

## Diversifying learning platforms with i-class and e-textbooks in the 21st Century classroom

The i-class and E-textbook learning interface offers a unique opportunity to both students and teachers to cross-educational boundaries. This digital, cloud-based platform allows for students of multiple cultural dispositions to share a single educational venue in a way that no single student may feel isolated or overwhelmed. This platform can identify the *general* strengths and weaknesses of a class such that the entire class may improve as a whole. Further, the teacher has exclusive access to the performance of those students who require more attention, but can administer it not at the expense of the time of the entire class. All of this is just to state the overall efficiency of this teaching method in principle. The actual e-classroom environment offers a unique set of tools that students can use to creatively engage with their education that allows for quantifying, but not at the expense of student creativity—no student feels isolated for their responses in spite of the creative freedom the learning platform allows for. Furthermore, the “blind peer review” feature gives students access to each other’s answers and allows for constructive responses without the risk of isolating individual students. Thus, for example, “common” mistakes may be identified without the judgment of other students. Overall, this venue gives room for positive feedback from students without the risk of negative feedback.

This platform, therefore, allows for many of the pedagogical virtues sought after without a number of traditional practical costs. In sum, it enables general assessment capabilities without jeopardizing attention to students based on individual needs by giving teachers access to the most objective and comprehensive venue for assessing student data. Furthermore, the teacher is able to tailor his or her presentation of student response data in accordance with his or her judgment using an array of graphical tools. For example, in a review session, student answers to a test question with a spread of plausibly-reasoned responses may be displayed to the students in, a word cloud or a pie chart, allowing students to both reconsider their own answers and think about why others may have answered differently. A different question, however, might demand a different pedagogical response, such as a follow-up discussion question. In both cases though, the discussion that follows the lesson allows for student dialogue that is tailored to each question based on the teacher’s assessment of both importance and class competence in the issue. Thus, important issues are easily identified as understood or misunderstood by students and addressed on the basis of both individual questions as well as individual students.

iClass is a set of real-time interactive e-learning platform on cloud, which provides platforms for teaching and learning. It focuses on enhancing the interactivity in the classroom. The platforms include "Teacher Platform" and "Student Platform" (iOS version + web-based version). iClass is a technology transferred from the e-Learning Technology Development Laboratory of the University of Hong Kong. (For more detail, please visit our project website [http://hku.iclass.hk/doc/about\\_us.php](http://hku.iclass.hk/doc/about_us.php)) Our laboratory is currently developing a series of e-textbook for Hong Kong students (funded by The Education Bureau), e-features of the i-class will also be involved in this new project.

Perhaps the most obvious and important way in which the e-textbook and I-classroom can address classroom diversity is the extent to which the student interface can be modified—specifically concerning NCS (Non Chinese speaking) students who might have been held back in traditional Hong Kong educational environments. Few trail classes have been launched in a local school which XX certain

amount of NCS students, the researchers have received positive feedbacks from the NCS students. The potential for tailoring to students' individual preferences and abilities, however, lies far beyond this single linguistic feature. The plurality of languages and abilities that students are able to engage with one another on is only limited by the competence of the teacher. This feature also encourages hiring teachers on the basis of increased pedagogical versatility by virtue of their access to the understandings of a more diverse array of student backgrounds and abilities. Assuming the teachers' expertise in the material, their role changes from the administrator of knowledge to the facilitator of knowledge discovery based on their access to understanding the students—not just the material. The e-textbook and iclass venue thus allows for the energies of the teacher to be expended more efficiently. The teacher is thus more responsible for managing classroom data than the data of the learning material, since their expertise should be assumed and trivial in the learning environment. In sum, this platform gives teachers access to classroom data in a way that allows them to make the most use of their understanding of the material in tailoring to individual student needs as well as to the needs of each class based on general classroom responses.

These goals are of course based on learning technology that can be accessed from a variety of computing platforms (including desktop, laptop, and tablet-based devices operating on Windows, iOS, and Android systems). The web browser-based e-textbook allows for full-feature offline viewing without the need for additional software. Data can be saved and submitted once the connection is re-established. Furthermore, animation based student-machine and virtual laboratory interaction will be available in addition to the sophisticated student-teacher interaction discussed above. The teacher therefore has access to an array of types of student responses, including multiple choice, lists, highlights, and drawings that again enable individualized response quantification, assessment, and presentation not at the expense of student creativity and confidence. Although this platform is in its infancy, the purpose of this presentation is to express its general potential as well as its current capabilities and tangible goals.