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Software Requirements Specification for EduConnect

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Requirements Engineering

Project 1

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1 Introduction

1.1 Purpose: Mission statement

EduConnect is committed to transforming the educational environment by means of its inventive and cooperative learning platform. Our goal is to empower educators, parents, students, and educational institutions by offering a complete, user-friendly solution that improves education, encourages productive dialogue and centralizes resources.

EduConnect aims to establish a dynamic and interactive environment that facilitates the success of all stakeholders by optimizing the educational process and increasing their involvement.

1.2 Scope

The goal of the EduConnect project is to provide an engaging and user-friendly web platform that improves the educational method for parents, teachers, students and educational institutions, but it does not replace the important role of each stakeholder in the learning process of each student.

It focuses on creating functionalities like centralized resource libraries, assignment tracking, real-time feedback and virtual classrooms. The main objective is being able to provide tools and features that allows easier communication, more engaging learning and easier access to resources.

The purpose is to establish EduConnect as the premier educational center where all parties may readily interact, collaborate and achieve success.

1.3 Definitions, Acronyms, and Abbreviations

1.3.1 <u>Educational Material</u> - powerpoint, worksheet.
1.3.2 <u>Class Subject</u> - subject that students have in class.
1.3.3 <u>Quiz</u> - multiple choice questions.
1.3.4 <u>Assignment</u> - open question work or other.

1.4 References

https://moodle2324.up.pt/pluginfile.php/231619/mod_resource/content/1/Project2.pdf

1.5 Overview

The goal of the online learning platform EduConnect is to improve learning for all stakeholders involved - students, teachers, parents and educational institutions. It all comes down to setting up an environment where the stakeholders can interact, exchange resources and collaborate to develop and learn. With tools like assignment tracking, virtual classrooms and real-time feedback, EduConnect seeks to improve accessibility and engagement in education for all students.

2 Overall Description

2.1 Product Perspective

EduConnect should be considered as an all-in-one platform for simplifying and enhancing learning. It's like having a resource library, study partner and virtual classroom all in one location. EduConnect covers the wishes of parents trying to stay active in their child's education, of teachers seeking to give feedback or of students trying to stay up to date with their tasks. It is made to blend in perfectly with any current educational system, increasing the effectiveness and enjoyment of learning for all students.

2.2 Product Functions

The functions of the product are divided into the following categories:
- Sharing of educational materials
- Homework and evaluation activities
- Student's evaluation monitoring
- Student's attendance tracking
- Prepared explanatory videos of the subjects
- Communication between parents and teachers
- Communication between students and teachers
- Communication between educational institutions and students
- Communication between educational institutions and teachers
- Notifications for new school events
- Verification of the use of Artificial Intelligence in the elaboration of the work delivered
- Tools to help the teachers create quizzes and assignments
- Parental accounts

2.3 User Characteristics

The primary users are students, teachers, parents and the educational "system admins", also known as educational institutions.

2.3.1 User/Stakeholder profiles

Stakeholder	Interests	Constraints
Students	Looking for a flexible and engaging learning platform	Not having enough technological skills to use the platform.
Educational Institutions	Aim to offer a comprehensive online learning platform to students and teachers.	Primary school until High-School institutions - too wide range, meaning different necessities for different age groups.
Parents	Interested in tracking their child's academic progress and engagement.	Not having enough technological skills to use the platform.
Teachers	Looking for efficient tools to manage courses, assignments, and provide feedback.	Not having enough technological skills to use the platform.
Developers	The technical team is tasked with creating and maintaining EduConnect.	Want to use technologies they are familiar with, which may not be the better ones possible for product development.

3 Functional Requirements

3.1 Authentication and Access Control

3.1.1   Students must authenticate using their institutional email accounts.

3.1.2   Teachers must authenticate using their institutional email accounts.

3.1.3   Educational institutions must authenticate using their institutional email accounts.

3.1.4   Parents will be signed up by their child's educational institution, through their personal email, for the creation of an account.

3.1.5   Access to specific features and data will be based on user roles and permissions.

        3.1.5.1 Teachers will be able to create assignments.

        3.1.5.2 Teachers will be able to evaluate assignments.

        3.1.5.3 Teachers will be able to manage class materials.

        3.1.5.4 Teachers will be able to view student progress.

        3.1.5.5 Students will be able to view educational materials.

        3.1.5.6 Students will be able to submit assignments.

        3.1.5.7 Students will be able to access their own grades.

        3.1.5.8 Students will be able to track their own progress.

        3.1.5.9 Parents will be able to view their child's grades.

        3.1.5.10 Parents will be able to view their child's attendance.

        3.1.5.11 Parents will be able to view their child's assignments.

        3.1.5.12 Parents will be able to communicate with teachers.

        3.1.5.13 Institutional administrators will be able to manage user accounts.

        3.1.5.14 Institutional administrators will be able to manage system settings.

        3.1.5.15 Institutional administrators will be able to manage data.

3.2 User Registration and Account Management

3.2.1 User registration will be automatically handled by educational institutions using institutional email accounts for students.

3.2.2 User registration will be automatically handled by educational institutions using institutional email accounts for teachers.

3.2.3 User registration will be automatically handled by educational institutions using institutional email accounts for educational institutions' members.

3.2.4 User registration will be manually handled by educational institutions using personal email accounts for parents.

3.2.5 Users can reset passwords through email verification.

3.2.6 Users can recover accounts through email verification.

3.3 Communication Features

3.3.1 Students and teachers should be able to communicate directly with each other.

3.3.2 Educational institutions and teachers should be able to communicate directly with each other.

3.3.3 Parents and teachers should be able to communicate directly with each other.

3.3.4 Institutions can share events.

3.3.5 Institutions can share notifications with parents.

3.3.6 Institutions can share notifications with students.

3.3.7 Students cannot send private messages to other students.

3.4 Education Management

3.4.1 Teachers can upload educational materials[1].

3.4.2 Teachers can share educational materials[1].

3.4.3 Students can access educational materials[1] provided by teachers.

3.4.4 Teachers will have the capability of conducting online classes.

3.4.5 Teachers will have the capability of conducting video conferences.

3.4.6 Students can access explanatory videos on the class subjects[2], divided by topics.

3.4.7 Teachers can create discussion forums where the students can discuss certain predefined topics.

3.5 Assessment and Evaluation

3.5.1   Teachers can create quizzes[3].
3.5.2   Teachers can choose which students should do each quiz[3].
3.5.3   Teachers can evaluate quizzes[3].
3.5.4   Automated grading will be implemented for the quizzes[3].
3.5.5   Teachers will be able to provide feedback per quiz[3] question.
3.5.6   Students can do the assigned quizzes[3].
3.5.7   Teachers can create assignments[4].
3.5.8   Teachers can choose which students should do each assignment[4].
3.5.9   Teachers can evaluate assignments[4].
3.5.10 The platform will include features for detecting plagiarism in student assignments.
3.5.11 The platform will include features for detecting Artificial Intelligence in student assignments.
3.5.12 Students can do the assigned assignments[4].
3.5.13 Progress tracking tools will be implemented.
3.5.14 The platform should display a calendar containing assignments' delivery dates.
3.5.15 The platform should display a calendar containing quizzes' dates.

3.6 Attendance Tracking

3.6.1   Teachers can track students' attendance in classes.
3.6.2   Teachers can take note of students' attendance in classes.
3.6.3   Teachers can track students' attendance in activities.
3.6.4   Teachers can take note of students' attendance in activities.
3.6.5   Parents can track their child's attendance in classes.
3.6.6   Parents can track their child's attendance in activities.
3.6.7   Students can take note of their own attendance in classes.
3.6.8   Students can track their own attendance in classes.
3.6.9   Students can take note of their own attendance in activities.
3.6.10 Students can track their own attendance in activities.
3.6.11 Educational institutions can track students' attendance in classes.
3.6.12 Educational institutions can track students' attendance in activities

3.7 Parental Access

3.7.1   Parents can access their child's grades

3.7.2   Parents can access their child's assignments.

3.7.3   Parents can get notifications for their child's grades.

3.7.4   Parents can get notifications for their child's assignments.

3.7.5   Parents can get notifications for their child's field trips.

3.7.6   Parents can authorize their child's to go in field trips through digital signature.

3.7.7   Parents can get notifications for their child's attendance in classes.

3.7.8   Parents can get notifications for their child's attendance in activities.

3.7.9   Parents have a separate account from their child, but have access to their child's account information.

3.7.10 Parents can only see their own child's information.

3.7.11 Parents cannot see the information of other children.

3.7.12 Parents can download their child's work materials.

3.7.13 Parents can access statistics of their child's grading.

3.8 User Interface Customization

3.8.1 The interface will be customizable based on user preferences and age groups.

3.8.2 The interface should be in white and various shades of yellow and blue.

3.8.3 The interface should be responsive.

3.8.4 The platform should engage its users by presenting mandatory checkboxes.

3.8.5 The platform should engage its users by having its information divided by sections.

4 Non-Functional Requirements

4.1 Scalability

4.1.1 The platform architecture must support an increasing number of students.

4.1.2 Support for a 10% increase in users per year, starting with 1000 initial users.

4.2 Performance

4.2.1 The system should maintain response times below 3 seconds.

4.2.2 The system should ensure 99% availability.

4.2.3 The system should correctly deal with different time-zones.

4.3 Security and Privacy

4.3.1 User data will be encrypted.

4.3.2 Access to user data will be controlled to ensure privacy.

4.3.3 Access to user data will be controlled to comply with regulations.

4.3.4 Students' information should not be accessed by other students.

4.4 User Experience

4.4.1 Different visual themes for the different educational levels.

        4.4.1.1 Primary and middle school levels should have juvenile themes.

        4.4.1.2 High school levels should have minimalistic looking themes.

4.5 Data Management

4.5.1 Data will be stored in a cloud-based non-relational database with regular backups.

4.5.2 Data will be stored in a cloud-based non-relational database with data retention policies.

4.6 Technologies

4.6.1 The frontend should be developed using React.

4.6.2 The backend should be developed using NodeJS.

4.6.3 The system should be developed using a multiple page design.

5 Constraints

5.1 Regulatory Restrictions: The platform's operation and design are subject to limitations imposed by industry standards, data protection legislation, and educational restrictions. There may be legal repercussions and reputational harm if these restrictions are broken.

5.2 Stakeholder Constraints: It may be difficult to define requirements and prioritize features when there are competing interests and expectations among stakeholders.

6 Risks

6.1 Technical challenges such as security, scalability and the achievement of compatibility across browsers and systems are crucial aspects to take into consideration when developing this platform.

6.2 Since the stakeholders of this project are accustomed to traditional teaching and learning methods, there may be some resistance or a lack of adaptability to using EduConnect.

6.3 When dealing with students' information, a security and privacy risk emerges. Since this data is personal it must be handled responsibly to avoid unauthorized access or improper use.

6.4 Since EduConnect is an online platform it is dependent on internet connection. This dependency may bring access issues to students who live in areas with poor internet infrastructures.