Online Testing for Classroom and Self-Assessment

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Abstract: This paper presents the development and use of IPST online testing system. The purposes of this project are 1) to develop the test items in science and mathematics for primary and secondary levels and 2) to provide as an item bank for classroom and self-assessment. All of test items are aligned with the national curriculum and had been tried out and revised to ensure that they passed the criteria such as content validity, item difficulty and item discrimination. Approximately 3,000 test items have been developed in four types including multiple choice, complex multiple-choice, matching, and constructed-response (short answer). In order to get the accounts, users have to register with their personal data. Then, they select parameters such as subject, grade level, topic, and testing time. After that, the system generates a test paper by selecting items based on the parameters at random. When completing the test, total score will be automatically reported and users can review their answers along with explanations. For teaching and learning, students can access this platform as self-assessment to examine their conceptual understanding in science and mathematics. Teachers can also implement it as a learning resource in the classroom. About eighty percent of users are students from around the country. The others are school teachers. IPST continues improving the system for easier access with other devices, more user friendly as well as providing an option for user's feedback. In addition, item statistical data which collected from each account are considered for reviewing the quality of the items.

Introduction:

Nowadays people increasingly use more online-communication in daily lives, so the educational developers should pay more attentions to improve the educational system using information communication technology. These could enhance the learning experience corresponding to student's lives both inside and outside the classrooms. Furthermore, teachers could access self-professional development easily and widely. The Institute for the Promotion of Teaching Science and Technology (IPST) continue developing the quality of Thailand's education in science, mathematics, and technology. IPST Learning Space was established in 2015 as the center of educational online system to improve the quality of education, and it is also the learning resource to expand opportunity to learn science, mathematics, and technology anywhere and anytime with quality and convenience for students and teachers.

Online Testing System:

Online Testing System is a part of IPST Learning Space for classroom and self-assessment. Approximately 3,000 test items in science and mathematics have been developed for primary and secondary levels. There are four types of test items including multiple choice, complex multiple-choice, matching, and constructed-response (short answer) that aligning with the national curriculum.

There are five steps for developing test items: 1) studying related documents and literature review to define the assessment framework, e.g. the purpose of the test development, grade level, topic, cognitive domain, numbers and types of test items. 2) developing the test items by following the assessment framework. 3) reviewing test items by a committee that comprises of IPST academic staffs and content experts. 4) conducting a try-out for quality testing. Then, the results are statistically analyzed for difficulty, discrimination and distracter and 5) selecting the qualified items for item bank against the following criteria: difficulty level 0.2-0.8, discriminating power 0.2 and above on and each distracter must be selected by 5% of respondents. These qualified items are ready for self-assessment that can be evaluated student learning.

Online Testing System Implementation:

In order to get the accounts, users have to register with their personal data on website http://onlinetesting.ipst.ac.th. When the registration process is completed, the user will get the account for logging in to access the system immediately. At the present, about eighty percent of users in the system are students from all over the country, and the rest of users are teachers. The system are operated differently depend on the type of user.

For the student, they can select parameters such as subject, grade level topic and testing time. After that, the system generates a test paper by selecting items based on the parameters at random. When the student takes the test, they can select the answer as multiple choice and complex multiple choice, drawn to match the answer as matching, or typed the answer as constructed-response (short answer). During taking each test item, students can skip a test item to take another one, then, back to complete the answer at the skipped test items.

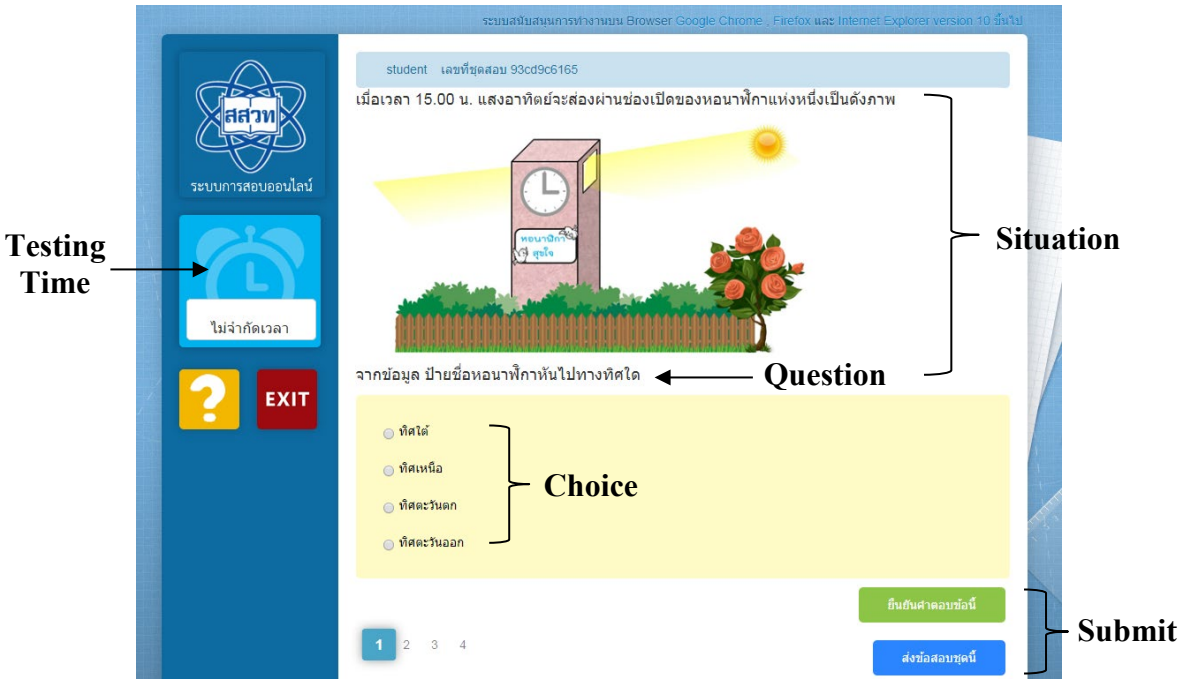

Figure 1: Display of testing system

Then, they have to confirm the answer. When completing the test, the total scores will be automatically reported and they can review their answers along with explanations. The explanations have many formats, such as texts, pictures, videos, and etc., accompanied with the same resolution as shown screen of students.

For the teacher, they can select parameters such as subject, grade level and topic. After that, the system generates a test paper by selecting items based on the parameters at random. They could access to see the compiled test with answers along with explanations, but they cannot take the test by themselves. Teachers can only be able to assign the tests to students after their teaching. When students complete the test, teachers can see the student report by exporting to Excel file that including the answers and the scores.

Conclusion:

IPST online testing system is a learning resource for students and teachers. It provides an item bank for classroom and self-assessment. Students can access this platform from any location by using internet. They can take the test before or after the lesson as pre-test or post-test. As a self-assessment, students can take the test and get the scores promptly. It makes the students know which content needed to improve. This system help students examine their conceptual understanding in science and mathematics.

For teachers, the system can be implemented as a part of assessment in the classroom. It is convenient for evaluating individually or the whole-class through a totally automated system. Test reports could be analyze for improving classroom practices. The test report could be analyzed to enhance students performance. Teachers could provide feedback to students that lead to improve their learning outcome.

IPST continues improving the system for easier access with other devices, more user friendly as well as providing an option for user's feedback. In addition, item statistical data which collected from each account are considered for reviewing the quality of the items.

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