VIA University College

Project Description

Semester Project 3

Group 3

Students

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Software Technology Engineering

3rd Semester

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1 Problem Domain

1.1 Education problem

Education is one of the most important aspects of life in civilized societies (NAICU - NAICU - Improves Quality of Life, 2025). Humans need knowledge in order to function in today's world — from simple communication to career growth. Knowledge can improve quality of life in many ways (Burke, 2023). "Nowadays around 40% of the global population does not have access to proper education in a language they understand" (PTI, 2025).

Many countries and communities struggle with gender inequality in educational opportunities, which ultimately results in educational disparities and economic inequality. Men and women should be able to choose their educational paths without being constrained by gender norms or stereotypes (Gender Equality in a Changing World, 2025).

In addition to unequal access, gender inequality is also visible in the socialization and education of boys and girls, even when both have equal formal opportunities. Gender norms and stereotypes at early stages influence the types of skills children are motivated to learn and the careers they are likely to pursue. For example, international test scores show that around age ten, girls read more effectively than boys, while boys perform better in mathematics and science (OECD, 2022). These patterns reflect not only differences in ability but also the effects of socialization, classroom processes, and cultural expectations about "appropriate" fields of study for each sex.

These inequalities are also shaped by intersecting variables, including socioeconomic status, physical ability, and social status (OECD, 2020).

1.2 Current Situation

Digital free-for-all educational platforms have been on the rise in recent years because they can provide knowledge to anyone with an internet connection and a device, thus minimizing educational inequalities (Duolingo, 2025).

However, many currently operating platforms focus on different aspects of education, such as language learning, coding, mathematics, or science (Singh et al., 2015). This leaves gaps and does not provide a consistent learning experience for users. Additionally, some platforms offer little free content, which can be a significant barrier for low-income users (World Bank Group, 2025).

Despite rapid advances in digital technologies, a major challenge persists: 2.6 billion people remain offline (Poggi, 2025). The digital divide is a major barrier to economic growth and sustainable development, with only 27% of the population in low-income countries having access to the internet, compared to 93% in high-income countries (Poggi, 2025).

1.3 Stakeholders

The primary stakeholders in the field of education include both learners and knowledge providers worldwide. Learners can be individuals of all ages, backgrounds, and locations who seek to acquire new skills or knowledge. Knowledge providers can include educational institutions, teachers, tutors, and online platforms that offer educational content and resources. Other stakeholders may include governments, non-profit organizations, and businesses interested in promoting education and improving access to learning opportunities.

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2 Problem Statement

2.1 Main problem:

How to provide easily accessible learning platform?

2.2 Sub-questions:

- Is there any way to speed up the learning process?
- How to make the learning process efficient and user friendly?
- How to ensure that all genders can acquire proper knowledge?
- What design principles can be used to make digital learning app more convenient?
- How can accessibility features (e.g., screen readers, voice commands, adaptive interfaces) be integrated for users with disabilities?
- How can trust in the system be established and maintained?
- How can the correctness of knowledge be ensured?
- How to provide and maintain security within the app?

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3 Delimitation

The project focuses on helping individuals who cannot access formal education. This may be due to income reasons or geographic constraints. Men and women will have equal opportunities on the digital platform, since everyone should be able to pursue education as they wish. To ensure high-quality, accurate content, courses will be reviewed by experts and AI.

The project is limited to the development of a simple digital distributed learning platform for students, teachers, and its administrators. Features such as high-scale performance, complete accessibility, AI-based learning, and enterprise-level security are not part of it.

Delimitations Related to Sub-questions

Speeding up the learning process: The system will not be based on any researches evaluating optimal learning speeds. It will provide a basic platform where exercises can be accomplished and tracked.

Efficiency and friendliness of the learning process: Intuitive navigation and role-based design will be implemented. Deep UX testing, advanced personalization, or industry-level research of design is beyond the scope.

Gender neutrality in learning: The platform won't include gender-specific functionality. The platform will assume equal opportunity and neutrality for every user.

Principles of convenience design: The platform will use common UI design patterns suitable for desktop learning solutions. Research and comparison of other design philosophies (gamified vs. traditional layout) won't be cunducted.

Accessibility features (screen readers, voice commands, adaptive interfaces): The application will provide only limited accessibility. Advanced adaptive interfaces won't be implemented.

Active pursuit of learning goals: The system will offer basic monitoring of progress. High-level motivational features (gamification, AI reminders) will not be part of it.

Trust in the system Trust will be addressed primarily by role-based access control and secure authentication. Broader features such as institutional certification or pedagogical authentication are out of scope.

Correctness of knowledge: Correctness of the course material will be assumed. The system will not include AI fact-checking, peer-review workflows, or third-party verification of material.

Security Security will be guaranteed on a low level (password hashing, simple role-based permissions). Advanced protection (multi-factor authentication) is beyond the project.

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4 Choice of Methods

4.1 Knowledge and Data Collection

To identify the educational and technical issues of digital learning platforms, we will:

- Review existing platforms (e.g., Coursera, Duolingo, Udemy) to ascertain their strengths and weaknesses.
- Review academic reports and papers on the digital divide and language learning strategies.
- Identify user needs from informal questionnaires and discussions within the project team.

4.2 Analysis and Modelling

For distributed system planning and design, UML diagrams will be used to model system functionality and interactions.

- Architectural patterns such as client–server and REST-based architectures will be part of the design.
- Threat modelling will be conducted and potential security threats in authentication and data communication will be analysed.

4.3 Design, Construction and Implementation

The system will be developed using standard software development methods:

- Agile methodology with short iterations to ensure continuous progress and responsiveness.
- UI/UX prototyping with Figma for wireframing and user flows prior to coding.
- Backend services implemented in Java/C# with RESTful web services.
- Authentication and authorization mechanisms to ensure secure access.

4.4 Testing

The testing will be carried out continuously during the project to ensure robustness and functionality:

- Unit testing (Java: JUnit / C#: NUnit).
- Integration testing to check interactions between client and server.
- Manual testing of UI components and learning flows for usability and accessibility checks.
- Security testing with emphasis on authentication and authorization.

4.5 Planning and Management

To facilitate organized collaboration and progress monitoring:

- Git with GitHub for version control, feature branching, and code reviews.
- Task distribution and workload management will be done using a Kanban board (Figma/GitHub Projects).
- Regular meetings to check progress, resolve problems, and plan next steps.
- Documentation will be written in a formal academic style, with correct referencing and adherence to plagiarism standards.

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5 Time Schedule

5.1 Final Deadline

Date: December 19, 2025

6 Project Timeline

Date / Period	Milestone / Activity	Details
Every Sunday	Weekly Reporting & Task Assignment	Submit progress report + assign new tasks
Weekly	Weekly Meeting	Checkpoint via Discord or at school
End of November 2025	Completion of Formal Project Part	Finish writing & documentation for review
December 19, 2025	Final Deadline	Submission of full project

6.1 Milestones

1. **Weekly Reporting and Task Assignment**
   When: Every Sunday
   Details: Submit a weekly report on the project's progress and assign new tasks for the upcoming week to maintain continuous progress and team accountability.
2. **Weekly Meeting**
   When: Once per week
   Platform: Meetings will be conducted either via Discord or at school.
   Purpose: These meetings will act as checkpoints to discuss progress, address challenges, and adjust tasks as necessary.
3. **Completion of Formal Project Part**
   Target Date: End of November 2025
   Details: Aim to complete the formal writing and documentation aspect by this date, allowing time for final revisions before the deadline.

6.2 Expected Time Commitment Based on 10 ECTS

Each student is expected to contribute a total of 275 hours to meet the 10 ECTS workload requirement, with increased hours in October and November to reduce the workload in December.

6.2.1 Breakdown of Hours for 10 ECTS

- **October:**
  - Weekly commitment: 16 hours per student
  - Total for October: $4 \times 16 = 64$ hours per student
- **November:**
  - Weekly commitment: 16 hours per student
  - Total for November: $4 \times 16 = 64$ hours per student
- **December (up to December 20):**
  - Remaining: 147 hours
  - Weekly commitment: $147 / 3 \approx 49$ hours per student
  - Total for December: $3 \times 49 = 147$ hours per student

6.2.2 Total Hours Calculation for 10 ECTS

- Total Hours: 275 hours per student

- Calculation: Total hours = $10 \times 27.5 = 275$ hours

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7 Risk Assessment

Risk	Likelihood	Severity	Normalized	Preventive Actions
Data storage issues	3	3	3.0	Secure datasets early, create backups, use redundant storage
Local server failure	3	3	3.0	Regular backups, spare devices, monitor hardware health
Synchronization failures between distributed parts	2	3	2.0	Use messaging queues, retries, health checks, test synchronization

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Project Title - Process Report

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5 Personal Reflections

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7 Conclusion

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8 References

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4 Discussion

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5 Conclusion and Recommendations

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