

# Gamification Strategy in Entrepreneurship Course

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**Abstract**— *The Gamification strategy plays an important role in determining students' learning achievement in the learning process. The entrepreneurship courses include the Understanding and appreciation of entrepreneurship, the role of entrepreneurial mental attitude for self-improvement and entity entrepreneurship through introducing the entrepreneurial characteristics, managing business interests and providing tips of successful entrepreneurs, creating business plans and making business plans. The goal of this course is to provide understanding and appreciation to the students about entrepreneurship. This developmental research used a gamification strategy on the entrepreneurship course in Indonesian Language and Literature study program, Faculty of Teacher Training and Education, UNISDA Lamongan. Gamification strategy was developed into four basic components, such as; the rules of gamification, feedback (leaderboards, prizes, and medals), objectives, and challenges. This study used Lee's and Owen's development research as follows: (1) needs, (2) pre-test and post-test analysis, (3) design, (4) development, (5) implementation, (6) evaluation. The results of this game were (1) gamification strategy (2) Lecturer guide (3) student guide (4) entrepreneurship Book.*

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## I. INTRODUCTION

There was a phenomenon of society's dependence especially the productive age (between 17-40 years) on games and the growth of game users in Indonesia which reached 30% per year has made practitioners and developers attempted to learn the elements of the game. In the field of science, the application of games in non- game applications is known as gamification. In the learning process, gamification can be applied as a strategy and media to improve the quality of learning and provide students' achievement motivation [1]–[3]. Achievement motivation in the learning process would have an impact on student learning outcomes [4].

Based on preliminary studies, it was known that the average grade of A-class students of fifth semester 2016/2017 for Entrepreneurship courses was 60. This indicated that they did not have high achievement motivation.

According to the lecturers, there were only a few active students, about 7.4% and 92.59% of them were silent or passive without any desire to interact with lecturers.

Low students' learning outcomes can be caused by a weak ability to think and understand the concept. In the future, it will affect their ability to solving life problems. If you have good problem-solving skills, you can also solve different problems in daily life [5]–[7].

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As an educational institution, the University of Darul Ulum Lamongan (UNISDA) has been working to provide facilities and convenience for the students to participate in learning activities such as providing e-learning for several courses; for example in an Entrepreneurship course. Using e-learning, students can learn flexibly, without being limited by space and time. As a result, the students coming from outside the Lamongan district can still follow the learning activities well, without worrying about missing lessons out.

Selecting web-like gamification as instructional media is appropriate to use. In addition to its suitability of the e-learning concept, utilizing the internet network with the web as the main portal of web-conveying information has unlimited space to support the purpose of applying gamification. Gamification can be used to make students e happier and challenged in following the learning process In the Entrepreneurship course. When students feel challenged, their achievement motivation will improve and positively change their learning outcomes.

## II. DATA COLLECTION

This study used developmental research with a multimedia design developed by Lee and Owens (Lee and Owens, 2004). This consisted of the following steps: (1) needs, (2) pre-test and post-test analysis, (3) design, (4) development, (5) implementation, (6) evaluation. The steps will be explained in figure 2.1 :

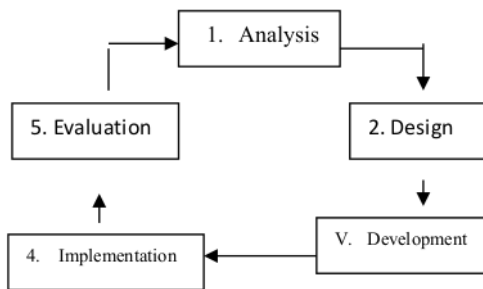


Figure 2.1 developmental process by Lee dan Owens

### 2.1 Analysis steps

#### 2.1.1 Need Assessment

Analyze needs by finding information about the characteristics of students, learning objectives, and teaching material[9]. The problems faced by students are different, where there are students who quickly understand the material and some of them are slow. Also, other problems are the lack of using instructional media by lecturers.

#### 2.1.2 Front End Analysis

After the needs analysis is found, the next step is to gather detailed information on what should be improved using:

2.1.2.1 Analyzing students(such as their background, learning characteristics, and prerequisite skills).

2.1.2.2 Analyzing the required technology needs.

2.1.2.3 Analyzing the objectives

2.1.2.4 Analyzing the media

#### 2.1.3 Design

The first and most important step is to make a plan. The things that need to be done in this planning are:

- 2.1.3.1 Making schedule
- 2.1.3.2 Determining project team members
- 2.1.3.3 Defining media specifications
- 2.1.3.4 Creating a content/material
- 2.1.3.5 Planning configuration control and review,
- 2.1.4. Development

The development stage is a specification stage that has been designed and realized in the program[10]. The activities of development stage are to create a concept map in the form of the lesson plan, select background color and feedback, arrange the style and change the material that is formatted in Microsoft Word, and make layout, storyboard, and other elements that can be used in completing the product.

#### 2.1.5 Implementation

The implementation stage is a follow-up of the development stage[11], meaning that the product developed can be used for learning because it has been tested both in terms of material and media. The purpose of this test is to collect data about the quality of products and the role of learning products to improve students' learning outcomes. The tests were conducted through three stages: individual test, small group test, and field test. All of the testing activities were conducted in the Faculty of Teacher training and education, Unisda Lamongan.

#### 2.1.6 Evaluation

The evaluation stage is conducted by considering several things such as how to implement an evaluation strategy, the use of measuring instruments and how to measure it, analyze and determine the system used in analyzing the data.

The evaluation phase of Lee's development model and Owens are not explained in detail how many subjects test try so the evaluation stage of this research and development is adapted from Borg and Gall [12] development model by conducting field trials initial and major field tests

This study uses two data analysis techniques, namely analytical techniques descriptive quantitative and qualitative descriptive analysis. Descriptive analysis technique qualitative is used to process the data of the review of material experts, media experts, and field practitioners in the form of comments and suggestions of improvements that have been provided in the questionnaire to know the validity of the interactive multimedia. Analysis effectiveness of the product obtained from the completeness criteria of student learning outcomes (cognitive, affective, and psychomotor) after using interactive multimedia.

The analysis of the practicality of the product is obtained from the questionnaire after the student response using interactive multimedia learning. Descriptive analysis technique quantitatively obtained from the value obtained from product validity test, test effectiveness, and practicality test.

Test the validity of the product obtained from the processing of questionnaire value from the expert materials, media experts, and field practitioners. Validation data were analyzed using the calculation formula percentage analysis as follows [13], showed in figure 2.2.

$$V = \frac{TSe}{TSh} \times 100\%$$

Figure 2.2. Formulation of percentage analysis

V = Validity

Tse = Total empirical score

TSh = Maximum score

### III. DATA ANALYSIS

The term 'Gamification' was first used in 2008 from digital media [14]. the term is defined as an application of a mechanical game such as a non-game situation or context. For, Kapp (2012) in DuVernet and Popp (2014) defines Gamiforms as a strategy that uses mechanisms, aesthetics, and gaming thinking to engage people, motivate to excel, learn lessons, and solve problems.

Gamification” is an informal umbrella term for the use of video game elements in non-entertaining environments or situations to improve user experience and engagement(Deterding, Sicart, 2011).

Based on these opinions, it can be concluded that gamification in an instructional strategy that implements **game elements in non-game applications to bind and motivate users** to solve a problem. In this strategy, the existing materials or technologies are presented in a more attractive format that will encourage users, such as students to get involved so that it behaves according to the desired.

#### 3.1.1 Gamification Elements and Classification

Gamification has three basic concepts of the game: activity objectives, reward mechanisms, and development tracking [18]. Here's a summary of the three concepts.

##### 3.1.1.1 Objectives

To know the difference between games and learning, students as a gamification object are asked to do tasks. In terms of the game, if students who have done these tasks will move to the next level based on the objective. Meanwhile, in terms of learning, students can get more understanding of complex topics or the material that they studied Ames (1992) and Pintrich (2003). This will encourage students to be able to master the topic and skills in the learning process.

##### 3.1.1.2 Rewarding Mechanism

Hamari and Järvinen (2011) stated There are many rewarding mechanisms used in the game that depends on the context such as First, leader boards or boards. leader boards are the player's list ranking boards according to their success in the game.

Leader boards are a technique very rough as repeated acts, but it can be a strong achievement motivation (although it provides little motivation to achieve more on the leader board). Leader boards are usually used in competitive activities but can also be used to encourage teamwork.

2) Prizes, Computer games allow the element customization to adapt to the characters they like. This helps to make the player more involved with the character and provides a more customized playing experience. In a game featuring customization options, the opportunity to obtain special items is usually related to the completion of certain tasks in the game, and the desire for the item gives the student achievement motivation to perform these tasks. Prizes can also take the form of additional activities, which will be opened after meeting previous goals. The different players will be motivated by different prizes and will do the appropriate activities, and the students will also be different in this way. Rewards should encourage further engagement, such as setting up research assignments for groups and should not prevent it, such as being released from tests.

(3) Medals are publicly displayed icons on online profiles that highlight activities completed by a person, and allow another person to track what he has completely done. They can be seen as a combination of two other mechanisms and have recently become popular in many domains due to their inclusion in the latest popular game.

##### 3.1.1.3 Tracking Progress

As a learning process, tracking progress of learning outcomes is important in the game to identify the remaining tasks necessary to satisfy winning conditions. Some of these trackings can be inferred from the reward mechanism, but this is a very simple size. Many games have a way to quickly identify unfinished tasks and general playing statistics. The developmental tracking method is analogous to give feedback in education. The good feedback should describe what the students have done and provided guidance on how to improve in the future, and in-game development tracking performs the same task by identifying the steps taken to make it to the next milestone.

### 3.1 Entrepreneurship Course

The entrepreneurship course is a general basic course on the Faculty of Teacher Training and Education, Islamic University Darul Ulum Lamongan. This course is usually programmed in semester 5 with 2 credits. This course is a required course (Guidance of Islamic University of Darul Ulum Lamongan, 2005).

Based on the above explanation, this course provides an understanding and appreciation of entrepreneurship for students. The people who can survive will be successful and those who are less successful will be eliminated in the global era. To face the challenge, there is no alternative but to improve quality, especially human resources. Understanding and appreciation of entrepreneurship, the role of entrepreneurial mental attitude for self-improvement and entity entrepreneurship through introducing the entrepreneurial characteristics, cultivating business interests and providing tips of successful entrepreneurs, creating business plans and making business plans.

Table 1 Gamification Strategy Design for entrepreneurship courses

Component	Domain	Representation
Rules	Theme of play	The game theme for entrepreneurship courses is business creation
	Action	Attendance, task management, and curriculum management
	Rules	[4].The stratified points system [5].single identity [6].each player can assess the results of the tasks performed by colleagues [7].the level of the game is determined by the success of the previous level [8].every gold rewards can be exchanged for additional value
	Mechanism	the more points a user get, the greater the chance he gets rewards and level up
Goal	Gameplay	students must be actively involved in the learning completion to earn points and feel enjoy the game
	Objectives	Submitting knowledge, completing schedules, finishing tasks, making a contribution in the game.
Challenge	Problem domain link	Being a top user of the month, assessing the other friends' task results.
	Progression	students get a different task and multilevel points for each level
feedback	Rewards	Register (100 points) Attendance (1 point) Submitting assignment (10 points) The top user of the month (100 points)

Experimental material validation results in Gamification show the average total percentage of each sub-chapter on the respiratory system material of 84% indicating the material criteria presented in interactive multimedia are very valid and fit for use in the learning process. Validation results from media experts in interactive multimedia show the average total percentage of each aspect of 89.5% indicating the criteria of interactive multimedia are very valid and fit for use in the learning process entrepreneurship.

The validation results from field practitioners (lecturers and students) show the average total percentage of each aspect of 92% and 92.25% indicating that the developed interactive multimedia criteria are very valid and suitable for use in the learning process. The cognitive learning outcomes were obtained from the average test scores on the respiratory system material after using Gamification with a scientific approach to Entrepreneurship Course. The completeness of student learning achievement in the classical reaches 92% so it is said that the completeness of the result of classical learning has been achieved accordance with Mulyasa (2013) stated that the success of classical learning is said to be achieved if  $\geq 80\%$  of students managed to achieve minimum value. The average value of cognitive learning outcomes in Entrepreneurship Course materials using Gamification is 91. The average value of cognitive learning outcomes of the Entrepreneurship Course in the academic year 2015/2016 is 78 with the completeness of the classical learning outcome of only 81%.

## VI. STUDY RESULTS, SUMMARY AND CONTRIBUTION

The research result showed that gamification strategy has a positive effect In Entrepreneurship Course by using lee's and Owen's development r

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