

# THE DEVELOPMENT OF A MOOC COURSE UNDER ADDIE IN BUSINESS EDUCATION

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*Abstract:* - With the advancement of technologies, the fast and convenient Internet has become an affluent and inexhaustible source of knowledge. This has also made e-learning as one of the mainstream models of modern education. The term MOOC was first coined in 2008 by Bryan Alexander and Dave Cormier. Initially, MOOC was an open, social, and network-based learning concept implemented in a course. This course was presented to 25 on-campus students, but it attracted about 2300 students to take the course online. In nowadays, MOOCs can attract millions of enrollees. This has drawn the attention of education and business administrators to the issue of how to use this trend to increase their instruction quality. In this research, the researcher employs the ADDIE model to progressively develop an "Investment and Financial Management" MOOC course, in hope of creating a standardized procedure for developing MOOC courses in business education.

*Key-Words:* - E-learning, Moocs, ADDIE, Business Education

## 1 Introduction

With the increasing advancement of technology, the e-learning market has drastically grown in recent years. Distance, online, and other forms of e-learning have abundant research and development of models [1] [2] [3] [4]. It is expected to recognize the major changes that can be expected in the next 5-10 years in order to prepare and reflect changes in the teaching and learning process [5]. In coming decades, education and training systems in every kind of organization will develop new technologies more than today. As a result, organizations have evolved regarding to approaches used in teaching-learning process. These approaches range from traditional classroom lectures, to online and blended learning. There is an increasing demand for inexpensive, high quality, global education and training for e-learning, m-learning, u-learning, social learning, MOOCs, and more [6]. Besides, learners are given the freedom to adjust their learning on their own [7] [8] [9] [10]. In summary, e-learning can be seen as an extension of traditional education. It allows learners to access learning content in diverse ways, manage learning experiences, and join interconnected learning communities, all without the constraint of time and space. However, while online education provides

learners greater opportunities to access learning resources, it also generates new challenges to online learners [11] [12]. Lack of prompt responses from instructors, too many ways to obtain information online, lack of effective self-learning, procrastination, and superficial participation in online discussion are some of the challenges for online learners [12].

"Flipped teaching" refers to a teaching strategy that "reverses" the traditional teaching process. It is to change the teaching process from "the teacher provides classroom instruction, and students do the homework after class" to "students engage in online learning in their spare time first, and the teacher guides them to have higher-level discussions in the classroom" [13]. Flipped teaching revolutionizes teaching and learning in the aspects of "concept" and "technology", making instruction more flexible and providing students opportunities to have higher-level thinking [13]. According to Bloom's taxonomy of objectives in the cognitive domain, in the traditional lecturing method, teachers can only begin with and focus on development of "remembering" and "understanding" abilities, which are at the lower level, in students. As to mid-level "applying" and "analyzing" or even high-level "evaluating" or "creating", teachers are often unable to guide

development of these abilities in students due to limited interactions and time. However, in the flipped teaching model, students can do “remembering” and “understanding” through self-regulated online learning at home, and the classroom hours can therefore be used for development of “applying”, “analyzing”, “evaluating”, and “creating” abilities through teachers’ guidance or collaboration with peer students [14]. In other words, through flipped teaching, students have more opportunities to develop higher level abilities such as “evaluating” and “creating” [15].

MOOCs are integrated with the notion of “flipped teaching”. The term MOOC (Massive Open Online Course, MOOC) was first coined in 2008 by Bryan Alexander and Dave Cormier. Initially, MOOC was an open, social, and network-based learning concept implemented in a course called Connectivism and Connective Knowledge jointly offered by George Siemens and Steven Downes. This course was presented to 25 on-campus students, but it attracted about 2300 students to take the course online [16]. In choice of learning materials, MOOCs emphasize on problem-solving spirits; in design of learning cases, lively examples that can induce learning motivation are preferred; in evaluation, multi-dimensional evaluation which involves use of online quiz, mid-term and final exam, group assignment, interactive exercise, and peer assessment is suggested. MOOCs have all that available in traditional classroom and further offer a greater diversity of learning content and methods. A new MOOC can easily attract thousands of enrollees. The popularity of MOOCs has drawn the attention of executives in education and business fields to the issue of how to make use of this trend to increase instruction quality. Clearly MOOCs have tremendous potential for the promotion of life-long learning beyond the traditional classroom. Since the coinage of the term MOOC, this new avenue for education has appealed a great deal of excitement and arguments in academia; these discussions have been recently reviewed [16] [17]. Some assert that these online courses carry the potential to revolutionize the boundaries of modern learning to a much more vast pool of students [18]. In a word, MOOCs can serve as an outlet for worldwide university outreach, expanding avenues for providing free, credible information to the general public on the one hand [19]. On the other hand, MOOC participants should be more heterogeneous than students in formal education

[20]. Owing to the overwhelming majority of MOOCs constructed to date are in English, language access can be added to the technology access barrier for many populations [21]. Moreover, most MOOCs are in the industrial engineering area, and those related to business courses are very limited in Asia. Therefore, this study attempts to develop a MOOC on “Investment and Financial Management” based on the ADDIE model [22]. Investment and financial management is a subject that every one of us has to learn and perform throughout our lifetime. It concerns our well-being and is a required course for all of us.

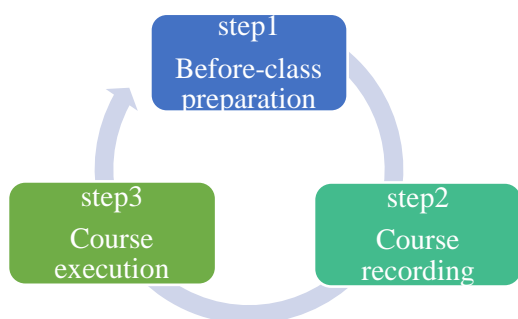
## 2 MODEL

MOOCs are large-scale, open-access classes taught by university faculty via the internet using a variety of techniques such as live videos, web-chats, online tests, discussion forums, and even live discussions and help requests. The huge range of learner access to the critical resources for personal growth and the breadth of existing municipal infrastructures worldwide must be considered by educators and course designers when creating open online courses for learners.

Since 2012, the trend of taking MOOCs, which are mainly provided on Udacity, Coursera and edX platforms, has spread across the world. As of 2014, over 700 MOOCs have been offered on these three leading platforms [23]. While the views supporting MOOCs continue to be diffused and discussed, a number of scholars have expressed their concerns about MOOCs. Harvard University professor Robert A. Lue, for example, claimed that “we are already in a post-MOOC era” [24]. The major criticisms of MOOCs are as follows: (1) Low course completion rate: Online surveys have shown that only about 5% of MOOC learners have completed the courses they enroll in and received a certificate of accomplishment [25]. Alcorn, Christensen & Emaneul (2014) even proposed the “rule of thirds”, which means that approximately one-third of students who sign up for a course would watch the first lecture; one-third of students would take the lessons until Week Four; and the remaining one-third of students would watch the Week Eight lecture and go on to complete the assignments and exams to earn a certificate. In other words, most students fail to complete more than 50% of the lessons of a MOOC. (2) Lack of learners’ e-portfolios: Whether students’ learning effectiveness is improved is a critical issue for all online learning courses. In online learning, students are not bound

by time and location, and the testing process is not supervised. Since students are able to discuss questions or cheat in a test, and most students fail to complete the course and earn a certificate, the authenticity or even the availability of learners' e-portfolios is questioned [26]. (3) Lack of funds and resources: Because MOOCs are free online courses available for anyone to enroll, long-term operation of MOOCs is an enormous challenge. The cost of producing an online course is high [27]. The production involves video recording, video editing, preparation of handouts, and digitalization of tests and supplementary materials [28], and each of these operations requires investment of a huge amount of resources. When the number of enrolled students reaches a certain extent, it is necessary to hire a specialized assistant to manage the students' discussion forum and chat room. Therefore, technical and financial support from a team specializing in development of e-learning materials is vital for development and operation of an MOOC [29].

In order to overcome the difficulties described above, three major tasks were adopted for the course "Investment and Financial Management" in this model, including "before-class preparation", "course recording", and "course execution", as illustrated below:

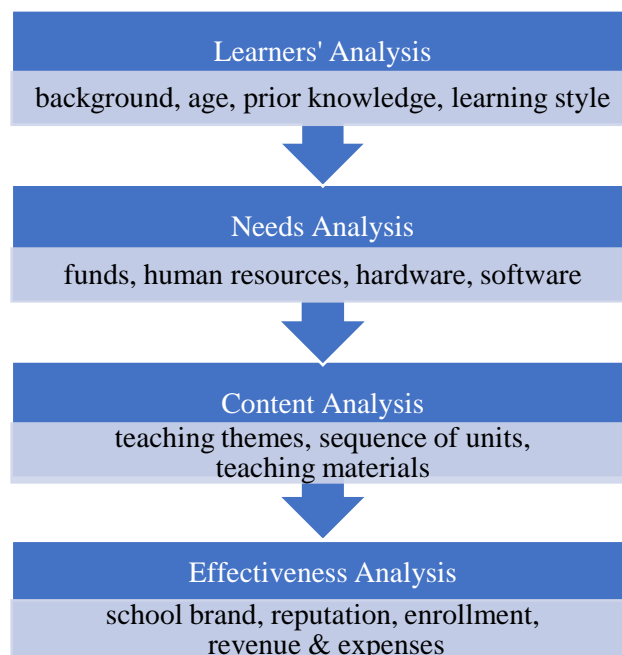


## 2.1 Before-class preparation

This task includes the "analysis phase" and the "design phase" of ADDIE [22].

### 2.1.1 Analysis phase

The main operations to perform in this phase are as follows:

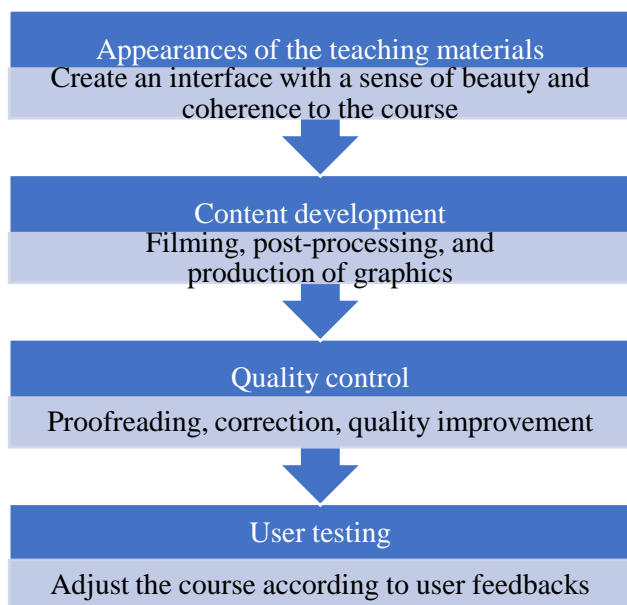


### 2.1.2 Design phase

The case study method is employed. The purpose is to use simulated situations to find the optimal ways of investment and financial management in each situation and enable learners to think from the viewpoint of the stakeholders in the situations. This course includes four case situations, including "Students at Loss", "Busy but Living Paycheck to Paycheck", "Girls with Petty Cash", "Sweet Newlyweds". Through these four different situations, learners can understand the multiple aspects of investment and financial management. The instructor will also analyze and discuss investment and financial management issues in each case. The example of teaching plan designed in this phase as [Appendix 1](#).

## 2.2 Course recording

This task includes the development phase of ADDIE and the subsequent course quality management and testing operations [22]. The procedure is illustrated as follows:

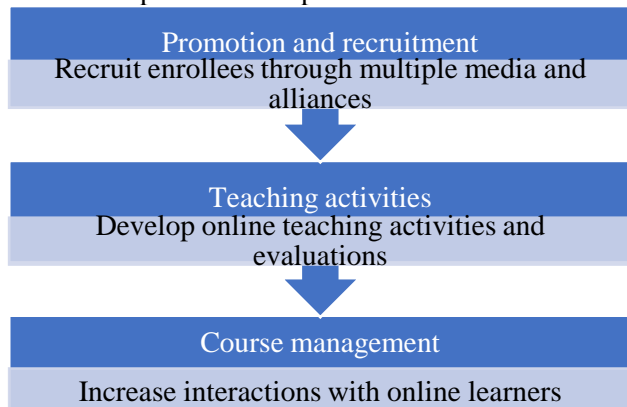


### 2.3 Course execution

This task includes the implementation phase and the evaluation phase of ADDIE [22].

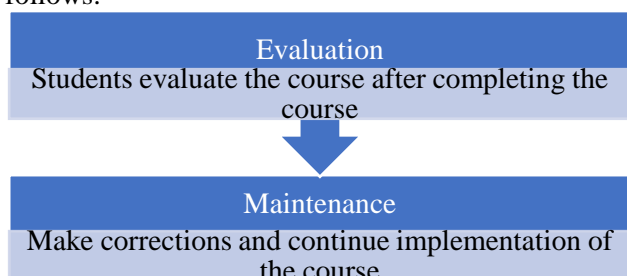
#### 2.3.1 Implementation phase

The implementation procedure is as follows:



#### 2.3.2 Evaluation phase

In this phase, the main operations are as follows:



## 3 Results

There are so many reasons for learners enrolling in a MOOC course, such as advancing a current job, the desire to obtain knowledge and skills, facing personal challenge, seeking enjoyment, overcoming the geographic isolation and financial barriers to formal education [5] [30] [31]. In addition, new technologies empower this trend in education and training models. With the popularity of mobile networks, the increasing use of these technologies have led to an exponential increase in volume of Moocs in all areas of education and training [6].

Some educators fear that a rapid proliferation of MOOCs could compromise the quality of learning and lead to a deterioration of the post-secondary education system. These critics point to the importance of face-to-face classroom engagement [32] [33] [34]. As a result, in this paper, the course “Investment and Financial Management” is offered in the four major general education curriculums under ADDIE in the university and integrated with activities including online evaluation, group assignment, issue discussion, peer evaluation, and etc. Students who get an average score above 60 on all the course evaluations will be given the credit of the course. Including this MOOC as a credit course of our university can not only promote other MOOCs but also allow the instructor to obtain a more formal and integrated learning portfolio of students for subsequent analyses and applications. In traditional model of instruction, teachers disseminate knowledge in the classroom and students do the assignment at home. With the rise of e-learning, students are enabled to watch short learning videos at home and learn at their own pace. As they can pause and reward the videos anytime, they can achieve a higher learning efficiency. After they come into the classroom, they can also have an in-depth discussion of the assigned problems that are variant or more difficult in the presence of their teacher. All students, regardless of their learning pace, are given greater control of their learning and can therefore benefit from the “customized instruction”.

## 4 Feedback

Based on document analysis and content analysis, a draft questionnaire consisting of 8 items was developed using a five-point Likert type scale ranging from 1 (strongly disagree) to 5 (strongly agree). After the draft was completed, two experts in this field were invited to review the questionnaire

and propose amendments to the draft. Their suggestions were used to modify the questionnaire and create a feedback questionnaire with expert validity.

Before this MOOC course was officially offered, 50 students were invited to review the course materials and provide their feedbacks, which are quantified as follows. This feedback showed learners are generally satisfied with this course.

| Question  | Mean level of agreement |
|---|-------------------------|
| 1. You are satisfied with the arrangement of the course content.                          | 4.17                    |
| 2. You are satisfied with the practicality of this course.                                | 4.14                    |
| 3. You are satisfied with the length of the course.                                       | 4.24                    |
| 4. The learning materials are in an easily understandable manner.                         | 4.21                    |
| 5. You are satisfied with the learning model of MOOCs.                                    | 4.25                    |
| 6. The online tests allow you to quickly clarify the key points discussed in this course. | 4.15                    |
| 7. The learning platform is easy to use.  | 4.17                    |
| 8. You are willing to recommend this course to other people.                              | 4.03                    |

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**Appendix 1: Example of teaching plan**

| Unit | Topic                             | Plan of instructional videos and activities   |
|------|-----------------------------------|---|
| 1.   | Correct concepts about investment | <p>1-0 Introduction to the unit---General information about this course (2 minutes)</p> <p>1-1 Investment map---The philosophy of investment (3 minutes)</p> <p>1-2 Cognitive learning---Correct concepts about investment</p> <p>1-2-1 Determine the goals of investment (6 minutes)</p> <p>1-2-2 Don't take a big risk for a small gain (6 minutes)</p> <p>1-2-3 Acquire the concept of life-long learning (5 minutes)</p> <p>1-3 Understanding---Key points on investment (Why do you need to invest? 5 minutes)</p> <p>1-4 Applying---Explanation of an investment case (<b>Students at Loss</b>: 6 minutes)</p> <p>1-5 Analyzing---Case situation (<b>Students at Loss</b>: 6 minutes)</p> <p>1-6 Extending---Auxiliary learning materials about this unit and related resources on the Internet (1 minute)</p> <p style="text-align: center;">-----<b>Discussion / Activity</b>-----</p> <p><b>Chatting in private</b> Issue discussion (all members discuss the issues on the platform)</p> <p><b>Issues of the week :</b></p> <p><b><u>(1) Please share your experience of investment.</u></b></p> <p><b><u>(2) What is the right attitude toward investment?</u></b></p> <p><b>Public discussion</b> Two-way interaction between the teacher and students</p> <p>A “dedicated investment forum” is created to allow students to post any questions about investment and get answers directly from the teacher or other members. This forum promotes exchange of opinions and interaction between the teacher and students.</p> |



|  |  |   |
|--|--|---|
|  |  | <p style="text-align: center;">-----<b>Test / Evaluation / Assignment</b>-----</p> <p><b>To win or to lose</b> –Online evaluation (conducted on the platform; 10-15 true/false and choice questions)</p> <p><b>Collaborative learning</b> –Group assignment (the size of each group depends on the total number of students)</p> <p><b>Peer evaluation</b> –Each student’s discussion of the assigned issues is presented on the platform for browse and evaluation by other members.</p> |
|--|--|---|