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iClass Assessment - A Pen-Based Assessment and Feedback Platform

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Abstract—In recent years, the demand of in-class interaction and assessment for learning is rising. There is more emphasis on using electronic tools for assessment for learning in order to facilitate teachers seeking to identify and diagnose student learning problems, and providing quality feedback for students on how to improve their work. This paper discusses the challenges of e-assessment and introduced a pen-based assessment and feedback platform developed in Hong Kong. The platform can provide an efficient and effective channel for providing feedback so as to monitor any learning difficulties and help teachers to diagnose students' prior skills and abilities, providing feedback for them to adjust the curriculum or provide additional assistance accordingly.

Keywords: Cloud-based Learning and Assessment, Learning Analytics, School of the Future, Future Classroom

I. INTRODUCTION

Assessment drives student to learn in education. "Students can escape bad teaching: they can't avoid bad assessment" (Boud, 1995)[1]. Assessment is an essential element in education whether it is used for the purpose of diagnosing student needs, giving feedback or collecting evidence of student learning. Assessment influences student approach to learning (Trigwell & Prosser, 1991) and it gives students feedback on their progress, providing them opportunities to demonstrate whether or not they have achieved the Intended Learning Outcomes and at what level they have achieved them. At the University of Hong Kong (HKU), an assessment policy has been approved at the institutional level to provide quality assurance and standards for both teachers and students.

With such teaching and learning policy in place, it is important to ensure that teachers will have the means and tools to collect evidence of student learning to make a judgment on what level a student has performed against the Intended Learning Outcomes in order to proceed to the next level of study and to protect our academic standards. In addition, it is important to have an efficient and effective channel for providing prompt feedback for students so as to address any learning difficulties observed. Some analytical and statistical tools which can provide feedback for teachers to diagnose students' prior skills and abilities and adjust the curriculum or provide additional assistance accordingly are also essential in the new curriculum. To cope with the aforementioned challenges, iClass Assessment was developed in the e-Learning Technology Development Laboratory of the University of Hong Kong for teachers to assess, record and analyze class performance.

II. CHALLENGES OF ASSESSMENT

In many colleges and universities, students are asked to submit their assignments through the on-line platform. Since most assignments are handwritten, teachers or tutors have difficulty providing feedback and marks on the assignments in softcopies. They are required to either print out the assignments and mark on the physical copies, or just give an overall text base feedback in the comment field of the assignments. Teachers cannot write comments, circle mistakes, or underline keywords on the assignment as conveniently as marking a hardcopy assignment. Being able to draw and write while providing feedback is especially important for those courses which involve diagrams, graphs or flowcharts. A system that can facilitate teachers to mark assignments directly through a pen-based on-line system would save workload, encouraging teachers to provide more feedback.

III. ELECTRONIC TOOL FOR THE ASSESSMENT FOR LEARNING

In recent years, there is a great demand to change assessment practices. Educators have been putting more emphasis on assessment for learning, a process in which teachers seek to identify and diagnose student learning problems, and provide quality feedback for students on how to improve their work. The concept of assessment for learning is not new. It is underpinned by the confidence and belief that every student is unique and possess the ability to learn, and that we should develop their multiple intelligences and potentials. To promote better learning, assessment is conducted as an integral part of the curriculum, learning and teaching, and feedback cycle.

Assessment, as a practice of collecting evidence of student learning, should be designed in a way that assesses what students are expected to learn and the learning processes that lead there. Different modes of assessment are to be used whenever appropriate for a comprehensive understanding of student learning in various aspects. Feedback can then be given to students and teachers to form basis on decisions as to what to do to improve learning and teaching. These modes can be classified as: (1) Assessment for learning; (2) Assessment as learning, and (3) Assessment of learning.

Assessment in school can be formative and summative depending on the purpose for which the assessment is designed. Formative assessment is carried out informally or formally in daily classroom learning and teaching throughout the school term/year. The primary purpose is to provide feedback to learning and teaching. Summative assessment is

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conducted at the end of the learning and teaching process. It focuses on the product of learning mainly and is primarily used for measuring what a student has learned and how much has been achieved at the end of the school term/year[3].

IV. THE NEW E-ASSESSMENT TOOLS

To cope with the aforementioned challenges and new demands on assessment for learning, iClass Assessment was developed to address the needs of the different assessment modes. The objectives of the tool are:

1. To provide a user-friendly tool for teachers to collect, mark, give feedback and redistribute the marked assignments to students in an effective way.
2. To provide an efficient and effective channel for providing feedback so as to monitor any learning difficulties.
3. To provide some analytical and statistical tools which can help teachers diagnose students' prior skills and abilities, providing feedback for them to adjust the curriculum or provide additional assistance accordingly.
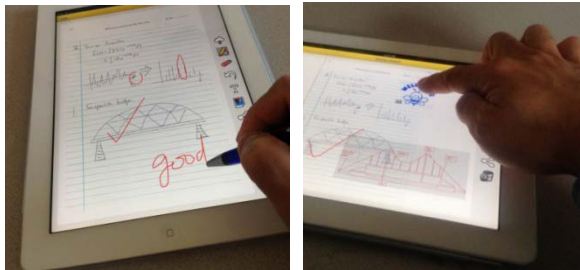
V. THE ICLASS ASSESSMENT

One of the main assessment aims is to provide timely and adequate feedbacks for students so that they can learn from their mistake and know what to improve next time. However many homework submission system can only allow teachers to give a general comment on the assignment using textual feedback. It is not possible, or very difficult, for teachers or tutors to write feedback and mark on the softcopy. They are required to print out the assignment and mark on the physical copies, then re-scan the marked copies and upload it to the system again. Such complicated processes had often discouraged teachers to give adequate feedback.

An on-line pen-based assessment tool is developed. Teachers can use this system to mark assignments, write comments, circle mistakes, or underline keywords on the assignment as convenient as marking a hardcopy assignment. These requirements are especially important for those courses which involve diagrams, graphs or flowcharts. It can maintain the quality and convenience of giving feedback even when all assignments are going to be submitted on-line. Some convenient features such as standard answer e-stickers, highlight pen, standard comments, will also be developed so as to simplify the feedback writing process and encourage teachers to give in-depth feedback to students. The feedback can be easily distributed back to students after the assessment process by just a simple click.

SUMMARIES

iClass Assessment can facilitate the use of technologies to enrich the quality and efficiency of assessment, shorten the feedback loop and provide a more convenient and in-depth analysis on the students strengths and weaknesses. In the new curriculum, the demands on teacher-students interactions are raising. However, it is difficult to conduct efficient and effective assessment in a large lecture environment. This project provided a platform to cope with the demand so that assessment feedback, score grading and performance distribution information can be collected and recorded on a large scale and in a convenient way. The solution also enriched the functionality of the Learning Management System and catalyzed the adoption of e-learning in higher education.

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