

Supporting Reflexivity, Confidence Building, and Career Orientation Through Educational Science-Grounded AI in Transition Education for At-Risk Students

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ABSTRACT

This exploratory study examines the use of Yepa, an AI-based conversational system that transforms student narratives into structured learning experience (LX) maps to support vocational guidance and competence recognition. The study investigates how students in transition perceive AI-mediated reflection, how it supports confidence and competence recognition, and how institutional and pedagogical conditions shape its educational value. These findings suggest that the potential of AI-mediated reflective tools in education depends less on technological sophistication than on institutional support, meaningful pedagogical integration, and socially mediated use.

Keywords: Artificial intelligence (AI) in education, Reflective learning, Learning analytics, Technology-enhanced learning, AI in education, Educational innovation, Career guidance

INTRODUCTION

The transition from compulsory education to vocational training represents a critical and often fragile phase, particularly for students who have not secured an apprenticeship. In Switzerland, vocational education and training constitute the primary pathway for nearly two thirds of young people, while approximately one third pursue general education pathways (OFS, 2026). Students without apprenticeship placement frequently encounter difficulties identifying suitable career trajectories, articulating their competencies, and making sense of prior experiences such as internships or school projects. Although digital career guidance tools are increasingly available, many remain focused on information delivery or automated matching processes, offering limited support for reflective learning, competence recognition, and identity construction.

This design-based case study forms part of a broader school innovation project supporting students who have completed compulsory education but not yet entered vocational training, through workshops focused on competence development, vocational planning, and job-search support.

The study examines the integration of Yepa, an AI-based conversational system designed to transform dialogue into structured Learning Experience (LX) maps grounded in pedagogical ontologies (Yllyl, 2026). Through guided conversations, Yepa externalises students' lived experiences into visual and structured representations that can support competence recognition, vocational exploration, and the identification of learning and employment opportunities. The system also provides matching and application-support functions aimed at helping students valorise their experiences in relation to vocational profiles and job applications.

This study explores how students interact with AI-mediated reflective tools and how these interactions contribute to their sense-making processes. More specifically, the research investigates: (RQ1) how students perceive their interaction with a conversational agent generating representations of their experiences through guided dialogue; (RQ2) how AI-mediated reflection contributes to competence recognition and confidence building; and (RQ3) how pedagogical and contextual conditions shape the perceived educational value of such tools.

BACKGROUND

This study is grounded in three complementary perspectives: career construction theory, reflective learning, and sociotechnical approaches to educational mediation. Together, they frame vocational development as a situated, reflective, and mediated process rather than a simple matching problem between individuals and occupations.

First, drawing on career construction theory (Savickas, 2005), vocational development is conceptualised as a narrative and meaning-making process. Students construct vocational identity through the reinterpretation of lived experiences, particularly internships and informal learning episodes. Social Cognitive Career Theory (Lent et al., 1994) and related identity frameworks converge in viewing vocational pathways as dynamic processes of agency under uncertainty, where external barriers and internal resources jointly shape trajectories. Constructivist and narrative approaches complement these perspectives by emphasising agency, future orientation, and meaning-making through narrative processes (Savickas, 2005; 2019). Despite numerous school-based interventions (portfolios, mentoring, counselling), existing approaches remain fragmented and insufficiently theorised in how experience becomes narrative, and how narrative becomes actionable competence, as in Yepa.

Reflective practice is central to narrative development, as it enables learners to critically re-examine experience through reflection-on-action (Schön, 1983), thereby supporting competency development and metacognitive awareness. Supporting reflexivity therefore requires enabling individuals to revisit experience as a form of inquiry into their own and others' practices (Poizat & Durand, 2017). From a competence-based perspective, reflexivity involves verbalising and distancing oneself from action in order to transform situated experience into conceptual and transferable knowledge. Reflection is cognitively demanding, especially in adolescence due to still-developing executive functions and heightened sensitivity to peer evaluation

(Crone, 2016). Students with difficulties in attention, planning, or self-observation require targeted support for executive functions, such as explicit strategies, structured templates, reflection sheets, individualised interventions, portfolios, and self-assessment tools (Dawson & Guare, 2018). In this context, the teacher plays a key mediating role in facilitating reflection via structured writing, guided debriefing, and narrative scaffolding.

Narrative and developmental approaches such as MSCI (McMahon et al., 2005) and Life Design through visual metaphors and modeling (Savickas et al., 2009) illustrate structured ways of supporting this process. Existing studies on the use of generative AI in education mainly focus redundant mainly on perceived usefulness and frequency of use. AI systems specifically designed to support self-regulated learning, such as MetaTutor (Bouchet et al., 2013), are more extensively documented. Molenaar (2022) addresses the benefit of visualisation in reflexivity.

Building on these perspectives, Yepa is conceptualised as a reflective socio-technical mediating artefact that helps students transform their experiences into structured representations to make competencies visible, connect them to vocational pathways, and support transition actions (e.g., applications). Yepa works through four steps: eliciting experience, identifying competencies, linking them to careers, and supporting action.

METHODOLOGY

The study adopts a design-based, practice-oriented approach in authentic educational settings. To enable iterative adjustments, Yepa was introduced sequentially in four small student groups, through one to five structured guidance sessions integrated into the school timetable. Sessions were not solely based on Yepa's usage; the latter was embedded in tutor-organised activities, including CV writing, application preparation, apprenticeship searches, and reflection on prior learning and training experiences.

Participants and Implementation

The study explores the integration of Yepa across four small student groups (N = 24), over five structured afternoon guidance sessions per group. The pilot follows a design-in-practice approach, conducted in authentic classroom-based guidance sessions embedded in the regular school timetable. The tutors played an active role in the co-construction of the intervention within authentic educational settings, maintaining control over the pace, frequency of use, and timing.

Data Collection

Data were collected through multiple sources to capture both students' and tutors' perspectives as well as the artefacts produced during the activity. Student data were gathered through an in-class questionnaire including five adjectives describing the interaction with the chatbot, five adjectives describing students' feelings during the activity, and Likert-scale items

(1–4, from “Strongly disagree” to “Strongly agree”) assessing interest in the approach, perceived value for self, and perceived value for peers. These data were complemented by classroom observations, digital artefacts consisting of Yepa conversation logs and generated LX maps, and structured discussions with tutors.

RESULTS

Results are presented in a descriptive manner and organised according to the three research questions. Given the exploratory and context-specific nature of the study, the analysis does not aim to demonstrate a causal effect of Yepa, but rather to describe how students and tutors experienced, interpreted, and situated the tool within support activities. The data were triangulated, combining student questionnaires, in-class observations, tutor interview statements, project meeting notes, and produced artefacts (LX maps).

RQ1: How do students perceive their interaction with a conversational agent generating representations of their experiences from guided dialogues?

Questionnaire responses suggest that students perceived their interaction with Yepa in a non-homogeneous way. Two interrelated themes emerged from the analysis: (1) perceived usefulness and engagement, and (2) cognitive and reflective difficulty.

Theme 1 Perceived usefulness and engagement: Several students described the interaction with Yepa using positive terms such as “interesting”, “useful”, “practical”, “efficient”, “simple”, or “productive”. These responses suggest that some students experienced the dialogue with the conversational agent as supportive and meaningful. Interest was expressed not only toward the interaction itself, but also toward the generated LX maps and vocational recommendations produced through the activity, which was also reported in tutor interviews. In this perspective, Yepa appeared to function as a tool that helped some students engage with reflection on their experiences and future orientations. According to tutor interviews, the pedagogical framing of the activity helped students maintain attention and understand the dialogue purpose.

Theme 2 Cognitive and reflective difficulty: Alongside these positive perceptions, other student responses reflected a more ambivalent or difficult experience of the interaction. Some students described the activity as “long”, “redundant”, or “boring”, while one student explicitly reported difficulty understanding Yepa’s questions and explaining their answers. These responses suggest that the interaction demanded forms of reflection and verbalisation that were not equally accessible to all participants. Tutor accounts provide additional insight into these difficulties. Tutors described the participating students as learners for whom verbalising lived experiences, identifying competencies, and projecting themselves into a vocational future were already significant challenges. From this perspective, the difficulties reported by some students may not only reflect the interaction with Yepa itself, but also the broader cognitive and reflective demands associated with the task.

Comparison between student and tutor data highlights the importance of pedagogical support in shaping the experience of Yepa. Overall, student experiences appear to emerge from the interaction between Yepa's prompts, the reflective nature of the task, and tutor mediation (RQ3).

RQ2: How does AI-mediated reflection contribute to competence recognition and confidence building?

Student questionnaire responses suggest that AI-mediated reflection through Yepa was perceived as supporting both competence recognition and confidence building, although in heterogeneous and situated ways. Three interrelated themes emerged from the analysis: (1) verbalisation and reflective engagement with experience, (2) recognition of competencies and personal resources, and (3) situated experiences of confidence and self-perception.

Theme 1 Verbalisation and reflective engagement with experience: Student responses indicate that the Yepa-supported activity encouraged many participants to revisit and verbalise their experiences. Out of the 12 students who completed the questionnaire, 10 agreed or strongly agreed that it was interesting to think back on their experiences, while 9 agreed or strongly agreed that the activity helped them talk about these experiences. These responses suggest that the guided dialogue and reflective prompts provided by Yepa supported students in articulating experiences that may otherwise have remained implicit or difficult to express. Tutor interviews and project notes help contextualise this finding. Tutors described the participating students as learners for whom describing lived experiences and projecting themselves into a vocational future already represented significant challenges. From this perspective, the reflective activity supported by Yepa may have created a structured context that encouraged some students to engage in forms of self-description and reflection that are not always easily accessible within traditional pedagogical settings.

Theme 2 Recognition of competencies and personal resources: Questionnaire results also indicate a predominantly positive perception regarding competence recognition. Ten out of twelve students agreed or strongly agreed that the activity helped them become aware of their resources and competencies. These responses suggest that the generated dialog-based LX maps may have contributed to making students' abilities, experiences, or resources more visible to them. According to tutor accounts, Yepa's dialogue-based LX maps were seen as mediating artefacts that helped structure discussions around personal strengths and vocational possibilities. At the same time, the data also indicate that this perception was not shared uniformly across participants. Some students did not report the same degree of awareness or engagement, suggesting that competence recognition should be understood as a situated and variable process rather than a direct tool effect.

Theme 3 Situated experiences of confidence and self-perception: Responses related to confidence building were generally positive, although less homogeneous than those concerning competence recognition. Nine out of twelve students agreed or strongly agreed that the activity gave them confidence in themselves. In the open-ended responses, several students described feeling "calm", "comfortable", "interested", "confident",

“relaxed”, “capable”, “curious”, or “happy” during the interaction with Yepa. These descriptions suggest that, for some students, the reflective activity was associated with positive emotional experiences and a greater sense of self-efficacy. However, other responses introduced a more ambivalent dimension. Some students reported feeling “not very motivated”, “tired”, “bored”, “slow”, “distracted”, or “timid”. These contrasting perceptions indicate that confidence building cannot be understood as a uniform outcome of the activity. Rather, confidence appeared to emerge differently depending on how students engaged with the reflective process, interpreted the interaction, and experienced the demands of the task. Tutor interviews reinforce this interpretation by highlighting the importance of pedagogical mediation throughout the activity. Tutors described the need to support students in understanding the purpose of the exercise, clarifying questions, and helping them engage with the LX maps generated by Yepa. Taken together, the data do not allow us to conclude that Yepa’s mediated reflection directly produces competence recognition or confidence building. They do, however, suggest that Yepa may contribute to these processes when students are able to describe their experiences, recognise competencies within them, and engage with these representations within a broader pedagogical and guidance context. In this sense, competence recognition and confidence building appear less as automatic outcomes of the technology itself than as situated effects emerging from the interaction between AI-generated learning experience representations, reflective activity, and tutor support.

RQ3: How do pedagogical and contextual conditions shape the perceived educational value of AI-mediated reflective tools?

The qualitative data suggest that the perceived educational value of Yepa was shaped less by the tool alone than by the pedagogical and institutional contexts in which it was implemented. The analysis identifies three main themes: 1) pedagogical adaptability over rigid scenarios, 2) tutor mediation and orchestration of reflective activity, and 3) institutional and contextual framing.

Theme 1 Pedagogical adaptability over rigid scenarios: Tutor interviews, planning notes, and project documentation suggest that Yepa functioned as a flexible, context-sensitive resource rather than a uniform pedagogical protocol. Initially, the project envisioned multiple forms of implementation, including individual student interaction, and collective classroom discussion around shared maps. In practice, however, classroom implementation focused primarily on students describing personal experiences and engaging with the LX maps in relation to vocational guidance. The data further indicate that tutors integrated Yepa in line with their existing pedagogical orientations and practices. Some tutors approached guidance through structured and pragmatic routines centred on employability and transition management, including CV preparation, motivation letters, apprenticeship applications, and realistic career planning. Within these contexts, Yepa tended to be valued when its outputs could support practical tasks such as identifying competencies relevant to application documents or helping students present themselves more effectively. Other tutor accounts emphasised guidance

practices centred on autonomisation, emotional support, verbalisation, and reflective projection into the future. In these cases, Yepa was used as a reflective tool to help students revisit experiences, identify personal resources, and make sense of them before turning them into vocational action. Overall, Yepa's educational value depended on how it aligned with and supported tutors' existing practices. These findings suggest that design should prioritise flexibility and pedagogical adaptability, supporting multiple modes of use and enabling teachers to appropriate the tool within their existing practices, rather than prescribing rigid implementation scenarios.

Theme 2 Tutor mediation and orchestration of reflective activity: The project documentation and tutor interviews highlight the importance of pedagogical mediation in shaping students' experiences with Yepa. Throughout the implementation, several questions emerged, including whether students should interact with Yepa autonomously or with tutor support, whether activities should be limited to the classroom or extended between sessions and, how peer discussion should be organised. Tutors also reported the need to support students without excessively influencing their responses. Project notes mention concerns regarding the complexity of certain prompts, and the importance of tutors becoming sufficiently familiar with the tool before integrating it into their pedagogical routines. The choice of experiences students were invited to describe, the timing of the activity, the instructions provided, the degree of tutor guidance, and the exploitation of AI-generated maps in subsequent discussions all impacted the activity's perceived usefulness. Yepa was not valued as a standalone educational tool, but rather as a mediational resource whose effectiveness depended on tutor support and contextual adaptation. Its educational value thus lay not only in the AI-generated outputs, but also in the pedagogical design and orchestration.

Theme 3 Institutional and contextual framing shaping implementation: Taken together, the qualitative data do not allow the identification of a single factor explaining variations across classroom experiences. They do, however, point to several conditions that appear to shape how Yepa was perceived and valued: the tutor's pedagogical framing of the activity, institutional pressure toward rapid placement outcomes, the time available for experimentation, tutors' familiarity with students, technical preparation, and opportunities for repeated use. More specifically, the data suggest that broader institutional and contextual conditions influenced how tutors prioritised and integrated reflective activities involving Yepa. In several accounts, as tutors took on the mission to secure internships or apprenticeships, classroom time was directed towards immediate, practical tasks such as job searching and application support. In one case, one tutor consciously prioritised securing student placements, driven by perceived pressure to achieve concrete outcomes, and later regretted not making greater use of Yepa's analytical and reflective features. In response, the institution clarified expected project outcomes in a plenary, which facilitated experimentation in the second project phase with subsequent groups. These findings suggest that effective use of AI tools requires clear institutional expectations, alongside iterative experimentation enabling and repeated exposure to foster familiarity and appropriation.

CONCLUSION

This study shows that the educational value of Yepa did not stem from the AI tool itself, but from the pedagogical, relational, and institutional conditions in which it was used. Yepa appeared most effective when embedded in structured reflective activities supported by tutor mediation, repeated engagement, and opportunities for dialogue. Rather than functioning as an automated guidance solution, the tool acted as a mediational artefact that helped students externalise experiences, recognise competencies, and explore future pathways. These findings suggest that the potential of AI-mediated reflective tools in education depends less on technological sophistication than on meaningful pedagogical integration and socially mediated use.

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