

DESIGNING TECHNOLOGY-ASSISTED LESSON MATERIALS FOR ESP NURSING STUDENTS BY USING TPACK

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Abstrak. Tujuan utama dari penelitian ini adalah untuk merancang bahan ajar berbantuan teknologi untuk siswa keperawatan dengan menggunakan TPACK. Bahasa Inggris untuk Keperluan Khusus untuk mahasiswa keperawatan berfokus pada mempersiapkan siswa untuk menggunakan bahasa Inggris di bidang akademik mereka dan mendukung profesi mereka dalam karier masa depan mereka sebagai perawat. Dilakukan di salah satu sekolah ilmu kesehatan swasta di Yogyakarta, penelitian ini menggunakan metode Penelitian dan Pengembangan. Analisis kebutuhan dengan menggunakan wawancara dan observasi dilakukan untuk mengumpulkan data. Partisipan penelitian adalah satu guru bahasa Inggris dan 45 mahasiswa keperawatan semester ketiga. Selain metode penelitian, kerangka kerja Analisis, Desain, Pengembangan, Implementasi, dan Evaluasi (ADDIE) diadopsi untuk merancang bahan pelajaran. Hasil penelitian menunjukkan bahwa siswa menunjukkan kebutuhan dan minat mereka dalam menggunakan alat teknologi selama proses pembelajaran mereka; ini diungkapkan melalui hasil analisis kebutuhan yang dilakukan pada awal penelitian. Kedua, alat teknologi yang diterapkan dengan menggunakan kerangka kerja TPACK tampaknya memberdayakan siswa selama proses pembelajaran; mereka menjadi lebih percaya diri dalam melibatkan kegiatan kelas dan berpartisipasi lebih aktif di kelas. Hasil penelitian ini akan memberikan wawasan bagi para guru ESP dalam merancang bahan ajar berbantuan teknologi dan kegiatan pengajaran dengan menggunakan kerangka kerja TPACK. Selain itu, guru ESP dapat mempertimbangkan untuk menerapkan kerangka kerja TPACK untuk membangun lingkungan belajar campuran dalam memfasilitasi pembelajaran siswa.

Kata Kunci: ADDIE, ESP, Bahasa Inggris untuk Keperawatan, TPACK

INTERFERENCE

Journal of Language, Literature, and Linguistics

Submitted: January 20th, 2020

Accepted : February 21th, 2020

Abstract. *The main purposes of this research is to design technology-assisted lesson materials for nursing students by using TPACK. English for Specific Purposes (henceforth, ESP) for nursing students focuses on preparing students to use English in their academic field and support their professions in their future career as a nurse. Conducted in one of private health science schools in Yogyakarta, this research employed Research and Development (henceforth, R&D) as the method. Needs analysis by using interviews and observations were done to gather the data. The research participants were one English teacher and 45 nursing students of the third semester of the respective institution. In addition to the research method, Analysis, Design, Development, Implementation, and Evaluation (henceforth, ADDIE) framework was adopted to design the lesson materials. The results of the research indicated that the students showed their needs and interests in using technological tools during their learning process; this was revealed through the results of the needs analysis conducted at the beginning of the research. Secondly, the technological tools implemented by using TPACK framework seem to empower the students during the learning process; they got more confident in engaging the classroom activities and participated more actively in class. The results of this research will provide insight for ESP teachers in designing technology assisted lesson materials and instructional activities by using TPACK framework. Moreover, ESP teachers might consider to implement TPACK framework to build blended learning environment in facilitating student learning*

INTRODUCTION

Nowadays in Indonesia, universities and higher education institutions have begun to include English as a subject in their curriculum to support the students academically and to prepare their future career. In relation to this, Saragih (2014) asserts that universities and higher education institutions design and develop English for Specific Purposes (henceforth, ESP) to enhance students' English competence in their respective areas of workplaces. The integration of ESP program in the curriculum enables students to contextually and authentically apply the target language based on their field based on their learning needs (Saragih, 2014). The integration of ESP program in the curriculum facilitates the students to gain awareness of what they should do with English, which skills they should master, what genres they should learn, and how it will be implemented within their areas of work.

ESP for Nursing is one of the ESP programs designed to support the nursing students and future nurses in learning English related to and preparing them to use English in their context (Saragih, 2014). The ESP program in this research is a program designed for undergraduate nursing students in a Private Health Science Academy in Yogyakarta, Indonesia. This program is a three-credit compulsory subject intended for the third semester students. In this program, the students are expected to be able to use communicative English to support their future job as nurses. Therefore, in order to help the students to achieve learning objectives, it is important to adjust the materials based on the students' needs. In the program, the students learned some English expressions on assessing ear, giving injections, applying infusion and some others expressions needed when they interact with English-speaking patients.

In designing the instructional activities for English for Nursing, it is important to pay attention on how to deliver the materials to students, as it will help the students to gain knowledge and achieve learning objectives. The use of technology can be one of the solutions to provide an interesting ESP materials, engage students into learning process, and to motivate students in learning. Therefore, this research is aimed to design ESP technology-assisted lesson materials for nursing students by using TPACK as the framework of technology integration.

REVIEW OF LITERATURE

ESP is a language program that is designed based on the needs of the students, in which it provides appropriate context to support the students to achieve the goal of language learning (Richard & Schimdt, 2010 in Saragih, 2014). It also facilitates students to understand the role and practice of English related to their career as it emphasizes on how the students will use English as a language in their workplace. Basically, ESP is one of the English programs which have some branches, such as English for Academic Purposes (EAP) and English for Occupational Purposes (EOP). Designed based on the students' needs, ESP is learners-centred program which prepares students to be ready in using English in their future workplace (Saragih, 2014).

English for nursing is one of ESP programs that designed to teach English for nursing students to support their future career in their workplaces. Research about

English for nursing is still limited in Indonesia. A previous research conducted by Saragih (2014) presented the process of designing ESP materials for Indonesian nursing students in a university. The results of the research showed that nursing students needed authentic materials to help them to be proficient in English for their future career. In regards to the limited numbers of ESP for nursing students in Indonesia, this research is aimed to design an ESP course for nursing students by integrating technological tools as the instructional activities. Therefore, lesson materials for ESP for nursing students were developed by blending technology into its pedagogy and content knowledge. As a part of blended learning, learning that integrates technology and used some delivery method such as collaboration software, website, and knowledge management practice (Kulvietiene & Sileikiene, 2006), this technology-assisted ESP design process employed a specific framework to integrate the technology.

TPACK, a model that is used in blended learning to support the content-based technology integration, was adopted as a framework to integrate technology into the instructional activities. According to Harris and Hofer (2011), TPACK consists of Technology, Pedagogy, and Content Knowledge that become the fundamental in teaching and designing materials. In TPACK model, as illustrated in Figure 1., content knowledge (C), pedagogy (P), and technology (T) are the fundamental elements for developing teaching and designing material. Apart from that, TPACK is a unit of framework where the elements would work in pairs; pedagogical content knowledge (PCK) technology content knowledge (TCK), technological pedagogical knowledge (TPK), and all three are together as technological pedagogical content knowledge (TPACK) (Koehler, 2006). In other words, TPACK has been implemented if the three elements have met in a sequence of learning activities. Therefore, in designing materials for nursing students, this framework was used because it provides the detailed analysis from both teacher and the school context (Onguko, Jepchumba, & Gaceri, 2013).

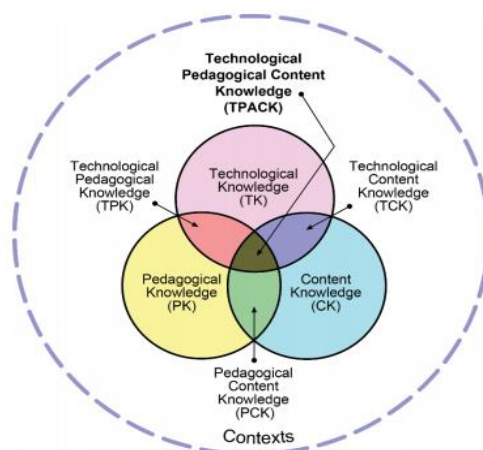


Figure 1. The Technological Pedagogical Content Knowledge Framework

ADDIE is one of research and development models that has five stages of instructional design, i.e. analysis, design, development, implementation, and evaluation. ADDIE is a framework used in designing instructional design in social and

humanity research (Mubar, 2015). By using ADDIE model, the curriculum developers and lecturers would be able to design the material for the instructional activities that will improve the students' knowledge and skills (Wang & Hsu, 2016). In addition, ADDIE model for instructional design accommodates students' needs in learning and provides opportunities for curriculum developers and lecturers to improve the design based on the evaluation of the product (Peterson, 2003). Likewise, ADDIE model is one of the appropriate models in designing a blended learning class (Wiphasith, Narumol, & Sumalee, 2016). Therefore, ADDIE model was used in this research as it was considered the most appropriate model for designing an ESP lesson materials for nursing students.

METHOD

Research Design

Research and Development (henceforth, R&D) method was used as a research method for this research. This method was used as it serves two purposes, i.e. to produce a certain product and validate the product innovation through interview and observation (Yoshikawa, 2012). Furthermore, R&D method enables researchers to develop product innovations based on the needs of the market and evaluate the effectiveness of the product to improve the end product results. In this research, the researchers adopted Analysis, Design, Development, Implementation and Evaluation (henceforth, ADDIE) model among the other R&D models. ADDIE model was chosen as a framework to design and develop the lesson materials in this research as this model is more suitable for social and humanistic research (Mubar, 2015) compared to the other models, for instance Borg and Gall which is commonly used in a scientific research (Borg & Gall, 1983). Therefore, ADDIE model was adopted as a framework to design and develop the lesson materials for ESP for Nursing students in this research.

The five stages in ADDIE model used in this research are explained and described as follow.

1. Analysis

Need analysis phase was done prior to designing the lesson materials for nursing students in a Private Health Science Academy in Yogyakarta by conducting an interview and observation. The interview with an English teacher was conducted to clarify problems encountered by the students, the curriculum being used in the academy, the goals and objectives of the program, and the nature of the students. Meanwhile, the observation was conducted with an English teacher and 45 students of the third semester to investigate the students' needs, lacks, wants, and their English proficiency.

2. Design

Based on the results of the needs analysis, the syllabus was designed. The syllabus consists of the learning objectives, topics, instructional activities, instructional media, and assessment. Three lesson materials were designed in complementary of the lesson materials prepared for one semester and designed by the English lecturer. In addition, in designing and developing the lesson materials, Technology, Pedagogy, and Content Knowledge (henceforth, TPACK) was used as a framework to integrate technological tools in the instructional activities.

3. Development phase

In the development phase, the intended-lesson materials were developed based on the elements in the syllabus. There are some activities involved in this phase, such as listing the instructional activities, selecting the ready-to-use materials for the students, developing and producing materials for the students, organizing the materials, and validating the materials before the implementation.

4. Implementation phase

In this phase, the lesson materials were implemented in one of the classes in the Private Health Science Academy. In this phase, the researchers, with the assistance of the English lecturer, taught the technology-assisted lesson materials. The implementation was conducted within three weeks.

5. Evaluation phase

This phase was designed to assess and evaluate the quality of the materials after being implemented. To assess and evaluate the quality of the materials, feedback was gained from the English lecturer. The English lecturer gave summative feedback for the materials, the use of technology, and assessments. The feedback will be used to make revision for the revised product in future research.

Research Setting and Participants

The research was conducted in one Private Health Science Academies in Yogyakarta, Indonesia. This place was chosen as the research setting as it was assessable for the researchers to gather the information and data for the research. Additionally, this place was chosen because the researchers were doing a pre-service teaching for one month in this place. Conducted from the end of October to the end of November 2020, this researchers conducted the research in an ESP class for semester 3 students. The research participants were an English teacher of English for nursing in a Private Health Science Academy in Yogyakarta and 45 students in nursing class of semester 3. The students are future nurses aged 18 to 20 years old.

Research Instruments

To collect the data, the researchers used qualitative method by collecting rich data from the interviews in order to see the reality from the viewpoint of the teacher (Creswell, 2012). Interviews were conducted with the English lecturer twice. Interviews with the English lecturer were done at the beginning of the process of materials development and at the evaluation phase, at the end of the research. With the nursing students, interviews were done by using a set of questions to find out the students' needs, wants, and lacks to develop the objectives of the lessons. Further, the observation was conducted in the selected class to observe the instructional activities, learning environment, nature of the students, students proficiency, and students motivation and behavior in the classroom.

FINDINGS AND DISCUSSION

Needs Analysis

The learners' needs were analyzed from the results of interview with the English lecturer, some students, and observation. The data gathered from these activities were used as resourceful information in designing the appropriate materials for the nursing students.

The interview with the English lecturer was conducted at the beginning of the data gathering process. There were three points highlighted in this interview, i.e. learners' needs, wants, and lacks. Responding to the researchers questions about the learners' needs, the English lecturer stated that as future nurses, the students need to be able to communicate with foreign patients. She added:

“The students are required to be able to use some basic expressions related to their profession as nurses. They have to be able to explain health-care procedure, instruction of assessing ears and eyes, procedure of giving injection and applying infusion, instructions of giving a bath, hygiene principles, and so on.” (INTV/CLO1)

She also reported that, in each meeting, there are three sections taught by the teachers and should be covered by the students. Those three sections are vocabulary enrichment, language expression exposure, and practice in pairs. Therefore, she suggested that the researchers should include those three sections in each meeting. Additionally, in regards to the students' wants, the English lecturer mentioned that, “Because they will work in a hospital, either national or international hospital, and deal with not only domestic, but also English-speaking patients, they realize that they need to be able to communicate fluently in English.” (INTV/CLO2). She mentioned that the students want to learn English in a fun way.

“They want to learn English with some games, communicative games and the other games. They also like to practice their English contextually. I usually give them role-plays to practice the language expressions they have learned. The students also like to do activities with technological tools during the class activities. I used PowerPoint slides to present the materials and Kahoot! to give them practice or formative assessments.” (INTV/CLO3)

In regards to students' lack, the English lecturer stated that the students' competence was average. There were some students who were good among the others, and some others were average. This condition made the English lecturer find it difficult to assess the students with different proficiency. Therefore, to assess the students equally, she asked the students to create a conversation video as their final project.

Observation was done after the researchers conducted the initial interview with the English lecturer. The class being observed consisted of 45 students of semester 3. During the observation, the researchers observed the instructional activities, learning environment, nature of the students, students proficiency, and students motivation and behavior in the classroom. The class was a teacher-student centered class where the lecturer as well as the students took equal parts in teaching and learning process. The instructional activities consisted of presentation of the topic or language expressions at the beginning of the meeting, vocabulary

enrichment activities (such as vocabulary games or vocabulary practice), language expression exposure, practice, and free practice (production). The learning environment seemed to facilitate students to feel safe, confident, and positive in the learning process. The students were actively participated in each class activity, it was a dynamic class. In most cases, students would answer the teachers' questions and some others seemed unconfident and shy. Students with good proficiency tended to be consistently participative thorough the class, while those who were weak tended to keep silent and avoid teacher's questions. Students were mostly engaged to their mobile phone. They seemed to get enthusiastic when the English lecturer give some technology-assisted classroom activities, such as playing *Kahoot!* game.

Therefore, from the results of the needs analysis, the researchers planned to design lesson materials which would engage students in learning process and facilitate the less confident students by integrating some technological tools during the instructional activities. TPACK was adopted as a framework to design the lesson materials for nursing students in this institution. As a framework that supports technology integration into teaching and learning process, TPACK comprises of technology, pedagogy, and content knowledge (Harris & Hofer, 2011).

Design of the Materials

From the results of needs analysis, the materials were designed by implementing TPACK framework. There were three lesson materials designed by the researchers, i.e. assessing ear, giving injection, and applying infusion. These three lesson materials were designed for the last three meetings of the course. The objectives of the respective lesson materials were 1) explaining the procedure of ear assessment and give instructions during the ear assessment procedure by using appropriate language expressions, 2) explaining the procedures and instructions of giving injection to the patients by using appropriate language expressions, 3) explaining the procedures in applying an infusion and giving what-do-to instructions to the patients when applying infusion by using appropriate language expressions.

The teaching method adopted for this class were Presentation Practice and Production (PPP) method. This method was used as it had been used as the class procedures by the English lecturer (INTV/CLO2). The English lecturer, during the initial interview mentioned that the curriculum had been arranged in a specific way consisting of vocabulary enrichment and language expression exposure which were given by the lecturer, and practice in pairs. In the presentation stage, students were given exposure of the vocabulary and language expressions as well as language functions corresponding the topic being discussed. The lecturer presented the vocabulary and language expressions by presenting the new words and expressions to the students. Most of the time, this was done by presenting them by using PowerPoint slides or video and asking the students to practice pronouncing the words or doing vocabulary games. In the practice stage, the students were given some written exercises or speaking tasks to practice the words and expressions they had learned in the previous stage. Some of the tasks given to the students during this stage were answering questions based on the conversation in the video,

doing *Kahoot!* formative assessment, and answering questions in Padlet. Lastly, freer practice was given to the students to apply the words and expressions in the authentic contexts.

Consequently, in order to meet students' needs and the objectives of the lessons, the materials were designed in the following sequence of activities.

1. The students are given some lead-in activities to introduce the topic
2. The lecturer presents some new words and language expressions related to the topic
3. The students practice the language items by using technological tools
4. The students produce the language item previously learned in a more authentic context by using technological tools

Development of the Materials

In development phase, the researchers adopted TPACK as a framework to integrate technology into the designs of the lesson materials. By combining technology, pedagogy, and content knowledge, the researchers designed the instructional activities done in class. From the content knowledge designed in the previous phase, the researchers determined the appropriate technological tools that support the objectives of each lesson. Various kind of technological tools and resources, such as Power Point slides, Quiziz, Paddlet and video were chosen to facilitate students achieve the learning objectives. The next step was to determine the pedagogical approaches to complement the integration of technological tools and content knowledge. Some pedagogical approaches such as the selection of PPP method, role plays, group work, and individual work were chosen. Along with the pedagogical approaches, the researchers also selected a wide array of instructional activities, such as vocabulary game, listening to the talk, doing discussion, individual quiz, and practicing conversation to engage the students during the learning process and to give them rich learning experiences. The implementation of TPACK framework in each lesson material will be explained in the following paragraphs.

The the first topic of technology-assisted lesson material developed by the researcher is assessing ear. The objective of this lesson is students will be able to explain the procedure of ear assessment and give instructions during ear assessment by using the correct vocabulary and expressions. At the beginning of the lesson, students watched a video of how a nurse explain the procedure of ear assessment and give instructions during ear assessment. This activity represents the integration of technology in the lesson and is explained in Figure 2. After the students watched the video, the lecturer highlighted the words and expressions used in ear assessment and provided some practice. The students, then, were asked to create a role play between a nurse and an English-speaking patient about ear assessment. In Figure 2., the area where the three elements, i.e. technology (T), pedagogy (P), and content knowledge (C) met was when the students received the input of the language items by using video, did role play of ear assessment, and used words and expressions of assessing ear appropriately.

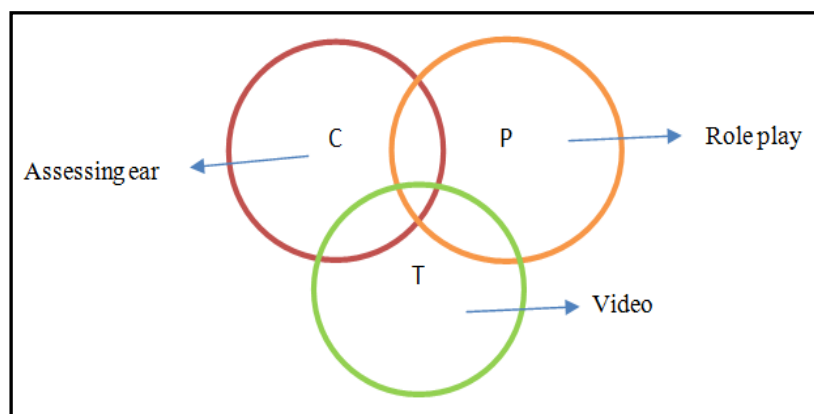


Figure 2. The Implementation of TPACK in Designing Material of Unit 1

The topic of unit 2 is giving injection. The objective of this lesson is students will be able to explain the procedures and instructions of giving injection to the patients by using appropriate language expressions. At the beginning of the class, the students were asked to do a vocabulary quiz on Quiziz individually. It was done to construct new knowledge of the words and expressions they have known before and the new words they would learn. Right after doing the quiz, the class discussed the answers and the lecturer presented the vocabulary and expressions used to give injection. These activities were illustrated in Figure 3 below. The three elements met, illustrated in Figure 3., represents the implementation of TPACK in this lesson material.

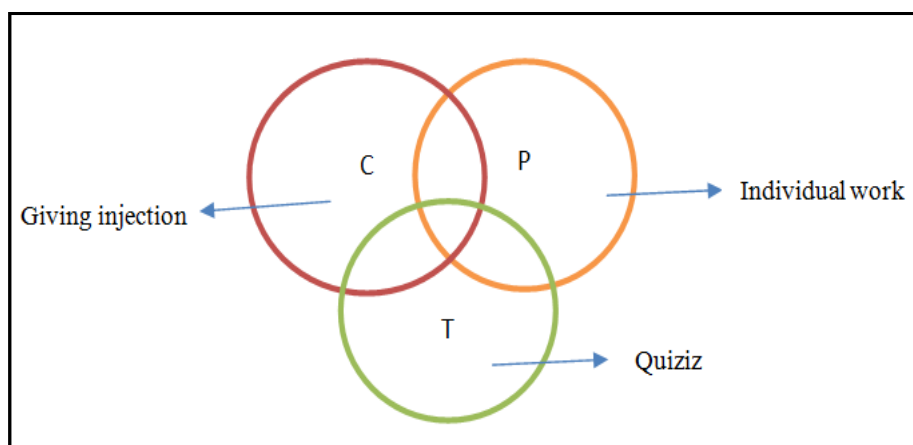


Figure 3. The Implementation of TPACK in Designing Material of Unit 2

The last topic is applying infusion. The objective of this lesson is students will be able to explain the procedures in applying an infusion and giving what-do-to instructions to the patients when applying infusion by using appropriate language expressions. The students learned the new words and language expressions of applying infusion by doing group work. They discussed the new words and language expressions used for applying infusion and shared the results of the discussion in Padlet. Students were also asked to leave comments on their friends' posts. In Figure 4., the area where the three elements met represents how TPACK was implemented in this unit.

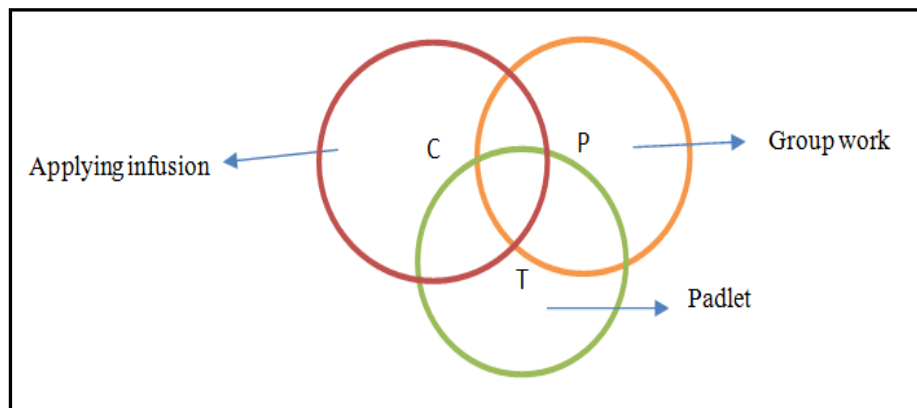


Figure 4: The Implementation of TPACK in Designing Material of Unit 3

Implementation of the Materials

Three technology-assisted lesson materials were implemented for three meetings during three weeks. The implementation phase was conducted from 21 October until 4 November 2019. During the implementation phase, the researchers taught the lesson materials being designed previously and was assisted by the English lecturer during the teaching and learning process.

In the implementation phase, the researchers did a sequence of instructional activities designed previously in design phase. Initially, the researchers gave some lead-in activities to the students to introduce the topic of the meeting. The lead-in activities were varied from technology-assisted games to introduce new words and expressions to instructional videos. The researchers, then, presented the new words and expressions. After receiving the language exposure, the students did some practice to the language items learned individually, in pairs, or in groups. Finally, the students did freer practice or production of the language items learned in a more authentic context. This sequence of instructional activities were developed by using TPACK framework of technology integration.

In conclusion, the technology-assisted lesson materials developed for nursing students in this institution could facilitate students learning process. The materials integrated the content knowledge the students need to learn and master with the appropriate pedagogical approach as the cornerstones to teach the knowledge and the technological tools to facilitate students learning and provide richer learning experience.

Evaluation of the Materials

This phase was designed to assess and evaluate the quality of the materials after being implemented. To assess and evaluate the quality of the materials, feedback was gained from the English lecturer by using interview. The English lecturer evaluated three things during this phase, i.e. the materials, instructional activities, and the use of technology to facilitate the learning process. Comments, feedbacks, and inputs of the designed materials would be use to improve the materials. In regards to the materials development, she commented that the materials developed by the researchers were varied and rich in modality; they were

completed with some learning audio and video. In terms of the instructional activities, she mentioned, “The students seemed enthusiastic in doing various classroom activities, such as role-play, discussion, games, and conversation drills.” (INTV/CLO4). In addition, the English lecturer stated that the various technological tools or platforms used in class helped motivate and increase the students’ confidence in practicing their speaking. She also observed that less confident students were facilitated a lot during the activities and they engaged in learning. She said, “Less confident students could also join the class activities since they could share their ideas by writing in Padlet and answering questions in Quiziz.” (INTV/CLO5). However, in regards to the integration of technology, the English lecturer evaluated that some of the students were still confused about using the applications, for instance Padlet (INTV/CLO6). She suggested to allocate some time to introduce the applications and how to use them before asking the students to work with them.

CONCLUSION

Summary

Teaching ESP to nursing students should provide instructional activities that can help students to communicate in English in their future career. To accommodate students’ needs of the language items, technology-assisted lesson materials were developed by using TPACK framework. These lesson materials integrated the technological tools, pedagogical approaches, and content knowledge that can facilitate ESP learning for nursing students. Three lesson topics, i.e. assessing ear, giving injection, and applying infusion were developed based on the needs analysis. Once the technology-assisted lesson materials were implemented in class, they were evaluated and assessed. The results of the evaluation given by the English lecturer were the materials were varied and rich in modality, classroom activities helped students engaged in the learning process, and the technological tools facilitated students learning and helped improve students’ confidence to express their thoughts and ideas. However, a how-to session was needed before introducing the new applications to the students.

Implication

The results of this research provided some significant implications for English language teaching and learning in general and ESP. This research will enrich the research in education related to blended-learning by using TPACK framework. For ESP lecturers, this research can provide them insight of integrating technology to support teaching learning process. Also, ESP lecturers can consider to use TPACK framework in implementing blended learning approach in their ESP class. Lastly, this research can provide insight for curriculum developers to design technology-assisted material by implementing TPACK as the framework.

Contribution

As it employed R&D research method which used ADDIE as the framework to design and develop the materials, this research will provide insight for ESP

lecturers and ESP curriculum developers in designing ESP instructional activities by using ADDIE framework. The findings of this research might help the teachers to explore more on how to design and develop technology-assisted lesson materials by using TPACK framework for teaching ESP for nurses. Lastly, the results of this research benefitted ESP lecturers and practitioners in a way that they could implement the technological tools explained in this research to improve students engagement in learning.

Limitation

There were some research limitations found in this research. First, limitation of the time in conducting this research. Due to the limited time, the participant being interviewed was only the English lecturer. Although the English lecturer gave much information on the students competence, the learning environment, and the previous material used in the classroom, yet, information gathered from the students' side would be beneficial to design and develop the materials. Second, in the evaluation phase, because of the semester had ended, feedback was received only from the English lecturer. It would be better to have a 360-degree feedback from both the English lecturer and students to evaluate the materials as it would provide more inputs from different viewpoints.

Future Studies

Based on the results of this research, some recommendations for future research were made. First, future researchers can conduct research on developing technology-assisted lesson materials by using different framework of technology integration. Second, future researchers can investigate the nursing students' experience and voices in an ESP-assisted technology class. Lastly, future researchers can investigate the relationship between nursing students' learning motivation and the use of technology-assisted lesson materials.

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