

Specification Document

PAT Phase 1 – Grade 12

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**EDUPLEX HIGH SCHOOL**

**Due Date: 7 March 2025**

**FunLearning**

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# Phase 1: Check List

*Refer to Phase 1 in the Assessment Rubric.*

In completing this phase, the learners will have to:

* Provide a brief description, including the purpose of the project, a summary of functions and a description of the target user group(s). Expand on it to describe exactly what needs to be done in your own words.
* Conduct research to determine if there are existing projects and provide an explanation of how the proposed project will differ from existing projects.
* List exactly what the functions of the program are going to be.
* List the specifications of the user interface (what it will look like).
* List and group all data required.

**Submission of evidence**

Hand in a **Specification Document** prepared in an appropriate application (e.g. MSWord), which contains the following:

|  |  |  |
| --- | --- | --- |
| **ASPECT** | **☑ or ☒** | **COMMENT** |
| Problem Summary |  |  |
| Research and Motivation |  |  |
| Program Functions |  |  |
| User Interface |  |  |
| Permanent Data required |  |  |

# Problem Summary

Education plays an important role in a student’s development in education, yet some teaching methods fail to maintain and keep students’ interest in the classroom. Students may find it hard to stay motivated, particularly when confronted with learning from reading from textbooks or enduring long classes which do not interest them. This disengagement often leads to lower retention, less participation, and a general ignorance towards learning. In our fast-moving digital age, where interactive content and immediate gratification reign in entertainment and social media, students require a more stimulating and engaging learning experience. Nicole, a 14-year-old who struggles with math and finds it quite frustrating. Despite her efforts to study from her textbook, she often forgets what she has learnt. However, Nicole enjoys video games and spends extensive time competing with friends online. If her educational journey gave the same excitement and feeling while gaming, it would allow her to progress further in her education. She could earn points for solving java coding problems and level up after completing lessons. This is our goal in our Gamified Learning Platform, which plans to turn education into an enjoyable, interactive, and fulfilling adventure that leads to students being eager to learn and engage in class more often leading to more positive results in school. Our Gamified Learning Platform is created to fill this gap by including game elements such as XP points and challenges into the learning process. As students advance, they experience a sense of achievement and motivation leading to better results. The platform will include challenges, and personalized learning plans as every student is different. Enabling users to learn at their own pace while still being motivated to improve through rewards and friendly rivalry is crucial as it brings the best out of every student. Whether it's mastering a new coding language, improving in sharpening problem-solving techniques, the platform promises to provide an enjoyable educational experience that feels less like work and more like a quest. By combining progress tracking and challenges, the platform ensures that every learner, no matter their skill set, can discover a route to reach their goals. This platform will not only increase participation but also bring a strong passion for learning that affects the classroom in a positive manner.

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# Research and Motivation

In the current digital landscape, conventional education frequently finds it challenging to captivate and inspire students. Certain teaching methods affect learners to be less involved during class, for instance reading from textbooks as well as participating in classes learners are not interested in, often lead to the student not understanding his work which affects the student’s participation in class time negatively. Studies and research prove that interactive learning gaming platforms considerably boost engagement and enhance knowledge in certain topics, leading to better results in schoolwork. Consequently, there has been an increase in gamified learning platforms, which include game elements-examples such as points, badges, and challenges to create a more interactive experience amongst the learners.

**Existing Gamified Learning Platforms**

* **Duolingo**: This language learning platform keeps users engaged by utilizing streaks, XP points, and leaderboards. There are personalized learning plans according to individual performance based on the users’ weak areas, allowing them to strengthen their weaknesses.
* **BitDegree**: Focused on teaching digital skills, BitDegree incorporates blockchain-based NFT certifications and interactive lesson formats to boost user engagement and enhance job readiness.
* **Centrical:** This platform is designed for corporate training, improving employee education through immediate feedback, tailored learning pathways, and competitive tracking of progress.

**Motivation for Our Platform**

Focusing solely on a single area, our platform will consist of java coding. The platform will include skills-based challenges and lessons based on the students ability which also appeals to visual and auditory learners. The user’s performance will be analyzed, and their lessons will be modified accordingly to their performance, ensuring a successful educational experience. By integrating these elements, our platform strives to create a more engaging educational experience amongst students, transforming learning to be enjoyable amongst all students, rather than just education being seen as a requirement.

# Program Functions

**1. User authentication**

* **User registration:** New users can create an account by providing their name, email, and password, along with selecting their role as student, teacher, or parent. To activate the account, email verification will be required to ensure security.

**2. Learning modules**

* **Course categories**: Users can select Java Coding. It will feature organized courses that lead learners from the basics to the more complex stages.
* **Lesson completion tracking**: The system will automatically monitor a user's progress through each lesson. Once the lesson is complete, it will be marked as "Completed," and the user will unlock access to the following section.

**3. Progress tracking**

* **User progress reports:** Learners will be able to track their progress.

**4. Gaming features**

* **Points**: Users will earn XP points by completing their work. This allows them to level up and monitor their learning progress, as well as motivating the user.

**5. Challenges**

* **Difficulty adjustment:** When a learner completes more segments, they will face more challenging questions to solidify their understanding or can skip challenging questions.

**User Interface Design**

The User Interface of the Gamified Learning Platform will be designed so that all users will find it easy to navigate and interact with the system.

**Main UI Screens & Their Functions**

**1. Home and login screen**

Introduces users to the platform and provides options to log in or sign up.

**Elements:**

* + **Welcome message**: "Welcome to FunLearning!"
  + **Buttons**:
* "Login"
* "Sign Up"
* **Text fields, labels**
* Enter username,password,phone number,name

**2. User dashboard**

The place where users track their learning progress.

**Elements:**

* + **Gamification progress:**
* levels are displayed
  + **Quick access buttons:**
* **"**Continue Learning" – Takes the user to their current lesson

**3. Lessons selection screen**

Allow users to view lessons.

**Elements:**

* + List view of available classes

**4. Lesson screen**

Users engage in lessons and interactive content.

**Elements:**

* + Lesson title and introduction
  + Lesson questions

**5. Challenge screen**

Interactive assessment of knowledge through quizzes and challenges.

**Elements:**

* + Feedback on answers:
* "Correct! Keep it up!"
* "Oops! Try again.”
  + Points display after quiz completion

**Permanent Data required is stored in Text Files**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Fields stored** | **When stored** | **When accessed** | **When updated** |
| **User information** | UserID, Name, Email, Password (encrypted), Date of Registration, Last Login Date | When a user registers | When a user logs in or views their profile | When users update profile details or reset password |
| **Student progress and learning data** | UserID, Lessons Completed, Quiz Scores, XP Points | When a user completes a challenge, lesson, or earns XP | When a user checks progress, leaderboard updates | When a lesson or challenge is completed, XP is earned |
| **Lesson data** | Difficulty Level, LessonID, Lesson Title, Lesson Content, Prerequisites | When a lesson is created | When a user starts a lesson | Not applicable |
| **Challenge data** | challengeID, challengeName, Question Text, Answer Options, Correct Answer, Best Score | When a lesson is hard coded into program | When a user attempts a challenge | Not applicable |
| **Gamification data** | UserID, Total XP Points | When a user earns XP | When the leaderboard updates | When the user completes lessons or challenges |

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