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SmartSim: A Curriculum-Centric Conversational Agent for Employee Training

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Abstract: *Sales and service training often lacks personalized, scalable practice tools, leading to inconsistent skill application on the job.*

In our experience working with sales and service training teams, tools they use often lack personalized, scalable practices, leading to inconsistent skill application on the job.

Corporate training seldom provides structured, realistic practice, resulting in low retention and limited behavior change. We built a curriculum-centric, multi-agent framework for role-play simulations (could be adapted for text and voice) that deliver sequenced, educationally grounded training conversations for sales employees. The framework automates delivering curriculum of scenarios by coordinating several agents: the Orchestrator manages flow, the Curriculum Manager sequences role-play scenarios with embedded learning objectives and rubrics, the Conversation Agent enacts realistic dialogues, the Data Agent tracks progress, Telemetry logs outcomes, and the Guard enforces safety. We designed a workflow prototype in n8n that simulates the behavior of a phone-based conversational agent. For this paper, the system is demonstrated through a chat-based interface that reproduces the curriculum sequencing and orchestration logic, rather than a production telephony deployment. Pilot learners

told us that sequenced curricula improved practice consistency and in turn confidence. Learners appreciated how realistic practice was and specific feedback via Telemetry, although challenges still remain around sustaining engagement and avoiding repetitive feedback. Through these findings we canconclude that a curriculum-centric, multi-agent role play simulation can improve learning outcomes in employee training, bridging the gap between adaptive e-learning and real-world application. Our objective is to examine whether curriculum-guided AI role play can improve soft skills when compared to unstructured. This paper contributes a curriculum-centric framework, functional prototype and findings from a formative pilot with three sales hires.

Keywords: curriculum learning; conversational agents; role-play simulation; training and coaching; behavior change; AI in education; HCI.

Introduction

Context: In the companies we studied, managers are under tremendous pressure to train their teams quickly while exceeding quality and outcomes (Deloitte, 2024; PwC, 2023). Traditional in person coaching and role-play exercises, especially sales, are resource-intensive and often inconsistent (most companies have one in two quarters), leaving employees under-practiced for high-stakes interactions. For example, in sales enablement, rising buyer expectations and complex product offerings demand that new hires quickly master product knowledge and their communication skills (Deloitte, 2024; PwC, 2023). AI-driven role-play tools have emerged to address this need: unlike static e-learning modules, they provide dynamic and interactive practice conversations. However, research also warns that conversational agents may mislead learners if accuracy and reliability are not ensured (Milana, 2024). Over-reliance on such tools can reduce critical thinking and learner independence (Zhai et al., 2024). In these reports we studied, simulations have dramatically shortening the ramp up time and improving skill retention by allowing realistic practice with real-time feedback (Deloitte, 2024; PwC, 2023).

Why is this important? Ultimately, improved practice leads to better on-the-job performance and confidence. PwC found that learners in interactive simulations were **275% more confident** in applying skills and completed training *four times faster* than those in traditional training (Deloitte, 2024; PwC, 2023). Yet, peer-reviewed studies note that these systems often struggle to sustain empathetic, realistic dialogue (ResearchGate Collective, 2023). They can reinforce bias or inconsistency if guardrails are not in place (Zhai et al., 2024). This suggests that AI "agentic" simulators (AI-driven agents for role-play) could produce real behavior change in workplace learning.

Gap in Prior Work: Despite promising advances, existing AI training solutions often lack an explicit educational structure. Most AI role-play systems focus on isolated sessions, without a curriculum to guide long-term skill progression. Previous studies in AI and education has explored curriculum design and AI assistance in largely separate ways: For instance, Kasztelnik reviews how AI plays a role in creating personalized learning content in creating an AI-assisted curriculum Kasztelnik (2024), but it does not address interactive dialogue or behavioral soft skills training. At the same time, many researchers have integrated generative AI tools into specific educational domains – *e.g.*, Wu et al. (2025) applied ChatGPT and Midjourney in a design-thinking curriculum to assist creativity – but even these efforts target domain knowledge rather than structured behavior change practice for employees. Co-design studies with educators have also tackled AI curricula (teaching *about* AI) benjixie.com, but didn't explore the use of AI *as* an instructor in soft-skill training. Industry whitepapers also emphasize aligning AI with curriculum goals for effectiveness (Imagine Learning, 2025), calling for "Curriculum-Informed AI" that embeds instructional structure into AI systems (Imagine Learning, 2025). This gap is significant, given that most prior systems remain scenario-based with limited sequencing, and reviews stress that more structured, curriculum-informed approaches are necessary to achieve lasting behavior change (Milana, 2024; Zhai et al., 2024). However, applications of curriculum-centric AI agents in corporate training remain scarce. This leaves a gap: How can we design AI conversational agents that deliver a sequenced, scaffolded practice curriculum to effectively drive a behavior change in learners?

In Summary, our objective is to test whether a curriculum driven AI simulator can provide structured confidence building practice for workplace skills.

Research Question: In this work, the central question we ask: "Can a conversation-based AI agent (voice or chat), with a structured educational curriculum, improve the soft skills in employee training compared to unstructured practice?". Our aim is to explore how

incorporating structured curriculum design principles like sequenced scenarios, scaffolding, and feedback loops into an AI role-play simulator will improve learning outcomes and user experience in the context of skills training in a professional setting.

Approach Summary: To test our idea, we developed a light weight prototype called SmartSim – an n8n workflow that simulates the intended phone-based role-play system through chat interactions. SmartSim is implemented as a chat-based n8n prototype. It uses an LLM as the Conversation Agent and a Curriculum Manager that sequences role-play scenarios from basic to advanced. Users (learners) interact with the agent through a chat interface that reproduces the sequencing and feedback logic. After each scenario, the system provides a score with structured feedback (start, stop, continue) and gradually unlocks the next scenario, following a designed curriculum flow.

Contributions: Our work makes four contributions. First, we introduce a framework as part of the curriculum. Second, we built a chat-based n8n workflow prototype with a curriculum manager that simulates the logic to control progression . The system illustrates how an LLM-based agent can be constrained and guided by curricular scaffolding. Third we piloted it with three new sales hires over a 15-day period. that informed our framework. Finally we discuss design implications for HCI and training design, including challenges of maintaining user engagement and ensuring a reliable agent-based training. Taken together, these contributions mark SmartSim as distinct from existing AI coaches by shifting from isolated role play practice to a curriculum-driven system with sequenced scenarios. This improves soft skills, enforces mastery and provides consistent rubric based feedback.

2. Related Work / Background

In this section, we review three areas of prior work that inform our approach: (1) Use of conversational agents for training and coaching, (2) Use of AI in curriculum design and adaptive learning, and (3) Use of gamification and scaffolding techniques for sustained behavior change. We highlight how our work builds on but also diverges from these lines of research.

2.1 Conversational Agents for Training and Coaching

Conversational agents and simulations have been studied in education and professional training. Early work on intelligent tutoring systems and dialog-based language tutors in the 1990s showed that interactive practice could improve learning. The recent advances in natural language processing, especially large language models, have enabled more realistic and flexible agents.

In corporate environments, AI role-play platforms are marketed for skills like sales, customer service, and leadership training. These systems simulate real-world conversations with virtual customers or work scenarios with colleagues, providing a safer space for practice than live coaching (Deloitte, 2024; PwC, 2023). Reports suggest that they can reduce onboarding ramp-up time and improve confidence(PwC, 2023; Deloitte, 2024).

For example, Deloitte found that immersive training (including AI-based role-plays) cut time-to-competency by up to 60% in domains like finance and healthcare (Deloitte, 2024; PwC, 2023). Similarly, generative AI tools in customer-facing roles have shown productivity improvements of 15–20% in sales settings (Deloitte, 2024; PwC, 2023). However, critical evaluations point out several shortcomings. Many platforms operate on a scenario-by-scenario basis without a structure or curriculum to guide long-term progression. Feedback is often repetitive; and agents struggle to sustain realistic, empathetic dialogue (Milana, 2024; ResearchGate, 2023). Over-reliance on such tools has also been linked to reduced critical thinking and uneven skill transfer (Zhai et al., 2024).

Current commercial solutions we explored (e.g., AI sales conversation coaches) focused on practicing individual conversations or pitches. They lack an educational structure- each user session is isolated, and it's left to the user or trainer to decide what scenario to practice next. Our work addresses this gap by embedding the agent in a carefully structured curriculum based on the learner performance. We build on the successes of conversational agents by adding a training **sequencing layer**: where the system not only simulates conversation scenarios but also guides the learner through a progression of scenarios optimized to their level.

2.2 AI for Curriculum Design and Adaptive Learning

Kasztelnik's (2024) research explored in academic literature, particularly for K-12 and higher education. It provides a comprehensive overview of AI-assisted curriculum development, demonstrating how AI can help create *dynamic and personalized learning experiences* tailored to diverse learner needs Kasztelnik (2024). The research also included adaptive learning systems that adjust content difficulty based on student

performance, a concept pioneered by intelligent tutoring systems (ITS) in domains like math and programming. Key theoretical frameworks, such as Technological Pedagogical Content Knowledge (TPACK), have been applied to

understand how AI tools can integrate with educational content effectively Kasztelnik (2024). These works show that AI can support educators in content sequencing, but their focus is on academic *knowledge* and traditional e-learning content (quizzes, instructional modules) rather than interactive soft skill development and practice.

Another research by Xie et al. (2024), conducted a study co-designing AI curricula with high school teachers across disciplines, emphasizes co-design curriculum with stakeholders benjixie.com. Their work identified the challenges teachers face in integrating AI topics into classes like history or art, and they stress the importance of flexibility and teacher expertise in curriculum creation. An important takeaway from the research is the value of *adaptable curricular resources* and involving domain experts in design. We apply a similar philosophy by enabling subject-matter experts (e.g., a sales enablement manager or sales coaching expert) to design training scenarios and objectives into our system's curriculum builder. The main difference is that we effectively "co-designing" the training flow with an AI agent by structuring the agent's behavior via a human-authored curriculum.

There is also growing interest in aligning AI-driven learning tools with established curricular standards and pedagogy. A recent industry white paper introduced the term "**Curriculum-Informed AI**," advocating for AI systems that are "purpose-built to support learning" by centering on high-quality instructional material and pedagogy rather than tech novelty (Imagine Learning, 2025). The authors argue that AI in education should not be an add-on but should be deeply informed by what to teach (curriculum content) and how to teach it (pedagogical methods) (Imagine Learning, 2025). They emphasize transparency, alignment with learning goals, and the need for oversight to ensure AI-generated content remains on track (Imagine Learning, 2025). We resonate this philosophy in our approach: our curriculum manager agent is constrained by a predefined curriculum structure and clear learning objectives at each step, ensuring that the AI's interactions "speak the language of learning" and stay pedagogically meaningful. Our contribution is a concrete instantiation of curriculum-informed AI in the context of conversation-based simulations (voice or text) for professional skills – an area that has not been thoroughly explored in prior work.

It's also worth noting that previous implementations of curriculum-aware training mostly reside in well-structured domains and not for soft skills. For example, language learning apps like Duolingo use a carefully planned skill tree (curriculum) that sequences vocabulary and grammar challenges; the content is unlocked gradually to scaffold learning (Duolingo Research Team, 2023). Unlike these systems that rely on scripted exercises and quizzes, our work brings structure to *open-ended conversational practice*, with less rigidity. By integrating an LLM agent with a curriculum manager, we aim to get the adaptability and richness of free-form dialogue along with the systematic coverage and scaffolding of a curriculum.

2.3 Gamification and Scaffolding for Behavior Change

Maintaining high user engagement over a period of training is critical for behavior change. We draw from insights on gamification and learning sciences here. Gamification techniques have been successfully used in educational technology to motivate learners through rewards, levels, and challenges. For example, Duolingo's design shows the power of bite-sized lessons and leveling-up mechanics to keep learners "doing one more lesson" (Duolingo Research Team, 2023). Short, achievable tasks and constructive feedback on progress can increase learners' sense of accomplishment and willingness to continue training. We incorporate similar elements in our curriculum as a sequence of "missions" or Levels (inspired by the progressive challenge ladders seen in video games). Early scenarios are easy wins that build confidence, and as learners advance, the scenarios become more difficult and complex – providing a game-like progression that is challenging but not discouraging.

Scaffolding is another key principle we leverage. In educational psychology, scaffolding refers to providing support and structure to learners initially, then gradually removing support as they become more proficient. In our system, scaffolding is achieved by the curriculum sequence itself: initial role-plays come with more guidance (e.g., the AI agent might provide hints or step-by-step prompts during the first practice calls). As the user's skill improves, later scenarios offer less guidance and more open-ended challenge, simulating real-world

difficulty. This design is informed by Vygotskian ideas of the Zone of Proximal Development – the curriculum always tries to operate at the edge of the learner's current ability, pushing them slightly further with each step.

Furthermore, behavior change (such as adopting better communication strategies at work) often requires *repeated practice* and *feedback loops*. Our approach explicitly builds these in: repetition is encouraged by daily scenario practice, and feedback loops are implemented via immediate post-conversation analysis by the AI agent. The agent provides specific feedback on key soft-skill criteria (clarity, empathy, use of open-ended questions, etc.), akin to a virtual coach. Consistent, standardized feedback from an AI can avoid the inconsistency and bias of human coaches (Deloitte, 2024; PwC, 2023), ensuring each learner is evaluated on the same rubric. Over time, these feedback loops help users reflect and adjust their behavior – a critical process for internalizing new skills. Prior work in immersive training supports this: *active participation + timely feedback* leads to stronger retention and behavior change (Deloitte, 2024; PwC, 2023). By structuring practice as a continuous loop of "attempt -> feedback -> adjusted attempt" embedded in a curriculum, we aim to create lasting behavior change rather than one-off learning.

In summary, our framework builds upon related work by combining the **conversational realism** enabled by AI agents (2.1), the **instructional rigor** of curriculum design (2.2), and **engagement techniques** from gamification and scaffolding theory (2.3). This synthesis is what we term *curriculum-centric AI design* for training simulators. Next, we describe the design and implementation of our system to illustrate these ideas in practice.

3. Method / System Design

Our research follows a system-oriented approach, where we designed a functional prototype of the *SmartSim* curriculum-centric training agent and conducted an initial formative evaluation. In this section, we detail the system's architecture and the guiding framework behind it. Because this is primarily a conceptual paper, we emphasize the framework and design rationale, with an illustrative use case, rather than a full-blown user study (which we reserve for future work).

3.1 System Overview and Architecture

We built SmartSim as a simple workflow in n8n, with an orchestrator at the center. For this paper, the system operates via chat interactions in n8n. This prototype mirrors the intended phone-based deployment but was deliberately scoped to chat for feasibility. Figure 1& 2: illustrates this architecture.

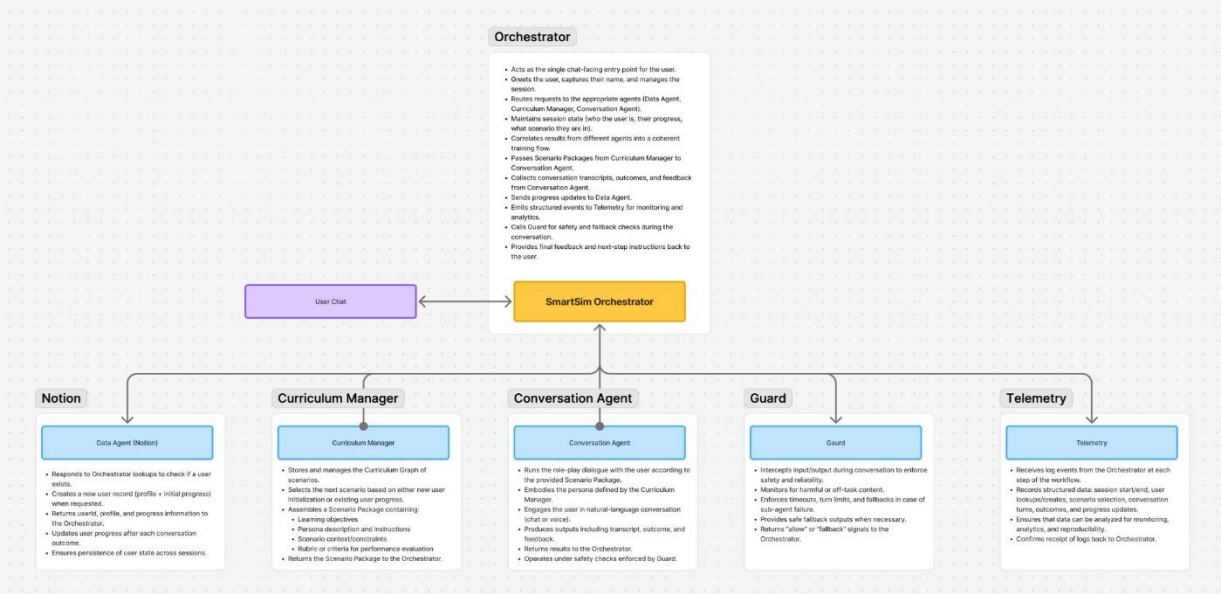

Figure 1: SmartSim system architecture showing the Orchestrator at the center coordinating with Data Agent, Curriculum Manager, Conversation Agent, Guard, and Telemetry to manage user training flows.

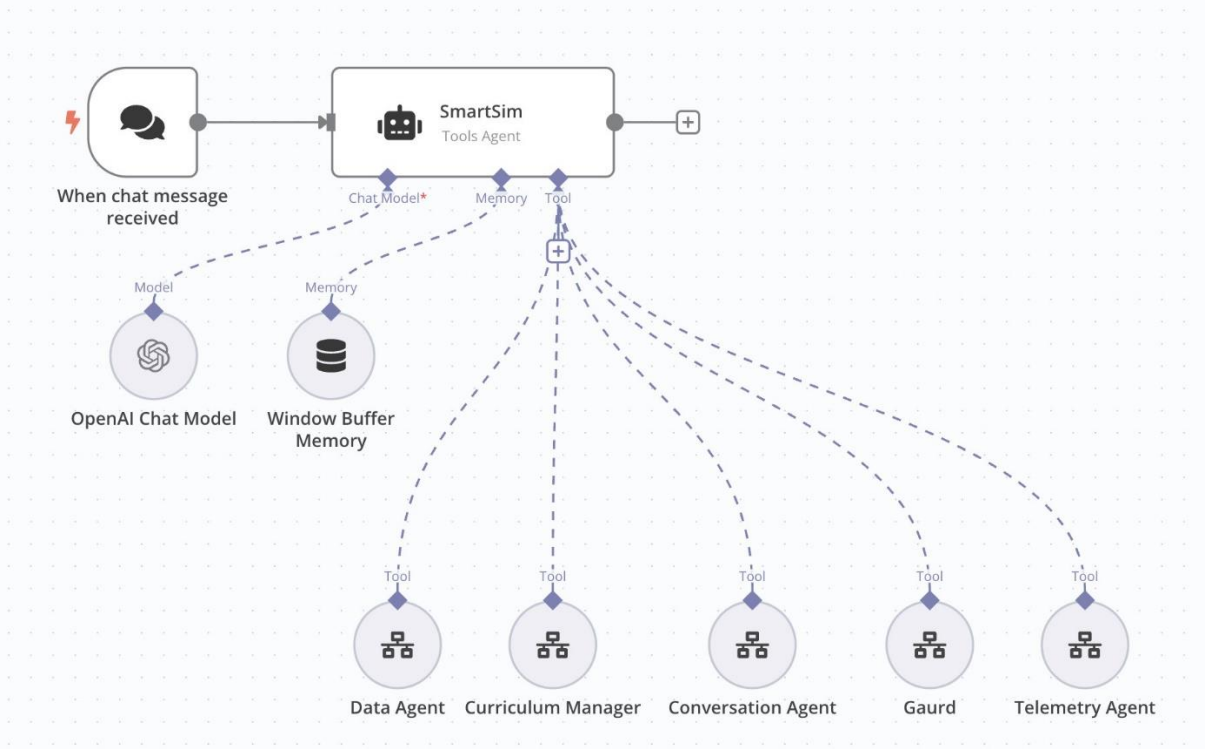

Figure 2: SmartSim system architecture in n8n showing the Orchestrator connecting with Data Agent, Curriculum Manager, Conversation Agent, Guard, and Telemetry to manage user training flows.

SmartSim Orchestrator: The orchestrator is the hub of the system. In our prototype, the orchestrator agent greets the user, captures their name, and manages the session. It routes requests to the appropriate sub-agents (Data Agent, Curriculum Manager, Conversation Agent), maintains session state, and correlates results from different agents. It maintains the current state of practice and merges the output of sub agents into a single stream back to the user.

Data Agent: This component maintains persistence of user profiles and progress. For the prototype, we used a lightweight Notion database to quickly check whether the user already existed, created a new user record, and ensured conversation state across sessions.

Curriculum Manager: The Curriculum Manager determines the learner's path through the system. Rather than maintaining a random scenario, it maintains a structured graph of scenarios from basic to advanced. In our prototype, each scenario is assembled containing learning objectives, persona instructions, scenario context/constraints, and evaluation criteria, and returns this package to the Orchestrator.

Conversation Agent: The Conversation Agent runs the role-play simulation with the user according to the scenario package. It adopts the persona defined by the Curriculum Manager, engages in dialogue (via chat or voice). Transcripts and feedback are returned to the Orchestrator, while Guard monitors safety in real time.

Telemetry: Telemetry ensures transparency and logs all interactions based on events from the Orchestrator agent. It records structured data which allows us to trace how learners move through the curriculum. In our pilot, this data shows struggles with objection handling. This data also supports monitoring, analytics, and reproducibility, and acknowledgments which could be useful for dashboards.

Guard: The Guard module acts as a safety and reliability layer. It monitors inputs and outputs during conversation flagging anything off-task or inappropriate. It enforces timeouts and turn limits, and fallback if any sub-agent fails. It provides either an "allow" or a fallback signal to the Orchestrator, ensuring robustness and user safety.

Pseudocode XML- Agent system messag

```xml
<AgentInstructions>
    <Role>
        <Name>Orchestrator</Name>
        <Description>
            You are an Orchestrator agent that serves as the central controller of SmartSim. You greet the user,
            manage session state, coordinate all sub-agents, and ensure that conversation flow follows the curriculum.
            You merge outputs from the Data Agent, Curriculum Manager, Conversation Agent, Telemetry, and Guard into a coherent training loop.
        </Description>
    </Role>
    <Goal>
        <Primary>
            Deliver structured role-play sessions by sequencing scenarios,  enforcing progression rules, and providing feedback to
            learners while maintaining safety and reliability.
        </Primary>
    </Goal>
    <Instructions>
        <Instruction>On session start, greet the learner and capture user identity.</Instruction>
        <Instruction>Query the Data Agent to check or create learner profile and progress record.</Instruction>
        <Instruction>Request the next Scenario Package from the Curriculum Manager based on learner progress.</Instruction>
        <Instruction>Send the Scenario Package to the Conversation Agent to run the dialogue with the learner.</Instruction>
        <Instruction>Collect transcript and outcome from Conversation Agent; update learner state via the Data Agent.</Instruction>
        <Instruction>Emit structured events to Telemetry for logging and analytics.</Instruction>
        <Instruction>Invoke the Guard to validate safety and enforce policies during and after the session.</Instruction>
        <Instruction>Deliver scenario feedback and next-step instructions back to the learner.</Instruction>
    </Instructions>
</AgentInstructions>
```

Figure 3. Orchestrator XML Schema The XML definition for the Orchestrator agent, showing its role, primary goal, and step-by-step instructions.

```xml
<AgentInstructions>
    <Role>
        <Name>Curriculum Manager</Name>
        <Description>
            You are the Curriculum Manager. You determine the learner's path through the curriculum.
            You select the next scenario based on progress, assemble scenario packages with objectives,
            persona context, and success criteria, and send them to the Orchestrator.
        </Description>
    </Role>

    <Goal>
        <Primary>
            Deliver the appropriate Scenario Package, ensuring that progression moves from basic
            to advanced and that mastery criteria are enforced before unlocking the next scenario.
        </Primary>
    </Goal>

    <Instructions>
        <Instruction>
            <Scenario id="1" name="Intro Call: Building Rapport">
                <Goal>Establish a friendly, professional connection.</Goal>
                <Criteria>
                    <Criterion>Greet the prospect clearly.</Criterion>
                    <Criterion>Use the prospect's name at least once.</Criterion>
                    <Criterion>Ask at least one open-ended question.</Criterion>
                </Criteria>
            </Scenario>
        </Instruction>

        <Instruction>
            <Scenario id="2" name="Intro Call: Distracted Prospect">
                <Goal>Build rapport under time pressure (~30 seconds).</Goal>
                <Criteria>
                    <Criterion>Acknowledge the time constraint.</Criterion>
                    <Criterion>Deliver a concise, professional introduction.</Criterion>
                    <Criterion>Create one clear reason for the conversation to continue.</Criterion>
                </Criteria>
            </Scenario>
        </Instruction>
```

Figure 4. Curriculum Manager XML Schema with Scenario Goals. The XML definition for the Curriculum Manager agent, with scenario-specific goals and success criteria.

3.2 Framework and Theoretical Basis

SmartSim is built as a curriculum-centric training system where an orchestrator coordinates a set of scenarios managed by the Curriculum Manager. The design follows principles from learning theory, with sequencing, objectives, pacing, and feedback all explicitly tied to scenario design.

Progressive Sequencing: All scenarios are ordered from simple to advanced. It starts simple and gets gradually harder with each call. In our sales training curriculum, the sequence begins

with introductory calls for building rapport (Scenarios 1–2), moves through needs discovery (Scenarios 3–4), product pitching (Scenarios 5–6), objection handling

(Scenarios 7–8), and culminates in negotiation and closing (Scenarios 9–10). Each step builds directly on the last, ensuring that mastery of core behaviors is reinforced before new challenges are introduced.

Learning Objectives Alignment: Every scenario was linked to specific objectives. For example, an Introduction call required the learner to introduce themselves, use the prospect's name, and ask at least one open-ended question. While objection handling requires acknowledging a price concern, justifying value with ROI, and maintaining a positive tone throughout. In the pilot, one participant said that this made the practice feel "like a checklist I could improve on".

Conditional Progression: Learners repeated scenarios if they missed key success criteria of a scenario before advancing and sometimes encountered variations (e.g., a guarded prospect instead of a cooperative one). This ensured that practice was based on mastery rather than simply clicking through. Even though some pilot users, it reinforced skills and gave them confidence before advancing.

Feedback and Reflection: After each scenario, the structured feedback from the system based on the objectives prompted learners to self-reflect ("How do you think that went?") before receiving targeted guidance.

Encouraging through gamification: The conversation scenarios are presented as "levels," and learners can track progress through the curriculum. This lightweight gamification supports motivation without distracting from professional training.

Thus by combining these elements, SmartSim formalizes a curriculum-centric agentic framework: the orchestrator routes conversation through scenarios, the Curriculum Manager enforces pedagogical sequencing and pacing, and feedback cycles support reflection and skill transfer. Together, they ensure that learners cannot bypass fundamentals and that training outcomes remain aligned with structured objectives.

3.3 Illustrative Use Case: Sales Coaching Curriculum

To demonstrate organized training, we designed a 10-scenario curriculum for onboarding new sales representatives.The ladder started with simple rapport building calls and gradually increased in complexity until learners were practicing high stakes negotiation and closing scenarios.

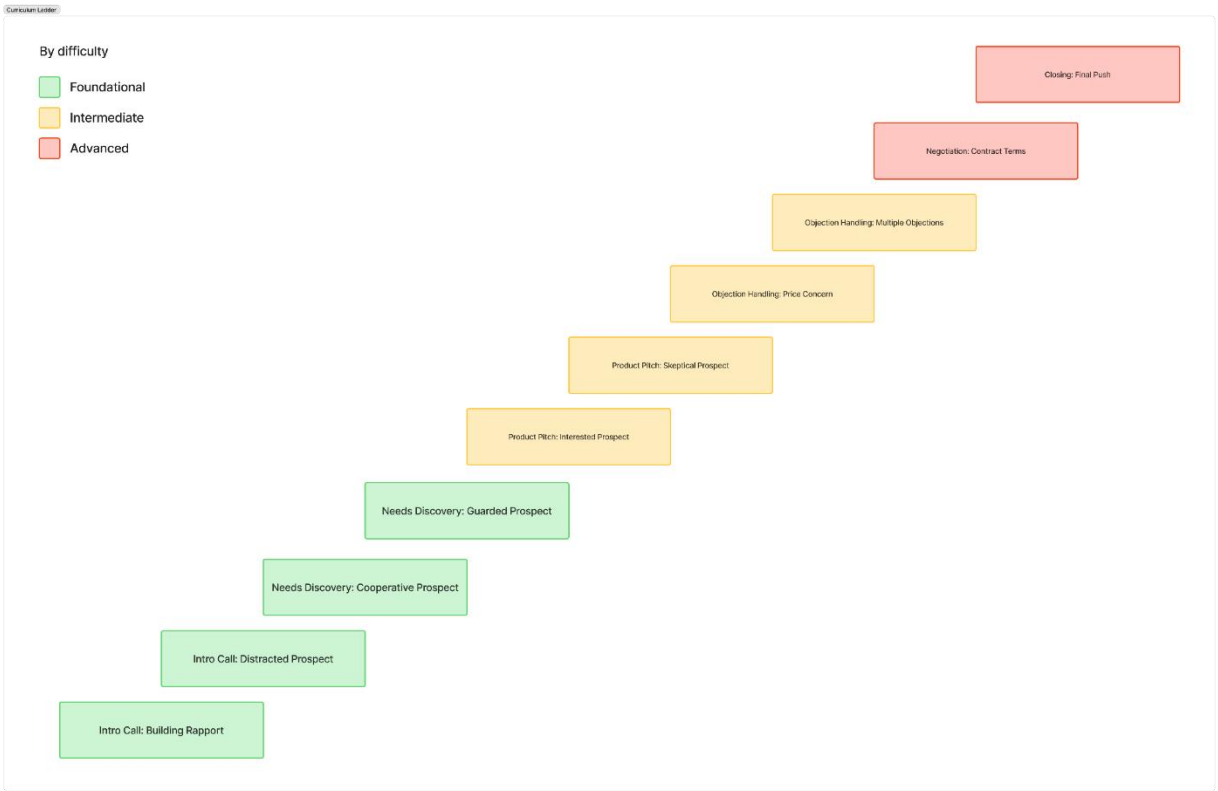

Figure 5: Scenario flow / curriculum ladder

Intro Call: Building Rapport (Level 1)

The scenario focuses on introduction and rapport building. The success criteria was as simple as greeting the prospect, using their name and asking at least one open ended question.

Scenario 2 – Intro Call: Distracted Prospect (Level 2)

The scenario challenges the learner to speak for just 30 seconds, requiring the learner to be concise while building the connection.

Scenario 3 – Needs Discovery: Cooperative Prospect (Level 3)

The scenario is more into discovery. The learner has to draw out customer needs with a co-operative prospect.

Scenario 4 – Needs Discovery: Guarded Prospect (Level 4)

The scenario is similar to 3 but here the learner is faced with a guarded prospect, resistant to sharing information. Learners learn balance, persistence and rapport building.

Scenario 5 – Product Pitch: Interested Prospect (Level 5)

Here the learner moves into pitching the value proposition. The learner is challenged to pitch a needs-based pitch.

Scenario 6 – Product Pitch: Skeptical Prospect (Level 6)

The learner practices pitching the value proposition, but is challenged to adapt the needs based pitch when facing skepticism.

Scenario 7 – Objection Handling: Price Concern (Level 7)

The learner practices to handle price concerns.

Scenario 8 – Objection Handling: Multiple Objections (Level 8)

The learner practices to handle multiple objections including price concerns and missing gaps to value.

Scenario 9 – Negotiation: Contract Terms (Level 9)

The learner is tested to reach agreement without losing value facing pushes for concessions (e.g., shorter commitment). Here the learner must explore trade-offs instead of offering discounts, while summarizing mutual benefits.

Scenario 10 – Closing: Final Push (Level 10)

Here the learner must summarize agreed points, ask directly for the sale, and gracefully address final hesitation.

Curricular Structure:

The sequencing moves from simple rapport-building (Scenarios 1–2), to discovery (Scenarios 3–4), pitching (Scenarios 5–6), objection handling (Scenarios 7–8), and finally negotiation and closing (Scenarios 9–10). Each stage builds on the previous one, ensuring mastery of core skills before advancing. The SmartSim orchestrator enforces this order, preventing learners from skipping ahead to advanced tasks without demonstrating proficiency in earlier stages

(The above use case is an example; in practice, the curriculum can be tailored to different domains like customer support, leadership training, or even personal wellness coaching. Our framework remains the same, only the scenarios and agent roles differ.)

4. Results / Findings

We piloted SmartSim for 15-days with 3 new sales hires. Each learner practiced through chat sessions with the multi-agent system- Orchestrator, Data Agent, Curriculum Manager, Conversation Agent, Telemetry, Guard). Our findings are qualitatively drawn from logs and short interviews with the participants.

↗ SmartSim Telemetry

timestamp	№ session...	# scenari...	user_id	Aa currentscenario_name	# score	# next_scenario
July 26, 2025 14:50	s-103-c5	L4	u-003	Needs Discovery – Guarded Prospect	90	L5
July 26, 2025 13:06	s-103-c4	L3	u-003	Needs Discovery – Cooperative Prospect	88	L4
July 25, 2025 17:30	s-103-c3	L4	u-002	Needs Discovery – Guarded Prospect	85	L5
July 25, 2025 17:00	s-103-c2	L3	u-002	Needs Discovery – Cooperative Prospect	79	L4
July 25, 2025 10:15	s-103-c1	L2	u-003	Intro Call – Distracted Prospect	82	L3
July 24, 2025 16:30	s-102-b3	L2	u-002	Intro Call – Distracted Prospect	84	L3
July 24, 2025 15:06	s-102-b2	L1	u-003	Intro Call – Building Rapport	80	L2
July 24, 2025 15:00	s-102-b1	L1	u-002	Intro Call – Building Rapport	75	L2
July 24, 2025 13:06	s-101-a1	L1	u-001	Intro Call – Building Rapport	78	L2

+ New page

↗ Curriculum Manager

user_id	current_level	Aa lastscenario_completed	score	# Pass/Fail	curriculumanager_deci...	next_scenario
u-001	L1	Intro Call – Building Rapport	78	1	Foundational	L2
u-002	L4	Needs Discovery – Guarded P	85	1	Foundational	L6
u-003	L5	Needs Discovery – Guarded P	90	1	Foundational	L5

+ New page

Figure 6: For illustration, we present a subset of telemetry logs covering 3 users over 3 days. The telemetry table logs session data (scenario, score, next step), while the Curriculum Manager interprets it into learner state, pass/fail outcomes, and progression decisions within the sequenced curriculum.

4.1 Formative Evaluation and User Feedback

Participants & Procedure. We conducted a formative evaluation over a 15-day formative pilot with 3 new sales hires. The SmartSim prototype was implemented as an telegram chat workflow for onboarding practice. Sessions were orchestrated by the multi-agent system. Sessions were orchestrated by the multi-agent system: the Orchestrator coordinated flow, the Curriculum Manager provided sequenced scenarios with rubric criteria, the Conversation Agent enacted role-play, and Telemetry logged progress. Data consisted of session transcripts, scenario outcomes, and short user interviews.

User Engagement. Two learners completed more than ten scenarios, while one stopped after a few sessions due to workload. The learners who continued expressed that the experience was "convenient" and “less intimidating than asking a coworker”. One participant compared it to a

game, saying each level “prepared me for the next”. The drop off highlighted a limitation: without workplace integration, busy schedules quickly pulled learners away.

Learning and Confidence. After a week, one learner reported feeling more confident in real calls. One participant shared: *“After week 2, I had my first sales call, and it went smoother — I wasn’t as nervous about objections because I’d already practiced them here.”* This suggests that sequencing reduces anxiety while building confidence.

Feedback Quality. Learners valued the immediate feedback after each scenario (e.g., “You interrupted the customer” or “You missed a follow-up question”). Logs confirmed that feedback was consistent, but some repetition appeared for high performing learners. This points to the need of broader feedback pool in future iterations.

Agent Realism. The Conversation Agent was generally seen as realistic, though occasional “helpful assistant” slips broke immersion. Users emphasized reliability as essential for trust. Technical issues, such as speech recognition errors, latency, occasionally frustrated learners, underscoring the importance of engineering refinements.

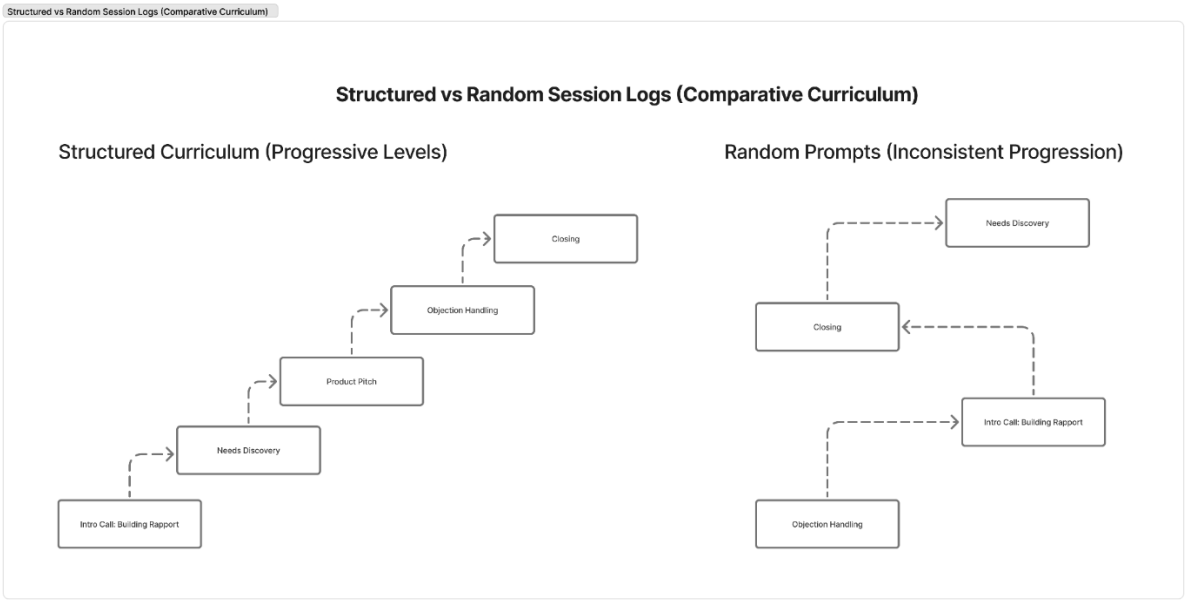

Figure 7. Example Session Logs: Structured vs. random session logs highlight how the Curriculum Manager's sequencing supports progressive mastery, whereas random prompts lead to inconsistency.

4.2 Theoretical Analysis using the Framework

Comparing pilot results with design principles built into SmartSim we found that sequencing worked as intended; learners who followed the structured path were able to combine skills by later sessions. In contrast, when one learner skipped practice, their performance appeared less consistent. This supports our idea that step-by-step sequencing builds skills more reliably than unstructured practice.

Pacing also played a key role. In one case, a learner struggled with the objection handling scenarios repeatedly. Their eventual improvement showed that enforced repetition can be useful , though one learner said it felt 'a bit strict'. This highlights that a mastery-based progression may reinforce learning, but it can also frustrate users who want to move faster.

Gamification had a mixed effect. Learners compared the progression to levels of a game which might have motivated them to continue. A lightweight leaderboard based on Telemetry data spurred competition between two users. At the same time, the third learner did not respond or feel motivated to continue, indicating that gamification should be optional.

5. Discussion

Our findings highlight both the strengths of the curriculum-centric, multi-agent approach and the areas that require careful consideration. We now interpret these results and discuss broader implications.

Interpretation of Results: The learners who continued through multiple scenarios described progression as helpful for confidence. We interpret this that step by step curriculum reduces cognitive load of practicing soft skills. At the same time, one learner dropped off early, reminding that workplace integration is as important as educational structure.

Design Implications. Several design insights emerge for building multi-agent training systems. The Curriculum Manager's packaging of learning objectives, persona prompts, and rubric criteria proved central - Learners noticed these as levels in a game. Still strict sequencing frustrated one

participant. This suggests a future exploration on how to maintain structure while offering learners some control over pace.

Implications for Theory. Although our pilot is too small to test theories formally, the results echo elements of deliberate practice. Repeated attempts with feedback seemed to improve objection handling. We also saw scaffolding in action although occasional lapses by agent broke immersion. These observations hint that curriculum-informed AI can operationalize aspects of learning theory, but they require much larger studies to confirm.

6. Conclusion

We presented SmartSim, a curriculum-centric **prototype in n8n to test sequenced role play practice**. Our small pilot with three new sales hires showed that learners

valued the structured progression and immediate feedback, reporting reduced anxiety in real calls. At the same time, technical issues and repeated feedback limited immersion, and one learner disengaged early. These findings suggest that curriculum-guided AI role-play can support professional training, but its effectiveness depends on reliable implementation and workplace fit. Future work should compare curriculum-based practice to unstructured sessions in larger samples, explore branching curricula, and refine the balance between learner autonomy and enforced sequencing. While preliminary, our study shows that even simple prototypes can clarify how curriculum and AI might work together in practice.

In this paper, we described the system design and illustrated its use in a sales coaching context. A small-scale formative evaluation indicated that users gained confidence and valued the sequenced progression, confirming that the structure provided by the Curriculum Manager was as important as the content itself. Telemetry logs and Curriculum Manager decisions showed how the Orchestrator coordinated session flow and enabled adaptive pacing. At the same time, challenges such as repetitive feedback, occasional agent slips, and sustaining engagement highlight the need for stronger guardrails, reliability improvements, and workplace integration.

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