DECO3500 Concept Proposal

Team Start Swinging

1. Introduction

Due to the influence of COVID-19, many schools in the world have to switch to online teaching mode. However, due to the lack of the experience of online learning at home, the learning process and efficiency of many students have been greatly affected. If students spend

a long time in a place where there is no learning atmosphere, no interaction between students, and no public cognitive pressure to face the electronic screen to carry out most of their learning activities, their enthusiasm for learning may be easily reduced and they are also more likely to be attracted by other interesting activities of entertainment. And most of the existing widely used online teaching platforms were designed to support online video conferences before, and will not have the function to improve this situation in a short time.

As a result, we propose to achieve a learning progress sharing platform to improve the quality of online education by encouraging interaction between students. It mainly explores two major aspects. First, it is a service that can support multi platform progress sharing and allow students to easily import and manage the learning materials, assignments and task lists of all ongoing subjects. This can reduce the steps as well as the time and energy required by students to navigate, organize and plan on several different platforms, and help them focus on their work in a very short time after they have the idea of preparing to start learning. Second, students can set up study groups and choose to share their daily learning progress with other members of the group, and they can punch in their positions in the library and the tasks that have been completed every day. The implementation of this part depends on the systematic and convenient schedule management function described in the first aspect, and it can let students who are not satisfied with their current state begin to try to leave the comfort zone, because seeing the efforts of other learning partners can helps to stimulate their fighting spirit and let them start to keep up with the pace of the group. In the specific proposal, these two main objectives will be broken down into small functions to jointly realize a logical and clear application.

2. Problem Space

The impact of the new covid-19 epidemic has forced many students to accept the online education model, and this unpracticed online teaching model has put a lot of pressure on the quality of teaching. Students who lack learning initiative and time management skills do not prefer to spend a lot of time on learning without teacher's supervision, which leads to a decrease in the learning efficiency of this kind of students (Latulipe & Jaeger, 2022). It can be seen that the increased physical distance between the teacher and the student in online

education leads to a lack of synchronization of educational progress, the lack of timely and accurate feedback on students' progress, and the lack of quick and effective changes in learning plans, which has a profound impact on students' learning. Students in online education are more likely to be exposed to a variety of recreational activities and away from the learning environment (Mogavi et al., 2021). The learning environment is one of the advantages of face-to-face education, which allows students to be away from the distractions of unfamiliar information and to focus on the learning task at hand, which can enhance students' attention and efficiency. Distance education, however, lacks such an environment and may result in students acquiring more unnecessary information and experiencing distractions. In addition, the quality of work completed by students in the distance education model is inconsistent and the amount of work completed by each student varies greatly (Crick et al., 2011). Such a format results in the teaching team not having an accurate picture of student learning outcomes like the student's real work completion situation.

The factors that influence the barriers to student learning in distance education include human barriers, technological barriers, and environmental barriers (Xiao et al., 2020). The technical barriers mainly focus on the technical difficulties encountered during the use of the software, and different platforms will generate different technical problems, which we briefly mention here, but do not discuss in depth. The human barriers mainly focus on students' learning behaviors and learning emotions, etc. Studies have found that synchronous interactive online courses can improve students' learning behaviors and increase their willingness to learn, but since one of the major features of online learning is the asynchronous learning mode, which leads to a decrease in students' willingness to communicate, lower motivation to learn, and other factors that are not conducive to learning. Therefore, it is important to find a way to provide synchronous learning interaction in asynchronous learning mode (Marciniak et al., 2022). The Chinese university MOOC platform, on the other hand, provides an idea by embedding pop-up interactive subtitles in the instructional videos, which allows students to interact with a synchronous video timeline in an asynchronous learning time (Yang & He, 2022). Student group identity is also important, distance education results in students not being able to integrate into the classroom atmosphere, cannot share differentiation, and do not have a sense of group identity (Shi, 2022). In contrast, by dynamically dividing learning groups, enhancing student-to-student connection, and fully integrating students into the classroom atmosphere through online cooperative learning, students can be more motivated to learn and students can directly monitor and compete with each other. Environmental barriers are caused by the physical distance between online education students and the school and the students' lack of access to the campus environment, also caused by the changes in various modes of online education. For example, the change in the format of the final exam resulted in students not being able to follow the traditional paper-and-pencil exams and eventually not being able to adapt to the new model of exams and achieving poorer grades (Rampure et al., 2021), and eventually losing motivation to study. Such a change in environment is compulsory for students, who need to step out of their comfort zone and actively adapt to such a change. In addition, students tend to feel disconnected from the campus, which prevents them from tracking their progress in an agile and efficient manner, and from ensuring the deliverability of assignments and eventually missing deadlines

(Chhetri, 2020). In fact online education can improve the quality of students' learning by mimicking some valuable learning styles of offline education, such as students' eagerness to take notes to record what they have learned in their courses for later review and exam preparation. Online education can help students record and share their learning on the web by providing them with a wiki platform to help them review their learning knowledge(Laru et al., 2009). In addition, building an online social platform is also one of the forms of imitating the campus communication environment, and Facebook provides many study groups to help people learn informally (Klomsri et al., 2013), and such a format is also worth learning from online education, by building various course study groups and allowing students to spontaneously solve problems arising from other students' learning process. Such a model with spontaneity and initiative can reduce the workload of the teaching team and allow students to learn and use more of the classroom knowledge.

It follows that the focus of improving the academic performance of students in the online education model is to address both human and environmental barriers. The way to address the human barriers is to keep students focused on learning tasks through some mandatory ways with regulatory nature. Most students are lazy, and without proper task assignment and progress tracking mechanisms, as well as supervision and rewards and sanctions, these students may be more inclined to stay in their comfort zone and spend their time on non-study related things. The main way to overcome environmental barriers is to reproduce some of the ways of offline education that are helpful for students to improve their performance into the online education model, so that students can develop a sense of adaptation and familiarity, they can learn in the way they have always been familiar with, and finally achieve an ideal learning state.

Therefore, our project focuses on the field of online education and tries to solve the problem of how to improve the quality and efficiency of teaching and learning in online education. Through literature review, our project believes that it is feasible to build a platform for teachers to supervise students and for students to supervise each other and learn together, which can improve the teaching quality of online education, improve the teaching and management efficiency of teaching teams, increase students' interest in learning, and enhance students' learning interactivity.

3. Design Opportunity

First, we choose to build a service platform that can support multi-platform sharing of progress. In our survey, we found that under the influence of the covid-19 epidemic, most students need to receive online education. It is difficult for students who lack learning initiative or time management ability to spend the same amount of time as offline education without teacher supervision, which also leads to a decrease in the learning efficiency of such students. (Latulipe & Jaeger, 2022) In online education, the physical distance between teachers and students is increased, resulting in a lack of synchronization in educational progress. Teachers cannot provide timely and accurate feedback on students' learning

progress, and students cannot effectively change their own learning change plans. At the same time, students who are educated online are more likely to be exposed to various recreational activities and away from the learning environment (Mogavi et al., 2021). So we wanted to build and leverage the ability to share across multiple platforms so that students could easily import and manage study materials, assignments and task lists for all ongoing subjects. Effectively reduces the steps, time and effort required for students to navigate, organize and plan across multiple different platforms, helping students focus on work in a short period of time. You don't have to spend a lot of time looking for information in countless different materials like offline education. At the same time, our online education platform has more valuable learning methods than offline education to improve the quality of students' learning, such as helping students take notes in the cloud to record what they have learned in the course, so that they can quickly find notes for review and preparation for an exam. It can also help students record and share their learning on the Internet, providing them with an online platform to help them review previously recorded learning (Laru et al., 2009).

Secondly, on the educational platform we have established, students can set up study groups, share their learning progress with other members of the group at any time, and can also punch in their positions and completed daily learning tasks in the library. In Klomsri's literature, we learned that online social platforms are also one of the forms of imitation camps in the American communication environment, such as Facebook, which provides many study groups to help people learn informally (Klomsri et al., 2013), so we The platform also hopes to allow students to spontaneously discuss and solve problems in the learning process through the function of establishing various course study groups. Increase student spontaneity and initiative. Let students who are dissatisfied with their status try to leave their comfort zone. After seeing the efforts of other study partners, they will stimulate their own learning and strive to keep up with the pace of the team. MOOC platforms in Chinese universities offer the idea of allowing students to interact with synchronized video timelines during different study periods (Yang & He, 2022). Therefore, our platform also tries to embed pop-up interactive subtitles to strengthen the connection between students and students, so that students who study online can fully integrate into the classroom atmosphere, be more motivated to learn, and can directly monitor and compete. It reduces the physical distance between online education students and the school and the environmental barriers caused by students' inability to enter the campus environment.

3.2 Project aims and audience

As many colleges and universities have been affected by COVID-19, a large number of on-campus courses have been switched to online courses. Many students become less enthusiastic about learning as they spend long hours at home studying alone. At the same time, due to the lack of supervision by teachers, students' learning efficiency will be greatly affected.

Our Project aims to help students improve the quality of learning and maintain their enthusiasm for learning.

Our audience are mainly all students and tutors and professiors. These three types of people are the main target population of our project and the main users.

There are a large number of online learning platforms on the market, such as ZOOM and Microsoft Team, but none of them have comprehensive functions. "Online education is an effective alternative educational medium for students with high self-discipline, but for students with low self-discipline, online education will bring negative effects. Online education is characterized by providing students with flexible study time, which requires students' time planning and scheduling ability. In order to achieve ideal learning results, students must have excellent time management skills to keep up with the pace of class. For these reasons, online education is not suitable for younger students. '(University of Illinois, n.d.) Our project is a service platform that supports multi-platform shared progress and helps students to focus on work in a short time, which helps students save time and have more focused attention on their study.

In contrast to Microsoft Team, our project will provide embedded pop-up interactive captions, which will directly help to increase students' online learning activity and help students fully engage with the classroom.

3.3 Function and problem review（Benzhuo）

The core of the project design is to establish an online collaborative learning platform to provide real-time communication and sharing platform for distance learning students. The goal of the project designed by the team is to solve the problem of low learning efficiency caused by distance learning. Therefore, it needs to be determined whether the project can be solved based on the lack of key points in distance learning. According to the existing distance learning proposed by Xin Zhang(Zhang et al., 2022), we need to analyze its characteristics. The factors affecting distance learning include but are not limited to: course content and resources, learners' personality, teachers' ability, and teaching process and methods. The further establishment of the project needs to investigate the above five points to obtain the best solutions and integrate them into the project platform. The difficulty in obtaining learning resources in distance learning may become a problem. Distance learning cannot simply communicate directly with students of the same major or academic administrators. Through the social content of the network platform, users can freely share course related learning resources, which greatly improves the richness of course content and resources, thus improving the learning effect of distance learners. Ritanjali Panigrahi(Panigrahi, 2017) proposed that social media is the best place to understand users' emotions]. The loneliness, stress and freedom that users may encounter in remote learning can be shared through social platforms, which greatly alleviates the mental pressure caused by the difficulty of integrating remote education into the environment. With the increasing demand for flexible education in

a large number of schools, and the rising acceptance of students for distance learning, the demand for educational administrators in Distance Education in schools is also increasing, and the teaching level of educational administrators may also be affected by the special mode of distance education. The distance education platform can not directly supplement teachers' abilities, but users can share their views on Teachers' teaching quality with students in the same school through the platform, and other users can personalize the selection of courses based on students' evaluation of teachers. Due to the mobility of the learning platform, the learning of the course can be carried out simply and quickly through video or text, without worrying about the limitations of time and space. In addition, users can share their learning methods with other users on the platform to jointly improve their learning efficiency.

The investigation of the learning platform should not be limited to its advantages. While the learning platform provides methods to improve the efficiency of distance learning, it also brings some problems. The simplicity of sharing learning resources through the platform may become a breeding ground for cheating. Users can upload their homework answers or exam answers through the platform. Because social platforms need to ensure user privacy, such cheating is difficult to be restrained. Too strong social attributes of the platform may improve users' interest in learning and reduce users' learning effect. In subsequent iterations, the team needs to find a balance between the social content and professionalism of the learning platform to solve the above two problems. More importantly, inaccurate evaluations of academic administrators may mislead students who have not yet enrolled. It may be a solution for the platform to restrict the feedback of academic administrators on campus in subsequent iterations. For social platforms, copyright has always been a big problem, and many users may have legal hidden dangers because they do not pay attention to copyright. When uploading pictures or files, the platform can reduce the occurrence of this situation by warning. In the next platform design, user testing and further academic literature search will become the focus of the team. It has been determined whether the existing functions of the platform are what users really need. In addition, analysis through user feedback may add new functions.

4. Plan of Work

The main help in the previous six weeks of study was to clarify the domain and to find matching members. The team members individually conducted research on the remote education domain and reflected on it. The team's domain was mainly targeted at remote education, and the main mode of interaction with the target group was through web pages. We wanted to improve the user experience by switching the interaction and social mode of remote education to improve learning and work efficiency. This section focuses on refining the content and process of the future work and exploring the methods and risks that may be used at each stage. The future work is divided into 4 phases, with the time point of Week7, Week9, Week11 and Week12.

	Method	Job to be done	Goal
Initial Requirements & Design (Week 7)	-Background check -Questionnaire survey -Interview	-Create questionnaires -Define interview questions -Identify the interview population -Specific program for interview -Integrate data -Analyze and evaluate the data	-Define user needs -Define the target group -Define the main functions of the system
Prototype & Initial Evaluation (Week 9)	-Interviews -Background checks for target groups	-Consider the technical barriers -Make low fidelity model -Consider design factors for user preferences -Conduct evaluation interviews -Integrate and analyze assessment data	-Consider whether the full functionality can be successfully built -Define the user's design preferences -Make sure the functionality is what the user needs -Define interaction patterns
Iteration & Formal Evaluation (Week 11)	Heuristic evaluation	-Modify low density fidelity and iterate -Produce Medium to High Fidelity Models -Develop Heuristic evaluation interview	-Identify possible barriers to user use of the process (specific interfaces) -Assigning a hierarchy to the barriers encountered by users

		process -Interview -Integrate data, analyze and evaluate	
Final Prototype (Week 12)	-Technology Acceptance Model（TAM） -System Usability Scale（SUS）	-High Fidelity Models -Modify TAM questionnaire -Usability assessment -TAM interviews -SUS interviews -Data integration, evaluation and analysis -Reflective process and flow	-Whether the software is running smoothly and whether users recommend the site to others after using it. -Getting usability data -Reflect to gain experience

#Table 1.1

The main methods used in the work at week7 were background research on remote education, questionnaires and interviews. In that phase of the work we already have some understanding of the background of remote education, the inspiration for the remote education platform project was mainly due to the covid-19 environment, the more students choose remote education to continue their studies, but the evaluation of the experience was not positive, even though the team analyzed through background research that the target group of the project is students, teachers, but in that phase the team used questionnaires The team used a questionnaire to segment the target group, which included position, age, gender, area of residence, and an open-ended question. After integrating and analyzing the results of the questionnaire, the team will use interviews to identify specific information about the students' experience with the remote education platform. The interview format is expected to be conducted through ZOOM, with 5-6 questions to be answered by the target group, lasting approximately 15-20 minutes. During Week7 the team is expected to complete background research on remote education, including negative reviews of similar platforms and technical barriers. Finding the right target group to participate in the interviews and questionnaires, creating the questionnaires and interviews, integrating the data from the questionnaires and interviews, analyzing and evaluating the data from the questionnaires and interviews. The

purpose of the work in this phase is to clarify the target group, define the user requirements and specify the main functions of the system.

In the work of week9, the main methods used were background research for target group preferences, and prototype interviews. At this stage the main functions of the system and the target group have been defined. During the design process it was necessary to understand the design preferences of the target group. For example, the design for the student group may be more innovative, while the system design for the teacher group may be more focused on design consistency and professionalism. In this phase, the user evaluation interview is conducted for the low fidelity model, and three simple tasks are expected to be designed to ask users about their experience based on the system functionality. The team is expected to complete the interview of the low fidelity model, integrate the data, analyze and evaluate the data. The purpose of the work in this phase was to clarify the design preferences of the users and to ensure that the features were needed by the users. Also consider whether all the features the team members are capable of building.

The main method used in week11's work is interviewing, and the interview method is Heuristic evaluation. In heuristic evaluation, it is expected to find 3 evaluators to evaluate the project, and the evaluators need to complete all 5 to 6 tasks and annotate the form with what heuristic principles they think the website violates. The Severity rating will help the developers to assess the severity of the problems and assign different priorities to solve them. The team is expected to create a medium to high fidelity model, find a target group for the interview, develop a Heuristic evaluation interview process, evaluate the medium to high fidelity model interview by users, integrate the data, analyze why users feel the interface violates the heuristic principles, and evaluate the severity rating. The purpose of the work in this phase is to identify possible barriers to the users' use of the process.

In week12, the main method used is interviewing. The interview method is Technology Acceptance Model (TAM) and System Usability Scale (SUS). In that phase, our team's prototype and functionality were defined. TAM is mainly user-centered, focusing on functionality, usability, user attitude, and propensity for future use, and the TAM evaluation model is relatively easy and simple. The user needs to score each question with a value from 1-7. SUS and TAM are very similar in that SUS is a quick and effective tool for perceiving the usability of a system, and a small sample size can still yield reliable results. The team is expected to complete the following tasks in Week12: create and modify the high fidelity model, find the target group for the interview, modify the TAM interview questionnaire, prepare the TAM interview process, and prepare the SUS interview process. Integrate data, analyze and evaluate data. The purpose of working in this phase is to get usability test data of the website, to understand users' experience and whether they would recommend it to people around them after using it, and finally to improve the prototype. Reflect on the problems encountered during the whole project and complete better in the next project production.

5. Team

Mingyi Ren: I am good at capturing participants' views on certain issues through interviews, and getting useful feedback from potential users in user testing, and finally converting them into visual data, summaries and conclusions. I am also good at the design and modification of the overall style of the prototype, and know the details about how to implement the accessibility settings. However, I lack the knowledge on the design of small elements in the specific UI interface, so I hope to learn more relevant skills through the online learning and from other team members this semester.

Xin Gong: I specialize in front-end UI creation, such as creating Prototypes and conducting user tests, and can optimize Prototypes based on the results of the tests. In addition, I have experience in assigning tasks to projects, and can reasonably assign tasks and take care of team members' feelings. However, I am not good at the technical part of the project, for example, I lack detailed knowledge of the concept model part and need to learn from other members. I am a good searcher and can quickly find the corresponding content according to the needs of the group.

Benzhuo Tian: I am good at user testing the project and analyzing user feedback to obtain useful information, and further iterating the team project. In addition, participating in the back-end design of the project may lead to slow progress due to my learning ability, but I will try my best to complete the contributions I should make to the team. I am not good at front-end UI design.

Jiayu Chen: I specialize mainly in UI and UX design, and have some basic knowledge of evaluation methods and design concept models. I have some experience in prototyping, but I have not yet fully mastered high-quality high-fidelity models. I am better at background research and writing articles, and I am familiar with the process and patterns of interview activities. My ideas for website development are very innovative, but I am not good at code knowledge regarding the web development part. Summarizing and analyzing interview data and results is also my strong point. I would like to try to build some new development experiences in my future studies.

Yifei Liu: I am more familiar with front-end UI and UX design, creating prototypes and then designing user test content, and then improving prototypes based on user test results. Have a certain understanding of evaluation methods and human-computer interaction design principles. I haven't quite mastered a high-quality high-fidelity model yet and am not good at the technical code part of the project, so I'll continue to learn from the other members.

Futian Jiang: I am good at UI design, such as making Mind Maps and making low to medium fidelity prototypes. I am adept at testing prototypes and websites using various user testing methods, gathering data for analysis, and using the data results to make recommendations for iterations of the prototype. I am also good at designing websites. I have some understanding of the code used to make websites but I am not good at it.

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