

Real-Time Assessment in Education Quality Management Support from Digital Teaching Platform

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Abstract—To assure education quality, assessment is considered one of key indicators which provide insights for teachers to tailor their teaching to students' needs and abilities. Generally, different kinds of assessment are used but sometimes too late for teachers to give real-time support for students in need. However, it is a big challenge for one teacher to get real-time progress of a class with over 30 students having different learning needs and abilities. Therefore, the technological support is an answer. This research is to assess the effectiveness of a real-time assessment system on education quality through analyzing its role in education quality improvement and showing how a digital teaching platform supports the process through a case study in Vietnam. The research uses the experimental method and it is concluded that real time assessment can significantly enhance the quality of education and without technology support, real time assessment is almost impossible.

Keywords—real-time assessment; digital teaching platform; education administration; Industry Revolution 4.0

I. INTRODUCTION

Gaining student attention and an instant insight into the level of student understanding during a lesson is an area that can be especially challenging for teachers. There are various techniques that can be employed to help gauge student's comprehension, such as getting children to raise their hand during a lesson, or asking individuals to re-explain a point during the lesson. However, these predominantly rely on the student actively responding, and research has demonstrated that teachers often select students who are more likely to have the right answers. As such there is an inherent unintentional bias in these types of approaches.

Apart from those ways of getting instant feedbacks, assessments will give teachers the insight they need as to how much the whole class and individual students have comprehended a topic. However, by the time the tests have been completed and marked, the class will most likely have moved on to a new area of study. This means that students who have not quite grasped the concepts involved may be left behind. It is the problem of immediacy that we are especially keen to solve, working alongside teachers to find a way to gain an instant insight into student understanding of a lesson – on a whole class and individual student level.

In addition, many schools are moving towards online assessment and reporting which has a multitude of benefits. First, a large amount of paperwork will be reduced and teachers will have better ability to monitor cheating or plagiarism. Secondly, it saves teachers an invaluable quantity of time which would otherwise be spent compiling results, or entering data manually.

To go with further analysis of the impacts of real time assessment on the quality of education, this research was conducted in a two-month period at FPT English language school (FPT GEM English) in Hanoi, Vietnam. FPT GEM English uses Time to Know English program providing digital learning materials suitable for students from 6 to 14 years old. Each student and teacher are equipped with one laptop with Internet connection apart from the textbook. This program follows blended learning, which means students' learning practice is the combination of online and offline activities. At FPT GEM English, students have two English lessons a week and one lesson lasts 1.5 hours in which they have 30-45 minutes working on computers and 45 minutes with offline activities. Time to Know English program has been implemented in Vietnam since 2012 as an after-school service. Its comprehensive EFL curriculum uses the backward design approach to define the desired outcomes. Each unit is organized around a theme relevant to the child's world. The unit emphasizes reading and writing as well as listening and speaking, with focused vocabulary development.

II. LITERATURE REVIEW

A. Key Concepts

1) *The quality of education*: In this study, the researcher stands on the viewpoint that the quality of education requires outcome-based teaching and learning approach. According to ISO 9001, quality is the "degree to which a set of inherent characteristics fulfils requirements" [1]. Degree refers to a level to which a product or service satisfies. Depending upon the level of satisfaction, a product may be termed as excellent, good or poor quality product. Therefore, in this research, the quality of education is defined in terms of students' learning outcomes as well as students' and teachers' enjoyment in teaching and learning.

2) *Digital teaching platform*: Digital teaching platform is a newly implemented online platform with three characteristics. First, the digital teaching platform is a completely realized networked digital environment that includes interactive interfaces for both teachers and students. Teachers use the administrative tools of this digital environment to create lessons, assignment to students and manage the work the students submit. Secondly, the digital teaching platform digitally provides the content of the curriculum and assessment for teaching and learning. Thirdly, the digital teaching platform supports real-time, teacher-directed interaction and data-driven teaching and learning in the classroom [2].

3) *Real-time assessment*: Real time assessment refers to a wide variety of methods that teachers use to conduct in-process evaluations of student comprehension, learning needs, and academic progress during a lesson, unit, or course. The general goal of real time assessment is to collect detailed information that can be used to improve instruction and student learning while it is happening. Real-time assessment requires nimbleness – the ability to address academic challenges that currently enrolled students face as they learn. This provides the alert that identify students at risk of underperforming and helps teacher predict the likelihood of students' success in a course based on their previous performance results and effective supporting practices that include recognizing students' immediate needs and directing them to appropriate activities and resources [3].

B. Role of Real-time Assessment in Education Quality Improvement and Its Challenges

Contemporary research finds a strong connection between assessment and student production. Students must learn to evaluate their own work during the production process; this evaluation must happen during each productive act, including moments of deliberate practice. Students must have tactics they use to modify their work as they produce it. These skills or tactics can be developed with direct authentic evaluative experience, and the instructional system must supply these [4].

Accurate, timely assessment is also related to effective use of individualized practice. Stiggins postulates that maximum learning comes from active engagement between the teacher and student; this engagement allows students to decide if they are likely to succeed and if meeting the standards is worth the effort [5]. In other words, students examine these assessment factors on a personal level. Moreover, awareness of individual students' ability enables teachers to respond to their students' strengths and areas of need. Thus, they are able to provide appropriate support to maximize learning for each student. Timely feedback enhances the teacher's ability to develop appropriate learning experiences that are specifically designed for each student's cognitive skills and level.

However, Stiggins concludes that many current assessment practices, especially high-stakes tests, do not provide this kind of information to students. Instructional decisions best occur in a fluid day-to-day instructional environment, not once a year in standardized tests. Using online assessment tools teachers and

students can assess individual learning and instructional progress quickly and efficiently. This approach to assessment has additional analytical power for the teacher because the results are both individualized by student and combined into a class analysis [5].

Finally, the role of individualization through technology leads to a view of "personalized learning." As Howard Gardner describes it, "Well-programmed computers offer many ways to master materials. Students or their teachers will choose the optimal ways of presenting the materials. Appropriate tools for assessment will be implemented. And best of all, computers are infinitely patient and flexible. If a promising approach does not work the first time, it can be repeated, and if it continues to fail, other options will be readily available" [6].

On the other hand, opportunities for more sophisticated pedagogy like getting real time assessment also pose challenges for the teachers. Jon Saphier and Robert Gower, in their seminal work *The Skillful Teacher*, identify six challenges that must be faced in effective classroom management: attention, momentum, time, space, routines, and discipline.

1) *Attention*: Students learn only when they attend to their learning. Teachers must get students on task during class time by engaging them in legitimate curriculum activities. In fact, researchers have documented that time on task is positively correlated with achievement.

2) *Momentum*: The teacher must coordinate the flow of events during class and provide smooth, rapid transitions between activities. Breaks in momentum are a distraction and interfere with students' concentration.

3) *Space and time*: Teachers must organize the physical space of the classroom in order to maintain momentum and routine. They must manage events, regulate schedules, and allocate time appropriately. Teachers must use that time efficiently, and they must set a pace for all activities that meets the needs of individuals as well as the whole class. In analyzing the use of computers in classrooms, Roschelle and Pea depict the ability of one-to-one computers to augment physical space with important information exchanges among students and teachers.

4) *Routines*: Classes are managed most efficiently by building procedural routines and using them effectively. Students must know what these routines are and how to engage in them.

5) *Discipline*: From time to time, all teachers must respond to resistant students. Rules must be clear and specific. Positive expectations must be repeated. Students must have a sense of influence on the life of the classroom. Students often become frustrated when they are working on assignments that are too hard, and they are bored when their assignments are too easy. By customizing all assignments to students individually and by adjusting these assignments during class, the teacher keeps students working at their optimal level, reducing the number of discipline issues.

6) *Technology and human support*: One of the reasons that student learning outcome assessment has had a relatively

modest impact in terms of improving teaching and learning is because the approaches used most frequently to document student accomplishment yield little in the way of actionable data [7].

To solve that problem, real-time assessment is a very much-needed option because it provides actionable information about the extent to which the learning conditions are enacted. Moreover, the data are available in a time frame that makes it possible for both students and faculty to modify their teaching and learning activities toward achieving the intended outcomes.

C. Digital Teaching Platform and Its Typical Features

Digital Teaching Platform which is featured clearly in Time to Know English program is a solution to the obstacle's teachers face today. It supports teachers and students in classrooms equipped with one-to-one computing device, with a wireless connection to the network. The teacher also has a networked workstation connected to an interactive display, or even a projector. Under the teacher's direction, the interaction between teacher and student and among students are facilitated by the cluster of networked computers. Digital teaching platform allows teachers conduct the lessons, manage the class and see, in real-time, individual student and overall class performance. When the results and responses appear instantly on teachers' screens, they can very quickly identify and address problem areas, giving unparalleled insight into student understanding during the lesson. There is no need to wait to collect worksheets at the end of a lesson or wait to see mistakes in workbooks.

It also supports an adapted learning pace for the students in numerous ways. First, the teacher can control the exposure rate of different learning activities during the lesson, and students can progress at their own pace through different questions and screens. This allows students to maintain their self-esteem while engaged in the program, and, students are also able to expand their challenge zones. In addition, advanced students who finish the assignment before their peers can easily access engaging, game-based activities. When performing computerized assessment, the teacher can allocate extra time for students if needed. The curriculum is built to provide extra materials on various levels for different learning needs. For example, the curriculum includes enrichment materials, practice materials for each specific lesson, and intervention materials. The teacher can allocate those materials to different students according to their specific needs and learning pace. The teacher can divide the class into 3 different levels: pre-level, on-level or above-level groups based on the data exported from the platform. This can be done before, during and after the lesson. So, it can be said that Time to Know integrates assessment and real-time feedback into teaching and learning process.

III. RESEARCH METHODOLOGY

The process of data collection was conducted for two months on 35 students and 3 teachers at the school. To guarantee the trustworthiness of the study, the data were collected using many sources such as using participatory

observation, deep interview and using questionnaire. The collected data were analyzed qualitatively and supported with quantitative analysis. The procedure was as follows.

- Observing the English classes in all age groups based on the schedules of the school.
- After each observation was conducted, the data were then directly analyzed qualitatively.
- Interviewing the teachers involved in order to triangulate the data collected through observations.
- Giving questionnaires to all participants in order to analyze their perceptions about real-time assessment in the classroom
- Interviewing students and teachers to explore more their perceptions on the effects of real-time assessment in the classroom
- Ethical procedure: The procedure of research was started by arranging a legal permission from the school. With the permits, data collections were then conducted at the school until the data were saturated and adequate.

A. Research Duration and Sample

The participants of this study were 35 students and 3 teachers at the language school – FPT GEM English. 35 students are chosen from 3 different class levels: Pre-level, On-Level and Above-level. This is newly established language school belonging to FPT University based in Hanoi, Vietnam. At the time of research, the school has been in operation for 1 year and has more than 400 students aged from 6-14.

The research was conducted in two months. The students' age group ranks from 6 to 9 years old and they all have at least 4 months of experience with the program, on average. 59% of the students did not have experience using computers in school for learning English (prior to FPT GEM). Three teachers were selected from 18 teachers of the center. One of them has two-year experience teaching Time to Know program, one of them has 11-month experience and the other is a new teacher of Time to Know with more than 6 months.

B. Research Measures

The research used three measures:

- Student assessment results: In two months, students complete two units of the program. The researcher used pre-test and post-test for each unit to check the students' progress after two months learning with Time to Know program. Both of the tests are individualized and the results of the students in post-tests are compared to their own results in pre-tests to see their progress. Both pre-test and post-test are structured in the same format with three main contents including pronunciation, vocabulary followed by listening and reading comprehension. The test contents base on the contents in the two units (My week and Weather) that the students learn in the two-month research period.



Fig. 1. Test.

- Student attitude questionnaire: The researcher gave a questionnaire to 35 students to check their attitude towards different aspects of learning with Time to Know program, focusing on the personalized feedback and real-time support.
- Student and teacher in-depth interviews: 6 selected students and three teachers were interviewed. Among six students, each two of them is from one academic level: Above-level, On-level or Pre-level. One of the two is the active student and the other is inactive. Three teachers selected are all have at least 6 months using the program and teaching at the school. They are also in charge of the largest number of classes in the school.

IV. RESULTS AND DISCUSSION

The findings of the research are collected through analyzing students' academic achievements after the two-month period, teachers and students' answers for the in-depth interview questions and analyzing the platform features. It is concluded that:

A. Student Achievements Significantly Improved

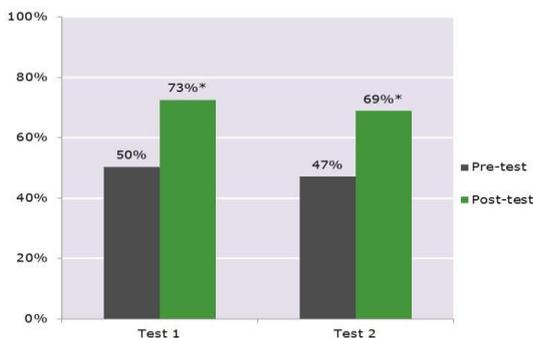


Fig. 2. Improvements in assessment scores.

The average results of the students in pre-test and post-test show that there is a significant improvement in their academic progress, as shown in Figure 2. The students themselves also

see their personal progress in learning when answering the interview questions:

“In the past, I was very bad at English but when I study English at this center, I experienced a lot of progress. I remember more words and I pronounce them correctly.”

“I understand more with the program. It's better than other places”.

“This program helps me write the words better. I know more ways to learn word spelling”.

B. Students' Enjoyment in Learning Reached High Level

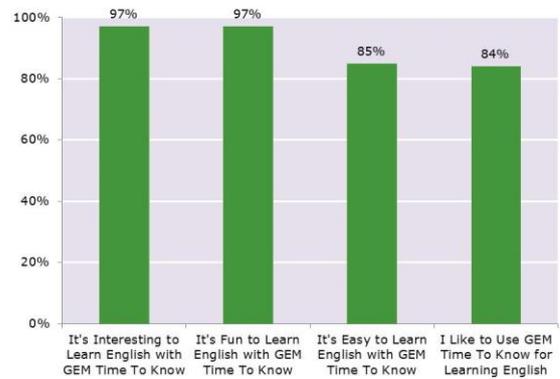


Fig. 3. Positive student attitudes.

85%-97% of the students either strongly agree or agree that learning English with GEM Time to Know is interesting, fun and easy. 84% strongly agree or agree they like to use the program.

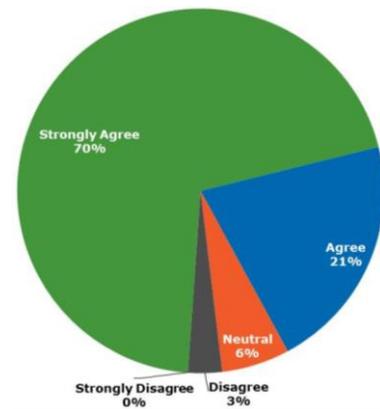


Fig. 4. Students' enjoyment with learning with time to know program.

91% of the students either strongly agree or agree they enjoy learning with Time to Know.

They show their interest in learning: *“I find it [the program] interesting and very effective.”* and are willing to recommend the program to other students.

“Studying here is very good and [it's] easy to understand the lesson.”

“Studying here is very funny and [students] should come here to study.”

The students are also aware of the timely support that the teacher provides during the lesson. They recognise the difference between the way teacher in a traditional class interact with them and the method teacher at FPT GEM use:

“Teachers at school often sit still and teach, teachers at GEM go around and help students.”

“The teacher gives us a lot of interesting activities and games.”

“Teachers here teach in an easier way to understand.”

All surveyed and interviewed students responded positively with the program when showing their eagerness and willingness in joining the class activities.

“I can join in more activities. In other places, I sat still.”

C. Teacher Satisfaction in Teaching

First, the teachers are empowered by data-driven instruction

“I really appreciate the feature of assessment report so I can show my students their results, to make encouragements at the right time as well as making some adjustments.”

“I think the monitoring is extremely helpful because it helps me to know the ability of each student.”

Secondly, they can provide in-time support for each student during the lesson

“It's easy to follow the student's progress... For the slow learners when I see the alert sign, I come to them and I help them with the exercise.”

Thirdly, the students have high-level of concentration and engagement in the lesson

“Everything is demonstrated lively. Everything is very attractive to children.”

“Students are more actively involved in the class... You don't have to prepare for those engagement activities a lot because they are available in the program.”

Lastly, all teachers experience high satisfaction in teaching this program

“I really appreciate the creator of T2K because as a teacher I think it is a very effective way to conduct a lesson.”

“I feel really comfortable and I think the program is very smart. It helps us to reduce with a lot of working pressure.”

“As a teacher I feel [it's] really easy when working with the program.”

The program is also really unique and makes the teachers satisfied in helping them deal with differentiation in teaching.

“Time to Know platform helped me a lot dealing with different levels of students because they assign different lessons for different levels of students.”

In addition, Time to Know instruction includes differentiated activities that enhance learning and acquisition of skills for different students. This enables the teacher to give individualized support to students who need to improve

specific skills. It also enables the teacher to give the scaffolding an individual student might need, such as narration. Integrated individualized assessment provides learners with a sense of accomplishment that motivates them to reach higher levels and greater success. Unique software allows for adjusted learning pace and inherent self-evaluation, as well as enhances possibilities for self-initiation of activities within learning cycles. Also, the blended environment empowers teachers professionally. It enables them to formulate attainable goals by selecting differentiated activities for each student. It provides the teacher with tools to evaluate each student's progress in real time, thereby helping the teacher to plan, modify, change, and adapt the learning modules based on the progress of individuals and groups of learners.

In short, on one side, real-time assessment and feedbacks have strong impacts on both students and teachers. On the other side, according to the researcher's observations and reflections from teachers, technology requirements are a big barrier in getting timely data-driven alerts of students' online academic results. When the school or a single class or student experience the Internet breakdowns or technical problems in a long time such as hours or days, it is impossible to carry out online activities and get real-time feedbacks. Therefore, for any monitoring and assessment tool to be real-time, it needs to be usable in the classroom.

V. CONCLUSION

Formative assessment which real-time assessment belongs to play an important role in forming class instruction. To maximize the positive effects that real-time assessment can have on teaching and learning quality, it is important that these assessments collect information that is closely linked to instructional goals, provides insights into students' cognitive understanding and processes, and is returned to teachers in a timely and easy to interpret manner. Digital teaching platform provides the rapid return of information without requiring teachers to invest teaching time analyzing every detail of student work. That is why they have more time for real teaching activities. Therefore, it is suggested that schools and teachers stay focus with the main purposes of real-time assessment. First, real-time assessment is to lead to improvement and adjustments in teaching activities, teacher's instructions and even teaching contents. Secondly, following an assessment must be timely feedback and feedback is to help teachers and students make adjustments that will improve students' achievement of intended curricular aims.

With the digital teaching platform support, teachers can develop more compelling and appropriate learning journeys for individual students, and for the class as a whole. They can spend their time where it is needed most, supporting struggling pupils, and ensuring that those who are excelling are continuously challenged and stretched. Every pupil can receive more appropriate input, based on their current ability, in order to ensure that they are driving towards their potential in the key areas that matter in the new curriculum. What is not yet widely celebrated is that technology-enabled assessment can be used for more than just tracking results and discipline knowledge. By combining data with learning analytics, technology also offers great promise when it comes to helping pupils to learn

through assessment. In addition, technology is an empty vessel if not driven by curricular and pedagogical priorities. But without technology support, real-time assessment is nearly impossible to be effective with a large class size.

In case, the schools have not been equipped with digital teaching platform, the teachers can still get instant insights of students' progress. These are some suggestions:

- View student screens in real time to identify areas with which students are struggling.
- Use quizzes at various stages of the lesson to gauge understanding and progression with Menti.com, Kahoots or Quizlets.
- Ask students to present their work to the class to demonstrate depth of knowledge.
- Use polls to give engagement a boost throughout lessons.
- Reduce paperwork by exporting reports on performance to evidence student understanding.

Not limited to real-time assessment, for further study, the researchers will extend the research to an effective platform for an adaptive teaching and learning system which a data-driven approach to adjust the path and pace of learning, enabling the delivery of personalized learning at scale. Adaptive systems can support changes in the role of faculty, enable innovative teaching practices, and incorporate a variety of content formats to support students according to their learning needs. In addition, education needs to simulate and prepare learners to enter into life as much as possible when technology has made access to knowledge easy so knowledge no longer means

"insurance" for the future of the learner as before. Accordingly, students will be equipped with knowledge coupled with applications in practice. They can experience, explore, discover technology associated with the knowledge learned from the curriculum; and are encouraged to be creative in science and technology in order to improve the development of new technologies [7]. This is an interdisciplinary approach to equip learners with knowledge and skills they can apply to solve problems in their lives which is believed one of the main goals of education.

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