on teachers' guidance, but we may not be able to provide guidance in real-time while they are taking online assessment tasks.

A lack of self-discipline reduced the students' engagement with online assessment, especially when teachers exercised only limited control during online alternative assessment tasks such as group discussions, peer assessment and projects. The following extract reflects this point of view:

You do not know what happens in breakout rooms because you cannot supervise all of the students at the same time. You have to jump from one room to another. When you are not in their room, the students might talk about irrelevant topics. (Participant 27)

Some of the participants also reported that students with low learning motivation were less likely to engage in online assessment activities. In their eyes, demotivated students might perform more poorly in online assessment than in in-person assessment, where teachers could remind them to concentrate. Moreover, some of the teachers believed that their students, especially junior students, lacked the adequate technical capacities to cope with online alternative assessment tasks such as videotaping and co-working with classmates on the learning platform and thus felt disengaged during such assessment activities.

In addition, some of the participants worried about keeping up with the teaching schedule when online teaching time was compressed and were thus forced to sacrifice some online alternative assessment tasks that took up a great deal of teaching time but conferred fewer learning benefits. For instance, when asked why online group discussions rarely took place, Participant 21 answered:

The class time of an online lesson is shorter than a face-to-face lesson by about 10 minutes. It is impossible for us to finish our teaching tasks as scheduled. If we do group discussions in breakout rooms, we need to spend almost a lesson. To be honest, we need to think about time input and learning output.

Discussion

A variety of Hong Kong primary school teachers' online assessment practices

This study scrutinised primary school teachers' online assessment practices during school lockdowns caused by the fifth wave of COVID-19 in Hong Kong. The participants reported various online assessment practices, including online tests/exercises, online alternative assessment tasks and online feedback. Some participants reported that although they conducted online tests for summative purposes, they did not enter students' marks into their transcripts to decrease the stakes of the tests. Other participants stated that their schools cancelled or suspended the summative examinations during school lockdowns. University teachers have been reported to make efforts to maintain summative assessment systems during COVID-19 (e.g., Kharbat & Daabes, 2021; Slade et al., 2022; St-Onge et al., 2021). Unlike university teachers, the participants in this study appeared to avoid using online tests for summative purposes, which echoes the findings of Panadero et al. (2021). Their study showed that 44% and 38% of primary school teachers reported that they decreased their use of mid-term and final examinations, and almost half of them did not use mid-term and final examinations at all. Although our findings are similar, Hong Kong teachers' decision-making appeared to be influenced by Chinese examination culture instead of constraints caused by the COVID-19 pandemic, such as reduced instructional contact and little time to adjust materials reported by Panadero et al. (2021). Chinese examination culture makes parents and students emphasise examination fairness, which allows students equal access to the same examination task and is fairly assessed by teachers (Zhan & Wan, 2010). This might not be easily achieved in an online assessment environment.

Interestingly, almost all of the participants reported the use of online tests/exercises for formative purposes. They used learning management systems to issue or collect students' assignments to monitor students' learning, echoing the findings of Drijvers et al. (2021) and Aslan et al. (2021). Moreover, the participants in this study adopted audience response systems to conduct game-based quizzes such as Kahoot! Tests and the Nearpod Time to Climb activity to motivate students and assess their learning progress. This finding implies that when online tests/exercises become low stakes and involve game elements, they are more likely to engage young students. Online game-based tests/exercises have the potential to enable new forms of assessment for young students (Courtney & Graham, 2019; Hautala et al., 2020).

Furthermore, it was found that fewer participants tried online alternative assessment tasks that required student collaboration, such as group discussion, peer assessment and projects in their online teaching. The decreased use of group work for assessment in emergency remote teaching was also reported by Panadero et al. (2022) and Sandvik et al. (2021). Furthermore, only three of the participants reported undertaking trials of audio-recording

comments. This finding suggests that teachers may have difficulty in giving feedback using digital technology. Teachers' difficulties in using digital feedback have also been reported by other studies conducted in middle schools (e.g., Drijvers et al., 2021; Nilsberth et al., 2021). Compared with middle school teachers, primary school teachers may encounter more difficulties in doing online alternative assessment tasks and giving online feedback since young students need teachers' in-person guidance, close monitoring and direct observation when they are engaged with such online assessment practices, as revealed by the observations of the participants in the study.

Influencing factors through the lens of the TPB

Teachers in Hong Kong were largely left to decide which online assessment practices best suited their students during COVID-19 lockdowns. Therefore, it is important to understand the factors influencing their decision-making. This study examined the influencing factors through the lens of the TPB and sought to generate some specific causal hypotheses.

This study infers that school examination culture and perceived limited control of examination fairness appear to negatively influence teachers' decisions on administering online tests for summative purposes. The data analysis revealed that significant others' opinions (especially those of school panels and parents) towards online tests for summative purposes greatly influenced the teachers' corresponding practices, such as cancellation or suspension of summative assessment or not entering the online test results on students' transcripts. This subjective norm reflects examination-oriented culture in the Chinese context, which emphasises examination fairness (Zhan & Wan, 2010). Two factors related to the participants' perceived less external control of examination fairness in this study. The first factor was the perceived uncontrollability of cheating, which appears to be a common concern shared by teachers across the educational spectrum (e.g., Alsan et al., 2021; Kharbat & Daabes, 2021; St-Onge et al., 2021). Student cheating on online assessment might threaten academic integrity and the credibility of schools (Hollister & Berenson, 2009; Slade et al., 2022). The second factor was the impossibility of ensuring students' equal access to online assessment tasks. This factor has also been widely acknowledged in the literature (e.g., Aslan et al., 2021; Fuller et al., 2020; Lee & Wang, 2019; Nisbet & Shaw, 2022).

It can be deduced from the findings of this study that teachers' perceived favourable norms, positive attitudes towards and increasing internal control of using online tests/exercises positively predict their formative use of them in the classrooms. The participants in this study were aware of the usefulness of online tests/exercises and showed positive attitudes towards them. Teachers' positive attitudes towards online assessment strongly predicted its use in their classrooms (Lee et al., 2012; Tang et al., 2022). In addition, the participants described positive subjective norms regarding this type of online

assessment, especially given their students' fondness for it. To actively engage their young students in online lessons, most of the participants used game-based online tests. The participants also showed increasing confidence in using online tests/exercises due to the test platform's user-friendliness and their accumulated experience using test tools. Ninković et al. (2021) found that teachers' information and communications technology (ICT) self-efficacy positively predicted their creation of online assessment materials. COVID-19 became a catalyst for developing teachers' ICT and assessment competencies, and teachers were better prepared for online assessment than before COVID-19 (Ninković et al., 2021).

The findings of this study lead to a hypothesis that teachers' awareness of others' neutral attitudes towards and limited external control of online alternative assessment tasks and online feedback appear to hinder their corresponding assessment practices in class. Although the participants recognised the usefulness of online alternative assessment tasks and online feedback, they appeared to use them less frequently in their online teaching. Compared with the favourable norms of using online tests/exercises for formative purposes, the participants reported that schools and parents had a neutral attitude towards online alternative assessment tasks and online feedback. Therefore, the participants faced less pressure to engage in these practices. Even more importantly, they felt powerless in controlling these two types of online assessment due to a lack of close supervision, time constraints and students' disengagement. Among these factors, students' disengagement is important because students are the ultimate users and intended beneficiaries of online assessment tasks. Disengagement has been observed more frequently among younger learners, who are less self-disciplined and more dependent on adult supervision (Pan et al., 2022; Panadero et al., 2022). Therefore, how to provide timely scaffolds and motivate primary school students to engage in online alternative assessment tasks and with online feedback should be further researched.

Conclusion

The findings of this study contribute to our understanding of school teachers' classroom-based online assessment practices, which have been afforded insufficient attention in earlier research. Most importantly, this study explored influencing factors through the lens of the TPB and produced specific causal hypotheses which call for large-scale survey studies.

This study has generated practical implications for primary school teachers to embed online assessment into their daily instruction. The COVID-19 pandemic provides an opportunity to break away from content-heavy summative assessment and to make effective use of technology to enhance formative assessment (Hughes, 2020; Yang & Xin, 2022). In examination-oriented educational contexts such as that of Hong Kong, online

tests/exercises for formative purposes may be acceptable and controllable in primary schools. Teachers and students can use the outcomes of online tests/exercises diagnostically and amend their teaching or learning by addressing areas that reflect poor performance. With the help of technology, teachers and students can regularly do online tests/exercises, thus using them not primarily to assess learning but rather to further and encourage learning at the classroom level. In addition, to promote the use of online alternative assessment tasks and online feedback in classrooms, schools need to establish assessment for learning culture and adopt a whole-school approach to guide teachers' assessment implementation. Teachers also need to provide more cognitive and affective scaffolds to get students involved.

Despite the significance of the study, it has limitations which call for further research. First, this study focused on primary school teachers' online assessment practices during school lockdowns caused by the COVID-19 pandemic, which amplified the importance and urgency of online assessment (Jimenez, 2020). Primary school teachers' online assessment practices in the new normal might be different. Second, this study identified some findings similar to those at the middle school level but could not tell if such findings are more typical for primary school teachers than for middle school teachers. A comparative study helps to resolve this concern. Last but not least, this study used semi-structured interviews to collect data. To enhance the trustworthiness of the findings, other data sources such as teachers' online assessment plans, the screen-captured online assessment task interfaces and interviews with their students need to be collected in a future study.

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Declarations

Competing interests
The authors declare that they have no competing interests.

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