Development of Electronic Documentation System for Final Project with Gamification to Improve the Effectiveness of Final Project Creation

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Abstract— The final project is very important for every student in their educational program. This is a final project that requires in-depth research and thought, helping students put into practice the knowledge they learn and apply it in the form of real work. In several educational programs, the results of the final assignment can also be used as a determining factor for a student's final grade. The process of preparing the final assignment involves several stages, including determining the topic, selecting a supervisor, conducting guidance, conducting a plagiarism test, final assignment exam, and uploading the results of the assignment. end to the existing system. However, in such a long process, if it is not supported by a good system, the process of compiling the Final Project can be a troublesome thing. Therefore, there is a need for a gamification process in the existing system to improve the quality of the system and re-encourage students in doing their final assignments. Gamification uses game design and has several important components such as feature points, badges, levels, leaderboards, challenges and prizes. The gamification process can increase student involvement and the achievements given.

Keywords— Final Project, Gamification, Electronic Document, Thesis

I. INTRODUCTION

The final project is an important part of the educational program for every student. This is a final project that requires extensive research and thought to complete. The final project helps students practice the knowledge they learn during their studies and apply it in the form of real work. The final project also helps students demonstrate their skills and knowledge in their field of study. In several educational programs, the results of the final assignment can also be used as a determining factor for a student's final grade [1]. Therefore, the final task is very important for every student and must be done seriously and earnestly.

Offline final project guidance has several challenges that are difficult to face. First, the difficulty in arranging face-to-face schedules between students and supervisors, because they have to be adjusted to the busy schedules of both. Second, access to limited resources, such as reference books and laboratories, which can limit students' ability to conduct research and experiments. In addition, it is difficult to provide fast and effective feedback because the supervising lecturer needs to manually review the final assignment and provide comments directly, which requires a lot of time and effort. Finally, offline tutoring can also reduce interaction between students and supervisors, so that it can affect student motivation and the quality of the final project results produced.

In preparing the final assignment, there are several stages that must be passed by students in their journey, including determining the topic of the final assignment, selecting a supervisor, conducting guidance, conducting plagiarism tests, final assignment exams, and uploading the results of the final assignment to the existing system. In such a long process, of course if it is not supported by a good system then the process of preparing the Final Project can be a troublesome thing.

In practice, making final assignments is not an easy thing, sometimes students feel lazy in doing their final assignments which causes the final assignment to not be completed [2]. Apart from dealing with supervisors, students must also carry out administrative processes through the final assignment coordinator. So that in a final project preparation process there are many stakeholders who play a role in the process.

To avoid problems regarding loss of motivation in doing something, a gamification process is often carried out on the existing system to improve the quality of the system and give enthusiasm back to system users. The term gamification was first mentioned by Nick Pelling which is a technique using the design of a game that is adopted in everyday work [3]. Gamification has several important components that exist in order to make an ordinary system have game features in it, including feature points, level badges, leaderboards, challenges, and prizes [4]. The gamification process is a positive step in the community because it can increase student involvement and also increase the achievements given [5]. Gamification has many important benefits in a system, including increasing user satisfaction, improving engagement and participation levels, and motivating users to complete tasks or achieve certain goals. In addition, gamification can also increase information retention, improve productivity, and reduce the level of boredom in a system. By utilizing game elements in the system, gamification can help users understand information and increase user interaction with the system in a fun and not monotonous way. Therefore, gamification is becoming increasingly important in many applications and systems to improve user experience and increase the effectiveness of using those systems.

So the need for a system that can help document all processes regarding writing the final assignment so that all processes carried out by students can be recorded properly and are not messy. In addition, there is a gamification process that supports the process of running the system so that students also get an encouragement system in carrying out the process of writing their work.

II. METHOD

In realizing the final project electronic documentation system with gamification features, the system development was carried out in several stages.

1. **Development of the Final Project Electronic Documentation System**

The process of developing an electronic documentation system for the final project is made using a website platform which has several advantages compared to other platforms, including the ease of access it provides. Due to the diversity of devices owned by both students, lecturers and administrators, choosing a website platform is relatively more accessible to all groups.

The development of an electronic final project documentation system is first integrated with existing data at the university so that you can see the contents of student, lecturer and administrative data. Then development is carried out by developing services for the three sides of the user.

In making the final project electronic documentation website using the website development method in the form of agile. This method involves iterative and incremental website development. The development process is divided into sprints or small iterations, which allows teams to focus on completing small tasks in a short amount of time [6].

On the student dashboard there are main menus such as registration, guidance, anti-plagiarism, exams, revision guidance, and also full text upload.

Figure 1. Student's Dashboard

On the lecturer dashboard there are several menus that can be seen containing a list of students, a list of guidance, anti-plagiarism, exams, revisions, and a list of graduated students.
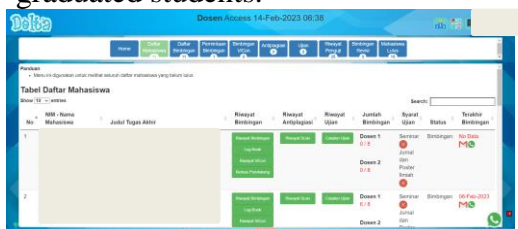

Figure 2. Lecturer's Dashboard

On the coordinator's dashboard there are several menus, namely a list of all students, supervisor plotting, exam plotting, input grades, input exam requirements, files, and application settings. The coordinator has quite a lot of roles including determining sup⬚⬚sors, determining exam schedules, managing files, and inputting grades.
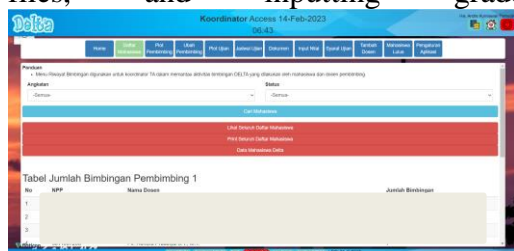

Figure 3. Coordinator's Dashboard

2. Development of Student Gamification Content

To increase the effectiveness of the final project preparation, the final project electronic documentation system is given additional gamification content for each existing user. On the student side, several elements of gamification are given, such as points, challenges, and also a leaderboard. The elements of the points given cover four types of points, namely Speed, Perseverance, Persistence, and Accuracy. The element of speed is how fast students can complete their final assignment, the faster it is done, the higher the score they get. The element of Perseverance is how much students carry out guidance with supervisors so that the more often students carry out guidance,

the more points they will get. The element of persistence is seen from the average of how quickly students return to guidance after the previous guidance. And the element of Accuracy is how students can complete the final assignment accurately according to the instructions given, the more accurate and do not get administrative revisions, the higher the accuracy score obtained.

Of the four points given, they are then summed up and averaged to become a leaderboard which will be compared with the scores of other students.
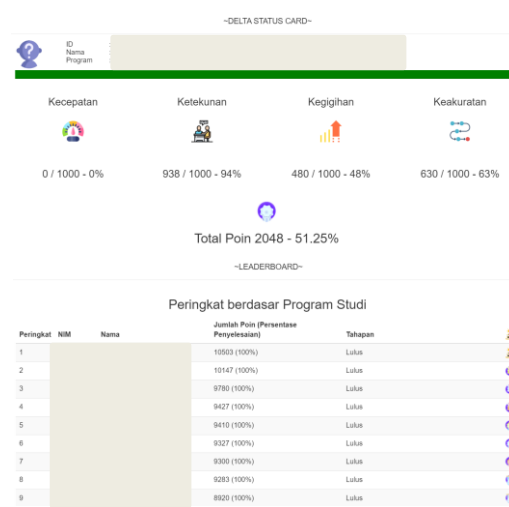

Figure 4. Student's Gamification

3. Development of Lecturer Gamification Content

The development of the gamification feature on the lecturer page must also be carried out so that the process of compiling the final assignment can run smoothly, so that the lecturer is more enthusiastic about providing services to his students. On the lecturer page, gamification features are provided in the form of points, experiences, and leaderboards.

The points given to lecturers consist of several aspects and are converted into point experiences which will affect the level of the lecturer, the points given include guidance, testing, and anti-plagiarism points. As for the leaderboard system given to lecturers, it is calculated from how fast the lecturer provides

guidance to students after students upload guidance in the system. The faster the lecturer responds and responds to the guidance, the higher the points obtained and can enter the lecturers' leaderboard.
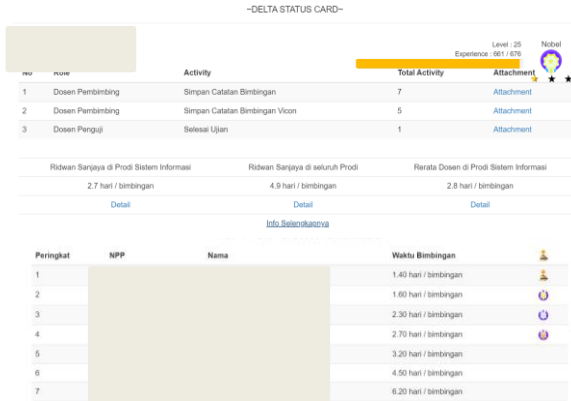

Figure 5. Lecturer's Gamification

4. Development of Coordinator Gamification Content

The coordinator of the final assignment is also one of the cores of the success of a student's final assignment process even though his work is only administrative in nature. Therefore, coordinators also need to be given elements of gamification so they don't feel bored with their work.

As a coordinator, the gamification elements provided are in the form of point experiences, badges and proof of performance. Where evidence of performance can later be reported to the university as an employee performance report.
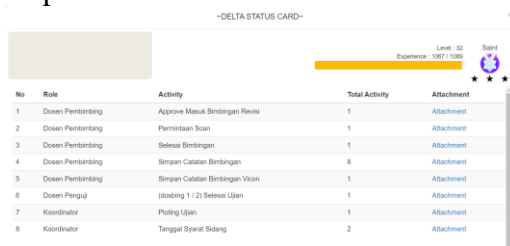

Figure 6. Coordinator's Gamification

III. RESULT AND DISCUSSION

The results of making the final project electronic documentation system as well as the gamification features in it are taken in the form of a questionnaire which is distributed to

students who have gone through the process of preparing the final project from start to finish.

From the results of the questionnaire, it can be seen that 72.3% of the 423 students were assisted by the final assignment guidance process using the system.
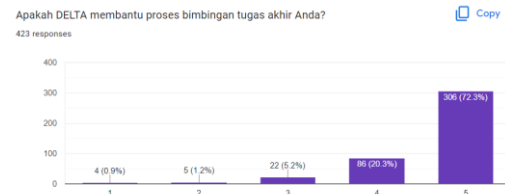

Figure 7. First Questionnaire

The next questionnaire showed that the lecturer's response in using the electronic documentation system for the final assignment was very good, out of 392 respondents 57.4% said it was very good and 27.3% said it was good.

Figure 8. Second Questionnaire

In addition to the lecturer's response, the response of the coordinator of the final assignment was also one of the drivers of the success of the final assignment. It can be seen from the questionnaire that out of 392 respondents stated that 62.5% of the responses were very good and 25.5% stated that they were good.

Figure 8. Third Questionnaire

IV. CONCLUSION

It can be concluded that the gamification process carried out can encourage stakeholders in the process of preparing a student's final assignment. Students become more motivated by the existence of a point system that makes them compete to get the best ranking. Meanwhile, as a lecturer, you can be even faster in providing guidance to students so you don't delay existing work. As a coordinator, you will also get more experience and appreciation for being more active in carrying out your final assignment.

V. ACKNOWLEDGMENT

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