

Intention to Implement IT Instruction for Teacher Learning

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Abstract Humanity's competitive advantages in the society are based on the intelligence and knowledge developed. One important way for human development is education. Under the global trend of decreasing birth rate, how can talents be developed to create advantages? It is obvious that talents are important resources in knowledge creation, as well as the foundation of a country. This study adopted the Decomposed Theory of Planned Behavior with the attitude aspect replaced by the teaching belief aspect, the perceived behavioral control aspect decomposed into perceived self-efficacy and condition of supportive resources, and the subjective norm aspect decomposed into teacher's superiors (the Department of Education), teacher's peers (colleagues in school), and teacher's teaching subjects (students and their parents). These three major aspects were used as the main points to design the questions for the interviews regarding teachers' intention to implement the idea of flipped classroom (Tucker, 2012). This study adopted the in-depth interview method and interviewed each subject individually in a face-to-face manner. A total of 5 teachers were selected for the interviews. In-depth interviews can be categorized into structured interviews, unstructured interviews, and semi-structured interviews depending on how structured they are. Due to the limitations of interview durations and the environment, the researcher wasn't able to take down all the contents on-site. Thus, with the approval of the subjects, all the interviews were recorded. When verifying the research findings, the subjects were asked to confirm the correctness of the content analysis results. In addition, some experts, scholars, and peers were invited to assist the analyses of the interview data to prevent biases caused by the researcher's subjective interpretations. This study showed the data analysis results to the subjects so that they could confirm if there was anything that didn't look right in data analyses and interpretations. If there was something that the subjects did not agree with, it would be reviewed for modification. The influence of teachers' teaching beliefs is on their intention to implement IT instruction.

This study aimed to explore teachers' intention to replace the traditional teaching method with IT instruction based on the theories of behaviors. Moreover, the research findings showed that the influences of teachers' teaching belief, perceived behavioral control, and subjective norm on their intention to implement IT instruction were all significant.

Keywords Intention, IT Instruction, Teacher

1. Introduction

This is an era of thriving information technology (IT) industries, and teachers' roles in education and social cultures have become increasingly important. Every student needs professional guidance from teachers to become an online learner. In Taiwan, in the age of information, the key of revolution is that teachers mostly make changes in their teaching methods (Cho and Trent, 2006). Now that things are being digitalized in the society, students may learn on their own. The clouds are the new schools, and the technologies are the tools of students. Thus, in various countries with different cultures, there have been different changes in learning led by the Internet technology, with ideas such as flipped classroom, large-scale online courses, Rocketship in the US, a School in the Cloud, and KIPP (Knowledge is Power Program). This means that there have been changes in the field of education, not just in Asia or America, but all over the world (Baker, 2000).

Thus, this globally rising reform in education and information technology has impacted teaching methods for education and the essence and systems of education. One of the challenges in information education reform that Taiwan has been facing is to increase teachers' knowledge in digital teaching and their intention to learn.

A teacher's teaching model can influence his/her

students' learning performances in his/her class. Therefore, in different classrooms, different teachers' activity models based on their beliefs regarding children's learning may influence their students' learning performance and provide different instructional activity models (Calderhead, 1988).

Clark (1988) argued that teachers' innovative behaviors are based on the changes upon their own teaching beliefs, and teaching innovation must begin with changes in teachers' concepts regarding teaching, beliefs, as well as their ideologies. Most studies on human behavioral intention are based on Ajzen's Theory of Planned Behavior, which talks about the influences of individual attitude, perceived behavioral control, and subjective norm. Taylor and Todd (1995) proposed the Decomposed Theory of Planned Behavior, which has been proven to be more suitable for explaining and predicting individual behaviors.

In the recent years, more and more parents are expecting teachers to be capable of innovative teaching and effective teaching. However, in fact, teachers are researchers in the field of teaching. They improve their professionalism, teaching strategies, and teaching skills based on their reflections after teaching. These viewpoints show that making changes in teaching methods is not just teachers' responsibility while teaching. External education environment and supportive resources are essential as well (Fujita-Starck and Thompson, 1994).

Students' satisfaction with learning activities can be used to evaluate their satisfaction with learning results, as well as a reference for teachers to determine whether their teaching designs are appropriate or their expected teaching effects are achieved (Fujita-Starck and Thompson, 1994).

2. Decomposed Theory of Planned Behavior

Human attitude has always been a challenge in social psychology. What is the relationship between human behaviors and human attitudes? How strong is this relationship? Sometimes, most people's attitude toward a new thing is positive. However, they don't actually take action to support it. Therefore, there have been scholars conducting studies on attitudes and actions. Fishbein and Ajzen (1980) proposed the well-structured Theory of Reasoned Action (TRA), which then became one of the fundamental theories for studying individual attitude changes and influences of attitudes on behaviors. Later, many scholars had learned that, while adopting the theory for their studies, the theory was too simplified as it considered merely one aspect. Therefore, other theories about individual attitudes and user behaviors such as the Theory of Planned Behavior (TPB) had been developed.

Shimp and Kavas (1984) learned that the explanatory power of a multiple-construct structure is higher than that

of a single-construct structure. Taylor and Todd (1995) integrated the TPB and the Theory of Diffusion of Innovation (IDT). They decomposed behavioral attitude, subjective norm, and perceived behavioral control into many aspects and proposed the Decomposed Theory of Planned Behavior (DTPB). Taylor and Todd suggested that perceived usefulness, perceived ease of use, and compatibility may influence behavior attitude. In cases with peer groups, supervisors, and main groups, their subjective norms are influenced. Self-efficacy, condition of supportive resources, and condition of supportive technologies can deeply influence individuals' perceived behavioral control.

The main belief formed after an individual's thinking plus one's attitude and after-behavior evaluation equal to the summation of the behavioral beliefs (Ajzen, 1985). Thus, a person's beliefs would influence the attitudes toward things. This study applied the subjective norm from the DTPB to teachers. The peer groups mentioned in this study are the groups of other teachers. The main groups in relation to teachers include education policies made by the Ministry of Education, students being taught, and students' parents. This study used the perceived behavioral control of the theory to analyze teachers' self-judgment while teaching, which is, in other words, their teaching self-efficacy. They could make judgments about which supportive resources to manipulate to achieve successful teaching, such as time, opportunities, funds, teaching techniques, and other factors. However, this study did not find any significant influences of condition of supportive resources or perceived behavioral control (Ajzen and Driver, 1991).

3. Material and Method

The research field of this study was in a large school located in the Taichung metropolitan area, with a total of 3 grades, 65 classes, 135 formal teachers, and 2100 students. According to some important research on the promotion IT instruction in Taiwan, compared with large schools in metropolitan areas, it was easier to promote IT instruction in small schools in remote areas. The reason was that schools in metropolitan areas could often find an excuse such as the pressure of sending students to a higher school to refuse carrying out technology education.

This study interviewed each subject individually in a face-to-face manner. A total of 5 teachers were selected for the interviews. Due to the limitations of interview durations and the environment, the researcher wasn't able to take down all the contents on-site. Thus, with the approval of the subjects, all the interviews were recorded. After the interviews, the audio recordings were transcribed into text data. Then, the content analysis method was applied to analyze the teachers' intention to implement IT instruction, the current condition of implementing, and

their intention to continuously apply IT instruction. Flick (2002) suggested that the content analysis method is a structured way to explore and summarize the data, and it helps to clarify the research process. The data for analyses in this study were mostly interview or literature contents, categorized in advance to obtain quantified descriptions regarding the contents (Zikmund, 2003). When analyzing data with the content analysis method, the most important task is to determine the categories and units for analyses, and categories should be created based on research purposes.

4. Finding and Results

When verifying the research findings, the subjects were asked to confirm the correctness of the content analysis results. In addition, some experts, scholars, and peers were invited to assist the analyses of the interview data to prevent biases caused by the researcher's subjective interpretations. These are ways commonly used to make research more effective in qualitative research (Tucker, 2012). This study showed the data analysis results to the subjects so that they could confirm if there was anything that didn't look right in data analyses and interpretations. If there was something that the subjects did not agree with, it would be reviewed for modification. The influence of teachers' teaching beliefs is on their intention to implement IT instruction.

According to the studies on teachers' teaching beliefs, such beliefs may guide their teaching behaviors and influence their decisions in relation to the contents to be taught (Stura and Thurlow, 2000), and, through their teaching behaviors, their teaching goals could be met.

This study concluded that many studies on behavioral intention had suggested that a person's behavioral intention can be influenced by his attitude, perceived behavioral control, and subjective norm. The influence of subjective norm is relatively small, even negative sometimes, while the influence of attitude is positive and relatively large (Taylor and Todd, 1995).

This study aimed to explore teachers' intention to replace the traditional teaching method with IT instruction based on the theories of behaviors. Moreover, the research findings showed that the influences of teachers' teaching belief, perceived behavioral control, and subjective norm on their intention to implement IT instruction were all significant. The influence of their teaching belief was the largest. The innovative features of IT instruction, such as observability and availability for try-out, and its high compatibility with past teaching experiences could positively influence teachers' intention to implement IT instruction. However, the complexity of implementing IT instruction could negatively influence teachers' intention to implement IT instruction. Therefore, regarding teachers' behavior of implementing IT instruction, properly using

the innovative features of this new teaching method can make this behavior more likely to occur.

5. Conclusions

How much has a student learned? What has he/she learned? Sometimes, it is hard to evaluate a student's learning effects from his/her monthly exam scores, semester grades, or annual grades. In terms of the subject school, flipped teaching was just implemented not long ago. It is still difficult to convince other teachers who are looking on from the sideline with the effects so far. If the following learning effects, learning attitudes, and ability development of students being taught using flipped teaching can be traced in the long run through the government, magazines, educational foundations, or other institutions, the results would be more convincing with higher public credibility compared to the words of the teachers applying the new model for just a short period of time or the words of their students. It would be more likely to alter teachers deeply rooted teaching beliefs so that they can change their teaching behaviors. The main motivator behind continuous implementation of flipped teaching is to accept students' learning effects after applying IT instruction.

Teachers should find a way to make their students interested in learning in class and help them to learn how to learn. What makes IT instruction different from other traditional teaching models is that students' ability of autonomous and independent thinking lies in its heart. Flick (2002) argued that the golden rule of successful teaching for teachers is to help students become interested in learning and facilitate their learning motivation and initiative. To apply a new teaching model different from traditional ones, teachers need to obtain the practice results of the model, which are the proofs of the positive effects of teachers applying the model. In other words, it is essential to collect evidences to prove that, by changing the teaching model, the teaching effects can be improved. The teaching beliefs that a teacher is persistent in can be changed when he/her sees the positive teaching effects after applying the new model. If a teacher is aware that his/her students' improvements in performances are the result of his act of altering his/her teaching method, he/she is more likely to reconsider the positioning of his/her role in teaching and more willing to try something that he/she is not used to in teaching (Stura and Thurlow, 2000).

Currently, there are different education systems for different learning phases. In these systems, IT education has been gradually implemented in courses. In the future, teachers who teach students during these learning phases should be further studied. In Taiwan, there are education programs such as preschool programs, elementary school programs, high school programs, university programs, and graduate school programs, where some teachers have

already been applying flipped teaching. Thus, future researchers can consider conducting a qualitative research on teachers of these programs or a research on the vertical comparisons of the opinions on flipped teaching among teachers of different programs.

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