Project-Based Learning Enhances Student's ICT Competence in Tourism Knowledge

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Abstract: Today education has increasing impacted on dynamic factors from fast changes of information and communication technology (ICT). Such as functions of Microsoft's Offices and social media of Facebook, Line, Instagram (IG) are all appearances in our living environment. Although those ICTs' tools have more and more convened in our life, however, they also have made students becoming laze and lack of cooperative learning attitude with others, this causes student's ICT tools look fruitful but their competence is lower than before. Therefore, how to enhance student's ICT competence has become an important issue in teaching methodology and strategy. In this paper aims to develop an effective teaching strategy on fitting this challenge. Through a way on using project-based learning in understanding the tourism knowledge, we find that student's ICT competence needs more advanced improvement on how to integrate tools of ICT, as well as how to work together with others when go through a team work project. This paper has a critical contribution on using ICT to construct an unknown industrial knowledge. And this knowledge is abstraction and difficult to understand in a traditional class teaching, but through project-based learning with ICT thus approached.

Key words: Effective teaching, project-based learning, case study, tourism education.

1. Introduction

Tourism has been recognized one of fast growth industries. The major reason is the industry consists of various stakeholders from upstream to downstream of industry. The upstream is supply side usually contains with different service providers for filled up tourist's requirements. The service providers are restaurants, transportations, accommodations, travel agents, and so on. On another hand, the downstream is demand side thus usually concerns with how to catch tourist's needs and information of travel satisfaction. Both problems of supply side and demand side are made tourism is a complex industry. And this complex industry is led to tourism education has an important challenge how to effective teaching on this complex domain knowledge.

Since tourism is a complex industry, every day the operations are working on different service functions, and then makes the specific requirements can be more satisfied after a complete service provided. The service process is connected by whole service system. And this service system is increasing development by different management learning methodology. And the management learning is one kind of ability when workers can solve different industry problems, especially the ability usually considers with people how to use modern information and communication technology. And therefore, the ability is identified and

becoming a competence for human resource management. That is why a topic on what should schools teach [1] has been raised for rethinking on tourism education. A student's competence in tourism education [2] is fostered to fill up this gap between industrial problem and school teach. The gap has been recognized that most industrial managers they thought school teach is always far away industry truthful needs. That is reason why most graduated students they have to re-training again before students they are suitable for job requirements.

Nowadays, information and communication technology has been broadly increasing used in many managerial works, which includes business management process, business to business (B2B) process, and business to customer (B2C) process. People who working in the tourism industry not only have to understand those traditional IT skills, but also have to learn modern social media of Facebook, Line, and Instagram (IG), which is a platform for understanding customers' needs and comments from someplace online reviews. Tourism enterprises also must learn how to promote their products on the website as marketing strategy. These IT's environment causes higher education must transpose traditional teaching method to new stage.

Therefore, the competence of using information and communication technology [3] thus required. Although, we know that students are often easy to use smart phone and computer, however, we know that students are not prepared really skills for understanding industrial knowledge with ICT competence as well. In this paper aims to this concerned point explores the unknown situation as possible teaching method and strategy for enhancing student's ICT competence with project-based learning in tourism knowledge.

2. Project-Based Learning with ICT

Project-based learning is usually used for enhancing student's learning outputs from work cooperatively and mutual co-construction efforts [4]. Therefore, it is based on a collaborative learning environment [5] and arranged by a team-work learning strategy. The cooperation is to train students how to solve a real problem with others. The "others" usually plays the co-worker in a real world when students are graduated from school. Why students must learn this matter? The major reason is students have to know in a real world most working tasks have connected by different functions from upstream to downstream of business process. Sometime the working tasks are complex and multiple / cross operations together. It means a working task is completed by different communications and information. And those of delivered data or information through multiple / cross operations thus can completed. Therefore, project-based learning is not only for doing or finish a working task, but it also for learning how to work together with others. It should learn a lot of human interactive skills such as communication, presentation, and emotion management. That is why the project-based learning is popular used in different learning disciplines such engineering, management, agricultural marketing [6], and language learning [7].

On the other hand, in recent years ICT has been broadly used for enhancing students' learning on web-based environment in an unlimited time condition. This is making ICT can be useful for teachers' teaching and students' learning, and then can be combined with project-based learning as one of effective teaching methods. For example, Marwan [8] reports an English classroom has been successfully implementation project-based learning with ICT, the research result shows students can participate actively in the process of knowledge construction and skill gain actively. This is pointed out that ICT has positive effects on project-based learning, since it can enhance student's ICT self-efficacy perceptions and attitudes [9]. Moreover, Dirckinck-Holmfeld [10] also supports this perspective that is project-based learning with ICT can make the teaching and learning more flexible and let students produce digital projects. That is why ICT can play an important role of platform and infrastructure for students learning in a culture of community, then approach the goal of information technology in education [11] in anywhere and anytime.

Project-based learning with ICT is also suitable for solving problem-based learning which students can construct content knowledge and teaching skill together. An integrating problem-solving learning and ICT model thus proposed by [12] as Fig. 1.



Fig. 1. An integrating problem-solving learning and ICT model.

The model is not only for making problem-based and project-based learning together, but it also emphases on integrating ICT as an effective teaching strategy. This is mapping teacher's new role and development of student's social skills [13] such as cooperation, empathy, assertion, and self-control. Therefore, the present paper is according to above-mentioned theory, implements the concept of project-based learning with ICT into practical teaching situation for enhancing student's ICT competence in tourism knowledge construction.

3. A Concept Framework

Here, a systematic concept framework is proposed for examining how the project-based learning with ICT can be useful construction industrial knowledge. This is designed with a three-phase instruction. Which includes inputs, teaching and learning process, and outputs. Each of phases is aimed to approach learning goal on completed a specially domain knowledge in traditional teaching and project-based learning with ICT community system. Therefore, when whole learning process as an especially domain knowledge, the learning process also became a value chain with value-added. In Fig. 2 thus shown our idea:



INPUT AND OUTPUT

Fig. 2. A concept framework for problem-solving learning with ICT.

Input: the team work is set up for project-based learning with ICT community system. The ICT tools are including Microsoft's Offices, Internet, and social media of Facebook and Line.

Teaching and learning process: here, teacher is teaching with ICT and interactive with students. This is usually traditional teaching process, but teacher has beginning to use ICT aids instruction. At the same time,

students are also used ICT tools for completing their project. In fact, students will face some uncertainty problems, which is need students they cooperation and communication with others.

Output: including concepts, skills, and knowledge. Through input and teaching and learning process, students will be more feelings and domain knowledge in the project. And the ICT's skills will be enhanced by asked finished project. The more important thing is students will prepare the concept of how to go through a project with others, especially how to work project with ICT's tools.

Control: that is quality management of instruction. That is teacher must measure each phase has any problem when students are cooperation and communication. In this part, the ICT's problem may happen, but sometime another problem of interpersonal relationship will appear from student's interactions.

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4. Result and Discussion: A Tourism Project Case

4.1. Teamwork for Understanding Industry Knowledge

This is cast study from tourism department in Meiho University. The teaching term includes two semesters from September of 2018 to June of 2019. There are 36 students in the subject of tourism topics, and they are grade four students in five-year college. The subject is to learn about the domain knowledge in tourism industry. Students were asked to set up a team work for understanding the selected topic as a problem-based learning with regard to tourism domain. Totally students consist of ten teams and working for project-based learning through two semesters, the topics are created by whole teams, Table 1 shows the detailed list as below:

Table 1. Topics Regarding Tourism Domain		
Team	Торіс	Number of students
1	Ecotourism of Xiao Liuqiu island in Taiwan	3
2	Night market in northern Taiwan	4
3	Cultural tourism with Wanjin church	4
4	Happy fun in Kaohsiung: Light Rail and MRT	3
5	Difference between free travel and group travel	4
6	What purposes for young traveler are?	3
7	Food tourism in Formosa	5
8	A cultural tourism of ancient castle in Tainan	4
9	Local food travel in Wan Hao pig fee	4
10	Japan travel experience: Tokyo	2

The topics are not limited by specific area in tourism, sometime the area of hospitality is also accepted, the major reason is five-year college students they must learn about the hospitality knowledge in first and second years as basic knowledge, since the area is part of tourism industry. Moreover, when students have problems with topic, they also can discuss with teacher before they select renew topic. After whole grouping actions completed, all teams are beginning to their project-based learning with ICT.

4.2. Project-Based Learning with ICT

Two categories of ICT's tools used for project-based learning. One is Microsoft's Offices (Word and PPT), and another one is social media (Facebook and Line). In the first semester, teacher asks students have to use Word of Microsoft's Offices as a formal standard. And then all teams must follow the formal standard to format their proposal, if students can not correct their format when teacher asks for each step, the proposal

will be rejected and returned to the team doing again. Since proposal is critical output, therefore, all teams have asked for making a completed format for teacher (for their tourism business if students graduate). However, some team uses web-based Word version to do their proposal, they face another problem that is school's teaching and learning computer cannot open their file, then they are failure to submit their proposal on time. On the other hand, the Power-Point Templates (PPT) of Microsoft's Offices used for oral and poster presentation in the second semester.



Fig. 3. Line plays an important way to communicate with students.

Moreover, social media of Facebook and Line used for interactive, cooperation, and communication. The Facebook is personal private place, but it is also a platform for students' social connection. The Facebook provides a virtual space for students' communications and stores their documents. Facebook often used during their project working, students are not frequently used USB, they download and upload their files on Facebook are directly. This has created another advantage that makes files are not commonly used then getting virus of software. Although, Google has same function with Facebook, such like Google Gmail and Drive, but students are also frequently used Facebook for their project. Therefore, Facebook is a way for communication to show what I have done and everyday life's things. They can chat with others in detailed personal opinions, for private or even for their tasks of project.

Line is an important way when teacher want to communicate or deal with students' problems. When each team has been successfully grouping, each team thus asked for set up a line group, and then the group has a name same with their topic. Therefore, teacher can directly to ask each team doing same thing at a same time. Fig. 3 is team 3 (Cultural tourism with Wanjin church) their Line group. In the right-hand side is teacher; and then students are in the left-hand side. Teacher and students are easy to chat with others in anytime and anywhere. Nowadays, it is easy way for teacher and students in order to smart phone (such like Apple's iPhone or Samsung's Galaxy) has popular been used. Those smart phones make the learning more mobility and ubiquitously when teachers or students they want to take the information through Internet (or WIFI's environment) easily.

4.3. Learning Outcomes and Reflections

Learning outcomes are measurement in student's concepts, skills, and knowledge. It is integrated to acknowledge student's competence is qualitied or not. The first learning outcome is concepts building. The concepts are human relationship and problem solving respectively. Through project-based learning with ICT, we find the concepts support students professional skills and knowledge. For example, some students they are smart but they lack personal interactive ability. Smart students they can doing good job but they are usually working alone, and fewer friends go project together. This affects ability of human relationship in future when they work in a real world. And concept of problem solving as well. Students must learn how to solve a real problem without enough information.

They must find related resources under uncertainty and unknown environment, especially, they must learn which ICT's tools are available for helping their practical problems. Two important concepts are training students make sense of doing a complete project is not only one can do it, you must learn with others, work with available resources, and "do the right thing more than do the thing right." When the concepts are increasing construction, and then can make the professional skills and knowledge going well. Especially, we find that ICT is critical competence but students are ignored this. When project has asked for completion of proposal (a formal report), oral presenting PPT, and poster. Students they must prepare the ICT's skills then can application. But, through the project we find students are easy to use any social media (Facebook, Line, and Google' Gmail and Drive), but they are still lack on using functions of Microsoft's Offices, especially on how to effective use Word's functions. We worry about that students do not like to use Microsoft's Offices, they are usually used any web-based software to finish their work, and then find that is not available for fitting teacher want. However, the "want" sometime is presented to industrial needs, to make a formal report or proposal by using Microsoft's Offices in practical task is normal. In the end of project, the learning outcome is to measure what tourism knowledge has been constructed. The oral and poster presentations show students have prepared already or not. Presentation is designed on two phases. The first is a competitive phase, all teams have to design their PPT, and then to present their study results of project, when all teams are finished their presentation in class, the teacher thus according to the performances to evaluate which teams are qualified to the formal oral presentation for whole departmental students and teachers. At this phase, only team 5 and team 6 are the best two teams for the formal oral presentation. And the second phase is the rest teams they must design their poster to the formal seminar, where is outside of oral presentation, the place shows as Fig. 4.



Fig. 4. Student's poster presentation when audiences asked questions.

Through the measurement of learning outcomes on student's concepts, skills, and knowledge, the project

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is nearly finish. But according to the proposed concept framework for problem-solving learning with ICT, we have last process must check, which is behind the process of control, it is process of feedback. The feedback is to obtain the reflective thinking from students and teachers. In this case, students are writing their reflective thinking show on the PPT and final report. We thought that is one kind of trainings for students how to make a critical thinking for what they have done, in not only finish a project but also complete a human-being process, which is inputs, teaching and learning process, and outputs. Most of students their reflective reports are descriptions the project-based learning with ICT is valuable when they do not know how to make the first step in unknown situations. And especially, they have re-learning on how to use and integrate the ICT's tools at the same time. They know that is well experience when they go a project should more respective with others, and more co-operate with others.

5. Conclusion

According to the results and discussions, this paper has been successful to develop an effective teaching strategy on using project-based learning with ICT. We find that student's competence needs more advanced improvement on how to integrate tools of ICT, as well as how to work together with others when they go through a team work project. In this paper has also provided a critical contribution on using ICT in understanding the tourism knowledge. And this knowledge is abstraction and difficult to understand in a traditional class teaching, but through project-based learning with ICT thus approached.

Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

Tsai K. N. collected the original data from multiple data sources. Wang E. P. undertook the data analysis and wrote the manuscript. Lo W. S. reviewed the results of the case study, writing the manuscript, and paper submission.

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