Improving Literacy Learning in EFL Reading Course in a Technology-Integrated Class

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Abstract. With the flourishing development of technology in all forms and types, changes have been made in all areas of our life. Education, as one of the areas, was strongly influenced by technology, especially during the COVID-19 period. Assistive technology tools for teaching and learning that intend to improve efficiency and quality are adopted by learners and educators in many classrooms. However, when evaluating for the learning result of incorporating technology in the educational context, less proficiency was revealed in using technology to conduct instruction that promotes high-cognitive demand learning effectively. Therefore, we proposed an English as a Foreign Language (EFL) class design based on Technological Pedagogical Content Knowledge (TPACK) Theory to demonstrate a highly engaging class interaction between instructors and learners. We intend to deliver effective reading skills for EFL learners during the class. This design illustrates our class activity supported by educational theories and steps to achieve our teaching objectives.

Keywords: EFL · TPACK · Technology in Education · Reading Skills

1 Introduction

With the advent of technology changing education in the 21st century, we have gradually been used to it in assistance with multiple learning scenarios and expected to gain valuable returns through investing in various technological tools for teaching and learning. This research paper aims to improve teaching quality and to learn in EFL classes in a Chinese 11th-grade classroom through technology integration. In the context of learning reading strategies for EFL learners, studies have shown that using technology helps improve students' levels of motivation and engagement. Nearpod, as one of the technology-based platforms, is commonly used in many classrooms nowadays. This study introduced a course design based on the TPACK theoretical framework and produced using Nearpod online technology.

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2   Literature Review

2.1   TPACK Theory

Technological Pedagogical Content Knowledge (TPACK) is built upon Shulman's Pedagogical Content Knowledge by adding technology into the educational environment to boost teachers' professional development preparation [10]. Incorporating knowledge of technological pedagogies arises to prepare teachers with the most updated information in this digital time. Technology has greatly changed our life in all facets, which is shown from the emergence of various types of technological devices for teaching and learning. However, it remains a force to be reckoned that to determine whether students gain effective learning assistance from technology, teachers should understand the purpose of using the technology and how to take advantage of educational technology to promote its high-cognitive demand learning. They need to gain a better and deeper understanding in implementing instruction with the help of technological devices to enhance teaching rather than simply remain the traditional format [10].

Despite what we see as benefits, technical devices in education have provided us with the efficiency in gaining information in a wider range and more straightforward operation. This kind of help for students is similar to people using a telescope or microscope to gain the image of an object, which does not inherently transmit new information or synthesized knowledge to students [14]. In other words, students can gain more information with the help of technology at hand but not necessarily develop high-order thinking abilities or high-cognitive demand learning patterns. Therefore, teachers should provide effective guidance in using educational technology and encourage effective learning, which aims to strengthen students' abilities in solving problems rather than memorizing content knowledge.

2.2   Current Practices of TPACK

Hill and Uribe-Florez (2020) [7] examined TPACK practices for mathematics teaching in secondary school classrooms and identified several barriers in encouraging TPACK based learning into an educational context. They noticed that although math teachers are more open to embracing technology in teaching, the confidence in using the TPACK framework of designing a class is relatively low due to the limited resources and time. Most of them believe that technology is beneficial in engaging students, but fewer are convinced that technology can contribute to students' motivations in learning math. Therefore, it is not surprising that teachers usually use technology as assistive tools to visualize the content for better understanding rather than encourage students' higher-order thinking strategies. However, the research reported being more confident in teaching if they are taught to use technology to teach the content that they are not very good at, such as geometry.

Pringle, Dawson and Ritzhaupt also researched teachers' intention in using TPACK in science class and pointed out the insufficient readiness of technological knowledge in their lesson plans [12]. Such deficiency is consistent with the misalignment of national reformational goals and teachers' actual implementations in class.

The unparalleled effect of using TPACK calls for extra affordance and guidance in teachers' preparation [6]. The effective integration of TPACK into instruction requires teachers' effort to collaborate with students, administrators and technical staff, and also their flexible usages of technology [15].

The case study conducted among three math teachers showed a distinct impact of using TPACK [15]. The author pointed out that the enhanced communications between teachers and students encourage students to learn math. The blending of technology-enriched the accessibilities for students to gain a deep understanding of mathematic principles. Moreover, TPACK can also encourage literacy learning by observing a workshop for a preservice teacher using a digital storytelling approach to teach [17]. The increased engagement and motivation proved the necessity to educate teachers on how to take advantage of technological resources in class. Redmond and Peled also notified that the effort to understand the theoretical framework of TPACK deeply is required for teacher educators and preservice teachers to design their instruction in alignment with the 21st curricular criteria [13].

2.3   Teaching EFL Learners Reading

Reading for developing students' ability and knowledge of English is vital since the reading materials provide abundant sophisticated expressions in English [2]. They are the direct interactions that students can have in daily life, even if they are not emerged in an English-Speaking Environment. Reading in English is an ideal way to instill original vocabulary and grammar for EFL learners.

Studies have shown that in the 21st century, due to the easy access to the internet, students have high acceptance of gaining textual information by means of digital tools. Digital reading is reported to bring higher motivation and enjoyment for students to learn based on online information. Bana has also concluded that digital texts help to develop students' creativity and curiosity during the learning process, and thereby contributing to enhancing their reading quality [2]. However, it is also worth noticing that, despite the tendency of students to read under the technological atmosphere, many of them regard it as a method to accomplish the assignments in schools rather than a self-learning process.

Naderi and Akrami (2018) [11] stated that reading strategies are also crucial for EFL learners since it leads to a different level of learning efficiency. They indicate that reading is a process that involves more than just understanding the text, but also its meaning and correlations with big pictures. EFL learners need to understand the language itself and perform specific tasks related to prior knowledge or contextual comprehension.

A study conducted among Chinese students revealed an increase in students' reading processes. Ahmed also conducted a study to demonstrate Mobile Assisted Language Learning (MALL)'s engaging effect for EFL Learners [1]. Since mobile technology provides a higher level of communicative and cooperative interactions in the learning context, modern teachers need to recognize the significance of incorporating mobile technologies in EFL classes to improve teaching and learning efficiency. The advantages of including technologies in EFL reading class lie in the opportunities of more resources for students to explore and autonomy they gained during the learning process. It is beneficial to cultivate self-directed learning habits with the use of mobile technology since there are fewer limits in time and space [1].

3   Methods

The teachers created this lesson based on TPACK theory and Web 2.0 tools. This EFL lesson was designed for a Chinese 11th-grade classroom. The learning objective is to deliver reading strategies to students and cultivate their reading habits for further improvement. The topic of the class is based on the instruction and discussion of the article: <Love is a fallacy>. There were 40 students and two teachers in this course of study.

In this lesson design project, the teachers used Nearpod, which was an interactive teaching website. Web 2.0 tools provided a platform for students to use their creativity and be more active in the learning objectives [8]. Nearpod allowed the teachers to add different activities to help students achieve the lesson's learning objectives.

At the beginning of the lesson, an open-ended question allows students to reflect on their English reading skills and understand the students' level. An article is provided in the main part of the course for students to explore. Students can analyze the article and provide feedback to the teachers through the "Draw it" activity. Students are divided into groups for discussions, and they can create an online group-shared mind map using Coggle. The mind map will be presented as a group, and other students can ask questions or make suggestions. This process allows students to delve deeper into the research and develop critical thinking abilities. The end of the course includes "Time to Climb," which uses a game-like activity to provide a summative assessment for the teachers.

This research explored how the integration of technology into the EFL classroom based on TPACK theory can positively impact teaching and learning. Each of the activities set up in this lesson serves a purpose. By participating in the activities, students can reflect on whether they have accomplished their learning objectives at a particular stage. At the same time, technology can help teachers collect information about students' learning in real time. Teachers can analyze whether the lesson has met the instructional objectives by collecting data.

4   Result

4.1   Formative Assessments

Formative assessments play an important moderating role in the teaching and learning process. In the Nearpod lesson, each instructional objective is followed by at least one interactive activity to obtain formative assessments. The purpose is to help the teachers get timely feedback. The teachers can see how the students are doing through the interactions and make appropriate adjustments to the content and pace of the lesson. Black and William's research showed that formative assessments are effective in helping teachers to improve their teaching effectiveness [3].

4.1.1   Draw It

An article titled Love is a Fallacy was provided for students to explore and discuss. Each student was expected to read the article at least once. The "Draw it" activity on Nearpod was designed to be used during the reading process. Students can use the paintbrush feature to draw their favorite sentences or mark areas they find confusing in this activity.

In addition, students can add a text box to record their summary and understanding of a paragraph. Students can show a signal to the teachers that they have finished reading by clicking "submit." The teachers can immediately see each student's understanding of the text in their interface and provide positive feedback to the students based on this.

Through independent reading, students are free to explore the content of the text and the meaning the author is trying to convey. Students are responsible for their learning, and they need to learn to gather and use information [3]. "Draw it" is an activity that promotes independent learning.

The "Draw it" activity helps teachers collect real-time information about students' learning. By observing and recording what students submit on the "Draw it", teachers can make timely adjustments to their class design. For example, more than half of the class is confused about the same paragraph in a text. The teachers should explain the paragraph in detail in this lesson.

4.1.2   Collaborate Board

In order to achieve higher-level learning objectives, a collaborative board activity is designed for this section of the course. Students are asked to form groups for exploration and discussion. Each group can explore and discuss at least two logic problems according to their interests. At the end of the discussions, each group will need to post on the collaborative board to summarize their findings. Students in other groups who agree with their ideas or are interested can support their posts by clicking "like."

During the group discussion, students can share their ideas. Peers are also a learning resource [3]. By sharing, students can gather good ideas from other members and question vague ideas. This process also develops students' critical discernments. The use of this teaching strategy helps to reduce the distance between students and their learning objectives.

4.1.3   Mind Map

Hyerle described mind mapping as a tool that can help students improve their thinking and cognitive skills [9]. A visual learning tool called "Coggle" is used to help students learn more holistically. Under the teachers' guidance, students worked in groups to create mind maps of the whole article using Coggle. Davies noted that using the mapping tool helped students move from gathering information to developing a deep understanding of hierarchical identification [5]. Students connected the examples and implications of each logical question from top to bottom. When students completed the mind maps, they understood the article better and improved their reading skills. In addition, Coggle is an online collaborative editor that allows sharing. Teachers can view Coggle to identify problems and provide feedback to students promptly.

4.2   Summative Assessment

The teachers used a summative assessment at the end of the lesson. For the students, the summative assessment can help them self-assess their learning in the lesson. Students can recognize their progress and weaknesses and gain a clear direction for their future

learning. The summative assessment also helped teachers get an overview of the level of knowledge acquired by the students and thus determine the quality of the whole class. In fact, all of these assessments positively impact teachers to improve their teaching in the future.

4.2.1   Time to Climb

This is a summative assessment activity. Students will be quizzed on the lesson's content through a kind of game. The traditional testing model can put heavy pressure on students, which reduces their motivation. In the "Time to Climb" activity, students can reflect on whether they have achieved their learning objectives in a relaxed mood.

5   Discussion

In traditional teaching, teachers seem to dominate in the role of only imparting knowledge. Students are not actively receiving knowledge in this teaching mode, which can lead to inefficient teaching and learning. Incorporating technology into teaching can be effective in improving this problem, which can, to some extent, achieve a student-centered class. Instructional performance is reconfigured due to the inclusion of technology. Through using technology tools in the class, teachers motivate students to explore actively. In fact, this new instructional model increases the effectiveness of teaching and learning.

Studies have shown that teachers have gained increased knowledge and confidence in integrating technology in instruction after receiving technology training courses [4]. Though multiple studies have recognized the beneficial impact of incorporating TPACK in class, concerns for distraction by overly emerging technology environment arouse with side effects being observed. However, a study that fills the research gap supports the claim that the benefits of using mobile devices in flexible ways lead to positive performance in academic fields. They also point out the necessity for teachers to learn how to use technological resources to enrich the class design [16].

This finding is consistent with the study's conclusion conducted by Atun, H., & Usta, E. They stated that the technology should be matched with the appropriate context and purposes of instruction to cultivate higher-order thinking. The difficulty with teaching reading strategies in EFL courses is that they are difficult to explain concepts or theories. Teachers often teach reading skills by leading students through analysis of the article. Technology tools provide a more accessible platform for teachers and students to collaborate, and it helps students keep up with the pace of the class. For example, the teachers allow students to work in groups to create mind maps using Coggle in this lesson. Coggle makes it easier for students to collaborate and reduces the chance of missing work. In addition, incorporating technology provides students with access to more information and resources to explore in greater depth.

6   Conclusion

Using technology effectively in teaching can be a challenge for teachers. However, the TPACK framework can help teachers design the lesson plan around technology.

The lesson plan presented in this research was designed using Nearpod, an interactive instructional website that creates slides and online activities. In addition, for creating a mind map, the teachers used Coggle, which allows group members to work on the same map at the same time. This research shows that technology tools provide students with better learning and research environment.

It has proved to be effective in using technology to engage students in self-guided learning. Incorporating technological-based learning tasks for students to complete is critical in improving students' reading strategies and critical thinking abilities. This technology-based teaching and learning process design is conducive to achieving learning objectives and cultivating good reading habits for lifelong learners. Technology can help teachers obtain formative and summative assessments more quickly. Teachers can make appropriate adjustments to the curriculum design based on these assessments to improve the quality of instruction. As technology evolves, it will bring more excellent values to teaching and learning.

7 Limitation and Contribution

However, there are several limitations to the design. Firstly, due to the time and word limits, there are still risks of distraction while teaching students lexical knowledge during their reading. Students might get overwhelmed by the instruction of the key points and thus cannot delve into the understanding of the content. Secondly, though the activities can be engaging, completing the tasks does not necessarily represent students' inquiry-based learning process. Therefore, we might need a more well-rounded assessment of the tasks to effectively evaluate our design to teach students to benefit from the activities and simulations. Despite this, this paper contributes to the future education area that provides an example of a lesson plan in terms of a Nearpod technology-based lesson in a Chinese 11th grade classroom, which could be inspiring for future teachers to utilize this lesson plan in their class. In the future, we are also looking forward to teachers teaching this lesson plan in practice and providing feedback if possible.

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