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FutureLab+: A Digital Pathway for School-Based Career Guidance: An Exploratory Pilot Study

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Abstract: School-based career guidance can benefit from structured pathways that allow students to explore possible futures through different forms of experience and information rather than relying exclusively on self-reported interests. Against this background, the present exploratory pilot examined the feasibility of implementing FutureLab+ as a digital career-guidance pathway integrating four experiential missions, a vocational-interest assessment, interaction information, and individualized feedback within a single school-based process. The pathway was implemented at IIS Confalonieri in Campagna, Italy, with 21 students who completed the full sequence in approximately one hour. An internal technical testing phase involving 17 FMTS Group employees preceded the school implementation and was used to identify and resolve technical, navigational, and operational issues. All students completed the pathway without reported relevant technical or operational difficulties, providing initial evidence of its feasibility under authentic school conditions. The platform generated five profile configurations, which were considered descriptive outputs of this specific implementation rather than validated psychological classifications. Overall, the findings indicate that FutureLab+ can be implemented as a structured and reproducible school-based guidance pathway in which experiential exploration, vocational-interest information, and individualized feedback are brought together within a coherent sequence. Further research is required to examine its educational contribution and the empirical properties of the information generated across different school contexts.

Keywords: career guidance; digital assessment; vocational interests; experiential learning; career exploration

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1. Introduction

School-based career guidance represents an important dimension of adolescents' educational development because decisions concerning further education and future work emerge during a developmental period in which individuals are progressively developing the capacities and resources needed to navigate educational and occupational possibilities (Robertson & Picard, 2021).

Building on this perspective, guidance cannot be reduced to the transmission of information or to the identification of an educational or occupational option; rather, it should support students in developing self-knowledge, exploring educational and occupational opportunities, and strengthening their capacity to make informed career decisions (Martínez Serrano et al., 2022).

Within this broader understanding of guidance, Italian research has explored approaches that complement traditional practices through the use of multimedia pathways, audiovisual resources, teacher involvement, and interactive forms of exploration, highlighting the potential of these approaches to support adolescents' reflection on educational and professional experiences and to strengthen career development within the broader educational process (Di Gennaro et al., 2021; Parola et al., 2024). This view is consistent with developmental approaches to career construction, in which career development is understood as an ongoing process of meaning making through which individuals interpret their experiences, navigate transitions, and reconsider future possibilities as circumstances change, a perspective that is particularly relevant during adolescence, when students are still developing their understanding of themselves and of the educational and occupational contexts they may encounter (Savickas, 2005; Savickas et al., 2009; Parola et al., 2024).

From this standpoint, career guidance is not primarily concerned with identifying a predetermined destination, but with creating conditions in which students can examine alternatives, make sense of their experiences, and develop increasingly informed views of the futures they may pursue. The role of experience is particularly relevant within this process because students' understanding of their own preferences and capabilities can develop through engagement with situations that provide opportunities for action, observation, and reflection. Experiential learning emphasizes the relationship between concrete experience, reflection, and conceptualization (Dewey, 1938; Kolb, 1984), providing a theoretical basis for educational activities in which students are not merely recipients of career information but participants in structured exploratory experiences.

Within career guidance, such experiences can provide opportunities for students to encounter different types of tasks and situational demands, reflect on their responses, and use these experiences as part of an ongoing process of self-exploration. In this sense, experiential learning can contribute to career development by encouraging both self-exploration and exploration of the educational and occupational environment, particularly when students reflect on their experiences and consider their relevance for future career possibilities (Kleine et al., 2021). Alongside the information gained through such experiences, vocational interests represent an established component of career development and counseling and can provide insight into individuals' preferences and orientations toward different career possibilities (Brown & Lent, 2005). Within this broader framework, Holland's (1997) theory has been particularly influential in conceptualizing vocational interests through the relationship

between patterns of individual preferences and characteristics of occupational environments.

Building on these complementary sources of information, digital technologies can create more integrated career guidance pathways in which students are able to explore educational and occupational possibilities through simulated and interactive experiences. Virtual reality, for example, can allow teenagers to engage with simulated occupational tasks and gain a more direct understanding of professional activities and work environments, offering an additional form of experiential exploration within career guidance (Holly et al., 2024). These developments are particularly relevant to school-based guidance given the increasing complexity of educational and occupational transitions and the differences in access to career-development opportunities across students and contexts (OECD, 2024).

However, integrating different forms of information within digital guidance environments requires careful consideration of how these data are generated and interpreted, as indicators derived from interest measures, simulated activities, and digital interactions may capture different aspects of students' engagement. This is particularly important when data-driven or AI-supported systems generate individualized profiles or recommendations, as the apparent precision of automated outputs does not necessarily guarantee their validity or interpretability and therefore requires appropriate human judgment in their use (Manganello et al., 2025).

Against this background, FutureLab+ is conceived as a digital ecosystem for school-based career guidance that integrates exploratory missions and vocational-interest assessment within a single structured pathway, leading to an individualized report. The report brings together information generated throughout the experience and presents it as a resource for career reflection rather than as a prescriptive or predictive tool; the resulting configurations are intended to support students' exploration of educational and occupational possibilities in relation to their experiences, aspirations, and representations of the future, and to be interpreted through dialogue with educational professionals. At this stage, the study does not aim to establish the psychometric properties or predictive utility of the indicators generated by the ecosystem, but rather to provide initial empirical evidence on its feasibility under authentic school conditions and on the nature of the resulting outputs. Accordingly, three research questions guide the study: (1) Can the complete FutureLab+ pathway be implemented in an authentic school context within a timeframe compatible with routine career-guidance activities and without substantial technical or operational difficulties? (2) What profile configurations are generated through the first school-based implementation of the ecosystem? (3) How can the resulting reports be incorporated into a student-centered guidance process while avoiding interpretations that exceed the current empirical evidence? By addressing these questions, the study provides an initial examination of the feasibility of integrating experiential exploration, vocational-interest information, and individualized feedback within a single school-based guidance pathway, while establishing a basis for subsequent research on the stability, validity, and educational contribution of the ecosystem across larger samples and different school contexts.

2. Materials and Methods

An exploratory pilot design was adopted to examine the feasibility and reproducibility of the complete FutureLab+ digital career-guidance pathway in an authentic

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school setting, with the complete pathway—from students' initial engagement with the experiential missions to the generation of the individualized orientation report—serving as the unit of implementation. The study comprised an internal technical testing phase followed by a school-based pilot. The internal phase involved 17 FMTS Group employees who interacted with the platform as simulated adolescent users, with nine participants completing the procedure on June 26, 2026, and eight on July 3, 2026. This phase was conducted to identify and resolve technical, navigation, and operational issues before school deployment and was therefore considered development-oriented testing rather than research evidence. The school-based pilot was conducted at IIS Confalonieri in Campagna, Italy, on July 7, 2026, and involved 21 students in their final year of upper-secondary education. All students completed the full pathway in a single session lasting approximately 1 h under ordinary school conditions. The study was designed as a feasibility pilot rather than a psychometric validation study; therefore, the analysis focused on implementation and platform-generated outputs and did not aim to establish reliability, validity, predictive utility, measurement invariance, or other psychometric properties of the resulting indicators or profiles.

FutureLab+ is a digital career-guidance platform that combines four gamified experiential modules (M1–M4), a vocational-interest questionnaire (M5), and interaction data collected during the activities. M1 (Critical Mission) presents a simulated crisis scenario requiring students to analyze incomplete information, allocate limited resources, and respond to an unexpected event. M2 (Build Something) involves designing a simulated product, service, or digital solution by selecting functions, priorities, and an operational structure. M3 (Team Simulation) places students in a virtual team where they select a role and respond to dynamic interpersonal and organizational situations. M4 (Motivational Engine) involves allocating points across six values and responding to binary dilemmas that place different values in tension. Across M1–M4, the platform records both students' choices and selected interaction characteristics, including decision latency, information-reading order, revisions of previous choices, and responses to unexpected events. These data are treated in the technical documentation as a second-order behavioral layer, distinct from the final choice itself. M5 consists of 30 Likert-type items assessing the six RIASEC domains—Realistic, Investigative, Artistic, Social, Enterprising, and Conventional—with five items per domain scored from 1 ("not at all") to 5 ("very much"). Each domain score ranges from 5 to 25 and is normalized to a 0–100 scale (ITACA S.r.l., 2026). The six RIASEC scores represent explicit self-reported vocational interests and are distinct from the platform's final profile dimensions.

The profiling process integrates three sources of information: behavioral choices in M1–M4, RIASEC self-report data from M5, and interaction metadata recorded during the experiential activities. Students' responses to the final open-ended question about their future aspirations are used separately in the cross-consistency analysis. The experiential and questionnaire data are normalized and combined to generate scores across eight platform-specific dimensions: Cognitive, Creative, Relational, Managerial, Motivational, STEM, Operational, and Leadership.

The contribution of RIASEC information varies by dimension and ranges from 10% to 30%, with the remaining contribution derived from the experiential activities (ITACA S.r.l., 2026). Thus, the eight dimensions should not be interpreted as RIASEC scales: they represent integrated platform-specific outputs combining experi-

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ential and self-reported information. The platform subsequently calculates a confidence score based on 70% aggregated behavioral information and 30% normalized RIASEC information, with adjustments for data completeness, stability of choices, and internal consistency in M4. A separate cross-consistency procedure compares behavioral information, stated vocational interests, and future aspirations and produces an Orientation Maturity Index. This index qualifies the interpretation of the profile but does not determine the attitudinal cluster.

The final profile is generated from the eight platform-specific dimensions rather than directly from the six RIASEC scores. Threshold-based rules are applied to identify a primary and a secondary cluster, with the dominant dimension determining the primary cluster and the complementary dimension determining the secondary cluster.

The resulting combinations are translated into narrative profile labels in the individualized orientation report. These labels are therefore platform-generated classifications based on the integrated scoring and clustering procedure and are not direct RIASEC categories or independently validated psychological classifications. The technical procedures described above are based on the methodology provided by ITACA S.r.l. (2026) and are reported to make the functioning of the pathway sufficiently transparent for replication; they are not presented as an empirically validated measurement model.

During the school pilot, the platform automatically processed the information generated during the pathway and produced one individualized report for each of the 21 students. The analysis was descriptive and considered the RIASEC scores, the eight platform-specific dimensions, confidence and cross-consistency outputs, final profile configurations, selected interaction indicators, and students' stated future aspirations. The two participating teachers reviewed the 21 reports in relation to their existing knowledge of the students. Their review was exploratory and concerned the practical interpretability and potential educational use of the reports; it was not based on a standardized rating instrument, an independent criterion measure, or a formal inter-rater reliability procedure. Similarly, the comparison between students' aspirations and platform-generated profiles was used descriptively to identify patterns of consistency or discrepancy and was not treated as a test of criterion validity.

The study did not require ethics committee review because it involved no medical or strictly sensitive health data, no procedures posing physical or psychological risks, and exclusively adult students. All participants were 18 years of age or older and provided informed consent through a dedicated form before participation; parental or guardian consent was therefore not required. Participation and use of the individualized report were voluntary. Data were processed in accordance with the General Data Protection Regulation (GDPR) using pseudonymization, with identifying information stored separately from profile data and access to the correspondence key restricted to authorized personnel. Data were stored on secure cloud infrastructures with role-based access and retained only for the period necessary for project and orientation purposes. The report was presented as a tool for orientation and self-reflection rather than as a prescriptive recommendation, using exploratory language and emphasizing the need for professional guidance when interpreting the results. FutureLab+ was developed within the activities of CeSFoL, while FMTS Group collaborates with CeSFoL in activities aimed at disseminating and valorizing

the platform. The authors are involved in activities promoting awareness of FutureLab+ within the scientific community.

3. Results

This section presents the main results obtained from the first school-based implementation of the FutureLab+ pathway. The results concern the profile configurations generated, the RIASEC scores, students' stated aspirations, and the completion of the pathway.

3.1. Profile Configurations Generated

Five profile configurations were generated among the 21 participating students. The distribution of the configurations was as follows:

- Relational–Empathic: 10 students (47.6%);
- Creative–Expressive: 5 students (23.8%);
- Analyst–Investigator: 3 students (14.3%);
- Leader–Entrepreneur: 2 students (9.5%);
- Structured–Organizer: 1 student (4.8%).

The Relational–Empathic configuration was the most frequently generated profile, accounting for 47.6% of the sample, followed by Creative–Expressive (23.8%) and Analyst–Investigator (14.3%). The two remaining configurations, Leader–Entrepreneur and Structured–Organizer, accounted for 9.5% and 4.8%, respectively.

3.1.1. RIASEC Scores

The six RIASEC domains were recorded for all 21 students and the mean scores, calculated, across the participating students, showed the following order:

- Realistic (R): 66.24;
- Investigative (I): 74.14;
- Artistic (A): 74.86;
- Social (S): 81.67;
- Enterprising (E): 76.19;
- Conventional (C): 71.43.

The distribution of the mean scores indicates a relatively stronger orientation toward the Social domain (81.67), followed by Enterprising (76.19) and Artistic (74.86), while Investigative (74.14) and Conventional (71.43) showed intermediate values and Realistic (66.24) the lowest mean score. Overall, the pattern indicates that Social, Enterprising, and Artistic interests were more strongly represented in this cohort, whereas Realistic interests were comparatively less pronounced. These results should be interpreted as descriptive characteristics of the participating group rather than as evidence of stable vocational dispositions or predictors of future educational or occupational choices.

3.2. Summary of Profile and RIASEC Results

The distribution of the five profile configurations is reported in **Table 1** and the man scores for the six RIASEC domains are reported in **Table 2**.

Table 1 Distribution of profile configurations generated in the school pilot.

Profile configuration	Frequency (n)	Percentage (%)
Relational–Empathic	10	47.6%
Creative–Expressive	5	23.8%
Analyst–Investigator	3	14.3 %
Leader–Entrepreneur	2	9.5%
Structured–Organizer	1	4.8% [1]

[1] Percentages are calculated on the total sample of 21 participating students.

Table 2 Mean RIASEC Scores of the Participating Students

RIASEC domain	Mean score
R – Realistic	66.24
I – Investigative	77.14
A – Artistic	74.86
S – Social	81.67
E – Enterprising	76.19
C – Conventional	71.43

4. Discussion

The present pilot examined the feasibility of implementing FutureLab+ as a structured digital career-guidance pathway within an authentic school setting. All 21 students completed the full sequence in approximately one hour, including the experiential missions, the RIASEC questionnaire, automated data processing, and generation of the individualized report, without reported technical or operational

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difficulties. These findings provide preliminary evidence that the pathway can be integrated into ordinary school-based guidance activities within a timeframe compatible with routine practice. The relevance of this result concerns the implementation of the pathway as a whole rather than the psychometric interpretation of the outputs generated at its conclusion.

FutureLab+ brings together different sources of information within a single sequence of exploration. The experiential missions engage students with contextualized situations that require choices, prioritization, adaptation, and responses to changing conditions, while the RIASEC component provides information concerning explicitly stated vocational interests. These elements are subsequently integrated within the profiling process and returned to the student through an individualized report. Such an architecture is consistent with career-development approaches that emphasize exploration, the interpretation of experience, and the progressive construction of possible future trajectories rather than the identification of a predetermined educational or occupational destination (Savickas, 2005; Savickas et al., 2009).

The profile configurations and RIASEC results observed in the pilot should be understood as descriptive outputs generated for this specific cohort. Their distribution illustrates the capacity of the platform to produce differentiated orientation profiles, but does not provide a basis for generalizing these configurations to other student populations or for attributing established psychological meaning to them. In this respect, the pilot addresses the first school-based observation of the profiling process while leaving questions concerning reliability, validity, and predictive value open for future investigation.

The individualized reports represent the main point of connection between the information generated by the pathway and the subsequent guidance process. By bringing together experiential responses, vocational interests, and students' stated aspirations, the reports can provide a basis for examining convergences and discrepancies between different sources of information and for supporting students in reflecting on possible educational and career directions. Their role should therefore be understood as a support for dialogue and reflection rather than as a definitive classification of students or a prediction of their future occupations. This interpretation is consistent with approaches that view career development as an evolving process of exploration and decision-making (Wang et al., 2024).

From an inclusive and pedagogical perspective, further attention should be given to the technical and cognitive accessibility of the missions and to possible adaptations for students with disabilities or different educational needs. Differences in students' digital skills may also influence their interaction with the pathway, while inclusive design should consider learner diversity from the outset. Recent research on immersive technologies for inclusive education highlights the importance of accessibility and of integrating established pedagogical frameworks to better respond to the needs of diverse learners (Poggianti et al., 2025). Within this perspective, the generated profile should remain open to discussion and reinterpretation by the student, while the guidance professional should play a central role in contextualizing the results and preventing rigid or deterministic interpretations.

The interpretation of these findings is necessarily constrained by the design of the pilot. The study involved 21 students from a single school, while the preceding internal testing phase involved FMTS Group employees and served technical and developmental purposes rather than providing research evidence. The teacher review

was also exploratory and was not based on a standardized evaluation instrument or an independent criterion measure. Accordingly, the present study does not allow conclusions concerning the reliability, validity, predictive utility, or educational effectiveness of the generated profiles. Further research involving larger and more diverse samples, multiple school contexts, and standardized measures will be necessary to examine the stability and educational contribution of the information generated by FutureLab+ over time.

5. Conclusions

This pilot study provides an initial basis for considering FutureLab+ as a feasible and potentially valuable framework for school-based career guidance. The pathway was completed by all participating students within a timeframe compatible with regular school activities, while the resulting profiles and individualized reports offered a structured way to bring together experiential exploration, vocational interests, and students' aspirations. At this stage, the main contribution of the ecosystem lies in supporting reflection and exploration around possible educational and career directions, consistent with the role of future-oriented thinking in fostering career exploration (Liu et al., 2025). The findings are necessarily preliminary, given the small sample and single-school setting, and further research is needed to examine the validity and educational value of the profiling outputs and their potential contribution to students' career exploration and decision-making in future studies.

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