

Project Design Phase
Solution Architecture

Date	01 JULY 2025
Team ID	LTVIP2025TMID38204
Project Name	Edututor AI: PERSONALIZED LEARNING WITH GENERATIVE AI And LMS INTEGRATION
Maximum Marks	4 Marks

EduTutor AI – Personalized Learning Architecture

Learning Interaction Options

- **Option A:** Learner interacts via smart assistant (e.g., Alexa or similar voice-enabled device)
 - **Option B:** Learner accesses AI tutor through phone, mobile app, or web interface
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Architecture Flow (Adapted)

1. **Learner Input (Voice or Text)**
 - *Option A:* Learner uses smart speaker to say, “Help me understand algebra”
 - *Option B:* Learner types or speaks query via mobile app or web platform
2. **AI Input Routing**
 - **Device (Echo/Web/App)** captures learner’s input
 - Sends **audio/text + learner ID** to:
3. **EduTutor AI Cloud Contact Layer (Amazon Connect Equivalent)**
 - Routes interaction to:
 - **AI Engine** (Generative Model – e.g., ChatGPT, Claude, or custom LLM)
 - **Learner ID and query intent**
4. **Intent Understanding (Amazon Lex Equivalent)**
 - NLP engine extracts:
 - **Intent** (e.g., "Explain Concept", "Generate Quiz", "Track Progress")
 - **Topic Slot** (e.g., “algebra”, “photosynthesis”)
5. **Bot Handler (Lambda Equivalent)**
 - Triggers appropriate:
 - Content generation (explanations, summaries, quizzes)
 - Personalized learning pathway update
 - LMS integration actions
6. **Response Storage & Analytics**
 - **DynamoDB** → Stores learner activity logs, content served, progress
 - **S3 Bucket** → Stores audio recordings (if applicable)
 - **CloudWatch Logs** → Stores transcripts for analysis and QA
 - **KMS (Key Management Service)** → Ensures data encryption and security
7. **Output + Notification**
 - Personalized response delivered to learner (voice or text)

- o Notifications sent to:
 - LMS (for grading, tracking, progress update)
 - Teachers (if flagged or reporting needed)
 - Learner dashboards (via email/app/portal)

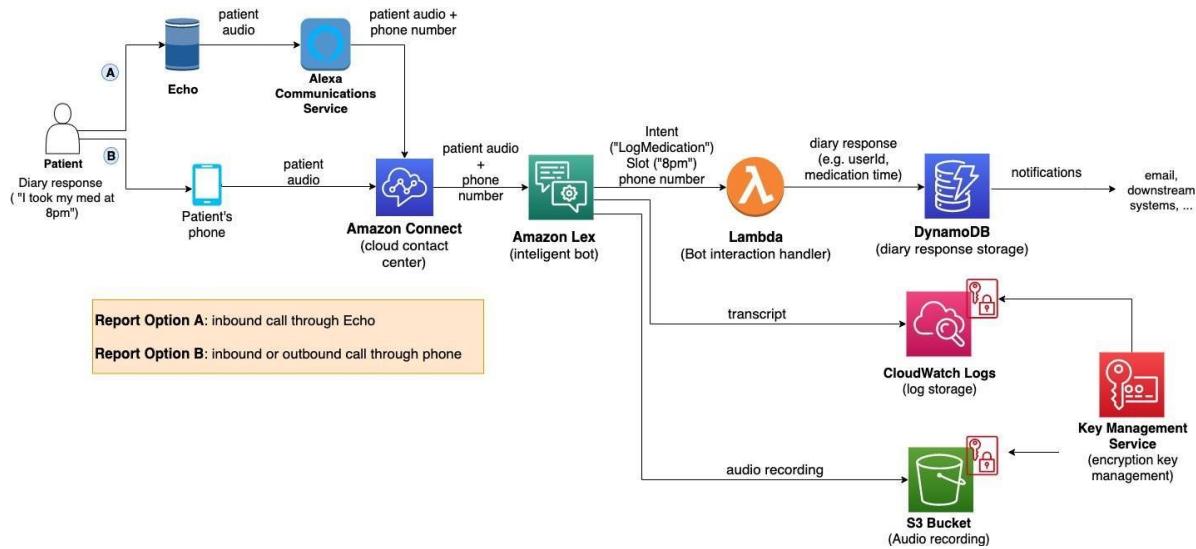


Figure 1: Architecture and data flow of the voice patient diary sample application

Reference: <https://aws.amazon.com/blogs/industries/voice-applications-in-clinical-research-powered-by-ai-on-aws-part-1-architecture-and-design-considerations/>