

Project plan for Degree thesis

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DB1478: Bachelor Thesis in Computer Science

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Thesis	Tentative title	Comparative study of Canvas and Google Classroom Learning Management Systems using usability heuristics.
	Classification	E-learning platforms, Interactive interface, Survey Evaluation
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1 Introduction

A user's satisfaction with using an interactive interface can be measured using usability heuristics. There are many definitions for usability, but usability lies in the interaction of the user with the product or system and can be accurately measured by assessing user performance, satisfaction, and acceptability [1]. Usability heuristics are used to identify the usability problems in the user interface design process [2].

The usability heuristics that are applied against the interactive interfaces for survey evaluation are [3][4]-

- Visibility of system status
- Match between the system and the real world
- User control and freedom
- Consistency and standards
- Error prevention
- Recognition rather than recall
- Flexibility and efficiency of use
- Aesthetics and minimalistic design
- Help users recognize, diagnose, and recover from errors
- Help and documentation

The interactive interfaces selected for applying the usability heuristics are Learning Management System platforms.

Learning Management System (LMS) is an information system that facilitates e-learning. An LMS processes, stores, and disseminate educational materials and support administration and communication associated with teaching and learning [5]. The LMS platforms chosen for comparison are the canvas web application and google classroom web application. Google classroom is an open-source platform. The canvas LMS platform has a free version and a paid version, and the survey will be performed only on the free version.

The idea is to create a dummy course on the LMS platforms for the experiment, to select users who can be classified into expert users, moderate users, and novice users. These users will be acquainted with the dummy course created on the LMS platforms and will answer with a survey questionnaire. The identity of the respondents will be kept anonymous, and the responses will not be shared outside the scope of the study. The respondents' response will conclude which LMS platform gives a better experience to the user. The survey results may not be applicable for the paid version of the canvas web application.

The approval of the BTH ethics commission is not required as the thesis will be done by the authors as instructors for the courses that will be created in the LMS platforms. The created courses on the platforms will not be related to the BTH.

The research would benefit the students and teachers who form the educational institutions and e-learning platforms. The survey results would help the users choose the LMS platform in the scope of usability heuristics. The educational institutions and e-learning platforms will save time and money while selecting the LMS platform, which satisfies their requirements. So, they have a choice to choose between the canvas and the google classroom.

1.1 Ethical, societal and sustainability aspects

The ethical aspect to be considered in the project regarding the user survey is:

- The anonymity of the survey respondents, should they choose to remain anonymous.

The social aspect to consider in the project is:

- Stipulate access to authorized users.

The sustainability aspects to be considered are:

- For how long the data uploaded into the course of an LMS platform sustains.
- The user to have the freedom to make the course contents available for a certain period.

2 Related Work

This section is related to applying usability heuristics on the selected LMS platforms.

1. **Visibility of the system status-** the users should be notified about the system' through relevant feedback within an ample amount of time[4].

- Canvas- When a user tries to submit a document, he/she will be informed with notification of submission at the top of the page.
- Google classroom- When a document is submitted in the form of google forms, then the message '*Your response has been recorded*' will appear. When the document is submitted in any other form, there will be an uploading blue bar with no message displayed.

Question:

- I. According to your observation, which LMS platform notified you about your submission after uploading a document?
 - a. Canvas
 - b. Google classroom

2. Match between system and the real world- The design should speak the users' language. Use words, phrases, and concepts familiar to the user, rather than internal jargon. Follow real-world conventions, making information appear natural and logical [4].

- Canvas- the words, phrases of the canvas match with the real-world conventions. For example, the word '*Assignment*' in canvas matches real-world meaning.
- Google classroom- most of the words and phrases in the interface match with real-world conventions. But the word '*Stream*' does not match with its real-world meaning.

Questions:

- I. In your opinion, which LMS platform has the real-world conventions as words, phrases and icons?
 - a. Canvas
 - b. Google classroom
- II. In the LMS google classroom, what do you think the word Stream means?
 - a. Streaming of a video
 - b. Dashboard
 - c. Announcements
 - d. None of the above

3. User control and freedom- the user needs an emergency exit from any unwanted activity done by mistake[4].

The selected LMS platforms are web applications, so there is a default user control (the arrow marks on the top left corner to go backwards and forwards ← →) for handling the unwanted activities in the websites.

- Canvas- if the user does any unwanted action, the canvas interface provides two different emergency exits, a cancel button and an 'X' to close the dialogue box.
- Google classroom: if user performs any unwanted action, there is an 'X' to exit.

Question:

- I. Which LMS platform has clearly marked emergency exit?
 - a. Canvas
 - b. Google classroom

Research on the first three heuristics is done and, on the others, it is yet to be performed.

3 Aim and objectives.

The thesis aims to find out which LMS platform among canvas and google classroom obeys the usability heuristics by surveying the users.

The objectives of the thesis are as follows:

- Analyzing the LMS platforms and creating a course with the same set of tasks in the respective platforms.
- Formulating a questionnaire for the survey with aspects relevant to the usability heuristics.
- Selecting a required mixed set of experienced users and acquainting them with the platforms to pose the survey questionnaire.
- From the results of the survey, concluding which LMS obeys the usability heuristics according to the users.

4 Research questions

The following are the research questions for the thesis:

1. How important are the LMS platforms like canvas and google classroom have become?
Motivation: The motivation for this research question is to find out how important the LMS platforms have become nowadays. LMS provides interaction between the students and the educational institutions and promotes e-learning. The LMS platforms are scalable according to the user requirement.
2. Which of the LMS gives a better experience to the user according to the usability heuristics within the scope of the study?

Motivation: This research question will be investigated by surveying the users. The results of the respondents will be statistically evaluated, and the conclusions will be drawn from the survey.

5 Method

The LMS platforms like canvas and google classroom have become essential in today's world because of the following reasons:

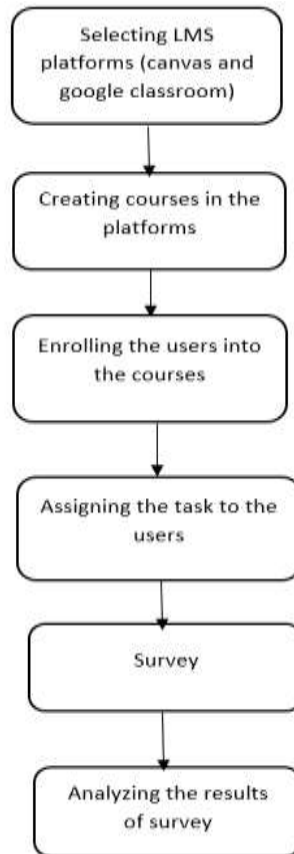
- Using the LMS provides improved communication and collaboration between the teachers and the students [3].
- The users have immediate access to the contents of the course.
- The users can update the contents, and it will reach any number of registered users immediately.
- These LMS platforms allow the educational institutions and teachers to efficiently manage the courses according to their requirements [3].
- Educational institutions and business save a lot of money and time using LMS [6].

A survey evaluation will be conducted using usability heuristics. The survey will have a multiple-choice grid, linear scale, checkboxes, and comparison between the images.

The survey evaluation will be done on a diverse set of users. The mixed set users are the expert users, moderate users and novice users. The selected set of users are limited to up to nine because of the limited time and scope of the study. These users will be acquainted with LMS platforms' dummy courses, perform tasks assigned to them and answer the survey questionnaire.

The collected results from the respondents will undergo statistical analysis. The statistical analysis results will be represented in a bar graph. The study of the survey results gives an idea about the perspective of the users on the LMS platforms. A conclusion will be drawn from the survey which LMS provides a better experience to the user according to the usability heuristics. However, the conclusions may not be generalized because the survey evaluation will be done on the free version of the canvas web application.

The motivation for choosing the survey evaluation on the users is to gain user feedback. The comparison of the LMS platforms will be precise and sharper when the user, who the platforms are created for, answers the survey through their experience.



6 Expected outcomes

The outcome of the thesis will be derived from the survey conducted with the users. The survey determines which LMS platform gives the users a better experience. The outcome of the survey helps the educational instructors and institutions to choose between the LMS platforms.

7 Time and activity plan

	Time Period	Activities to do.
Activity -1	1 Week	<ul style="list-style-type: none">➤ Forming a group➤ Contacting the supervisor➤ Research about the selected topic➤ Referring to the papers in BTH DiVA and Google Scholar
Activity -2	1 Week	<ul style="list-style-type: none">➤ Getting to know more about LMS.➤ Getting familiar with canvas and google classroom.
Activity -3	2 Weeks	<ul style="list-style-type: none">➤ Creating dummy courses in both LMS platforms➤ Enrolling users into the courses➤ Assigning the tasks to the users
Activity -4	3 Weeks	<ul style="list-style-type: none">➤ Formulating the survey questions➤ Surveying the users.➤ Live interview of users
Activity -5	1 Week	<ul style="list-style-type: none">➤ Evaluating the results of the survey➤ Generating the graphs➤ Concluding the results
Activity -6	2 Weeks	<ul style="list-style-type: none">➤ Documenting the thesis➤ Updating the thesis draft after every activity

Activity plans provide an overview of all the tasks and activities that need to be done weekly. Each activity has a deadline that helps to complete the thesis by the deadline. By the end of the week, an update will be sent to the supervisor via mail.

Regular meetings will be held via mail and zoom with the supervisor to discuss the updates about the projects, and receive suggestions and to clarify any doubts.

8 Limitations and risk management

The risks that are prone while the development of the project is as follows:

Risk	Likelihood	Severity	Mitigation
1. Misplacing the user's information which is collected from the survey	Unlikely	High	This can be avoided by safeguarding the surveyor's credentials.
2. Inaccurate results	Unlikely	High	To give a disclaimer to the respondents to answer the questions honestly after getting familiarized with the platforms.
3. Access	Unlikely	Low	This access limitation restricts all other unauthorized users.

References

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