Integrating Technological Pedagogical and Content Knowledge (TPACK) with Gamification: Emerging Pedagogical Approach for Developing Creative Skills in English Language

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ABSTRACT

In this article, the researchers reviewed the literature related to Gamification and Technological Pedagogical and Content Knowledge (TPACK) in order to develop creative sills in teaching English language for Grade 8 students. The researchers came up with the key characteristics of Gamification. Then, the researchers synthesized Gamification and TPACK and reached five teaching steps: a) Present the situation and set learning goals; b) Learn through gamification features; c) Present learning outcomes and reinforce them with rewards; d) Summarize and Discuss; and e) Evaluate. TPACK was integrated into every teaching steps in the appropriate manners. At the end, the authors raised one lesson plan on Occupation in English language teaching that applied the TPACK-Gamification model in teaching English for Grade 8 students. This example may trigger other teachers' ideas in the application of TPACK-Gamification in other subjects, topics or grade levels.

Keywords: TPACK, gamification, creative skills

1. INTRODUCTION

In the globalization era, English is appeared as the common medium of communication among people around the world. English is a very important language tool for people in communicating, educating, seeking for information and knowledge, working and understanding other cultures, traditions and visions. In particular, in the technological world, English is increasing its importance because technology helps us communicate with others around the world in an easier manner. English promotes the understanding about the diversity of perspectives and cultures in our world that can bring to more understanding about multi-cultural perspectives and living with others with more peaceful understanding. Students who learn English as a Foreign Language (EFL) will learn and understand individual differences coming from the cultural, tradition, societal, economic and political diversities. They will start to develop more positive attitudes about people and leaning EFL [1]

In the Basic Education Core Curriculum B.E. 2551 (A.D. 2008) of Thailand, learning EFL aims to help students develop more communication skill and positive attitudes towards English. Students are expected to be able to communicate in English effectively and efficiency in diverse situations and to apply English in their future studies and/or careers. In addition, students should be able to apply English in comprehend global perspectives regarding ideas, issues and cultures as well as communicate their ideas and Thai cultures to other people around the world in creative ways [1] This vision is translated into the Basic Education Core Curriculum B.E. 2551 (A.D. 2008) as:

Foreign languages enable learners to be aware of diversity of cultures and viewpoints in the world community, conducive to friendship and cooperation with various countries. They contribute to learners' development by giving learners better understanding of themselves and others. The learners are thus able to learn

and understand differences of languages and cultures, customs and traditions, thinking, society, economy, politics and administration. They will be able to use foreign languages for communication as well as for easier and wider access to bodies of knowledge, and will have vision in leading their lives.

In the rapid-changing technological world as the present, teachers are mandated to teach their subjects by using technological tools and applications (e.g. Kahoot, Padlet, Plickers, etc.) and on-line learning platforms (e.g. Google Classroom, Moodle, etc.). In addition, in the COVID-19 pandemic era, all teachers are forced to social distancing and teach via on-line through the platform provided by their organizations (e.g. Google Meet, Cisco Webex Meeeting, Zoom Meeting, etc.). To apply technological tools, instruments and platforms effectively in teaching, teachers need the very important knowledge so called "Technological Pedagogical and Content Knowledge" or TPACK. This situation is also true with teachers who teach EFL in Thailand. However, the problem is that TPACK is not well received and practiced in teaching English in Thailand.

One problem in teaching and learning EFL is that students have negative attitudes towards learning EFL because the teaching and learning environment is bored and not challenging. Teaching by using game or Gamification may help to relieve this difficulty because Gamification can stimulate students to learn with fun and eagerness through challenging tasks and games. In addition, most teachers teach EFL by emphasizing on content and communication skills; they lack the emphasis of creative skills that is very important for students in this innovation world. Consequently, this article aimed to integrate TPACK with Gamification in order to develop Grade 8 students' creative sills in learning EFL. The authors reviewed the literature related to Gamification and TPACK and then synthesize the learning model integrated Gamification and TPACK for teaching English.

2. LITERATURE REVIEW

The literature review consists of TPACK, creative skills and Gamification. .

2.1 TPACK

In the 21st century, technology plays more important part in teaching and learning including teaching EFL. Alvin Toffler [2] mentioned to this current world as the third wave that impacts us with several changes in society, economy, politics and so on. In such changes, technology is appeared as a key drive. Learners should possess technological skills and literacy that will help them live appropriately in the current world. Learners should be able to utilize technological tools in seeking for more information, communicating and working with others as well as learning required content. In addition, teachers themselves must possess technological skills and literacy as well; they should be able to appropriately apply technological tools and platforms to suit the topic taught (content) and selected teaching method (pedagogy). This knowledge is called "TPACK" [3] that is very important for all teachers in particular to the rapid-changing technological world. In particular, English teachers also need TPACK for delivering effective learning experiences to their learners. In sum, English teachers should continually develop their own TPACK and apply it in teaching EFL for their learners. At the same time, learners should have an opportunity to practice their technological skills and apply them in their English learning with their best potentials Partnership for 21st Century Skills [4]

TPACK is suitable for teaching and learning in the borderless world where learners can learn anywhere and anytime. At current time, the accessibility of technological and communication tools such as a mobile phone, a tablet, and so on is easier than the past. These technological and communication tools are cheaper and easier to use. People in the world can rapidly and easily contact and communicate with others around the world. Situations occurred in a particular side of the world can impact to other sides of the world easily and, many times, in unexpected ways [5].

Teachers in Thailand are not familiar with the term "TPACK" much because TPACK just took its root in the literature in Thailand. Buaraphan and Roadrangka [6] presented the meaning and importance of PCK (Pedagogical Content Knowledge) for the first time in the PCK literature in educational context of Thailand. They emphasized that PCK is truly needed by all teachers especially science teachers. The organizations relating to professional development (PD) of teachers (e.g. Ministry of Education (MoE), the Institute for the Promotion of Teaching Science and Technology (IPST), etc.) should consider PCK as a conceptual framework in designing PD for teachers in Thailand. Later, in 2009, Koehler and Mishara [3] proposed the term "TPACK" and its framework as Figure 1.
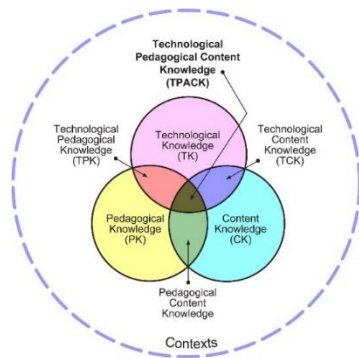
Figure 1 Technological Pedagogical and Content Knowledge (TPACK) Framework

From the TPACK framework, teachers should possess strong Content Knowledge (CK) or knowledge of subject matter and be able to choose an appropriate pedagogical strategy (Pedagogical Knowledge: PK) to teach that content. That is the basic conception of PCK. However, that is not enough especially in this technological world, teachers should be able to apply technological tools or platforms that are suitable with content taught and chosen pedagogy. PCK in combination with Technological Knowledge (TK) are referred to as TPACK [3]

TPACK is increasing its importance especially in the OCVID-19 pandemic era, which all teachers are mandated to maintain social distancing by teaching on-line. Many teachers are struggle with TPACK because they did not have technological knowledge and skills enough for delivering effective on-line teaching. English teachers still face this difficulty as well; so that, TPACK is needed by all teachers including English teachers. There is, therefore, an urgent need to develop TPACK in English teachers [7] If English teachers can develop TPACK in themselves and apply it in their English teaching, it will help make teaching and learning English are more effective and meaningful. As we have known, right now, there are many technological tools, instruments and platforms that can be applied effectively in teaching all subjects and being suitable to the diversity of learners [8]

2.2 Creative Skills.

Creativity or creative skills is regarded as one key desirable characteristics of learners in the Basic Education Core Curriculum of Thailand [1] Such priorities are consistent with the policy of the Ministry of Education in guiding Thai children and youths towards the 21st century. Emphases have been placed on morality, preference for Thai-ness, skills in analytical and creative thinking, technological know-how, capacity for teamwork and ability to live in peace and harmony in the world community.

In addition, creative skills are included in the 21st century skills framework (3Rs7Cs) that categorized the 21st century skills into three main areas: a) Learning and innovation skills: critical thinking and problem solving, communications and collaboration, creativity and innovation; b) Digital literacy skills: information literacy, media literacy, Information and communication technologies (ICT) literacy; and c) Career and life skills: flexibility and adaptability, initiative and self-direction, social and cross-cultural interaction, productivity and accountability. These 21st century skills have been identified as being required for success in 21st century society and workplaces by educators, business leaders, academics, and governmental agencies. They are required for students in this 21st century to master in preparation for success in a rapidly changing, digital society. Many of these skills are also associated with deeper learning, which is based on mastering skills such as analytic reasoning, complex problem solving, and teamwork. These 21st century skills differ from traditional academic skills in that they are not primarily content knowledge [9]. In summary, the focus for English teachers should be on creative skills in combination with other skills.

In the post knowledge-based society, English teachers should select pedagogical strategies being suitable to students' ages and grade levels in order to help them develop communication skills, questioning skills, critical thinking skills, creative skills and so on [1] Teachers should not pay strong focus on content memorization but should focus on essential knowledge and competencies which learners needed to live and survive in the 21st century [10] [11] Developing students' creative skills is regarded as an important task that teachers must accomplish according to the National Education Act B.E. 2542 and the Basic Education Core Curriculum B.E. 2551 of Thailand (Ministry of Education, 2008). In these two national regulations, creativity is appeared as one of desirable characteristics of learners. Creativity is one kind of thinking in nature of everyone; it can be developed if teachers provide appropriate learning experience and environment for learners such as a providing open learning environment, using a thinking out of the box technique, etc. Teachers inevitably plays a crucial role in developing creative skills in learners [12].

2.3 Gamification

Gamification is the application of principles, ideas and mechanics of game in educational context as teaching and learning. English teachers can apply Gamification in designing learning activities in teaching EFL ([14] [15] [16] However, teachers should select components of gamification that are suitable to the content taught, pedagogical strategy used and targeted

students [17]. Students learned with Gamification should be fun and motivated in learning. Learning activities in Gamification should be student-centered. In applying Gamification, English teachers should think about their students regarding what kind of Gamification activities that will make students learn with fun and not boring and what kind of motivations will work for students in helping them to learn best [18]. In addition, Sayamon Insa-ad and Wannathida Yolawilas [19] mentioned that teachers should design or choose a game that is most appropriate in teaching the targeted content. Students should take active role in their learning and learn with fun and motivating. Gamification is one pedagogical approach that can develop students' 21st century skills and ability to apply technology in seeking information and learning [20].

The authors reviewed the literature related to Gamification [21] [22] [23] [24] [25] [26] [27] [28] and summarized the common characteristics of Gamification as Table 1.

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Table 1. Summarization of characteristics of Gamification

Hwang (2018)	Hsin-Yuan Huang and Soman (2013)	MacMeekin (2013)	Chatpong Choosang nil.(2019)	Benjapuk Jongmuen wai (2018)	Marczews ki (2016)	Huang & Soman (2013)	MacMee kin (2017	Characteris tic of Gamificatio n
Determine learning objective	Determine learning goal	Identify learning result	Determine learning objective	Determine learning goal		Determine learning goal	Identify learning result	Identify learning result
		Select big ideas		Select big ideas			Select big ideas	Select big ideas
Determine learning structure	Arrange learning experience structure				Plan learning experience	Arrange learning experience structure		Arrange learning experience structure
		Story of game	Determine content structure of game	Story of game	Counter response		Story of game	Determine structure of game
		Design learning activity	Strategic design of game	Design learning activity	Design and develop		Design learning activity	Design learning activity
Determine resource	Determine resource				Determine resource	Determine learning resource		Determine resource
		Team building		Team building			Team building	Team building
Apply components	Apply components	Apply mechanics of game		Apply mechanics of game		Determine components		Apply dimension of gamification

of	of					of		
gamification	gamification					gamification		

In summary, the summarization of characteristics of Gamification consisted of eight characteristics: a) Identify learning result; b) Select big ideas; c) Arrange learning experience structure; d) Determine structure of game; e) Design learning activity; f) Determine resource; g) Team building; and h) Apply dimension of gamification.

Later, the authors synthesized Gamification and TPACK and concluded with these five teaching steps of TPACK-Gamification learning model: 1) Present the situation and set learning goals; 2) Learn through gamification features; 3) Present learning outcomes and reinforce them with rewards; 4) Summarize and Discuss; and 5) Evaluate. The description of each teaching step can be described as follows.

Teaching Step 1: Present the situation and set learning goals

A teacher explores students' prior knowledge by using a pre-test or questioning by using appropriate technological tools or applications such as Kahoot, Quizziz, Padlet, etc. Then, the teacher identifies key ideas of the lesson as well as expected learning results and learning objectives.

Teaching Step 2: Learn through gamification features

Students participate in Gamification-embedded learning activities. The gamification activity requires students to work in team with the aims in promoting students' communication skills in English including speaking, listening, reading and writing.

Teaching Step 3: Present learning outcomes and reinforce with rewards

Students in group present their learning outcomes to the class. The teacher reinforces them with Gamification that can be embedded in this teaching step though competition and rewards such as Best Presentation Award, Popular Award, etc.

Teaching Step 4: Summarize and Discuss

Students summarize key ideas and learning experience together and the teacher checks their summarization and participate in the discussion. The teacher may set the award for a person or a team, who perform dominant in summarization and/or discussion.

Teaching Step 5: Evaluate

The teacher employs diverse methods to assess students' learning such as post-test, checking students' products, evaluating students' performances. In addition, the teacher may require students to do self-assessment and/or peer assessment.

In order to show how to concretely apply the five teaching steps of TPACK-Gamification model in teaching EFL. The authors raised one example lesson plan on the topic of Occupation for Grade 8 students as follows.

3. LEARNING OBJECTIVES

After learning in this topic, students will be able to:

a) read aloud words, phrases, or sentences relating to occupation;

b) make conversation about occupation;

c) perform role play about occupation; and

d) participate actively in learning activities.

4. CONTENT

a) Occupation

 b) Vocabulary

Singer, Doctor, Farmer, Chef, Artist, Pilot, Policeman, Teacher, Student

c) Function

    - Greetings and introductions

    - Talk about occupation

    - Ask and answer about role-play occupation

    - Spell words

d) Grammar and Structure

    - Present Simple Tense

    - Wh Question

5. TEACHING AND LEARNING

Teaching Step 1: Present the situation and set learning goals

A teacher engages students into the lesson by presenting the Occupation Cards as Figure 2. The teacher askes students to name each occupation card and describe the meaning of each occupation. The presentation will be presented through PowerPoint presentation software. The questions the teacher will ask are:

Teacher: Can you guess, what does he do?

Expected answer: Doctor, teacher, taxi driver, solider, soccer player.

When students answer correctly, the teacher encourages them by saying "*Excellent*" "*You are excellent*"


Figure 2. Occupation Cards
Source Tanthong and Pimvichai (2022)

The teacher explores students' prior knowledge about occupation by requiring them to do a pre-test on Occupation, which is consisted of 10 items.

The teacher presented the learning objective of the lesson and its associated learning results.

Teaching Step 2: *Learn through gamification features*

2.1 The teacher employs a video clip from YouTube titled "Eakachai, an artist without hands" in order to inspire students about occupation from a perspective of handicap.

... without hands"

uAvl1xmNSt0
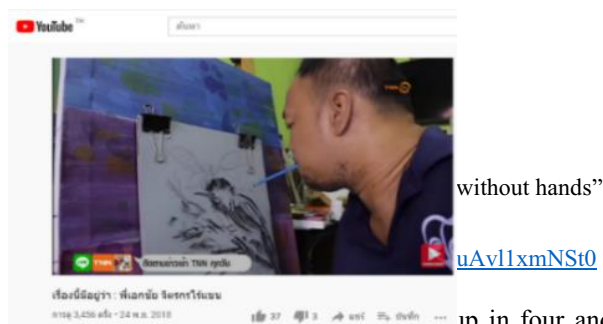
... up in four and discuss about the video clip by using these guiding questions.

Teacher: What does he do?

Expected answer: He is an artist.

Teacher : What did you learn from this video clip? Please discuss in your group.

Expected answer :Everyone, even a handicap, can do job, develop and learn.

Teacher: What do you want to be?

Expected answer: I want to be a /an ………………

Students in each group discuss and answer these questions.

Teacher: What do you want to be?

Expected answer: I want to be a /an ………………

Teaching Step 3: *Present learning outcomes and reinforce with rewards*

The teacher describes the structure of question about occupation by using a diagram.

| What | do | you they | do? |
| | does | he she | |

I	am		a doctor.
You They	are		nurses.
He She	is		a farmer.

FIGURE 4. Structure of question about occupation
SOURCE: Tanthong and Pimvichai (2022)

The teacher uses a video clip from YouTube titled "Conversational English – Occupations" derived from https://www.youtube.com/watch?v=YAX3Yu4gueQ. This clip will help students develop more understanding about the structure of question about occupation.

Figure 4 YouTube titled "Conversational English – Occupations" and QR Code

Source

https://www.youtube.com/watch?v=YAX3Yu4gueQ

The teacher uses a video clip from YouTube titled "Jobs Song / English for Kids" by using the link: https://www.youtube.com/watch?v=LLDOcVVpmF8.
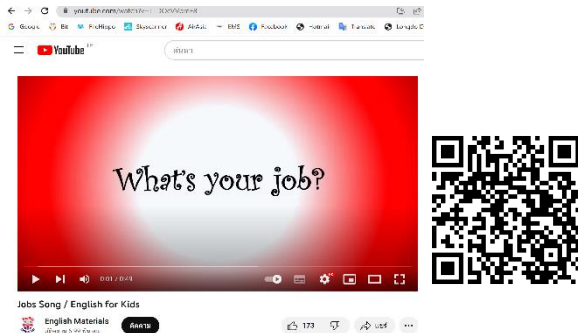
Figure 5 YouTube titled "Jobs Song and QR Code

Source

https://www.youtube.com/watch?v=LLDOcVVpmF8.

Students together with the teacher summarize an occupation in each situation and what did students learn from the video clips.

The teacher requires students in team to play a game titled "Who am I." In this game, each group will be take a draw to get the secret occupation. Then, each group must create the conversation that occupation normally do with others and a script of role play. Students may seek for more information from search engines such as Google. Then, each group will practice role play and, later, perform a role play and other students who watch the role play will guess what occupation each group perform. Regarding this, the teacher may set the award for a team, who perform a dominant role play – Best Performance Award. The winner will get more score from the teacher.

After finished role play, students do the Worksheet 1 Occupation by reading the information about secret occupation, note vocabularies, key terms, and guess what secret occupation in the reading is.

Teaching Step 4: *Summarize and Discuss*

Students together with the teacher summarize key ideas about occupations and how English skills (reading, writing, speaking and listening) may help to succeed each occupation. The teacher set the award for a team, who perform excellent discussion.

Teaching Step 5: *Evaluate*

Students are requested to take a post-test on Occupation, which is consisted of 10 items. The teacher evaluates students' performance on role play by using a five-scale scoring rubric (1-5 scores). In addition, the teacher checks students' Worksheet 1 by using a five-scale scoring rubric.

students are asked to evaluate themselves through self-assessment report consisting of these stimulating points: a) Key things you learned from this lesson, b) Problem and obstacles of learning, and c) Suggestion to improve learning and teaching.

The teacher announces the Best Performance Award and Excellent Discussion Award and gives the rewards.

6. CONCLUSION

This article shows how the author came up with the TPACK-Gamification model for teaching English language for Grade 8 students. The analysis of literature related to Gamification has been merged with the conceptualization of TPACK until reaching the five teaching steps of TPACK-Gamification model. These five teaching steps of TPACK-Gamification model, then, are applied in designing a lesson plan on Occupation for developing creative skills for Grade 8 students. Anyway, the effectiveness of this lesson plan and TPACK-Gamification model still needs further research in the next phase. At this point, the readers or other teachers may realize the practical way to create a new learning model that is suitable for teaching a particular topic and grade level. The first author of this article is an English teacher who tries to find better or more effective pedagogical strategy for her students. This positive attitude toward professional development drives her to accomplish the new teaching model in her field. This article shows that it is not too difficult for other teachers in any fields who try their best in delivering the best learning experience for their students. The readers who are interested can e-mail the corresponding author for more detail about the model as well the lesson plan.

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