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# Redesigning the Colega Application Interface and Interaction Using the Learner-Centered Design Method

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**Abstract:** In the rapid development of technology, almost all activities are carried out online, activities become timeless so that many students have difficulty in managing time between lectures and other activities. So that students must be able to organize their activity schedule, record tasks and activities that must be completed. One of the efforts that can be made is to use colega products which are technology products to remind activities. The purpose of this research is to redesign the Colega mobile application interface that is suitable and easy to use based on student needs to increase the level of usability with the learner-centered design method., this method is a design process that focuses on the needs of learner, by performing 5 stages, namely Specify the context of use, Specify user requirements, Product design solution, and Evaluate against user requirements. The product developed using this method, the principle of this method is a collaboration that allows learner to develop, test, and analyze their ideas for the product to be made. Interface design and interaction testing using the System Usability Scale. the results of usability testing on the interface obtained a value of 60.62 to 78.12. With the test results obtained an increase in value in the usability aspect. So it can be concluded that the usability value falls into the good and acceptable category.

**Keywords:** E-learning; Learner; Learner Centered Design; System Usability Scale; Usability

## INTRODUCTION

E-learning has developed significantly as an educational tool (technology), but with the passage of time, efforts to advance technology are emphasized rather than trying to understand the learning needs and ways of learning of each student(Kemendikbudristek, 2013). The implementation of e-learning can use Learning Management System (LMS), LMS is system for lecture activities containing quizz assignment, and materials(Yauma et al., 2021). Information technology is a solution to implementing online lectures(Suni Astini, 2020), but there are also problems when carrying out online lecture activities. Based on the results of interviews conducted by Rahmawati, students experience difficulties in managing time between lecture activities and other activities(Rahmawati & Narsa, 2019). So students must be able to organize their activity schedules and record tasks and activities that must be completed so that they can arrange a priority scale so that no tasks or activities are missed.

By utilizing technology, it is easier for students to organize all lecture activities, especially in using e-learning. One of them is the Colega task reminder application, the application is a mobile-based application with a pedagogical agent that can help students at Telkom University as a lecture reminder from the Learning Management System(Akbar et al., 2021). This application will be a

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reminder of lecture activities such as assignments, quizzes, and also lecture schedules. The application can make it easier for students who experience delays in doing their assignments faster. To determine the usability of the application, testing was carried out with a minimum of 5 respondents, using small resources to run many small tests and improve the design between each test so as to correct usability deficiencies(Nielsen, 2012). Usability testing was carried out with the System Usability Scale (SUS) measuring instrument on 12 respondents with the characteristics of Telkom University students with the characteristics of participating in activities outside of lectures (Work/internships/independent campus activities/organizations), so it is appropriate to be used as respondents in this evaluation. The usability evaluation results get an average score of 60,62. The average score is below the average good score, which is 68(Sauro, 2011).

In addition, based on the results of observations and interviews in using the application to 12 respondents. Respondents are Telkom University students with the characteristics of participating in activities outside of lectures (Work/internships/independent campus activities/organizations), so it is appropriate to be used as respondents in this evaluation, there are several problems and difficulties in the user interface, namely limitations in setting reminders and activities, limitations in navigation, layout and color make students ambiguous and too monotonous, and students are looking for features to activate reminders because the icon display is not like the notification icon so they don't know how to set notifications from courses and are less highlighted.

Based on the explanation of the problems above, the application still has usability problems, so it is necessary to redesign the interface and interaction. The method that will be used for the interface redesign process in this research is Learner-Centered Design (LCD). The LCD method is chosen because it can find out the needs and emotions of learners when interacting in online learning to create a good online learning experience(Pratiwi & Sudirtha, 2022). Another reason this method was chosen is that it provides convenience in designing solutions with target learners, because there is an LCD principle of collaboration that allows learners to develop, test, and analyze their ideas on the product to be made(Chou, 2004).

The results of the interface redesign that has been made will again be evaluated for usability aspects using the System Usability Scale measurement and usability testing methods. Based on the factor analysis conducted by P. Kortum and M. Sorber(Kortum & Sorber, 2015), SUS can measure usability aspects because there are usability statements contained in the application (items 1, 2, 3, 5, 6, 7, 8, 9) representing usability aspects. The results of this test are expected to be used as a benchmark in redesigning and are expected to be able to become the basis for the development of the application so that it can facilitate users as learners in using the application.

## LITERATURE REVIEW

### Colega

This application is a pedagogical agent prototype mobile-based application that can motivate Telkom University students as a reminder of lectures from Moodle Learning/Learning Management System. This application will be a reminder of lecture activities such as assignments, quizzes, and also lecture schedules. This application can facilitate students who experience delays in doing their assignments and motivate students to do their assignments faster. This application has several features, namely the pedagogical agent feature, notification feature, calendar feature, and login feature(Akbar et al., 2021).

### Learner-Centered Design (LCD)

The Learner-Centered Design (LCD) method is a development of the User Centered Design (UCD) method, but the difference is in the objectives, in LCD in the design process it helps learners to achieve their goals in learning activities(Dhar & Yammiyavar, 2012), In addition, the LCD method is a learner-centered design of a product, then being able to know the needs and emotions of students when interacting in online learning is very important to create a good online learning experience(Pratiwi & Sudirtha, 2022). From a research conducted by A. Battoui, O. Baz, and D. Mammass(Battou et al., 2018), There is an interaction component that takes part in developing a

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system or product, namely the Learner Model, with this component the product will be developed. This is because learners can make changes to the system. With this, learners are considered as partners who participate in the improvement of the system.

According to Chou, this LCD method can provide evidence of the ease of designing solutions with the target user, namely the learner because there is an LCD principle of collaboration, where there is a problem-solving scenario that allows learners to develop, test, and analyze their ideas on the product to be made(Chou, 2004). LCD directly involves learners in the design process so that they can determine the right interface design to be used in learning. There are steps in using the LCD method with the foundation of the UCD method, namely: Specify the context of use, specify user requirements, product design solution, and evaluate against user requirements.

**Usability**

The International Standards Organization (ISO) defines usability as effectiveness, efficiency, and satisfaction with a particular user to achieve a particular goal. Similarly, Nielsen's statement in his article (Nielsen, Jakob. "Usability 101: Introduction to Usability") states the quality attributes that evaluate the usability of interfaces. According to Nielsen, usability has five quality components, including Learnability, Efficiency, Memorability, Errors, and satisfaction(Jordan, 2002).

**Persona**

A persona is an imaginary, yet realistic, description of a typical user or product target such as characteristics, activities. Its main function is to increase empathy, awareness, and memorability of the intended user, as well as help in identifying feature priorities and influencing design decisions. The following sources provide in-depth definitions of personas and compare them with other related artifacts(Kaplan, 2022).

**System Usability Scale (SUS)**

System Usability Scale (SUS) is an evaluation tool used specifically to measure the usability evaluation of an application or software user interface design. SUS is a reliable and effective measurement tool for measuring the usability evaluation of various products and services(Jordan, 2002). SUS is a standard that is often used to assess the usability of products as perceived by users, SUS is an evaluation method that does not require time, cost, and a large number of samples but adequate results(Ependi et al., 2019). SUS contains a questionnaire consisting of 10 standard statement items that are asked to the user(Pradini et al., 2019). The statements are organized using a Likert scale.

Table 1. System Usability Scale Questions

| No | Questions |
|---|---|
| 1 | I think I will use this system again. |
| 2 | I find the system complicated to use. |
| 3 | I find the system easy to use. |
| 4 | I need help from other people or technicians in using this system. |
| 5 | I feel that the features of this system work properly |
| 6 | I feel there are many inconsistencies in the system. |
| 7 | I feel others will understand how to use this system quickly. |
| 8 | I feel the system is confusing. |
| 9 | I feel there are no barriers to using this system. |
| 10 | I need to learn a lot before using this application. |

In Table 1, each score corresponds to a specific interpretation. A score of 1 indicates a Strongly Disagree response, a score of 2 suggests an Agree response, a score of 3 implies a Doubtful response, a score of 4 indicates an Agree response again, and finally, a score of 5 suggests a Strongly Agree response. This table represents the assessment index used in the System Usability Scale method(Pradini et al., 2019). Score categories System Usability Scale (SUS) can be seen in table 2.

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Table 2. Score System Usability Scale

| SUS Score | Questions |
|---|---|
| >80 | Excellent |
| 68-70 | Good |
| 67 | OK/Fair |
| 51-65 | Poor |
| <51 | Worst Imaginable |

**Prototype**

Prototype is the experience of the user when using a product. Based on an article by Marcin Treder, CEO of UXPin, prototypes have the purpose of running a simulation process of the interaction on the product between the user and the interface. Clickable buttons, user flow, and functionality play an important role in this process. Using prototypes for research is a very important process, with this process it can save costs by fixing problems before a product is finished and has a new problems. In a prototype design there is a type of display that describes the product, Low-Fidelity Prototype and High-Fidelity Prototype(Bank & Cao, 2014).

**Usability Testing**

Usability testing is one of the non-functional software tests that involves elements of human interaction in its assessment. Usability testing can produce the right product because it can see how the test user behaves when trying to perform a task. With the usability testing method, several metrics can be measured such as the time required for users to perform a task so that it fulfills the elements of human interaction in its assessment including user interface, user experience, and usability(Wahyuningrum, 2021).

## METHOD

The research stage is a process to describe the workflow of a research, starting from the initial stages of research to the final stages of research. The stages of the research can be seen below:

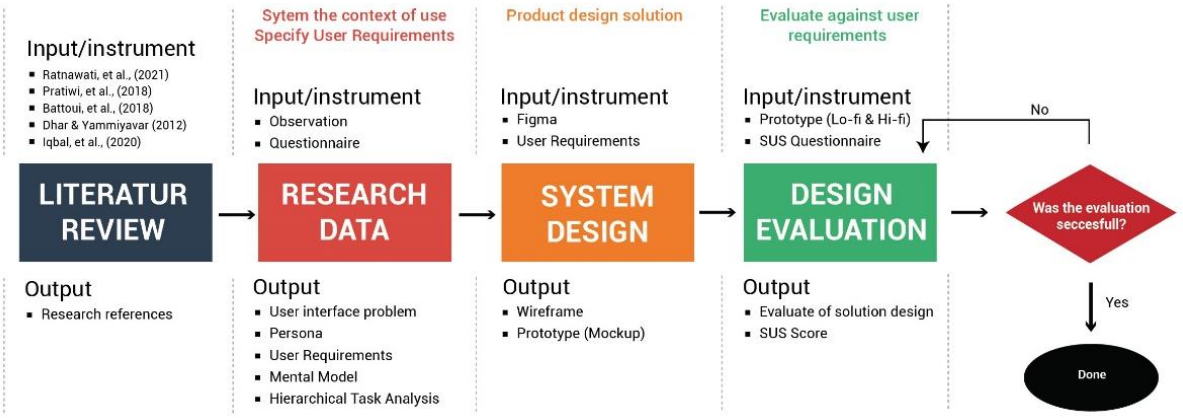


Fig 1. The Research Stage

In this study, the stage used is in accordance with the stage in the Learner-Centered Design method. This method has 4 stages(Dhar & Yammiyavar, 2012). Figure 1 represent about research stages.

**Specify The Context Of Use**

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Knowing learner activities and knowing user interface problems experienced by Telkom University students when using the application and get a usability score using the system usability scale. Then the problem is concluded through the user persona of the learner.

**Specify User Requirement**

Determine the need for a solution based on the context of use. To achieve the learner's needs, then create a mental model, task analysis, and scenario model as a reference for the solution design process.

**Product Design Solution**

The product design solution creates interface designs based on analyzed learner needs such as learner needs, task analysis, and user scenarios. This process includes creating mockups and prototypes as a result.

**Evaluate Against User Requirement**

At this stage, a design evaluation is carried out based on the user requirements that have been obtained previously, this evaluation will check the quality of the design for the design or development of software as a whole whether it is in accordance with user requirements and see how understandable and easy it is for users to carry out activities in the design that has been made. Then usability will be measured again using the system usability scale and comparisons will be made to the previous results.

## RESULT

**Specify The Context Of Use**

From the results of observations that have been made to telkom university students based on the research target, namely having activities other than lectures and using the system in organizing activities, researchers get results from groups of students based on the characteristics and criteria previously mentioned, that there are problems or obstacles when using the application because the interviewees need system or application assistance to organize all lecture activities to be structured. With this problem, it makes it difficult for sources to use the application to organize lecture activities with other activities. The issues found in the application are : Limitations in setting reminders and activities, the reminder setting display only applies to the entire lecture schedule, not per course and cannot add schedules independently, Limitations in navigation, navigation management on the calendar is not very clear so that respondents experience wrong clicks on the calendar, Layout and color make students ambiguous and too monotone, such as difficulty when viewing activity progress because it is located at the bottom, then the color when the activity progress is complete does not change, Looking for the feature of activating reminders, the appearance of the notification icon makes students confused, because the appearance of the icon is not like the notification icon so they don't know how to set up notifications from courses.

Table 3. System Usability Scale Result Before Redesign

| Question Number | User 1 | User 2 | User 3 | User 4 | User 5 | User 6 | User 7 | User 8 | User 9 | User 10 | User 11 | User 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 5 | 4 |
| **2** | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| **3** | 4 | 2 | 5 | 4 | 4 | 4 | 2 | 4 | 4 | 4 | 4 | 4 |
| **4** | 2 | 4 | 2 | 2 | 2 | 2 | 2 | 1 | 3 | 2 | 1 | 2 |
| **5** | 2 | 5 | 4 | 2 | 4 | 2 | 4 | 3 | 4 | 5 | 3 | 4 |
| **6** | 4 | 4 | 4 | 4 | 3 | 5 | 4 | 4 | 3 | 5 | 1 | 4 |
| **7** | 3 | 3 | 2 | 3 | 4 | 2 | 3 | 3 | 5 | 2 | 4 | 4 |
| **8** | 2 | 2 | 4 | 2 | 1 | 3 | 3 | 3 | 2 | 4 | 1 | 2 |
| **9** | 4 | 5 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 2 | 5 | 5 |
| **10** | 4 | 5 | 4 | 5 | 4 | 5 | 4 | 4 | 5 | 5 | 5 | 2 |
| **Average SUS Score : 60,62** | | | | | | | | | | | | |

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The results of application testing before redesigning can be seen in table 3, researchers measured the usability aspects of the application using the system usability scale (SUS) measuring instrument. The results obtained are the average SUS score of 60,62. Based on the average SUS score, the score is still below the average, for the average SUS score is 68(Sauro, 2011).

Table 4. User Persona

| Objective | Persona 1 | Persona 2 |
|---|---|---|
| Demographic | Age: 20 -24 Years<br>Profession: Student of Telkom University | Age: 20 -24 Years<br>Profession: Student of Telkom University |
| Profil Behaviour | Persona in his daily life uses applications/systems in organizing all lecture activities and other activities. | Persona in his daily life uses applications/systems in organizing all lecture activities and other activities. |
| Activity | Persona has activities other than lectures (Part-time/freelance work). | Persona has activities other than lectures (Organization/community). |
| Pain Points | Feeling uncomfortable on the calendar page because the month can only be set manually so that it can optimize the time schedule.<br>There is a lack of usability in the calendar menu, as there is no manual scheduling feature that can make the schedule more organized.<br>There is no change in the color of the activity progress.<br>Difficulty in finding the notification icon, because the icon does not match its function. | Difficulty in activating notifications on the app, due to the unfamiliar icon for the persona in the reminder settings, so respondents cannot understand it.<br>Feeling uncomfortable because the navigation management on the calendar is not very clear so respondents experience wrong clicks on the calendar.<br>The reminder setting display only applies to the entire lecture schedule, not each course.<br>Unable to set activities manually on the calendar page. |
| Goals | Set reminders based on current activities.<br>Adding an independent schedule for lecture activities and work activities. in order to be organized.<br>Set priorities between lecture and work activities.<br>Monitoring and completing the progress of assignment progress. | Setting reminders can be customized based on each course/activity.<br>Adding an independent schedule for lectures and organizational activities in order to be organized.<br>Doing completion to monitor the progress of the assignment progress.<br>Set priorities between lecture and organization activities. |

Based on the needs and preferences of these various personas, redesigning the interface design and interaction of the application will ensure a better user experience and improve performance in the use of the application.

**Specify User Requirement**

From the personas in the previous chapter, we will get the limitations of users in running the application to achieve their goals and will produce requirements. Table 5 is a guide to redesigning the interface and interaction design that meets the needs of the learners.

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Table 5. Requirement

| Code | Requirements |
|---|---|
| R1 | Students can set reminders based on the activities being carried out and the system can provide notifications in the form of pop-ups to students when the reminder feature has been activated for each activity. |
| R2 | Students can input an independent schedule for lecture activities and lecture/work/organization activities. |
| R3 | Students can view and complete the progress of the progress being worked on with a display of the percentage of progress, remaining time, and subtasks that have been done. |
| R4 | Provide types of priority categories (high priority, medium priority, low priority) on the activity list so that students can set the priority of each lecture/work/organization activity. |

**Mental Model**

At this stage, is a representation of the persona's understanding and expectations of a system being built. Mental models are generated from the user's previous experience and knowledge on topics related to the system. The user's mental model can be seen in Tabel 6**.**

Table 6. Mental Model

| Task | User Wants and Needs | System Features and Requirements |
|---|---|---|
| Enabling notifications | I want to enable notifications for lecture activities for 3/2/1 Day.<br>I want to enable notifications for each course.<br>I want to enable custom notifications. | There is an icon to activate notifications on the main page.<br>There is a button to activate notifications on the card.<br>There is a choice of notification schedule.<br>There are options for each activity. (not available)<br>There is a custom notification option. (not available)<br>There is a notification list on the main page.<br>There is a pop up when the notification is activate. (not available) |
| Adding activities | I want to see the percentage of the progress of the task being done.<br>I want to do a completion that the task has been done. | There is a home icon to go to the main page.<br>There is a calendar icon to go to the calendar page.<br>There is a list view of each task. (not available)<br>There is a percentage of tasks that are being worked on. (not available)<br>When a task is selected a detail task will be displayed and there will be a sub task for the completion of the sub task. (not available) |
| View progress and complete tasks/activities | I want to add activities independently. | There is a calendar icon to go to the calendar page.<br>There is an icon to change the month on the calendar.<br>Provides a month dropdown on the calendar. (not available)<br>Can add activities on a specific date. (not available)<br>There is a choice of type of activity (college, work, organization). (not available)<br>Can fill in the details of the task or activity (date, time, description, sub-task). (not available) |
| Set task/activity priority scale | I want to make coursework for course A as high priority. | There is a calendar icon to go to the calendar page.<br>There is a list view of each task.<br>There is a daily mode calendar option on the calendar page. (not available)<br>There is a dropdown (high priority, medium priority, low priority) on the task list to set the priority. (not available) |

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**Hirarchical Task Analysis**

At this stage, the research involves creating a hierarchy that outlines the tasks performed by the user while using the application. When creating the Hierarchical Task Analysis (HTA) in Figure 3 , the user's goals are derived from the results of previous observations. In other words, the goals of the user are identified based on the data andfindings obtained from earlier observations or research activities. These goals are then used as a foundation for constructing the hierarchical structure of tasks in the Hierarchical Task Analysis.

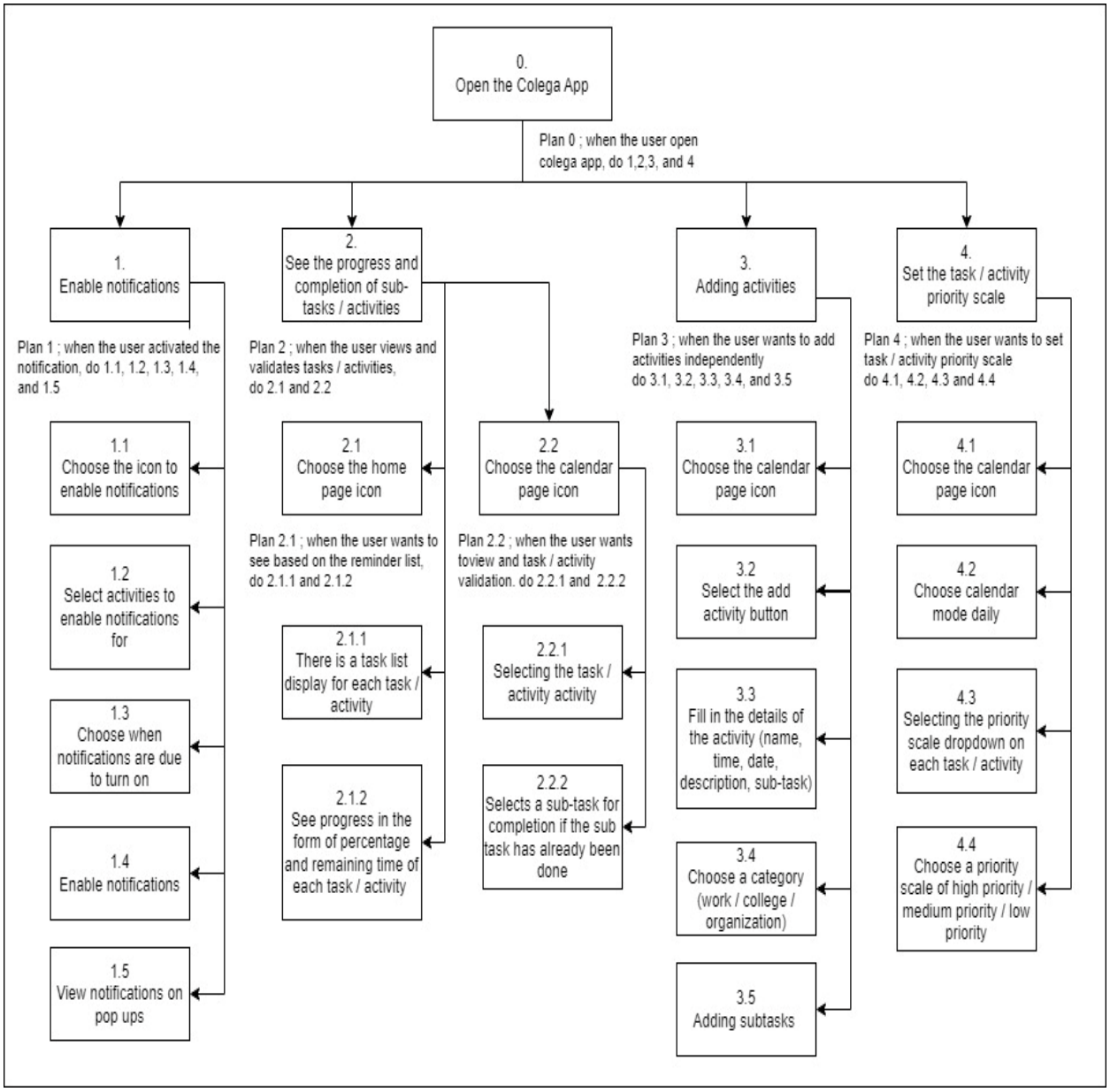


Fig 2. Hirarchical Task Analysis

**User Scenario Model**

In this model scenario there is an explanation of the parts of the scenario which consists of a description of tasks, goals, and descriptions. The scenario table is in table 6.

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Table 6. User Scenario Model

| Code | Task | Task Goal | Description |
|---|---|---|---|
| R1 | Enabling notifications | Can set notifications based on activities<br>Can activate notifications<br>Can view notifications via pop up | Students activate notifications via the notification icon, select the activities for which notifications will be set, and select the deadline for notifications. |
| R2 | Adding activities | Can add activities for schedule management | Students input an independent schedule for lecture activities and lecture/work/organization activities on the calendar page. |
| R3 | View progress and complete tasks/activities | Can see task/activity progress in detail (percentage and time remaining)<br>Ensure that tasks/activities can be completed on time. | Students view and complete the sub-task that has been done by selecting the activity to be updated. |
| R4 | Set task/activity priority scale | Can organize tasks/activities based on priority categories | Students choose which activities to work on first through the categories (high priority, medium priority, low priority). |

**Product Design Solution**

At this stage, the author creates a prototype from the results of the observation data solution. By considering the findings from the observation, we can make necessary changes and adjustments to improve the quality and functionality of the design. The design is based on user persona, user requirement, mental model, user scenario model, and hierarchical task analysis from the observation of learners.

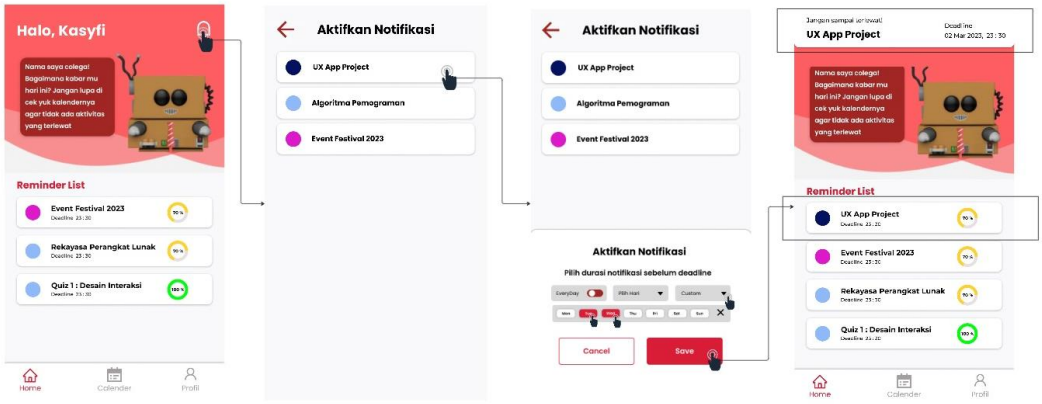


Fig 3. Design Requirements 1

In Figure 4 is the design for R1 (Enable notifications) based on the observations that have been made, in this feature there is a list of activities that can be selected to be activated with custom notification duration to set based on the terms of the working day of the persona. If it has been activated a notification pop up will appear according to the settings and the activity will be displayed on the reminder list.

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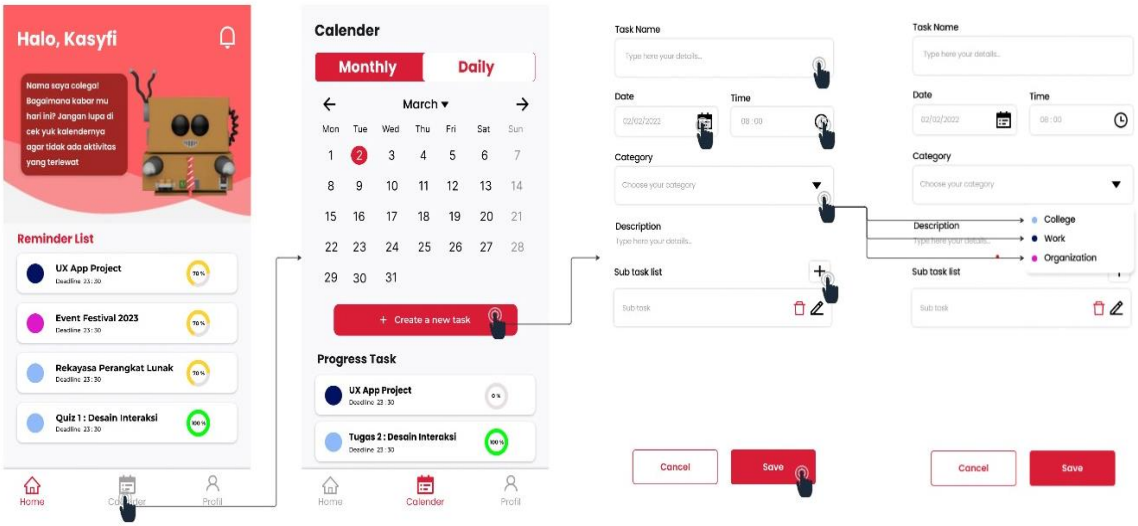


Fig 4. Design Requirements 2

In Figure 5 is the design for R2 (Adding activities) based on the observations that have been made, in this feature there is a button to input an independent schedule for lecture activities / work activities / organizational activities (activity name, date, time, category, description, and subtask).

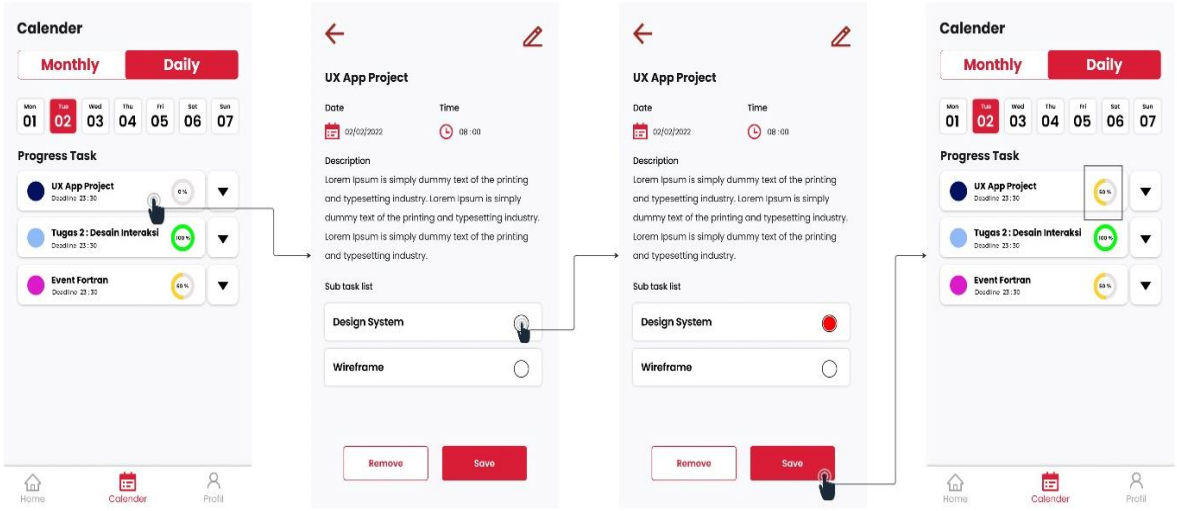


Fig 5. Design Requirements 3

In Figure 6 is the design for R3 (Viewing progress and completing tasks / activities) based on observations that have been made, this feature can complete the subtask activities to see the progress of the progress being worked on by providing a display of the percentage of progress, remaining time, and available subtasks.

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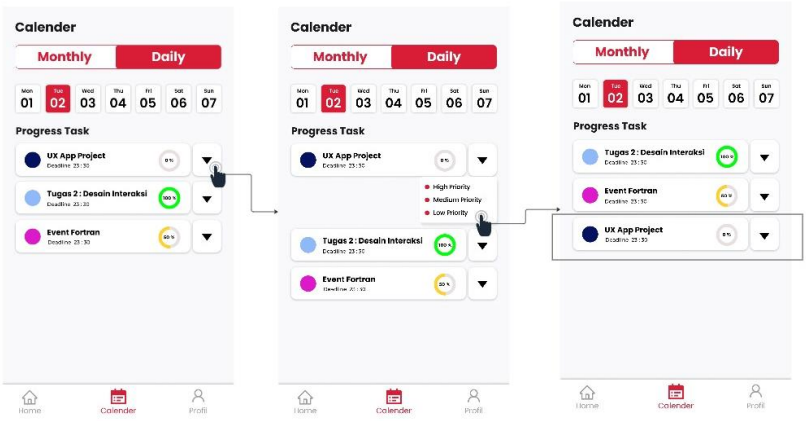


Fig 6. Design Requirements 4

In Figure 7 is the design for R4 (Set task / activity priority scale) based on observations that have been made, there are types of priority categories (high priority, medium priority, low priority) on the list of activities and activities will be arranged on a priority scale. (high priority activities will be at the top followed by medium priority and low priority.

## DISCUSSIONS

### Evaluate Against User Requirement

This section discusses the results and analysis of the test results after the redesign. Previously, application testing was carried out based on table 3 by getting a SUS score of 60.12. Testing was again carried out on 12 respondents who fit the persona character, testing was carried out using the figma prototype link and carried out remotely by giving tasks that must be carried out by respondents. The following table describes the tasks performed by respondents.

Table 7. List Task

| Code | Requirement |
|---|---|
| Task 1 | Enable notifications |
| Task 2 | Adding activities |
| Task 3 | View progress and complete tasks/activities |
| Task 4 | Set task/activity priority scale |

Table 7 provides an explanation of the tasks that must be performed by users in testing the application, the first task is to enable notifications, the second task is adding activities, the third task is viewing progress and completing tasks/activities, and the fourth task is Setting the task/activity priority scale.

Table 8. Result of Miss Click Each Task

| Task | User 1 | User 2 | User 3 | User 4 | User 5 | User 6 | User 7 | User 8 | User 9 | User 10 | User 11 | User 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | M | M | M | M | M | M | M | M | M | M | M |
| **Task 1** | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Task 2** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| **Task 3** | 1 | 4 | 0 | 4 | 3 | 1 | 0 | 0 | 0 | 1 | 1 | 2 |
| **Task 4** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

M = Number of missclick when running the task

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Table 8 records the number of missclicks that occur when a user completes a task in application testing. This data will help to identify areas that require improvement in the application interface, as well as provide a focus on a better user experience by reducing unnecessary misclicks. By analyzing this missclick data, it was found that more than half of the users still miss clicked on task 3.

Table 9. Duration of Completing The Task

| Task | User 1 | User 2 | User 3 | User 4 | User 5 | User 6 | User 7 | User 8 | User 9 | User 10 | User 11 | User 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Task 1** | 9,9s | 21,4 s | 15,1s | 10,1s | 13,3s | 14s | 17,8s | 12s | 21,6s | 26s | 10,3s | 25,8s |
| **Task 2** | 25,4 s | 13,2 s | 17,8s | 17,5s | 37,6s | 11,6s | 18,6s | 26,7s | 11,9s | 13,4 s | 8,2s | 22,5s |
| **Task 3** | 10,5 s | 90s | 6,5s | 56,4s | 28,7s | 18,1s | 13,5s | 6,3s | 4,6s | 14,8 s | 26,2s | 35,3s |
| **Task 4** | 3,4s | 4,5s | 7,8s | 10,1s | 4,9s | 5,1s | 6,3s | 13,1s | 3,2s | 8,4s | 8,2s | 7,7s |

The average task completion duration recorded in the table shows a very fast time interval level in completing application tasks in dealing with various tasks given to users. Based on the data in table , it is found that the average duration in completing the task as a whole is 16.99 seconds.

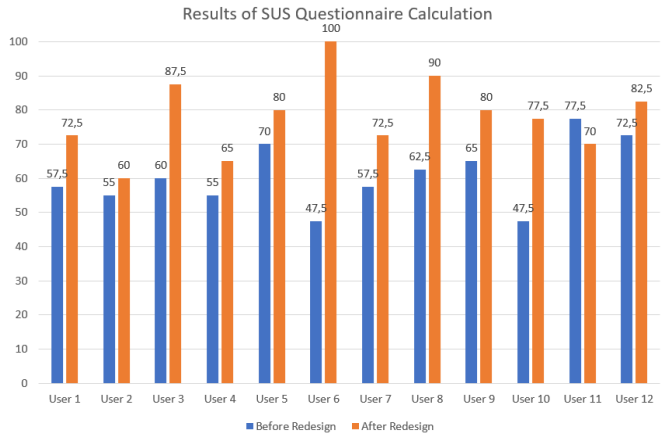


Fig 7. Result of SUS Questionnaire Calculation

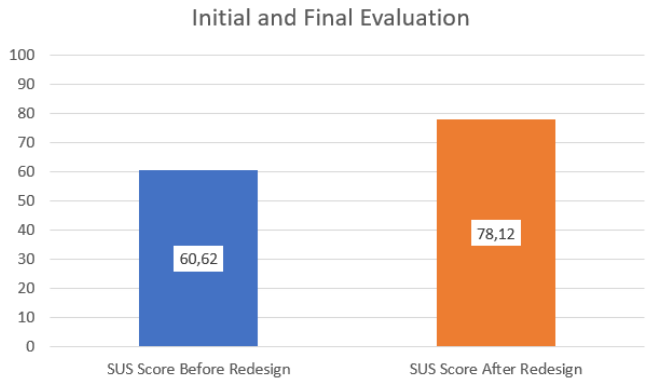


Fig 8. Initial and Final Evaluation

From the results of data processing, the SUS score is 78.12. The score is interpreted in two interpretations. Interpretation with Acceptability range, referring to the SUS score of 78.12

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acceptability of the results of the redesign of the application interface and interaction is included in the Acceptable category. Interpretation with the Grade scale based on table 18 with a SUS score of 78.12, entered into grade B.

The results of the evaluation of the results of the redesign of interface design and interaction are carried out usability testing with remote moderated and SUS questionnaires to get the level of usability of the redesign of the interface design and interaction of the application. SUS testing was carried out twice, experiencing an increase in testing before redesigning, obtained from the test, namely the SUS score of 60,62. Testing after redesigning, obtained from the test, namely the SUS score of 78.12. So at the time before the redesign, the system had a SUS score value below average, indicating that the system needed to be improved. However, after the redesign, the SUS score value increased, indicating that there was an increase in system usability. This can be said to be acceptable because based on the table above, the time interval obtained in performing tasks with an average time speed of 16.99 seconds, meaning that the time speed is a very fast level of achievement in the process based on the time interval indicator(Ayu, 2017). Although the overall level of usability has been found to be good, there are still areas for improvement to enhance the user experience. In performing task 3 in the table above, some of the respondents still experience a miss click when completing the given task, so it is hoped that in the future this feature can be improved again in order to improve overall usability.

## CONCLUSION

Based on the evaluation results, it can be concluded that by using the Learner-Centered Design (LCD) method and by following the guidelines in designing for learners (college students), the proposed solution design can improve usability for learners in the Colega application case study. Proper and easy interface design based on learners can improve usability in applications with target users of learners. By using the Learner-Centered Design (LCD) method, with steps starting from Specify the context of use, Specify user requirements, Product design Solution, and Evaluating design against user requirements, the redesign of interface design and application interaction provides the right and easy display results based on the needs of learners. This is supported by the test results that show that learners feel very helped by using the solution design offered because it is considered to be able to overcome the problems they experience. Based on the test results using the System Usability Scale (SUS) measuring tool, the usability level of the application has increased from 60.62 to 78.12, so it can be said that the design is acceptable. This is supported by the time interval obtained in performing tasks with an average time speed of 16.99 seconds which is a very fast level of achievement in the process.

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