

# Winanti 20210713

*by* Winanti .

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# Gamification in the Learning Community for Culinary Basics Course at Higher Education

Winanti<sup>1,2</sup>

Scholar of Doctor of Computer Science,  
BINUS Graduate Program, Bina Nusantara  
University, Jakarta, Indonesia 11480  
Information System Departement, STMIK Insan  
Pembangunan, Tangerang, Indonesia 15810  
[winanti@binus.ac.id](mailto:winanti@binus.ac.id); [winanti12@ipem.ac.id](mailto:winanti12@ipem.ac.id)

Ford Lumban Gaol<sup>3</sup>

Computer Science Departement, BINUS  
Graduate Program – Doctor of Computer Science,  
Bina Nusantara University, Indonesia 11480  
[fgaol@binus.edu](mailto:fgaol@binus.edu)

Meyliana<sup>4</sup>

Information Systems Department, School of  
Information Systems Bina Nusantara  
University, Indonesia 11480  
[Meyliana@binus.ac.id](mailto:Meyliana@binus.ac.id)

Harjanto Prabowo<sup>5</sup>

Computer Science Department, Doctor of  
Computer Science Bina Nusantara  
University, Indonesia, 11480  
[harprabowo@binus.edu](mailto:harprabowo@binus.edu)

Francisca Sestri Goestjahjanti<sup>6</sup>

Management Departement, STIE Insan  
Pembangunan, Tangerang, Indonesia 15810  
[sestri@ipem.ac.id](mailto:sestri@ipem.ac.id)

Dwi Ferdijatmoko Cahya Kumoro<sup>7</sup>

Management Departement, STIE Insan  
Pembangunan, Tangerang, Indonesia 15810  
[Dwiferdiyatmoko33@ipem.ac.id](mailto:Dwiferdiyatmoko33@ipem.ac.id)

**Abstract** – This paper discusses basic culinary learning in universities using gamification techniques. The learning objectives are carried out to improve maximum learning outcomes, create a sense of pleasure and joy (satisfaction), and increase motivation. Although the author realizes that gamification is not the only learning technique that must be applied. The success of learning can be influenced by various factors including the internal factors of students and lecturers which until now have become the most important factors. Apart from the curriculum, social environment, and methods used, gamification is an alternative to produce maximum value, satisfaction, and motivation. The gamification technique is done by dividing students into several groups, each group consisting of 4 to 6 students. Each half-semester group is given learning by conventional methods and the next half-semester is given learning by gamification. Both will be evaluated through the results of the assessment in the form of statistics. The results obtained by using gamification on average have 10 to 20 points better than conventional methods. Students and lecturers become satisfied, motivated and get maximum test scores and in the end they become more creative and innovative due to direct student involvement and fast interaction between lecturers and students.

**Keywords:** gamification, education, Culinary basic course

## I. INTRODUCTION

Learning by using gamification is an interesting and preferred method by students compared to conventional methods. A method that provides many advantages for students ranging from positive behavior and increasing student creativity starting from choosing cooking ingredients, determining recipes, processing cooking ingredients to serving dishes and reviewing cooking results. Students are more enthusiastic, give a sense of joy and create motivation with better learning outcomes from each semester.

Game and Gamification have different meanings, gamification is information for gamification development combined with various fields to solve predetermined

problems by increasing user retention [1]. Gamification uses the main principles and elements of the game in the learning process, where these main elements will become part of gamification [2].

The learning method with the gamification method is more fun, preferred, trains social interaction between participants, and is able to increase student motivation to improve student achievement, especially in the Department of Catering and make it easier for lecturers to deliver learning materials. Learning through gamification allows students to be themselves and directly involved.

Gamification technique is not the only technique that can be used for learning. There are many other techniques besides gamification, but gamification is considered easier and much in demand by students in every major. Learning the basics of culinary arts is a basic course in the culinary arts department. Many basic things are learned in this course.

The reason for taking the basic culinary courses in this paper apart from the basic culinary courses is also because food is a major factor in one's health. [3]. Therefore, proper processing and presentation methods are needed so that allergies do not occur, which is a special concern for learning in the culinary community [4]. Uncontrolled food quality, inadequate nutritional supplements, limited knowledge of processing correct and healthy food, low dietary awareness, increased fast food, loss of culinary knowledge [5]. Coupled with food is a lifestyle in addition to basic needs and determinants of one's health [6]. From the background of the problems mentioned above, it takes basic learning of community-based culinary at Higher Education. The gamification technique is considered in accordance with current conditions where learning can look fun and students feel motivated because of direct student involvement and interaction between students and lecturers can be well established.

## II. RELATED WORKS

Game pattern thinking is adopted from several approaches, including simulation real games, educational games, and gamification. Gamification provides a space for creativity, ideas and problem solving through a multidisciplinary blend [1]. Elemen utama dari sebuah permainan dalam gamification untuk pembelajaran antara lain (1) challenges untuk mahasiswa, these map to the learning goals. (2) Adanya level, they map to the learning path and help learners with proficiency gain. (3) Instant feedback, this helps learners understand where they stand and help them in stepping up their learning. (4) Score, they provide accomplishment and gratification to the learners. (5) Badges, they provide recognition for significant achievements. (6) Leaderboards, they provide analytics and help learners focus on terminal objectives. (7) Competition helps learners assess when they stand against others. (8) Collaboration, this encourages team building and leveraging on peers or experts to meet the goals [2].

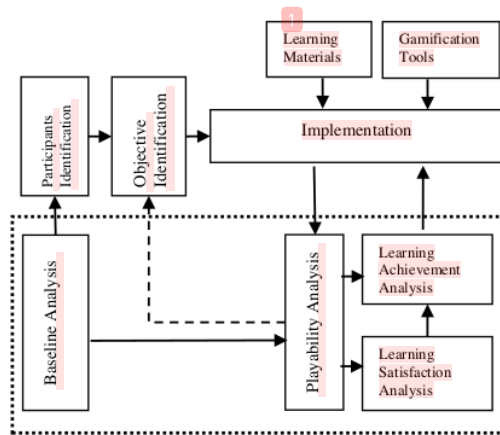


Fig. 1. Gamification Framework for Education [7]

Gamification framework for the education context comprises the following activities and see Figure 1, the main activities are: (1) Identify students as participants and actors involved. (2) Objective identification as the main goal of educational gamification by selecting the main priority. (3) Implementation of gamification through game mechanisms according to needs by involving students in the delivery of learning materials. (4) Evaluation of learning outcomes used to measure learning success which can be seen from the values, games and student satisfaction [8]. There are additions in the form of basic analysis, learning materials and tools used in gamification. Baseline analysis becomes a basic information center before learning begins and as a tool to predict program impacts before and after learning is implemented. Lecturers are assisted with learning materials that are made systematically and structured in accordance with predetermined competency standards, so that gamification tools can help lecturers and

## III. RESULTS AND DISCUSSION

students in the learning process and are able to maximize motivation, feelings of pleasure and involvement in the learning process [7].

The pandemic condition is a challenge for lecturers in presenting a distance learning atmosphere that is not only effective but must be fun and maximal. In the context of Culinary Education, the gamification method can be an attractive solution for students, especially for students who are directly affected by the Covid-19 pandemic. Cooking is no longer a difficult thing to do nowadays, there are lots of cooking media and applications on offer. Cooking games have become one of the preferred types of cooking learning methods, not only girls but many boys try to get involved [9].

### III. Gamification Method

Learning with gamification was developed to increase students' motivation in learning to cook at Higher Education, so that it will have an impact on improving student learning outcomes, especially in basic culinary courses in the Catering Study program. The steps taken are as follows: (1) describing the background of the problem regarding the low motivation of students, (2) interaction between students and lecturers, (3) the pleasure felt by students, (4) continuous learning [10].

The gamification method is one of the effective learning methods that is able to make learning easier and more developed for future learning because gamification can make student behavior easier to accept the learning material presented by the lecturer. [11]. Gamification offers the concept of involving students with varied ideas so that students are more happy, motivated and ultimately interested in always trying and making improvements in achieving maximum learning outcomes. The gamification technique for basic community-based culinary learning in higher education 9 is carried out in several stages including:

- 1) Determine the learning objectives clearly and in accordance with the type of cuisine to be processed,
- 2) Create and define the big idea to be achieved,
- 3) Create several game scenarios that are in accordance with the learning materials, for example, it can be started by determining the ingredients, the recipes needed, the cooking process and the assessment of the results of the dishes.
- 4) Learning activities are made in the form of a design, namely procedure text to make it easier for students to understand the steps of cooking step by step.
- 5) Create and build small groups consisting of several students to become a solid team among them.
- 6) Implementation of the game dynamics that have been determined according to the theme of cuisine.
- 7) Giving appreciation in the form of points, badges, badges, Leaderboard, Rewards and Onboarding.

Based on the steps mentioned above can help students in creating excitement, enthusiasm, interaction, and motivation to students so that learning outcomes become more leverage and better. The learning with gamification

techniques in the basic culinary courses in the Catering study program are as follows:

(1) Learning objectives and Learning Problem Analysis

The first step that must be taken in learning basic culinary courses with gamification techniques at Higher Education is to identify problems and analyze learning problems in higher education. Several problems have been found, such as:

- a) Students find it difficult to understand the basic concepts of selecting basic ingredients for cooking.
- b) Students find it difficult to follow the material given by the lecturer, especially regarding the new recipes presented by the lecturer.
- c) Low student participation, especially in class discussions which are always dominated by certain students and other students tend to be more passive.
- d) Students in learning are more likely to be individualistic, teamwork is very low.
- e) Students often feel bored, especially in receiving material that is often repeated.
- f) The involvement of students in conveying ideas and ideas is very low, so learning feels boring and monotonous.
- g) Student motivation is low because the learning atmosphere is not pleasant, and the teaching style of the lecturers is often boring.
- h) Student achievement in finding new recipes by combining existing ingredients is relatively low.
- i) There are no challenges for students in finding new ideas in composing recipes, combining recipes, and making new recipes with different variants.

(2) Define the big idea.

Learning is designed to determine creative, innovative and big ideas to produce maximum learning and students are able to properly process and understand the basic culinary courses which are the basic and main courses in the culinary department.



Figure 2 Expected learning outcomes with gamification

(3) Participant Identification with game scenarios

Actors in the learning process are students, lecturers and lecturer assistants, the framework will be tested within one semester, while the testing for this framework is in the development stage. In the initial testing process, students in one class are divided into several groups, each group consists of 4 to 6 students with the same proportions, both for male students and female students, assuming the profile of students per

group is homogeneous. The learning materials delivered in each group are as follows:

- a) Each group uses conventional techniques for 3 months (mid-semester) and each group uses gamification techniques for the next 3 months. The experiment started with filling out a questionnaire that all students had to fill out before using the conventional method and after using the gamification method. Lecturers conduct short interviews as basic data in the implementation of gamification learning.

- a) The purpose of gamification in the culinary arts study program is to improve student learning outcomes in basic culinary courses with the following topics:

1. Understanding and the relationship between food and health, the benefits of food for health.
2. Selection of food ingredients according to the type of cuisine to be processed.
3. Seasoning food substances ranging from carbohydrates, proteins, and fats.
4. Nutrients ranging from vitamins, minerals, water, and cellulose.
5. The need for nutrients for the human body and adequate food for the body
6. Prepare a balanced menu.
7. Selection of food ingredients (for babies, toddlers, pregnant and lactating women)
8. Nutritional problems

Learning with gamified orientation is to increase students' understanding and mastery of the preparation of a balanced menu and reduce student errors in preparing a balanced menu while still paying attention to balanced nutrition guidelines. Students often experience difficulties and errors in determining daily food consumption for infants, toddlers, pregnant and lactating mothers. Often ignores healthy behavior based on the principles of food consumption, clean living behavior, balanced physical activity and weight monitoring in maintaining a normal weight.

(4) Implementation of gamification

The implementation of gamification techniques starting from the initial preparation of learning, the learning process and the end of learning is carried out by referring to the selected topics. Starting with the lecturer explaining the learning objectives, research procedures, the results to be achieved, a set of game mechanisms and measurement metrics for learning outcomes that have been made according to learning standards. The type of basic culinary learning here is divided into two types, namely individual learning, and collaborative learning with groups. Each learning objective is mapped according to the game mechanism that has been selected and determined. To appreciate the learning achievement of social media engagement by displaying the final results of participants based on ratings. Fast



interaction and feedback from lecturers in this learning is important to improve learning outcomes, motivation, and a sense of joy and fun according to Figure 2



Figure 3 Implementation of game mechanic

Lecturers provide completing quests for students in order to convey their best work in accordance with the rules and norms of learning. Students who can answer and have completed the quest are given points so that students have the challenge and motivation to complete as soon as possible. Students who are able to answer correctly are given a badge and students will be given a challenge to answer the following questions. For students who have passed one stage will be given new challenges and if students experience difficulties, the lecturer will immediately help solve the challenge so that student confidence can increase. Displaying leaderboards on student social media, internal campuses or lecturers with the hope that students are more enthusiastic about competition and teamwork to improve basic culinary knowledge. Each student, both individually and in groups, who can answer, and complete assignments will be rewarded in the form of certificates, achievements or badges that are displayed on student social media, lecturers or internal campus websites. Lecturers are responsible for explaining the material according to current real conditions and providing feedback in a transparent, consistent, and fair manner so that students become more responsible for themselves.

#### (5) Learning Evaluation

Evaluation of learning outcomes to measure the extent to which the success of learning by using latent variables, where the feeling of pleasure, joy, motivation, and student satisfaction. Correlation between variables and causal relationships between variables were analyzed using statistics. Through these statistics, it can be seen how much success the teaching and learning process is in each semester. In addition, learning outcomes are also used to see how much improvement in learning outcomes has an effect on improving lecturer performance. The learning material delivered by the lecturer is considered very effective or cannot be seen from the learning outcomes. The ability of lecturers in

teaching is at stake. Students and lecturers are both struggling to improve learning outcomes.

#### IV. CONCLUSION

Qualitative measurements were carried out even though the sample was quite small. Student learning outcomes in basic culinary courses show better results than conventional methods. The value with gamification technique is greater than the value before using gamification. The difference in the value of the conventional method with the gamification method is 10 to 20 points. Great impact for students and lecturers after using gamification techniques and very helpful both in achieving maximum results. Students are more creative and innovative with gamification. The learning atmosphere is more live, and dynamic with a fun atmosphere, student motivation and satisfaction are met, interactions between students and lecturers can be well and humanely established. In the end, the learning objectives can be achieved maximally, and students will compete to get better grades.

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PAGE 1

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PAGE 2

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PAGE 3

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PAGE 4

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PAGE 5

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