

Re-designing Telkom University's CeLOE LMS Course User Interface Using User Centered Design Method

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Abstract

The Learning Management System (LMS) has become crucial for online and offline learning for Telkom University faculty members. Despite its importance for their studies, it was observed that student engagement with Telkom University's LMS CeLOE is low (between 1,6% to 2,7% engagement). This study utilizes User-Centered Design (UCD) to explore the influence of User Interface (UI) on student engagement. Findings indicate that appealing UI design significantly boosts student interest in accessing LMS. The findings emphasize the significance of user-centric UI design to improve interaction and student engagement on online educational platforms.

Keywords: learning management system, user interface, user centered design.

Introduction

Learning Management System (LMS) is a platform or software designed to manage and provide various online learning tools in educational settings. LMS allows teachers to plan and execute structured and integrated learning. With LMS, students can access learning materials, assignments, tests, and interactions with their teachers and fellow students online. LMS also allows teachers to track student's learning progress, send feedback, and create a structured and interactive learning environment (Wiragunawan, 2022). LMS such as Google Classroom allows students to host discussions and do group work online. With the support of LMS, the learning process can be efficient, and provides ease for educators and students in their academic activities (Pratomo & Wahanisa, 2021). An effective and user-friendly interface is crucial for a supportive learning environment, and effective long-distance learning. A well-designed user interface (UI) can assist LMS users to navigate various features and contents, increasing user engagement, create a better experience for users, increase efficiency, minimize errors, and increase information retention (Novianto & Rani, 2022). CeLOE (Center for e-Learning and Open Education) LMS is a learning platform developed by Telkom University; to be used as a tool to provide online learning contents for the university's educators and students. CeLOE LMS assists educators to prepare and create online learning contents and provide interactive access to various learning resources at all times for students (Siregar et al., 2022). This platform was designed to facilitate the students' learning by providing a positive experience in online learning (Azhar, 2022). It is a part of Telkom University's efforts to enhance their academic excellence, with three aspects of focus: Learner Excellence, Teacher Excellence, and

Institutional Excellence. Issues found among users of CeLOE LMS are negative perceived ease of use, computer anxiety, lack of experience, lack of enjoyment, negative perceived usefulness, negative attitude towards using, and negative self-efficacy (Siregar et al., 2022). Previous interview done on July 12th, 2023, with CeLOE LMS team revealed that only 1,6% to 2,7% of student users engage with the platform at any given time, indicating a low engagement with the LMS. This research will focus on re-designing the User Interface of Telkom University's CeLOE LMS, due to the crucial importance of this tool for learner excellence. Problems still found today among users are difficulties of navigating features, especially from students. This complaint showed that current UI design of CeLOE LMS is not fully optimal, this issue can impact the learning experience negatively.

Method

This research will focus on re-designing the User Interface of Telkom University's CeLOE LMS, due to the crucial importance of this tool for learner excellence. Problems still found today among users are difficulties of navigating features, especially from students. This complaint showed that current UI design of CeLOE LMS is not fully optimal, this issue can impact the learning experience negatively.

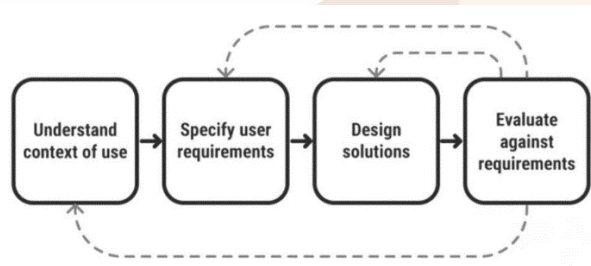


Figure 1. Main steps in User Centered Design

Source: <https://www.interaction-design.org/literature/topics/user-centered-design>

There are four main steps in UCD implementation:

1. *Understand Context of Use*: This step is used to understand contexts of the designed system. Data regarding user needs, preferences, and challenges will be gathered at this stage.
2. *Specify User Requirements*: Specifying the requirements of the design based on data gathered from users in the previous step.
3. *Design Solutions*: This step involves creating designs based on requirements found in the previous step, conceptualizing, prototyping, and initial revisions will be done in these steps.
4. *Evaluation*: Evaluation involves developers and users, where users evaluate the prototype and developers gain feedback on areas in need of improvement for users.

Result and Discussion

This section will explain the steps in research and its results in compliance to required steps of user centered design:

1. Understand Context of Use

The table shows results from preliminary survey done with linear scale (1-10 score) involving 110 respondents who were active students of Telkom University.

Topics	Statements	Disagree	Neutral	Agree	Result
LMS Course	I feel the overall LMS course appealing and pleasamt	47	47	13	-32
	I feel the overall look of LMS course increase my learning motivation.	56	40	11	-42
Quiz	I feel the quiz feature appealing and pleasant	46	47	14	-30
	The quiz feature motivates me to do more quiz	55	38	14	-38
Discussion Forum	I feel the discussion forum feature appealing and pleasant	52	40	15	-35
	The look of discussion forum motivates me to actively discuss my lessons	60	38	9	-48
Assignment	I feel the assignment feature appealing and pleasant	38	44	24	-38
	The look of the assignment feature motivates me to submit my assignments	43	44	19	-23
Interactive Video	I feel the interactive video feature appealing and pleasant.	54	34	16	-37
	The look of the interactive video feature motivates me to submit my assignments	60	32	12	-46

*Table 1. Preliminary questionnaire results
Source: authors*

The results shown on the table indicates users do not enjoy engaging with the main features of CeLOE LMS from finding the appeal and pleasantness of the platform to be lacking.

2. Specify User Requirements

The table shows results from a preliminary survey done with linear scale (1-5 score) involving 110 respondents who were active students of Telkom University.

Num	Statements	Disagree (%)	Neutral (%)	Agree (%)
1	I feel that the overall appearance of LMS Course is adequate	67.3%	26.9	5.8%
2	I feel if LMS CeLOE have a better appearance, I will be more willing to use it	1%	16.3%	82.7%
3	I feel the LMS Course feature need to be shown in the homepage instead of the sidebar	4.8%	24%	71.2%
4	I feel the LMS Course page should be easier to access	15.4%	13.5%	71.2%
5	I feel the font used in LMS CeLOE should be easier to read	0%	1%	99.1%
6	I would like the LMS CeLOE layout to be more spread out	1%	2.9%	96.2%
7	I would like the colors used in LMS CeLOE to have more contrasts	2.9%	4.8%	92.3%
8	I would like the LMS Course feature were more informative	0%	0%	100%

9	I would like buttons for interactions in the LMS Course feature were easier to find	0%	0%	100%
10	I would like the LMS Course to have more figures and illustrations	2%	2.9%	95.2%
11	I would like the LMS Course features were more instructive	0%	0%	100%
12	I would like LMS CeLOE to have minimize options between features	0%	2.9%	97.2%
13	I would like the LMS Course to show me a progress bar	0%	1.9%	98.1%
14	I agree that LMS CeLOE's appearances need revamping	0%	1.9%	98.1%

Table 2. Results of user interface feedback questionnaire
Source: authors

The user wants the Learning Management System (LMS) to have an easy-to-navigate homepage, legible fonts, a clean layout, and informative features. They also desire clear interactive buttons, appealing illustrations, and a minimization option for certain views. Additionally, showing a progress bar for undergone tasks would motivate users. Overall, the goal is to maintain an intuitive interface.

3. Design Solutions

Based on data gathered from LMS CeLOE's student users, a wireframe design is made to meet the design requirements found. The wireframes serves as the base for guidelines for future re-designing efforts regarding the user interface.



Figure 2. Wireframe LMS Re-design
Source: authors

Figure 2 attached is the wireframe re-design of LMS CeLOE's desktop website, the wireframe design from left to right are My Course; Assignment, Interactive Video and Quiz; Discussion Forum.

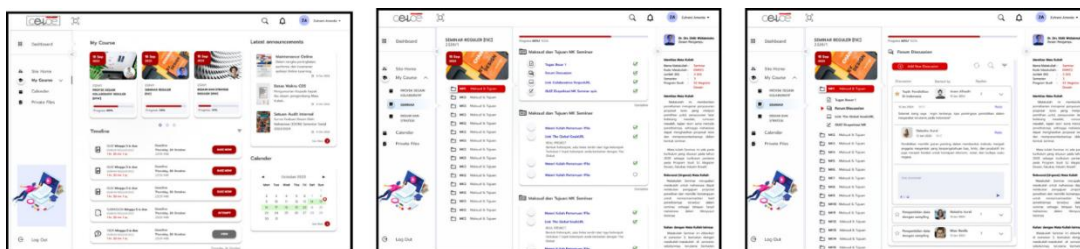


Figure 3. LMS CeLOE UI re-design
Source: authors

Figure 3 attached is the UI re-design of LMS CeLOE's figure 3 attached is the UI re-design of LMS CeLOE's desktop website, the UI design from left to right are My Course; Assignment, Interactive Video and Quiz; Discussion Forum. The re-designed UI mock up were then evaluated by users to compare desktop website, the UI design from left to right are My Course; Assignment, Interactive Video and Quiz; Discussion Forum. The re-designed UI mock-ups were then evaluated by users to compare.

4. Evaluation

The questionnaires were given to 87 respondents with linear scale of 1-5.

Topic	Statements	Disagree (%)	Neutral (%)	Agree (%)
LMS Course	I feel the look of LMS My Course feature is appealing and pleasant	8%	11.5%	80.5%
	I feel the layout of LMS My Course feature is appealing and pleasant	8.2%	12.6%	78.1%
	I feel the font is legible and appealing	13.8%	5.7%	80.5%
	I feel LMS My Course is informative and instructive	5.7%	12.6%	81.6%
	I feel the action buttons are legible	6.9%	11.5%	81.6%
	I prefer the re-design over the current design	5.7%	14.9%	79.3%
Fitur Quiz	I feel the Quiz feature is appealing and pleasant	11.5%	8%	80.5%
	I feel the layout of the Quiz feature is appealing and pleasant	6.9%	12.6%	80.4%
	I feel the font in the Quiz feature is legible	10.3%	11.5%	78.2%
	The Quiz feature is informative and intrsuctive	11.5%	9.2%	79.3%
	I feel the action buttons are legible	8%	11.5%	80.4%
	I prefer the re-design over the current design	8%	10.3%	81.6%
Fitur Discussion	I feel the Discussion Forum feature is appealing and pleasant	8%	11.5%	80.5%
	I feel the layout of the Discussion Forum feature is appealing and pleasant	8%	12.6%	79.3%
	I feel the font in the Discussion Forum feature is legible	9.2%	11.5%	79.3%
	The Discussion Forum feature is informative and intrsuctive	9.2%	9.2%	81.6%
	I feel the action buttons are legible	6.9%	8%	85.1%
	I prefer the re-design over the current design	8%	10.3%	81.6%
Fitur Assigment	I feel the Assignment feature is appealing and pleasant	4.6%	12.6%	82.8%
	I feel the layout of the Assignment feature is appealing and pleasant	9.2%	8%	82.7%
	I feel the font in the Assignment feature is legible	8%	11.5%	80.4%
	The Assignment feature is informative and intrsuctive	9.2%	11.5%	79.3%
	I feel the action buttons are legible	10.3%	6.9%	82.8%
	I prefer the re-design over the current design	10.3%	8%	75.6%
Interactive Video	I feel the Interactive Video feature is appealing and pleasant	2.3%	13.8%	83.9%

	I feel the layout of the Interactive Video feature is appealing and pleasant	8%	10.3%	81.6%
	I feel the font in the Interactive Video feature is legible	10.3%	9.2%	80.4%
	The Interactive Video feature is informative and intrsuctive	9.2%	6.9%	83.9%
	I feel the action buttons are legible	4.6%	13.8%	81.6%
	I prefer the re-design over the current design	5.7%	12.6%	81.6%

*Table 3. Results of re-design evaluation questionnaire
Source: authors*

Most LMS users approve of the CeLOE UI re-design, including layout, fonts, information, and action buttons across features like Quiz, Discussion, Assignments, and Interactive Videos. Interviews with LMS administrators confirmed the redesign's suitability for future implementation in the CeLOE interface.

Conclusion

Based on analysis of the results of the UCD based re-design of LMS CeLOE's desktop website UI, the student users favour the re-designed UI over the current one. The re-designed UI is also applicable for future implementation.

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Further Readings

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