SECD2613 – SYSTEM ANALYSIS AND DESIGN
SECTION 09

Project Phase 1

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1.0 Introdution

We are pleased to introduce the Peer-to-Peer Study Groups Platform on Zoom, a cutting-edge resource created to improve student collaboration on assignments. Students can work together on assignments and projects with ease thanks to Zoom's breakout sessions, screen sharing capabilities, and virtual study rooms. Zoom's scheduling tool enhances student participation and organization, and the recording capability guarantees accessibility and session review.

While participation metrics and attendance tracking help teachers keep an eye on student engagement, real-time chat and messaging also make communication easier. Study groups are given access to extra learning opportunities like interactive polls, quizzes, and webinars. Accessibility and usability are streamlined by seamless connection with learning management systems. To sum up, Zoom's Peer-to-Peer Study Groups Platform offers a complete solution for group learning that will increase student engagement and productivity.

2.0 Background Study

Zoom is now widely used as the main platform for virtual teaching, learning, and collaboration in educational settings. Globally, educational establishments have included Zoom into their endeavours for distance learning, utilizing its functionalities for in-person lectures, group debates, and group projects.

Zoom functions as a virtual classroom platform that allows instructors to hold simultaneous online meetings, present lectures, lead discussions, and communicate with students in real time. With the use of technologies like video conferencing, screen sharing, chat, and breakout rooms, the platform may digitally recreate traditional classroom settings.

Moreover, it has also become an essential tool in enabling both in-person and remote education as a result of the growth of hybrid learning models. In order to provide flexibility and continuity in the learning process, educators utilize Zoom to stream live in-person classrooms, hold virtual office hours, and grant distant access to course materials.

Although Zoom is a popular tool for virtual meetings and teamwork, it still needs to be improved in order to better serve the needs of students participating in study groups. Zoom currently lacks elements that are especially intended for educational purposes, which leads to inefficiencies in the dynamics of study groups and the administration of resources. Students struggle to build appropriate study groups, encourage active involvement, and easily access pertinent resources in the absence of specialised tools for peer matching, interactive engagement, and centralised access to study materials. Consequently, it is evident that Zoom has to be improved in order to maximise study group benefits and promote efficient learning.

3.0 Problem Statement

1. Connecting with peers who have similar interests and values might be difficult for some people. This makes it more difficult to build deep connections and work together.

2. During study groups, students frequently find it difficult to participate and actively engage as there are currently no features on Zoom that are expressly made for studying group dynamics which could encourage them to participate more.

3. Students usually have trouble locating relevant study materials. This disorganised approach not only wastes time but also makes it difficult for pupils to concentrate and successfully understand the course material.

4.0 Proposed Solutions

        Based on the problem statement which have been identified, the appropriate proposed solution is to implement a peer matching system in Zoom that recommends members of a study group that are compatible based on variable such as enrolled courses and study preferences including preferred study time, study styles and topics of interest. In this way, we believe that it can improve the compatibility because the system will recommend possible study group members with similar profiles.

        Next, introduce interactive components or features to promote focused engagement in study groups. This can be done by having discussion boards for collaborating, exchanging ideas and asking questions. Moreover, to make sure that everyone participates, assigned tasks and their progress should be monitored. In the same context, points could be rewarded for finishing tasks and have a leaderboard that highlight the members who are involved and active.

        Other than that, to upgrade the 'Zoom' online platform, establishing a single and accessible repository for study materials could be done. In this way, students or users can be able to upload and distribute multimedia items, notes, links as well as Portable Document Format (PDFs). In order to make this repository easy and efficient to use, providing a categorization system and search feature also would be helpful for easier document findings.

        The highlighted problem statements previously can be successfully addressed by the "Peer-to-Peer Study Group Platform" through the implementation of these proposed solutions and by conducting feasibility studies. The ultimate goal of these solutions is to assist the students in achieving their educational goals by improvising their study group performance and their experience.

4.1 Feasibility Studies

Feasibility study is simply an evaluation of how a feasible a project plan or the methodology is. An effective feasibility study is important to speed up a process, combine a process, decrease errors in output, redundant storage and output as well as enhancing system and subsystem integration.

4.1.1 Technical Feasibility

Technical feasibility can determine if the new system can be operated with the present technological resources to meet the project requirements. In order to create a peer matching system, advanced software that can evaluate user profiles, study interest, and courses will be required. Next, the repository for study materials would also need a large amount of storage space as well as effective categorization and search features would be needed for the study material repository. Zoom uses a lot of cloud infrastructure, therefore it is possible to be satisfied with improvements to the current system.

4.1.2 Operational Feasibility

Operational feasibility determines if there are enough human resources on hand to run the system after it has been implemented. In addition, it also checks if a project meets the needs identified throughout the system development process' requirements analysis phase. It is necessary to evaluate the current Zoom support system to see if they are qualified and able to oversee the new features. The team has to skilled in areas like user engagement strategies for interactive features, data management for the repository and system development for peer matching.

4.1.3 Economic Feasibility

Economic feasibility assesses the availability of money and time for the system's development. This feasibility acts as an independent project evaluation and raises the project's credibility by assisting the decision makers in identifying the planned project's potential advantages to the organization's finances. In order to conduct this project, a cost-benefit analysis (CBA) is performed to determine if it will be profitable to invest in the creation of the new features while comparing the costs and benefits. There are several techniques included in CBA which is break-even analysis, payback, cash-flow analysis and present value analysis.

4.1.4 Cost-Benefit Analysis

Estimated Cost	
Hardware	RM 20000
Software	RM 20000
Maintenance	RM 10000
Salary	RM 25000

Assumptions	
Discount rate	20%
Sensitivity factors (cost)	0.5
Sensitivity factors (benefits)	0.9
Annual change in production costs	5%
Annual change in benefits	15%

Estimated benefits	
Inventory savings	RM 2000 per month
Increase sales	RM 25000

Costs	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Development Costs						
● Hardware	10000					
● Software	10000					
Total	20000					
Production costs						
● Maintenance		5000	5250	5513	5789	6078
● Salary		12500	13125	13781	14470	15194
Annual Production Costs		17500	18375	19294	20259	21272
(Present Value)		14583	12760	11166	9770	8549
Accumulated costs		34583	47343	58509	68279	76828

Benefits	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
● Inventory savings		21600	24840	28566	32851	37779
● Increase sales		22500	25875	29756	34219	39352
Annual Benefits		44100	50715	58322	67070	77131
Present Value		36750	35219	33751	32345	30997
Accumulated Benefits		36750	71969	105720	138065	169062
Gain or loss		-2167	-24626	-47211	-69786	-92234
Probability Index	4.612					

Profitability index = 4.612. This is showing that it is a good investment because the index is higher than one. Thus, we can say that this project is economically feasible and can be proceeded to the next step.

5.0 Objectives

Objective improvement of the new platform:

1. To create and implement a peer matching system in Zoom to suggest members of study groups that will get along based on the course taken, study styles and interest areas.

2. To introduce interactive components or features such as discussion boards, task assignments and progress monitoring.

3. To establish a single and accessible repository for efficient and easier document findings.

6.0 Scope of The Project

1. The main goal of this project is to increase the formation of study groups with compatible members. In this way, it will make the students or the users to share similar learning goals which creates a more conducive atmosphere for productive cooperation. Moreover, this will also help to boost motivation and confidence when handling complicated topics or assignments.

2. These enhancements facilitate various viewpoints and peer-to-peer teaching by having discussion boards, promotes responsibility and prompt completion as well as provide study assignments to group members in an effective way.

3. This can reduce the duplication and make sures that everyone will have the access to the latest versions. In addition, materials can be arranged by subject, topic or even course by using the categorization system, which facilitates finding certain materials. The search feature also has the ability to quickly retrieve documents which saves time and effort while looking for specific and appropriate study materials.

7.0 Project Planning

Project planning is the process of specifying the team members and their respective tasks. It will be detailed further in the Human Resources part and arrange tasks and resources required to successfully finish a system development project. It also includes the estimated duration of the project, which is the time spent on each activity or task. Initially, the project will be divided into smaller tasks and activities and allocated into phases which is followed by a Work Breakdown Structure (WBS)

7.1 Human Resources

In this project, it must have efficient human resources management and coordination. To accomplish project goals, it includes actions meant to increase team productivity and effectiveness while ensuring that human resources are used efficiently. Each member of the team must be aware of their new responsibilities and what it takes to accomplish them. Making sure that everyone understands their responsibilities that allows us to concentrate on project management, which in turn in team members a sense of personal accountability. The role will be distributed as follows:

i.   **Ghadeer Mahmoud** as a project manager will be responsible assigned particular responsibilities to other team members and making sure they have the resources and equipment necessary to complete their work. Also, implementing the Work Breakdown Structure (WBS) to divide the project into smaller parts and allocate a time frame for each one. Moreover, she will also be involved in information gathering on the current Zoom system. This is to create a thorough questionnaire with a balanced mix of close-ended, open-ended, bipolar and probing questions. This guarantees that the information gathered is both qualitative and quantitative, offering an accurate picture of the current Zoom system.
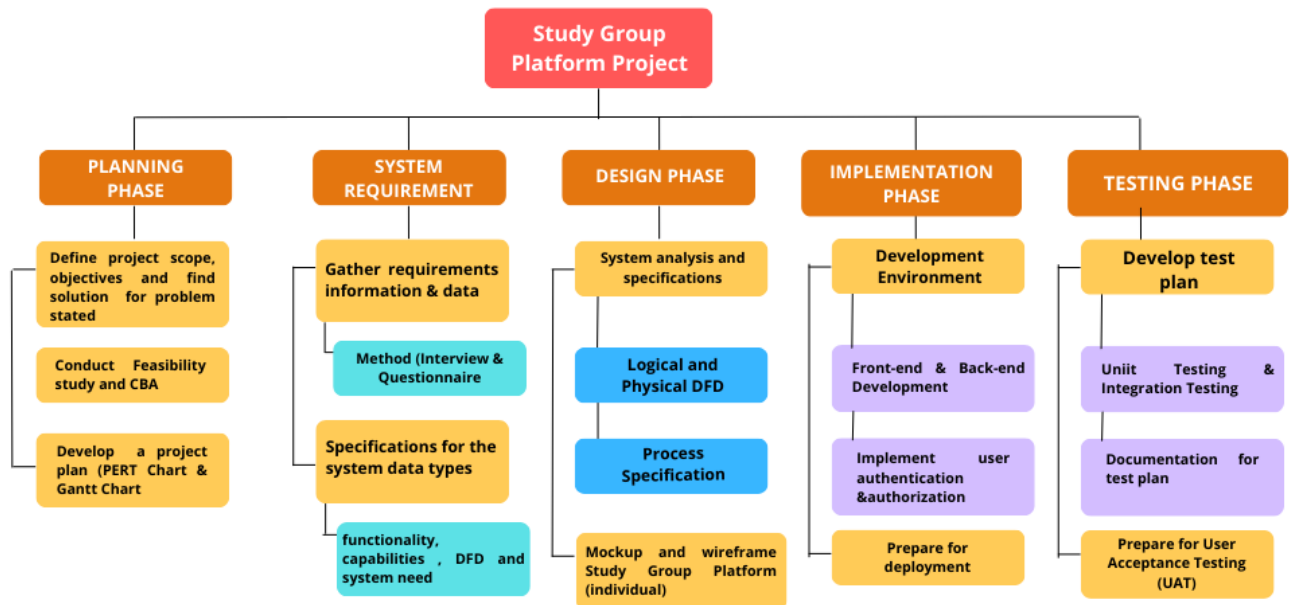
ii.   **Uthaya Darshni,** the recorder arranges and keeps up with project paperwork, which includes providing background studies, and the suggested solutions, which include the Cost-Benefit Analysis (CBA), and feasibility study, which is technical, operational, and economical. It could help edit and revise project materials to ensure reliability, consistency, and clarity. They assist in making sure that all documentation complies with established requirements and regulations. In addition, the recorder will also develop a logical Data Flow Diagram (AS-IS) system based on the current Zoom system. She will be involved in creating a context diagram as well as giving a brief introduction and conclusion for the information gathering process. She will provide a significant contribution to the project's basic understanding ensuring that the new system improvements are accurate and successfully meet user demands and system inefficiencies will be made possible in large part by extensive study.

iii.   **Nurul Amirah,** the project analyst will be responsible for defined the project scope, objectives, and deliverables. In addition, verify that the requirements are clear, accurate, and in line with the project's objective. In collaboration with the facilitator **Aifa Insyirah** (moderator), is also responsible for giving the benefits and summary of the proposed system. Moreover, Amirah will continue with creating Diagram 0 and a Child Diagram which will assist the project team and the stakeholders in gaining a clear and detailed understanding of the current Zoom system's functionality. These diagrams are important for analysing inefficiencies, and making sure the proposed solutions are in line with the real system and user requirements.

iv. **Aifa Insyirah,** the facilitator is in charge of conducting workshop discussions so that the limits of the system being analyzed and built are clearly defined. The facilitator works with the project analyst to summarize the proposed system's benefits, focusing on important advantages and potential outcomes. Ensure that the summary includes ideas from workshop sessions and represents participant consensus. Moreover, the facilitator will create and send out questionnaires made with Google Form which is an easier and efficient way to survey about the improvements that can be done to Zoom platform. This questionnaire will be sent to the Zoom users. Other than that, create an extensive report by analysing the data gathered from many resources is also the facilitator's responsibility.

7.2 Work Breakdown Structure (WBS)

Work Breakdown Structure

Study Group Platform Project

PLANNING PHASE

- Define project scope, objectives and find solution for problem stated
- Conduct Feasibility study and CBA
- Develop a project plan (PERT Chart & Gantt Chart)

SYSTEM REQUIREMENT

- Gather requirements information & data
  - Method (Interview & Questionnaire)
- Specifications for the system data types
  - functionality, capabilities, DFD and system need

DESIGN PHASE

- System analysis and specifications
  - Logical and Physical DFD
  - Process Specification
- Mockup and wireframe Study Group Platform (individual)

IMPLEMENTATION PHASE

- Development Environment
  - Front-end & Back-end Development
  - Implement user authentication &authorization
  - Prepare for deployment

TESTING PHASE

- Develop test plan
  - Uniit Testing & Integration Testing
  - Documentation for test plan
  - Prepare for User Acceptance Testing (UAT)

Phases	Task / Description	Time estimated
Planning phase W2- W5 (4 weeks) Phase 1 Report	A. Define project scope, and objective and find a solution for the problem stated	1 week
	B. Conducting feasibility study and Cost-Benefit Analysis (CBA)	2 weeks
	C. Develop project plan (PERT Chart and Gantt Chart)	1 week
System Requirement W6-W8 (3 weeks) Phase 2 Report	D. Gathering data and information (Interviews and Questionnaire)	2 weeks
	E. Specifications for the system's data type (functionality, capabilities, DFD, and system need)	1 week
Design, Implementation & Testing Phase W9- W15 (6 weeks) Phase 3 Report	F. System analysis and Specifications (Logical and Physical DFD and Process Specification)	1 week
	G. Mockups and Wireframe Study Group Platform (Individual)	1 weeks

	H.	Development Environment (Front-end & Back-end Development, Implement user authentication & authorization)	1 week
	I.	Prepare for Deployment	1 week
	J.	Develop test plan (Unit Testing & Integration Testing, Documentation for test plan)	1 week
	K.	Prepare for User Acceptance Testing (UAT)	1 week

Task / Description		Time estimated
A. Define the project scope, and objective and find the solution for the problem stated	None	1 week
B. Conducting feasibility study and CBA	A	2 weeks
C. Develop project plan (PERT Chart and Gantt Chart)	B	1 week
D. Gathering data and information (Interviews and Questionnaire)	B, C	2 weeks
E. Specifications for the system's data type (functionality, capabilities, DFD and system need)	D	1 week
F. System analysis and Specifications (Logical and Physical DFD and Process Specification)	E	1 week
G. Mockups and Wireframe Study Group Platform (Individual)	F	1 week

H. Development Environment (Front-end & Back-end Development, Implement user authentication & authorization)	G	1 week
I. Prepare for Deployment	G, H	1 week
J. Develop test plan (Unit Testing & Integration Testing, Documentation for test plan)	I	1 week
K. Prepare for User Acceptance Testing (UAT)	J	1 week

7.3 PERT Chart (based on WBS)
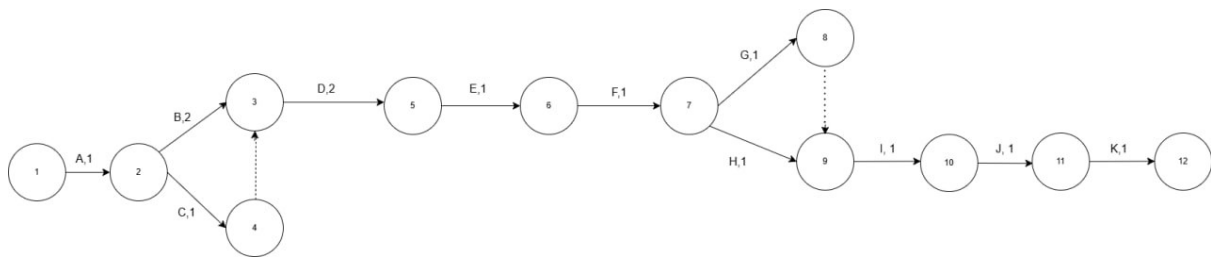
7.4 Gantt Chart

No	Tasks	Duration(weeks)	1	2	3	4	5	6	7	8	9	10	11	12	13
A	Define the project scope	1	█												
B	Conducting feasibility study and CBA	2		█	█										
C	Develop project plan	1				█									
D	Gathering data and information	2					█	█							
E	Specifications for the system's data type	1							█						
F	System analysis and specifications	1								█					
G	Mockups and Wireframe Study	1									█				
H	Development Environment	1										█			
I	Prepare for Deployment	1											█		
J	Develop test plan	1												█	
K	Prepare for User Acceptance Testing	1													█

8.0 Benefits and Overall Summary of Proposed System

8.1 Benefits

1. Improved Compatibility:

    Peer-to-Peer Study Group Platform is designed to optimize the formation of study groups. By pairing students with others who have comparable academic interests, study styles and schedules, the peer matching method promotes more cooperation and comprehension among study group members.

2. Enhanced Engagement:

    As students, they are more likely to be interested in the subjects being covered and the study techniques used in the group, being paired with peers who share similar interests can increase motivation and engagement.

3. Improved Academic Performance:

    The platform encourages active involvement, resource sharing and individualized support adapted to each learner's needs through interactive features including discussion boards, task tracking and a common repository for study materials. This strategy will improve understanding and retention of the course information, which helps users succeed academically and get better scores.

8.2 Summary

The proposed Peer-to-Peer Study Group Platform aims to completely transform how students work together and participate in group projects or studies on the Zoom online platform. The platform aims to improve compatibility, encourage targeted interaction and streamline collaboration among study group members.

The platform also includes a reward system and task monitoring to promote active participation and accountability. The Peer-to-Peer Study Group Platform aims to improve study group performance, increase student engagement and assist students to achieve their educational goals more effectively. This platform aims to enhance the overall study group experience and empower students in their learning journey.

9.0 References

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10.0 Github Link

https://github.com/drshni03/Group8_Project1_SAD_20232024