



Curriculum Design and Learning Achievements for Applying e-Learning and PBL in Financial Analysis

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Abstract

With the excellent development of the Internet, mobile devices, and digital technology, various e-learning approaches flourish nowadays. The critical learning goal of financial education is the connection between financial theory and the actual market. However, Financial education was seldom discussed in the teaching innovation research; this research focuses on the learning achievements of e-Learning and Problem/Project-based learning in "Financial Statements Analysis and Business Valuation", the core course among most financial education fields. We believe that Blended Learning strategies can help students develop the ability and quality to adapt to financial market changes. As long as students can participate in this curriculum, they have significant learning progress in understanding professional curriculum theory and the analysis and application of the financial analysis report.

Keywords— e-learning, Problem/Project-based learning, Flipped Classroom, Financial Education.

I. INTRODUCTION

Graham (2005) pointed out that the blended learning method, which combines face-to-face instruction and computer-based multimedia learning, has become a prevailing trend in higher education. Currently, Massive Open Online Courses (MOOCs) and Modular Object-Oriented Dynamic Learning Environments (MOODLE) are widely used in the practical application of blended learning in Taiwan's higher education, regardless of whether they are MOOCs or MOODLE, e-learning platforms, as a whole, function as a teaching aid for traditional in-person instruction and serve as an efficient aid for facilitating students' pre-class preparation, in-class use, and post-class review. Besides, such e-learning platforms have obtained positive evaluations from most studies (such as Chang and Yeh, 2014; Lin, Tseng, and Chiang, 2016). This study believed that the teaching of professional theory should be the focus for courses in the discipline of finance, and an emphasis should be placed on adaptation ability, which combines the application of the disciplinary knowledge

of finance in fundamental markets to follow the rapid, substantial changes that occur in practice.

It is especially the case since many studies have pointed out that it is difficult for traditional in-person classroom instruction to provide the necessary training to enhance students' practical experience and adaptation abilities. Indeed, only breakthrough teaching strategies can help students develop the capacity and qualities to ensure that they adapt to changes that occur in practice (Betty, Angie, Neal, & Andrew, 2014; Bristol, 2014; Chiu, Su, Liu, & Huang, 2015; Huang, 2017). This research focuses on finance curriculum design, a field seldom discussed by practical teaching studies, as the main course of research.

Throughout the instruction process, Problem/Project-based learning (PBL) was used with an e-learning platform of teaching materials, thereby applying an innovative teaching method to a finance course. This research aims to examine students' learning

effectiveness concerning the application of digital learning and PBL in the Financial Analysis course.

II. LITERATURE REVIEW

Boyer(1990) indicates that teaching performance should be highlighted in university education. It is time to move from traditional course-centred or teacher-centred instruction to a student-centred approach. Flipped learning is also known as flipped classroom or flipped teaching. Regarded as the pioneers of flipped learning, in 2007, two chemistry teachers of Woodland Park High School in Colorado, Jonathan Bergmann and Aaron Sams, recorded the classroom lecture and uploaded the video to YouTube for absent students to download and access whenever and wherever it was convenient. Once the students returned to the classroom, they would get major support in problem-solving, experiments, and interactions. Flipped teaching combines digital media technology and face-to-face lecture, which also matches the concept of blended learning. Since then, flipped teaching approach has been widely adopted (Hamden, McKnight, McKnight & Arfstrom, 2013). Many researchers also point out that flipped learning does enhance students' learning performance and achievement in digital learning environments, leading to better teaching and learning techniques. (Smith & Cardaciotto, 2011; Brame, 2013 ; Critz & Knight, 2013 ; Forsey, Low, & Glance,2013 ; McDonald & Smith, 2013 ; Schwartz,2014 ; Baepler et al., 2014 ; Betty et al., 2014 ; Bishop, 2014)

Concerning teaching practice research in Taiwan, Sue-Ting Shy(2014) conducted a study in the course "Literature and Life" to explore the impact of flipped education on university students. The result shows that the activities and assignments of blended learning both improve classroom climate and further help reach the teaching goal. Ju-Ling Chen and Der-Yan Han (2015) implement blended learning in the "Outlaws of the Marsh" course. The result shows that flipped teaching provides a self-learning model to enhance students' core competence, verbal expression ability and learning motivation. Chih-Hsiung Huang (2017) studies the impact of student-centred flipped teaching in the "Early Intervention Medical" course. The result shows that flipped teaching promotes students' willingness to participate, self-reflection skills and learner autonomy.

As described above, most researchers highly esteem the practice result of blended and flipped teaching models. However, most studies are conducted via

Moodle platform in subjects such as Language Learning, Literature, Education, Mathematical Science, Medical and Nursing. Therefore, this research focuses on the teaching practice that integrates digital technology into traditional lecture methods in finance education. Moreover, social networking tools are widely adopted in all industry, government, and academic fields. Social media learning and interaction systems are used as the teacher-teacher, teacher-student and student-student interfaces.

III. CURRICULUM DESIGN AND RESEARCH PROCESS

This study takes "Financial Statement Analysis and Enterprise Evaluation", a compulsory course for junior university students of the Department of Banking and Finance of the 2016 and 2016 academic years, as the primary teaching practice course.

The teaching practice of this course adopts Problem/Project-based learning (PBL), which requires students to complete the financial statement analysis report of the chosen Taiwan-listed companies as an essential task in the semester. Cooperating with the progress and content of the class in a sequential, step-by-step manner provides students to follow throwing repeated group discussions and problem exploration to achieve the purpose of independent learning. Regarding those more controversial financial report news cases during the lecture, the researchers will guide the students to participate in the discussion together. This teaching design eliminates teachers' one-way narration and teaching so that students have the practical experience of "Learning by doing". At the same time, the teaching design improves students' participation and achievement in the class.

In addition, the digital teaching materials of this course are supplemented by many suitable network resources and multimedia materials so that students can improve learning effectiveness through thinking, experiential learning and discussion of interesting cases in each chapter and paragraph.

IV. TEACHING AND RESEARCH OUTCOMES

1.1 Analysis of Digital Learning Materials

The Analysis of Financial Statements and Enterprise Evaluation course is taught by disseminating course contents in a shallow-to-deep manner. The beginning of the course emphasizes building professional knowledge, using a broad perspective to understand the actual state of company operations, and providing a

basic introduction to financial statements such as Statements of Financial Position, Statement of Comprehensive Income, Statement of Cash Flows, and Statement of Changes in Equity. A further focus is also given to the application of enterprise debt-paying ability, management, asset utilization, profitability and financial ratios, supplemented by individual case studies on well-known enterprises within and outside the country, along with highlighting news events that will occur throughout the course. The latter half of the course then delves into the level of application that combines theory and practice. Students are divided into groups to make study reports to gradually develop a professional approach and standard of uniting problem-solving and knowledge. The course design is the expectation of achieving a final result of an equal emphasis on theory and practice.

Because the materials provided in this course were constructed using professional theory as the guiding framework and were supplemented by the most appropriate online factual information that serves as source material for combining theory and practice, the aim is that alongside students' professional development, the learning motivation and interest levels of students may also be increased. Digitalizing and uploading all teaching materials used in the semester onto the digital learning website, the e-learning platform, provides a valuable source of preparation and review material for students. Accordingly, after the digitalization and uploading of learning materials onto the e-learning platform, in the years 2015 and 2016, respectively, the actual usage rate of such media among students was 80.28% (57/71) and 95.12% (39/41), while students' average number of classes attended increased from 7.85 to 9.61, the average number of pages read increased from 12.14 to 13.76, and the average total reading time increased from 50 minutes and 44 seconds to 1 hour, 19 minutes, and 34 seconds. Additionally, following the digitization and uploading of teaching materials onto the learning platform, the qualitative results obtained were as follows:

Following the digitalization and uploading of teaching materials onto the learning platform, students could study the course contents of a given week in advance. They were allowed to conduct a pre-class study of course contents. It aims to induce students to conduct independent research into related information online before class and participate in the course topic discussions, thereby increasing their learning motivation and interest.

Following the digitalization and uploading of teaching

materials onto the learning platform, students were provided with a convenient opportunity to review course contents after class, allowing students to gain an adequate understanding of the critical concepts of financial statement analysis and enterprise evaluation. Students were also spared the deficiencies of incomplete taking of notes during class.

The e-learning platform reliably performed functions related to relaying class announcements and teacher's messages, transmitting archival materials such as term teaching materials and homework question banks, thereby assisting students in tasks such as post-class review discussions and homework completion and increasing teacher-student information interaction and communication efficiency (Fig. 1).



Fig.1: Results of using the course e-learning platform.

The course adequately used the function of a course discussion page, wherein the entire class of students was divided into groups to conduct financial statement analyses (practice reports), with the students' objective being to upload their end-of-term report to the course discussion page before the deadline (Fig. 2). Students were also encouraged to enjoy the merits of learning together online. The effectiveness of classmate utilization and mutual learning was assessed during the end-of-term examination.



Fig.2: Results of course discussion Board

1.2 Learning Assessments and Outcome Evaluations

The student learning efficiency assessments used in the course employed various assessment methods. Students' regular course participation (including the rate of student attendance and class participation), mid-term and final course knowledge examinations, and end-of-term financial statement analyses (practice

reports) each make up 25% and serve as the main examination methods for measuring student learning effectiveness. In terms of the final grades for the term, the grades for respectively the 2015 and 2016 school years were as follows: the actual end-of-term number of persons enrolled in the course was 66 and 36 persons, and the term final grades were 74.5 points (standard deviation 17.3 points) and 79.4 points (standard deviation 17.9 points); in terms of the evaluations items, the average course participation grade was 68.8 points (standard deviation 24.7 points) and 82.3 points (standard deviation 17.7 points); the average midterm grade was 61.7 points (standard deviation 22.1 points) and 79.3 points (standard deviation 13.1 points), the average final examination grade was 82.7 points (standard deviation 18.4 points) and 75.4 points (standard deviation 17.6 points), and the average term financial statement analysis (practice report) grade was 74.1 points (standard deviation 20.1 points) and 77.2 points (standard deviation 11.0 points). Additionally, the term financial statement analysis and enterprise evaluations of some students were highly distinguished, encouraging the motivation to participate of other students. Finally, the grades which students enrolled in the course gave to their teachers out of a 5-point scale were 4.7 points (standard deviation 0.6 points, Fig. 3) and 4.9 points (standard deviation 0.3 points, Fig. 4). The above information shows that while students in the course actively participated in the course, they achieved outstanding efficiency both in terms of familiarization with the professional theory and the application of practice report analysis. Moreover, students also gave high approval ratings for their teachers in the teaching evaluations.



Fig.3 Teachers' end-of-term teaching evaluation system in 2015



Fig.4 Teachers' end-of-term teaching evaluation system in 2016

V. CONCLUSION AND REFLECTION

The Financial Statement Analysis and Enterprise Evaluation course is a vital training process and subject that ought to be taken by students in the department of finance worldwide. With the emphasis on the educational objective of abilities, including professional ability, employment ability, workplace adaptation ability, ethical interpersonal ability, and humanistic care ability - this course curriculum uses a thoroughly organized professional ability development plan, practical case discussions and applications, and the final enterprise finance evaluation reports to allow students to systematically combine the core qualities of professional knowledge, communication, introductory foreign language skills, and problem-solving. Thereby it enables students to acquire adequate employment competency upon completing this course.

Even though students from our school exhibited relatively high variance in the aspects of learning ability, learning motivation, and learning attitude, this course set requirements for students using gradual, phrasal problems/tasks, allowing a majority of students to be able to achieve the course goals gradually. During this process, the gentle giving of encouragement combined with the setting of strict time-sensitive goals not only gave students the experience of learning by doing in the course time. This aspect is geared to improve everyone's sense of course participation. However, at the same time, when students were struggling, course assistance and group learning were provided to foster mutual encouragement. In the end, students completed the term report they initially viewed as problematic or incomprehensible. Regardless of the grade they achieved for their term reports, many students felt that being able to complete them. It was an accomplishment, and we felt confident that they now possessed the professional core qualities to conduct financial statement analysis and enterprise evaluation projects. The most crucial objective of this course that practically implements digital teaching materials with PBL is to ensure that students gain considerable benefit professionally; therefore, it is also hoped that the teaching of the course will attract more student opinions and feedback in the future so that the course may be designed to the utmost perfection.

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