Conference Paper

T-Scheduler, Integrated Website and Mobile Apps Design Based on 4DX for the Acceleration of Thesis Completion

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Abstract

During COVID-19, thesis tutoring is more challenging. Offline meeting consistency is hard to maintain online. To solve this problem and keep students motivated to finish their thesis, we proposed developing a website based on the 4DX theory. The theory of 4DX is setting Wildly Important Goals (WIG), acting the lead measure, presenting a motivating scoreboard, and creating the rhythm of accountability, which are represented in the visual languages of the interfaces of the developed website. The website and apps were designed to visualize those four theories by using M. Asimov methodologies. The students can set WIG (for when the thesis exam is planned) and lead measure (in the task form) in the calendar interface. The lecturer can check their progress. The scoreboard page presents their thesis milestones, and all students working with one lecturer can see each other's profiles. There are chat rooms, teleconference facilities, and reminder tools that can be plugged in to mobile apps for support. Thus, a creative and innovative solution was developed for guidance on completing a thesis in higher education by using gamification through a scoreboard.

Keywords: 4DX, online thesis guidance, website, mobile apps

1. Introduction

Pandemic situation force the university in Indonesia to close and delivering training online [1], no exceptions in thesis guidance [2]. UNESCO (in Sakri, 2020) dan Kemendikbud (in Sakri, 2020) suggest using distance learning and opening up an educational platform that can be used during pandemic times.

The mentoring process contributes 74.05% in providing obstacles to the thesis process [3]. Because inevitably, this covid situation forces lecturers and students to conduct the thesis mentoring process through online, the selection of media used in the mentoring process determines the effectiveness of the process of mentoring [4]. The

application used is still an integration of various applications such as, whatsapp, video call, google meet, zoom meeting, e-learning, email, google drive [4], [5] and have not used an application that integrates the needs of the thesis mentoring process in 1 application.

External inhibitory factors in the form of such media, there are also external factors such as the duration of the consultation is uncertain [4]; length of feedback from supervisors [3] and the presence of internal inhibitions such as boredom [4], lack of a place to brainstorm with friends [4] which eventually makes stressful and saturated [4]. This turned out to have an impact on the effectiveness in the achievement of thesis which only 6% reached the target above 70%[4]. Kintama [4] confirms the need for an application to facilitate the process of mentoring thesis online.

The solution of these inhibitory factors is tried to be solved by several universities in Indonesia through their online thesis mentoring platform. Such as applications that have integrated the documenting process, uploading progress report, recording thesis guidance with communication, and collaboration learning system in students who have the same topic in 1 lecturer mentor (learning group) and calendar (guidance schedule), conducted by Telkom University [6]. But in this case there is no strategy that designs the behavior of stakeholders skrispi guidance through the platform, for example by the granting of a game model and scoreboard achievement process.

Other applications that integrated mobile applications and websites to accommodate the thesis mentoring process were offered by Nasution [7]. The platform offers feature heads of departments can monitor and evaluate the thesis mentoring process that occurs. Another platform that accommodates the thesis mentoring process is also found at the Faculty of Engineering of Yogyakarta State University called SIBIMTA [8]. So is the online mentoring system offered by Putra [9] only focusing on uploading files and reviews from supervisors, has not integrated with small tasks in achieving the expected script and associating scheduling with it.

The media problems, there are also internal and external factors in the thesis mentoring process, so in addition to the need for an online thesis mentoring platform that resolves the main needs, such as the repository of thesis script files, feedback communication, guidance scheduling, and monitoring by the head of the department, other solutions are also needed related to the design of user behavior outlined in the user experience of the platform. T-scheduler offers 4DX (The Four Discipliner Execution) strategy in changing user behavior in completing thesis and integrating it with gamification strategies based on its platform.

Although 4DX was started to change employee behavior in achieving the company's business objectives, 4DX was also widely applied to the field of education [10]. The 4DX strategy is expected to allow stakeholders to focus on achieving the goal of completing thesis among other activities. With the stage of determining wildly important goal that can be in the form of the expected thesis trial date; and determination of lead measure (daily activities that have an impact) on the calendar that can be monitored by thesis supervisors; and scoreboard monitoring for positive competition ministers; and meetings set once a week to establish the rhythm of accountability of the thesis mentoring process and get social support; it is expected to help solve internal and external problems of the thesis mentoring process.

The implementation of 4DX in the thesis guidance platform at The State University of Malang will use a gamification model that is sufficiently in accordance with the game components on the 4DX scoreboard. Gamification is done is to divide the stage of the thesis writing process into game levels consisting of; level 1 is uploading the thesis manuscript from chapter 1 to chapter 3 or background, theoretical framework, to method; level 2 is the uploading of the thesis manuscript chapter 4 or data exposure and data analysis; and level 3 is the uploading of the thesis manuscript chapter 5-6 or discussion / process of design and conclusions and suggestions; and level 4 is the trial thesis and revision of the manuscript of the trial and or article thesis. At each level, students should not proceed to the next level if the previous level has not been set clear by the supervisor.

All levels of that stage will be implemented using mascot of Universitas Negeri Malang so that student affection can be improved in the use of t-scheduler platform. The mascot will also appear on every section of the t-scheduler platform including the scoreboard. This scoreboard will show the progress level of each thesis guidance student in 1 tutor who is also shown their status position in the trial deadline and the maximum deadline level determined by the supervisor or head of the department.

2. Method

This design process follows the design model of M. Asimow that Duberly presented in the book titled How do You Design. Asimow's design process consists of the feasibility study, preliminary design, detailed design, planning for production, planning for distribution, planning for consumption, and planning for retirement [11].

Details of the design process stage revealed by Asimow above, detailed into steps: need analysis, system identification, design concepts, physical analysis, economic analysis, financial analysis [11]. In the stage need analysis can be known that in addition to the main needs needed in the online counseling process such as repository of thesis script files, communication feedback, scheduling mentoring, and monitoring by the head of the department, also needed strategies that form the behavior of students and lecturers in working on the thesis related to; internal external problems. This design offers solutions that impede the thesis mentoring process of the internal and external factors mentioned above.

In the identification system, mascot of Univeristas Negeri Malang usage strategy is carried out. As for the stage design concept follows the flow of 4DX where; determination of Wildly Important Goal (WIG) and lead measure facilitated by hompe page and calendar page; scoreboard facilitated scoreboard page; meeting rhythm accountability facilitated by calendar page, chat page, and video meeting page. Here also added a special feature to meet the needs of the thesis that is page review. As for stage physical analysis, economic analysis, and financial analysis is not done because this match is intended to be non-commercial and only used for internal universities.

3. Findings and Discussion

Here are the design results on each T-Scheduler page consists of 6 pages. 5 Pages will be featured in this article. And the last page that is Learning page will be developed at a later stage.

The t-schdeuler design above is adapted to the existing SIAKAD design and integrate it with mascot of Univeristas Negeri Malang. On page scheduling will be diembed with google calendar that has been purchased by Universitas Negeri Malang with diatambahakn feature that suits your needs. The calendar can also be integrated with other calendars of user accounts.

The novelty of the solution offer provided by the T-scheduler is displayed in the Scoreboarding page that informs the status of each guidance student in 1 thesis tutoring lecturer. Page Feedbacking will be diembed with google drive that has been purchased by Univeristas Negeri Malang. In Page learning, the concept and interface will be further developed in the next development process related to the repository of skrispi writing materials.
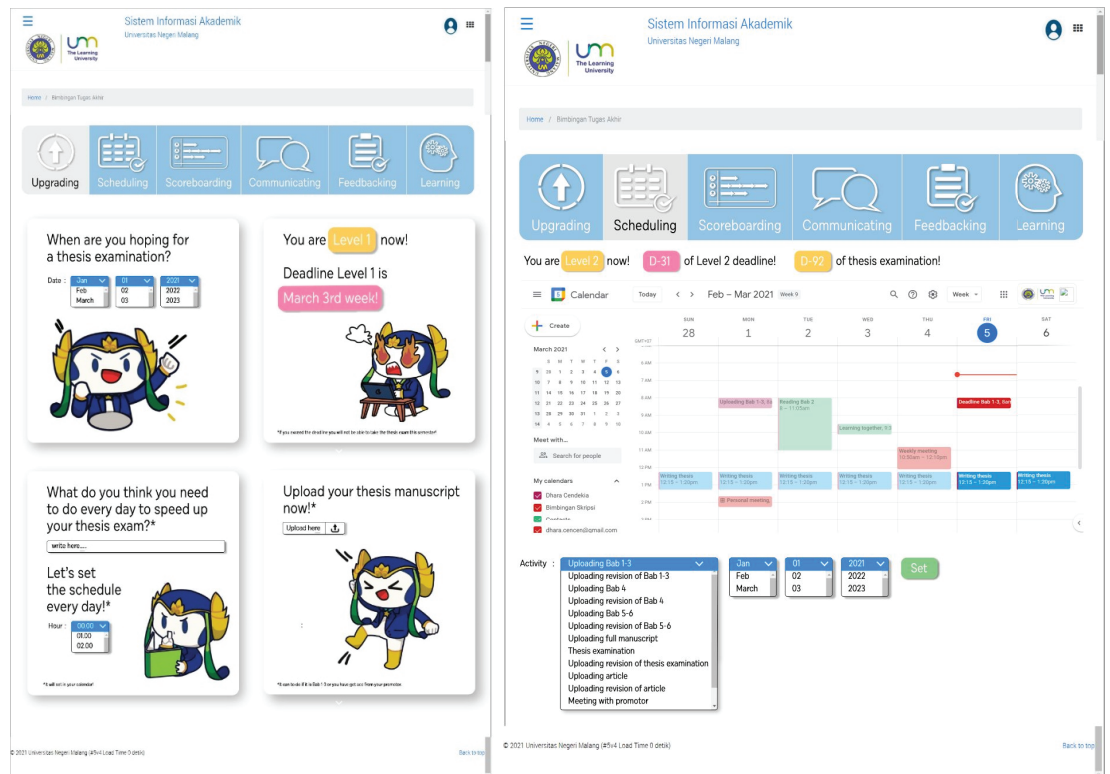
Figure 1: Upgrading and Scheduling Page of T-Scheduler

4. Conclusions and Suggestions

In the comments column feedbcaking page will be better when developed there is a voice note to make it easier for students to understand the direction of the supervisor and accelerate the supervisor in providing feedback. On the Learning page will have an impact if there is a discussion chat column on each material or video uploaded by the supervisor. Materials and videos uploaded by supervisors can be unlisted in the central repository or not. The repository of material is sourced from a library repository with filters that focus on writing thesis and related research topics selected by the supervising lecturer.

Acknowledgement

![KnE Social Sciences]

Figure 2: Scoreboarding Page of T-Scheduler
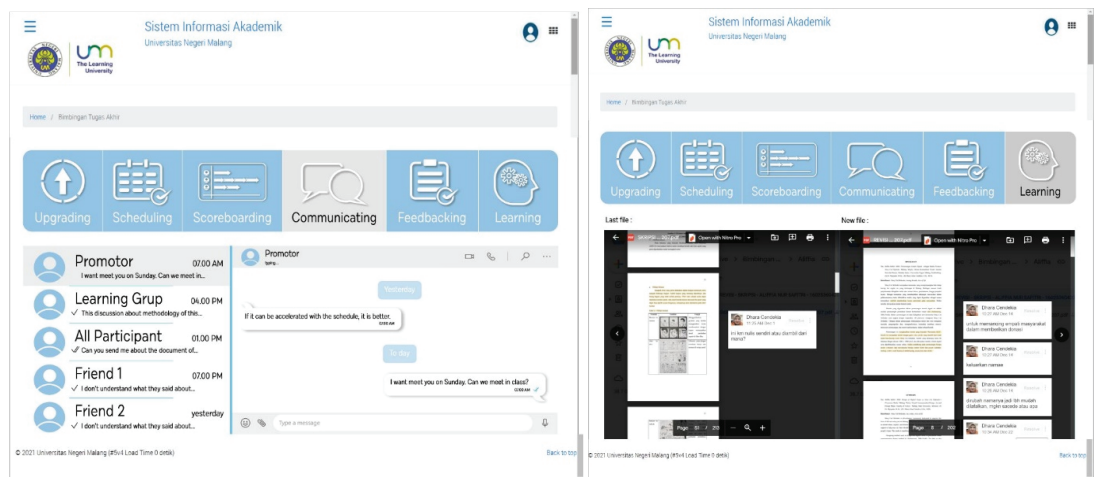

Figure 3: Scoreboarding Page of T-Scheduler

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