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Gamification needs analysis in learning at the University

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Abstract

This study aims to look at the needs in the field related to the development of gamification in learning in universities. These innovations must be implemented immediately to infuse learning activities with new life. This qualitative descriptive study was conducted using a survey method between January and March 2021. A questionnaire was utilized for data collection. The questionnaire sheets were used to collect data about university courses. The descriptive and qualitative analyses of the research data were conducted. The study enrolled 100 students from Universitas Terbuka, Universitas Pendidikan Indonesia, Universitas Sebelas Maret, Universitas Negeri Surabaya, and Universitas Negeri Makassar. Based on the findings of the investigation carried out, it can be seen that gamification is very much needed in learning at the university level. Gamification in higher education is critically needed and must be implemented in practice. The next step needed is to develop gamification-based learning for universities.

Keywords: Digital technology; gamification; learning; need analysis; university

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1. Introduction

The current digital era impacts every aspect of life, including education (Kristanto et al., 2021; Pradana, 2021). The learning process undergoes rapid change, one of which is implementing learning through technology, methods, and media. These rapid changes are always connected to the performance of digital devices (Mariono et al., 2021; Stockdale et al., 2019). This era is frequently referred to as the period of digitalization of education by many (Rodiyah, 2021; Sari et al., 2021). All are interconnected and integrated through the utilization of digital technology. Education has a significant impact on the future, for instance, education 4.0 (Bojović et al., 2020; Nastiti & Abdu, 2020). Students are better prepared to face challenges in the digital era due to Education 4.0, which encourages students to develop creativity that can pave the way for them in a variety of developmental (Sarsar et al., 2021; Stockdale et al., 2019).

We should also provide enjoyable learning experiences for students (Quezada et al., 2021; Udayani et al., 2021). Something that pleases a person makes learning easier. This needs to be developed to ensure that learning is enjoyable and relevant to the modern era. If one examines the growth of pleasure in learning in greater detail, one will notice that it increases students' interest in learning and significantly increases understanding (Ilgaz, 2019; Kurniaman & Zufriady, 2019; Khaldi et al., 2023). This will also encourage students to be more capable of excelling than previously. Pleasure-based learning enables other positive motivations and increases enthusiasm for learning (Parra-González et al., 2020; Sumbawati et al., 2020; Bai et al., 2022). The widespread adoption of new technological advancements affects university educational procedures (Hanafi et al., 2020; Troussas et al., 2021). Technology has a significant impact on education, as it enables relationships to function optimally in the implementation of new information systems, which are also beneficial for learning (AlKhamaiseh, 2021; Rahardjo et al., 2019). One of the innovations that can bring learning in a better direction and make students comfortable is the concept of gamification in learning. Gamification is a system that facilitates individual and collaborative learning, content management, activity management, formal and informal learning, and learning in the learning environment (Symonenko et al., 2020; Vanduhe et al., 2020). Learning with the concept of gamification will make students feel happy and comfortable in carrying out learning activities.

Students now find games, both digital and traditional, delightful (Lo & Hew, 2020; Tobon et al., 2020). This is the primary reason students engage in game-based learning. Additionally, games may have become a necessity for everyone at this time, both children and adults (Marino et al., 2020; Sailer & Homner, 2020) because games can cause someone to escape from everyday life and find happiness through their participation in the game. There is nothing wrong with using the game to help create a more appealing learning environment for students; as it is more effective than the traditional method of teaching (Kolpikova et al., 2019; Faust & Faust 2021).

Games can increase students' interest in learning and serve as a platform for their thinking (Warmelink et al., 2020; Zainuddin et al., 2020; Bovermann & Bastiaens 2020). Games are defined as activities that are 1) enjoyable; 2) spatially and temporally separated; 3) uncertain; 4) non-productive; 5) regulated; and 6) contrived. Numerous strategies for utilizing games to foster a positive learning environment exist. Gamification is one of them.

Gamification applies game elements to non-game situations (Kift, 2017; Lim et al., 2020). Gamification is the process of attracting users through game concepts and mechanics. Gamification is another term for applying game element designs in non-game situations (Bai et al., 2020; Warmelink et al., 2020). Gamification can be used to extend the appeal of a game to real-world or productive activities. Gamification uses game elements and principles to achieve goals and engage and motivate people to take action (Mulcahy et al., 2020; Mullins & Sabherwal, 2020). Gamification of learning is an effective method of increasing students' interest and motivation to learn. Gamification of education can increase students' interest and engagement in collaborative learning and participation in learning activities (Mitchell et al., 2020; Vanduhe et al., 2020, Kabilan et al., 2023). However, their interest is not in the subject matter; they are only interested in the game. As a result, improved learning designs incorporating gamification models must be developed. Until now, numerous researchers have attempted to create this gamification-based learning model.

Gamification can be used in two ways: during the student learning process to increase motivation and interest in learning and during the assessment process to determine the student learning outcomes (Pektas & Kepceoglu, 2019). Table 1 presents the game elements that can be used to aid in the educational process (Pektas & Kepceoglu, 2019). Table 2 shows the game components that can be used to evaluate student learning outcomes (Pektas & Kepceoglu, 2019).

Table 1
Game Elements in the Learning Process

Learning process	Game Element
Setting goals, objectives, and regulations	Challenges, missions, and how to say win or lose
Student participation and agreement	Characters, avatars, restart points, and endless possibilities.
Assessment, evaluation, and prizes	Virtual coins, equipment, and access to things
Reciprocal	Hints, alerts, progress bars, and alerts
Cooperative or collaboration	Teams, clues, social interactions, fighting, how to communicate, transactions, and help each other

Table 2
How do the Details Support the Assessment

Game elements	How do the facts support the assessment
Challenges and missions	Seeing students' capacity to apply knowledge and complete some assignments.
Game rules and restrictions	They see their behavior as honesty and respect for each other.
Choose a different path	We see student abilities such as decision-making, problem-solving, and student creativity.
Reload points and a lot of opportunities to complete tasks	Develop the ability or knowledge to be mastered, besides seeing behaviors such as student resilience and tolerance for despair.
Teams, roles, and battles	Encourage teamwork in solving problems and student leadership.
Points, levels, and progress bar	Establish information on student progress toward achieving goals.

Developing a gamification learning model (Huang & Soman, 2013) must adhere to specific development steps, which include the following: 1) an understanding of the context and its application; 2) establishing learning objectives; 3) mapping the experiences that users/students will obtain; 4) analyzing resources; and 5) incorporating gamification elements. These steps must be taken systematically. This must be carried out to create effective gamification learning and meet the field's needs. Without following the steps in development, it will be impossible to develop effective gamification of learning (Andini et al., 2019; Arsanti, 2018).

1.1. Purpose of study

The current problem that is aimed to be revealed in this research is the analysis of learning needs with the concept of gamification in it. This research is expected to reveal the current learning needs of students and what kind of learning is expected to be carried out. Students as the main target in learning have the liberty to carry out teaching and learning activities with pleasure, which allows them to have high enthusiasm for learning. Therefore, this study will review how interested students are in the concept of gamified learning. This will be the basis for researchers to be able to create learning that can make students feel happy and comfortable in doing so.

2. Materials and Methods

This research is a descriptive study with a survey method (questionnaire) carried out in January–March 2021. This study aims to analyze the needs of students in learning with the concept of gamification.

2.1. Data collection instrument

The data collection instrument was a questionnaire. The instrument of data collection was used as an observation sheet. Observation sheets are used to obtain data about courses in universities. The research data were analyzed descriptively and qualitatively. The method of data collection utilized by scientists is suitable for analyzing the learning needs of students. The subjects used as research objects are curriculum development, education statistics, learning media, and student development. The course was chosen because the subject is the basis that must be mastered by students majoring in education. This is what makes researchers choose to analyze learning in these courses.

The analysis was conducted to identify the problems that exist in universities related to the process of implementing learning in universities and the availability of learning media so far. In addition to that, observations were made to determine the learning process and to find out the types of learning resources used to date. Interviews were conducted with lecturers and students to find out the conditions of learning carried out and the type of learning media needed. A needs analysis was carried out to determine and determine the form of learning that students need in the learning process. Researchers distributed questionnaires to students related to the analysis of gamification needs in learning.

The interview process conducted by the researcher was carried out carefully with the relevant instruments to see the need for gamification in learning. Interviews were conducted by a team that was distributed to all universities so that the data collected could be valid and by the conditions in the field.

2.2. Participants

The sample used in this study was 100 students consisting of students from the Universitas Terbuka, Universitas Pendidikan Indonesia, Universitas Sebelas Maret, Universitas Negeri Surabaya, and Universitas Negeri Makassar. The 100 students who were included in the research sample were an even sample and could interpret the real situation of students in the field.

2.3. Ethics and procedure

Oral permissions were sought before the study. All participants' identities were kept hidden. Data collection was conducted utilizing a Google Form questionnaire for a survey and semi-structured interviews. The instruments used include a preliminary study questionnaire. For interviews, researchers conducted interviews in person or virtually to be able to collect more and better data. For observation, the researcher followed the learning directly in the classroom and observed the learning process directly. Descriptive qualitative data analysis is employed by analyzing and summarizing the obtained data to provide an overview of the settings and scenarios that occur in the field.

3. Result

According to the research, learning in higher education requires a new level of innovation in its implementation. Over 30% of the students report feeling uneasy and dissatisfied with their learning activities, owing to a lack of enjoyable learning opportunities – the absence of comfortable learning results in low student enthusiasm for learning activities. Students' learning resources used in lectures are frequently dull, causing students to lose interest in their learning activities. Students expect learning that is capable of igniting their enthusiasm for learning. Additionally, they require nuanced education through games such as those they use to combat fatigue. Students will become more motivated and enthusiastic about learning by incorporating fun into the learning process. This also helps students understand that they have a soul, require enjoyable knowledge, and help them feel that boredom associated with expertise can be alleviated.

The data processed by the researcher based on the research subject is presented in each course. This information was taken from 100 students who took the curriculum development, education statistics, learning media, and student development courses. From the various kinds of data obtained, and processed accurately by researchers, what can be drawn is an understanding that students need gamification in learning so that students will feel happy because there is an element of play in the learning they are doing. With this concept, students will have a high sense of enthusiasm for participating in learning. It should be noted that students will have fun if there is an element of play in the learning they do.

In this section, it is explained that each course can use gamification in learning. As a first step, the researchers designed the courses below to be arranged in such a way that they can be used as learning using the concept of gamification. This design will later become the basis of the development process that will be carried out by researchers as a further step from the current needs analysis research.

Most of the students (87%) stated that their current learning was less interesting. The learning that students do tend to use is conventional where students only listen passively to explanations from the lecturer. One-way learning can cause learning to be boring and make students inactive (Indriani et al.,

2021; Sumiyati, 2019). The interactions that occur are only questions and answers that are carried out. This kind of learning makes students less interested in actively participating in learning.

88% of the students stated that lecturers used learning media in their lectures. However, the existing learning media is only limited to presentation slides. Learning media can make learning interesting (Lutfi et al., 2019; Samsudin et al., 2019). Learning media can be a way to make students not bored in lectures. A good learning medium is a medium that can make students more focused on learning.

86% of the students stated that the current learning is still difficult to understand. The difficulty of the material being mastered by students is because the learning model used does not help students learn the learning material easily. The selection of student-centred learning models will be able to improve their ability to comprehend academic material (Chauca et al., 2021; Majid et al., 2012).

87% of the students explained that they were interested in using gamified learning. This is disclosed in the questionnaire provided. Students feel that learning by using gamification techniques will make them active in the classroom. Gamification improves learning content and activities (Mitchell et al., 2020; Sanchez et al., 2020). This is what makes students interested in being able to use gamification in learning.

88% of the students stated that they prefer material presented in the form of gamification. This is because the learning presented with gamification will make students participate actively in learning. With the activeness of students in the classroom, learning is more interesting and students will have high spirits to be able to understand the learning material. Gamification can increase students' enthusiasm for learning (Mee Chaucer et al., 2020; Webb & Cantú, 2013).

Most of the students (87%) said that they wanted to learn to use gamification. Learning that blinds students' curiosity will become an addiction for them to be able to participate in learning more actively and optimally (Ade et al., 2018; Jiang et al., 2019). Students want to learn with gamification because they are curious about what it is like to learn with gamification. The curiosity of students makes them have a high sense of enthusiasm for learning.

86% of the students stated that learning using gamification can make learning easy for them anytime and anywhere. Learning anywhere and anytime will make students feel comfortable while studying. With today's developing technology, it is not impossible that learning can be done anytime and anywhere. Learning anytime and anywhere can increase their effectiveness in learning (Megasari et al., 2021; Odeh et al., 2022).

89% of the students revealed that learning using gamification can motivate learning more. Students need motivation to learn and to be able to boost their learning spirit. Higher learning motivation can also be caused by the selection of learning methods used by lecturers. Good learning is learning that can increase students' learning motivation (Dewi et al., 2021; Gunawan et al., 2021).

86% of the students said that learning using gamification allowed them to study independently. Gamification learning can make independent learning in students increase. Independence in learning in students should be developed so that they do not depend on others. Good learning is learning that can allow students to be independent (Aini et al., 2021; Yuki, 2021).

86% of the students stated that they want to learn with gamification. The concept of learning with gamification is widely used in the current era. This is because of the advantages obtained by lecturers and students when applying gamification learning. The application of learning with gamification provides many advantages that will be obtained by students. One of the benefits of gamification in learning is that it can increase motivation and good learning relationships between students (Alsawaier, 2018; Saleem et al., 2022).

87% of the students stated that they agree when lecturers apply gamification in learning and develop it into a novelty. Gamification is proven to bring many benefits to learning (Aini et al., 2021; Johnson et al., 2016). These benefits are needed to improve the quality of higher education. In addition, students will find it easier to absorb the knowledge they gain during lectures.

87% of the students need gamification as an alternative to learning from currently available media. With a blend of media that is confused with the concept of gamification, it will bring learning at the university level to be more modern. In addition, learning with the concept of gamification will have a significant impact on learning. The combination of gamification and interactive multimedia will be an appropriate blend in learning. Interactive multimedia and online learning in learning can increase student motivation to learn (Kus Eddy Sartono et al., 2022; Meruyert et al., 2022).

Out of 100 students, 87% stated that they needed a learning concept with gamification elements in it. This is explained in more detail from the results of interviews that students want learning based on increasing challenges and levels, like a game. The current concept of gamification makes students want to learn how they use concepts. Moreover, students also expect curriculum development, education statistics, learning media, and student development courses to be directed toward gamification learning. They hope that future innovations and learning directions refer to the true gamification concept and make them feel happy when carrying out learning activities.

4. Discussion

Here, we will explain in more detail the courses required by students with the concept of gamification. Specific courses at the university level require gamification to facilitate learning. This is carried out to make learning more enjoyable and increase students' enthusiasm for learning. Gamification should be used to conceptualize learning in higher education so that students feel comfortable attending lectures. Gamification has the potential to introduce new nuances to university-level learning. Gamification can be applied to various subjects in education, including curriculum development, education statistics, learning media, and student development.

Curriculum courses are courses that educational personnel education institute students take to lay the groundwork for their future involvement in education. Given that the curriculum is the bedrock of education, students must understand these courses well. The curriculum of the courses must be understood by students, as the curriculum is designed to develop intellectual and intelligence abilities and attitudes that must conform to prevailing social norms and can provide pupils with the skills necessary for community adaptation. The curriculum plays a critical role in education because it regulates and ensures that educational goals are met and do not deviate from the planned objectives. The curriculum is one of the educational system's components. Today's digital learning environment directs education to be swift and brief. Digital learning enables students to comprehend the material more easily. Currently, games are top-rated among all age groups, from children to teenagers to

adults. Given this, innovation is required to pique students' interest in learning by incorporating games into the curriculum. This can help students become more enthusiastic about learning and capable of developing their learning capacity.

Statistics is the most frequently used concept in all fields, including economics, marketing, and computer programming. It is inextricably linked to mathematics. As a result, evading statistics is similar to dodging mathematics where one will be exhausted for some time. This article does an excellent job of discussing the role, importance, relevance, and significance of statistics in education and other general learning areas. Statistics in education aids in collecting and presenting data in an orderly fashion. Put simply, statistics aids in organizing processed and unprocessed data in education. Statistics in education increase the effectiveness of actual teaching and learning. Statistics in education, with a particular emphasis on concept measurement and evaluation, is a critical component of the teaching and learning process. Scores are computed and interpreted during this process to aid in decision-making. Thus, statistics enables an objective examination of these scores. It enhances the effectiveness of the teaching and learning process. Statistics in education aids in the creation of accurate descriptions. This allows the teacher to describe the data accurately. This can be seen in the administration of students or the observation of children. To ensure that ideas are accurately described and convincingly presented, the introduction of statistics can be used as a tool in the analysis and presentation process. Education statistics is a subject that students despise. Many students struggle to comprehend statistical material because there is no enjoyable way to study this subject. With the inclusion of games in this learning, students will be able to learn statistics in a fun way and will improve their ability to understand statistics.

Numerous obstacles are encountered during the teaching and learning process, preventing the learning objectives from being met optimally. To accomplish the learning objectives effectively, the teacher must overcome these impediments. One way is through the use of the appropriate educational media. Learning media can be used to expedite the process of teaching and learning activities, thereby ensuring that learning objectives are met. Using media as a means of instruction will assist students in developing their competence in the field of media education. Historically, the teacher was the sole source of learning in the teaching and learning process. Educational activities are still predominantly traditional, i.e., learner-centered. Then, as technology advanced rapidly, the educational era was influenced by Industrial Revolution 4.0, using digital technology in the instructional process. This is referred to as a cyber system, which enables the learning process to occur continuously without regard for space or time constraints. If prior learning was centered on the learner, the current understanding is also centered on the learner. Apart from the Internet, the environment, books, and other learning resources, learners are the only source of knowledge. In today's digital age, cultivating student knowledge requires a sophisticated yet user-friendly method. One of them is the incorporation of games into the educational process. And it is not impossible if we can combine games and learning to create effective and innovative instruction and foster student learning.

As an educational personnel education institute student who will eventually struggle in education, students must understand their development. By examining the development of students, we gain several benefits, one of which is a realistic picture of children and adolescents. It will be determined by developmental psychology at what age children begin speaking and developing the ability to think

abstractly. These are generalizations about what happens to most children; additionally, it will be determined at what age-specific children acquire special behavioral and emotional skills. Understanding child development psychology enables us to respond appropriately to a child's specific behaviors.

As prospective teachers, they must be able to play a significant strategic role, particularly in shaping the nation's character and developing students' potential. Teachers cannot be replaced by other elements, even more so in our multicultural and multidimensional society, where the role of technology in assuming teacher responsibilities is minimal. Teachers play a critical role in determining the educational success of students. Professional educators are expected to produce graduates of the highest caliber. Teacher professionalism as the spearhead of curriculum implementation in the classroom requires attention. The role of the teacher in the process of teaching and learning is to encourage, guide, and provide learning opportunities for students to achieve their goals. Teachers must monitor everything that occurs in the classroom to aid in student development. Submission of subject matter is only one of the numerous activities involved in learning as a dynamic process that occurs throughout the various stages and functions of a student's development. Given the critical role of the teacher (for students enrolled in the education personnel education institution) in the success of students, prospective teachers must be able to adapt to various existing developments and enhance their competence, as teachers are now required to serve as managers of the teaching and learning process. As someone who manages the teaching and learning process, s/he must improve her/his ability to create lesson plans, implement and manage effective teaching, objectively evaluate learning outcomes, and motivate and guide students, particularly those experiencing learning difficulties. Students in the modern era exhibit distinct characteristics in their learning activities; observing reality on the ground, students prefer playing games on their gadgets to reading books. Thus, we can seize an opportunity to incorporate fun into the learning process to pique students' interest in learning.

5. Conclusion

The conclusion from the research conducted is that gamification in learning is needed in learning at the university. Students need fun while learning and bring the world of games into the classroom so that students can be enthusiastic about learning. This is necessary because students feel that games in the classroom will boost their learning enthusiasm. Innovation in the delivery of education at the university level is required. The creation comes in the form of gamified learning. This will have a beneficial effect on the advancement of tertiary education. Students will be able to maintain a high level of motivation for learning due to this innovation effort. Students' motivation will correlate with their accomplishments. Gamification in higher education is critically needed and must be implemented in practice

This research is a very important basis for the next steps to be taken. This step is a strategic step that can help students in their learning. Based on the findings and conclusions from the research that has been conducted, recommendations to carry out the next stage are given. It is recommended to develop a form of learning with the concept of gamification. This development is needed to be able to help students in their learning activities to be more fun and for enthusiasm for learning to increase. Finally, researchers are recommended will develop a form of gamification learning for learning at the university level.

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