

Edu Tutor AI: Personalized Learning

Introduction

- Edu Tutor AI: Personalized learning
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2. Project overview

- **Purpose**
- The purpose of personalised learning is to adapt education to the unique needs, strengths, interests, and pace of each learner. Instead of a one-size-fits-all approach, personalised learning focuses on giving students the right support, resources, and pathways to achieve their full potential.
- **Here are the main purposes:**
 1. Individual Growth – Helps each learner progress at their own pace, ensuring no one is left behind or held back.
 2. Engagement & Motivation – Connects learning to students' interests, goals, and real-life contexts to keep them motivated.
 3. Equity in Education – Provides tailored support so learners with different abilities, backgrounds, or learning styles can succeed.
 4. Mastery over Memorisation – Focuses on deeper understanding and skill mastery rather than just completing standardised tasks.

5. Empowered Learners – Encourages students to take ownership of their learning through choice and self-direction

3. Architecture

When we talk about Personalised Learning Architecture, we mean the framework that supports how personalised learning is designed, delivered, and managed. Think of it like the blueprint of a system that combines pedagogy, data, and technology to adapt learning to each individual.

Here's a structured view of the architecture:

1. Core Components

Learner Profile

- Captures data on strengths, weaknesses, interests, goals, **pace**, and learning style.
- Continuously updated through assessments, feedback, and interaction data.

Competency Framework

- Defines what learners need to know and be able to do (skills, knowledge, competencies).
- Maps learning objectives to personalised pathways.

Learning Pathways

- Adaptive routes learners follow, based on their profile and progress.
- Can branch into different content, activities, or projects depending on learner need

2. Technological Layers

Data & Analytics Layer

- Collects real-time learner performance data.
- Uses AI/ML for predictive insights, recommendations, and adaptive learning.

Content Delivery Layer

- Digital platforms, LMS (Learning Management Systems), or apps delivering customised content.
- Includes multimedia (videos, simulations, gamification) adapted to learner preference.

Assessment & Feedback Layer

- Continuous formative assessments (quizzes, reflections, projects).
- Provides instant, personalised feedback to guide progress.

Integration Layer

- Connects school systems, teacher dashboards, content providers, and analytics tools.
- Ensures a unified learner experience across platform

3. Human & Pedagogical Layer

Teacher/Facilitator Role

- Acts as a coach and guide rather than just an information provider.

- Interprets data to support learners with targeted interventions.

Collaboration & Peer Learning

- Encourages group work and discussions adapted to learner levels.

Learner Agency

- Gives learners choice and voice in setting goals, selecting activities, and reflecting on progress.

4. Governance & Support Layer

- **Equity & Accessibility** – Ensuring all learners (including special needs) have fair access.
- **Policy & Standards** – Frameworks for implementation across schools or institutions.

4. Setup Instructions for Personalised Learning

Step 1: Define Goals & Vision

- Clarify why you want personalised learning (e.g., improve engagement, mastery learning, equity).
- Align with curriculum standards, skills, and future readiness.

Step 2: Build Learner Profiles

- Collect data on students' interests, strengths, weaknesses, pace, and goals.
- Use surveys, diagnostics, assessments, and teacher observations.
- Store this in a digital profile (LMS, AI-tool, or portfolio).

Step 3: Design Competency Framework & Pathways

- Break learning into competencies (skills/knowledge units).
- Map flexible pathways for learners to achieve mastery (choice in projects, difficulty levels, formats).

Step 5: Develop Adaptive Content

- Prepare multiple types of resources (videos, texts, simulations, games).
- Tag content to competencies and learner levels.
- Ensure accessibility (languages, devices, special needs).

Step 6: Implement Assessment & Feedback System

- Use formative assessments (quizzes, quick checks, reflections).
- Provide instant feedback (via AI or teacher).
- Track mastery instead of just grades.

Step 6: Pilot & IterateStart with a small group or subject.

- Collect feedback from learners and teachers.
- Adjust tools, pathways, and methods before scaling up.

Step 7: Ensure Governance & Support

- Protect learner data (privacy, security, consent).
- Provide equitable access (devices, internet, accessibility features).
- Create policies for scaling and sustainability.

Folder structure

5. Folder structure

A folder structure in personalised learning helps keep resources, learner data, assessments, and reports organised for both teachers and students. It can be set up digitally (e.g., Google Drive, OneDrive, LMS) or physically.

Personalised Learning Folder Structure

1. Learners

 Learner Profiles

Individual folders for each student with:

Interests & goals

Strengths & challenges

Learning style info

Progress reports

6. Running the application

When we talk about running the application in personalised learning, we're usually referring to how a personalised learning platform/app (LMS, AI tutor, or custom system) is actually used in practice once it's set up. Think of this like the operational workflow for teachers, students, and administrators.

1. System Setup & Access

Install or host the application (cloud-based or on school servers).

Create user accounts (students, teachers, admins, parents).

Configure roles & permissions (teacher dashboards, student view, parent access).

7. API documentation

API documentation in the context of personalised learning.

An API (Application Programming Interface) lets different systems in a personalised learning ecosystem—like LMS, AI engines, content repositories, and analytics dashboards—talk to each other.

8. User interface

- The User Interface (UI) in personalised learning is critical, because it's how learners, teachers, and parents interact with the platform. Since personalised learning focuses on individual progress, choice, and feedback, the UI must be simple, adaptive, and role-based.

9. Testing

Testing here doesn't just mean student exams — it also includes system testing (the platform itself) and educational testing (student assessments). Both are key for making personalised learning effective.

◆ 1. System/Application Testing

To ensure the personalised learning platform works smoothly:

Functionality Testing

Check learner profile creation, pathway generation, content delivery.

Verify dashboards (student, teacher, parent, admin) display correct data.

Integration Testing

LMS ↔ AI engine ↔ content repository ↔ analytics dashboards.

Ensure APIs (content, assessment, reporting) exchange data correctly.

Performance Testing

Can the system handle 1,000+ students logging in at once?

Test speed of adaptive recommendations and feedback.

Security Testing

Validate authentication (JWT, OAuth2).

Test role-based access control (student can't see other students' data).

