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Technological Platform for Implementing Students' Individual Educational Tracks

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A B S T R A C T

This study explores the integration of technological platforms in supporting students' educational tracks, emphasizing the need for psychological monitoring to ensure adaptive and meaningful learning pathways. Drawing from the psychology of personal development, the research proposes a structural-semantic model for guiding and monitoring individualized educational progress. Methods include theoretical analysis, diagnostic tools, and formative experiments. The findings highlight the role of educational technologies such as learning management systems, MOOCs, and new educational infrastructures in enabling self-directed learning and professional development. The paper outlines psychological functions (adaptive, meaning-making, and developing) as central to designing and implementing effective individual trajectories. The study is valuable for educators, technologists, and counselors seeking to personalize education in a digitally driven academic environment.

A R T I C L E   I N F O

1. INTRODUCTION

In a rapidly evolving post-industrial society, one of the most pressing challenges in education is the development and implementation of individual educational trajectories for students (Glushchenko, 2023; Glushchenko, 2025). The urgency of this task is amplified by the accelerating pace of socio-economic transformation, professional mobility, and technological advancements (Borisenkov, 2015). The educational landscape is shifting toward a more learner-centered model where personalization and flexibility are vital. Specifically, after covid-19 condition, there is a change in the educational system, as reported elsewhere (Sangsawang, 2020; Al Husaeni & Nandiyanto, 2022; Nasution & Nandiyanto, 2021; Huwaidi et al., 2021; Ammatulloh et al., 2022; Sukmawati & Maryanti, 2022). In response, the global educational community is actively exploring innovative solutions, including the creation of comprehensive technological platforms that support these evolving needs.

Such platforms are built upon the integration of several key components, including learning management systems, new educational infrastructures, massive open online courses (MOOCs), and education support ecosystems (see **Figure 1**). These interconnected systems collectively facilitate lifelong learning by providing learners with structured, accessible, and personalized educational experiences. The emergence of terms like *High Ed*, *EdTech*, *High Tech*, and *High Hume* reflects the ongoing convergence of technology and pedagogy in redefining the goals and delivery of education (Konanchuk, 2013). However, the successful implementation of individual educational tracks requires more than just digital infrastructure. It necessitates a psychologically informed framework that accounts for learners' cognitive and emotional development. The functions of a technological learning platform extend beyond content delivery; they include adapting trajectories to learners' needs and evaluating educational outcomes within a coherent and universally understood system (see http://europa.eu/rapid/press-release_SPEECH-05-796_en.htm). In this regard, psychological monitoring becomes a crucial tool for supporting and guiding students through their personalized academic paths (Bonfá-Araujo & Farias, 2008; Kochan & Kunkel, 1998).

The present study aims to investigate how a technological educational platform can support the psychological and educational design of individual learning pathways, and how such systems can foster the personal and professional development of students. By integrating psychological principles with educational technologies, this research outlines a structural-semantic model for developing competencies and designing flexible, future-oriented educational trajectories.
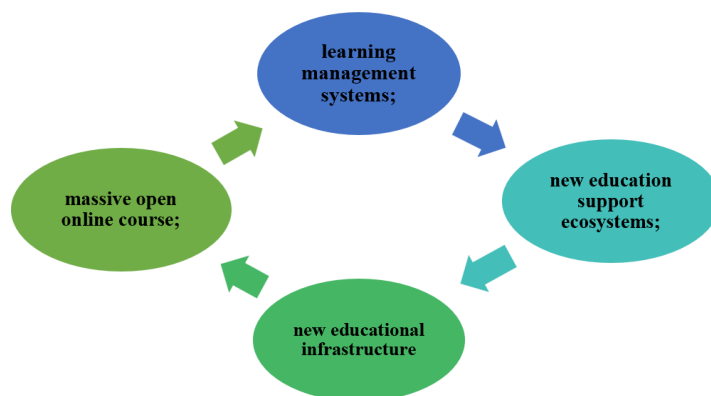

Figure 1. Key components of the modern technological learning platform: LMS, support ecosystems, infrastructure, and MOOCs.

2. METHODS

This study employed a comprehensive, multi-phase methodological framework designed to investigate and implement psychological monitoring of students' educational trajectories within a technological educational platform. The methodology combined theoretical, diagnostic, empirical, experimental, and statistical approaches, enabling both the design and evaluation of personalized learning pathways.

2.1. Research Stages

The research was structured into four interconnected stages:

(i)   Information-Analytical Stage: At this initial stage, an in-depth analysis of students' psychological characteristics was conducted to substantiate the methodological foundation for designing individual educational tracks. This included reviewing literature on student development and professional self-determination (Yurevich, 2008).

(ii) Diagnostic Stage: This stage focuses on identifying individual psychological traits that influence students' learning paths. Diagnostic tools such as:

   (a) the Locus of Control methodology,

   (b) the Self-Regulation of Behavior Style questionnaire,

   (c) and assessments of self-awareness, achievement motivation, and interpersonal skills

Were used to explore students' readiness for self-regulated learning and goal setting (Koldaev, 2013).

(iii) Design Stage: During this phase, students collaborated with tutors and psychologists to construct personalized educational projects based on diagnostic outcomes. This involved aligning course modules and elective subjects with each student's individual traits, interests, and professional goals. Students produced reflective artifacts such as essays ("Reflection of My Past"), biographical narratives ("Main Events in My Biography"), and mini-projects ("Prediction of Professional Development").

(iv) Formation Stage: This final stage aims to develop core educational and professional competencies necessary for future career planning and lifelong learning. The emphasis was placed on cultivating:

   (a) self-directed learning,

   (b) social and professional behavior,

   (c) and adaptability in dynamic environments.

The tutor played a central advisory and coordinating role, fostering student values aligned with poly-technological education (Zeer & Popova, 2015).

2.2. Tools and Techniques

A wide range of qualitative and quantitative tools was applied across stages:

(i)   Theoretical methods: comparative analysis, modeling, and analytical-synthetic generalization.

(ii) Diagnostic methods: surveys, interviews, observation, and psychological tests.

(iii) Empirical methods: foresight projects, narrative tasks, and essay writing.

(iv) Experimental methods: formative psychological observation and project implementation.

(v) Statistical and graphical analysis: results were visualized and interpreted using statistical tools to support evaluation and refinement.

This multi-method design allowed for both personalized intervention and the evaluation of psychological support strategies within the platform, ensuring that the trajectory of each learner was optimized for intellectual growth and future professional success.

3. RESULTS AND DISCUSSION

The implementation of individual educational trajectories in the context of modern education is rooted in the growing necessity to account for students' unique psychological profiles, learning needs, and long-term professional goals. This section presents the empirical and theoretical foundations for building a technological educational platform supported by psychological monitoring. The results reflect the importance of structuring educational pathways in a way that empowers learners and enhances adaptability, motivation, and goal setting. These outcomes are achieved through a functional and individualized approach, particularly when integrating psychological tracking as a guiding framework.

3.1. Psychological Functions Supporting Individual Educational Trajectories

Figure 2 in this study illustrates the five foundational functions that psychological observation plays in the development and monitoring of individual educational trajectories. These functions include:

(i) Organizational-Methodical Function – This refers to the development of tailored project plans that predict and support individually oriented educational modules. It also includes the preparation of relevant teaching and methodological resources. In the design of educational pathways, this function ensures that learning activities are aligned with the student's goals, while equipping instructors with necessary guidance materials (Popova, 2014).

(ii) Diagnostic Function – Accurate diagnosis of students' psychological attributes and career readiness is essential. This includes selecting and applying diagnostic tools such as personality inventories and motivation assessments. For example, tools measuring self-regulation, locus of control, or achievement orientation help educators understand a learner's psychological readiness for independent and professional development (Koldaev, 2013).

(iii) Technological Function – Focused on psychological and professional counseling, this function is responsible for the development of educational forecast projects, advisory essays, and strategies for projecting professional futures. These projects are tools for empowering learners to visualize and simulate their vocational direction (Bonfá-Araujo & Farias, 2008).

(iv) Forecasting Function – This function addresses the process of envisioning and evaluating the student's educational and career future. It focuses on identifying potential pathways based on cognitive and psychological readiness and matching them with real-world educational and occupational opportunities (Zeer & Popova, 2015).

(v) Reflective and Evaluative Function – This final function assesses students' achievements and their reflections on the relevance of their educational forecasts. This step also allows for corrections in the trajectory and informs strategy development for continuous professional growth.

Together, these functions, as visualized in **Figure 2**, form the structural foundation for psychological monitoring. This model supports educational guidance not just as a reaction to learner needs but as a dynamic process that anticipates and cultivates their potential.
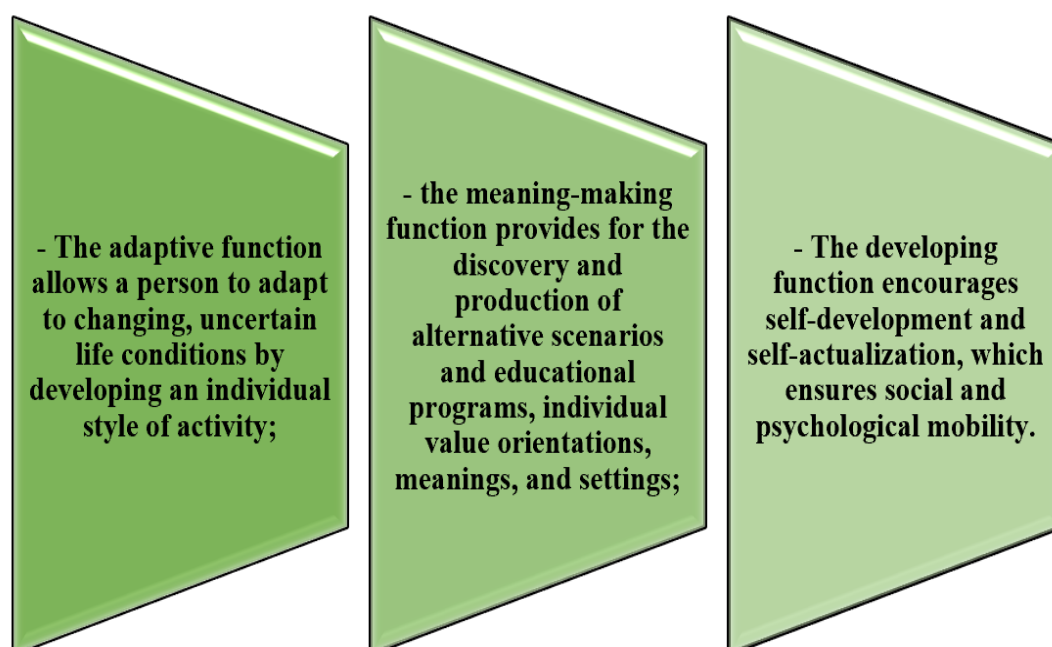
Figure 2. Functional significance of psychological monitoring in individual educational trajectories: adaptive, meaning-making, and developing functions.

3.2. Technological Platform: Actualizing Professional and Individual Potential

The first key module within the technological platform is represented in **Figure 3**, which outlines the Actualization of Professional and Individual Potential. This model comprises three interrelated modules:

(i)   Self-Analysis Module. It encourages learners to explore and document their personal interests, abilities, and career motivations. Exercises include self-reflective writing, value clarification tasks, and personal biography reviews (Popova, 2014). This stage allows the learner to recognize intrinsic motivators and evaluate their preparedness for specific career paths.

(ii) Goal Orientation Module. It supports the development of realistic and achievable career goals. It includes scenario planning, mapping short- and long-term objectives, and aligning educational activities with projected professional roles. Here, learners engage in exercises such as "My Professional Future" essays or planning maps that visualize their desired trajectory (Yurevich, 2008).

(iii) Motivational Activation Module. This module helps sustain engagement by connecting personal aspirations to tangible actions. Students learn to maintain momentum through feedback mechanisms, peer discussions, and exposure to real-world experiences such as internships and shadowing programs. These activities are critical in reinforcing a student's belief in their ability to achieve their goals (Lawson *et al.*, 2019).

Together, these modules foster introspection, purposeful planning, and motivational resilience. As depicted in **Figure 3**, the integration of these aspects within the technological platform helps bridge the gap between students' potential and their actual progress along educational and career trajectories.

Figure 3. Core areas in psychological observation: psychodiagnostics, skill enrichment technologies, and professional forecasting.

3.3. Vocational and Educational Technologies

Further advancing the technological platform is the second framework illustrated in **Figure 4**, which outlines Vocational and Educational Technologies. These are presented as four main modules that structure the application of practical skills and professional knowledge:

(i) Modular Curriculum Integration. It encourages the use of flexible curriculum designs that allow students to tailor their coursework based on individual competencies and interests. These modules often include elective courses, skill-building sessions, and thematic clusters centered around specific vocational goals (Konanchuk, 2013).

(ii) Independent Project Design. Students are encouraged to initiate and manage mini-projects or capstone experiences that directly reflect their field of interest. These might include research papers, social entrepreneurship projects, or "main biography events" storytelling exercises that allow students to draw connections between personal experiences and career ambitions (Minyurova, 2008).

(iii) Social and Professional Navigation. Through this module, learners engage in activities that build real-world competencies. This includes workshops on workplace communication, resume writing, and job simulations. Students practice navigating social networks and establishing professional relationships, gaining familiarity with labor market expectations (Kochan & Kunkel, 1998).

(iv) Forecasting and Professional Adaptation. It focuses on training students to adjust to evolving job roles and industries. Activities include market trend analysis, adaptability training, and future-scenario exercises. These experiences help students embrace uncertainty and proactively adapt to future career demands (Jonker *et al.*, 2020).

As shown in **Figure 4**, the vocational and educational technologies module provides a bridge between theory and practice. It prepares learners for employment through applied activities and encourages an anticipatory mindset that aligns with lifelong learning and career adaptability.
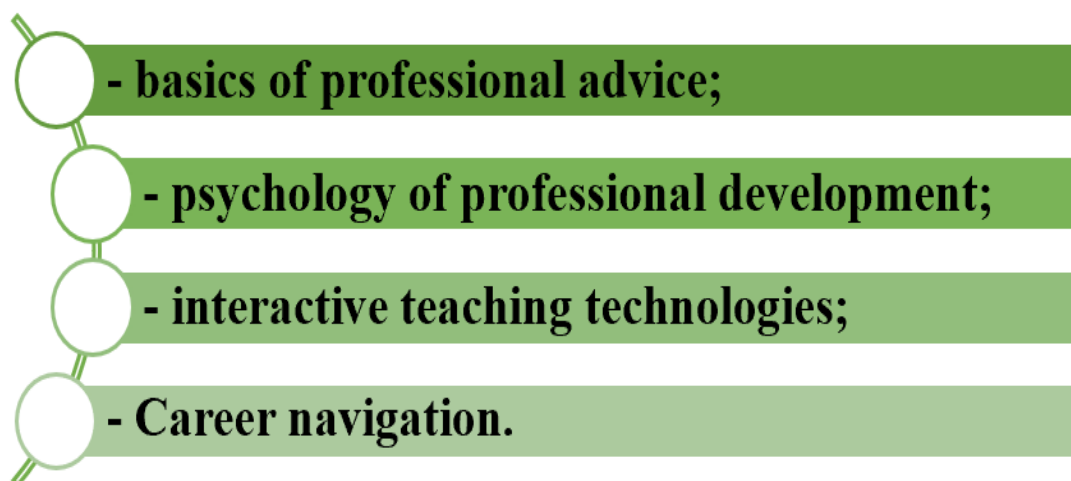
Figure 4. Key modules for supporting professional development in education: advice, development psychology, interactive technologies, and career navigation.

3.4. Self-Determination of the Individual in a Contradictory Reality

The third structural module in the educational platform is illustrated in **Figure 5**, which focuses on the Self-Determination of the Individual in today's complex and rapidly evolving social context. This model is divided into three interdependent modules:

(i) Reflection of the Past: Students are encouraged to analyze their past learning experiences, life events, and developmental milestones to understand how these have shaped their motivations, competencies, and values. This is often done through reflective essays, autobiographical storytelling, or "Life Event Mapping" activities that explore the emotional and cognitive impact of prior experiences. This reflection supports identity formation and enhances metacognitive awareness (Popova, 2014).

(ii) Awareness of the Present: This component helps students evaluate their current positioning, both academically and socially. Learners assess their strengths, weaknesses, support systems, and challenges within the educational system. Diagnostic tools are employed here to measure self-efficacy, emotional regulation, time management, and interpersonal skills (Koldaev, 2013). The goal is to ensure that students have an accurate understanding of their current capabilities and limitations.

(iii) Projection of the Future: Finally, students are guided to visualize their future roles in society and the workforce. This module includes future scenario planning, role-play simulations, and the creation of "Professional Forecast Projects," where students outline anticipated career paths and the steps required to reach them. This process enhances goal-directed behavior and promotes long-term motivation (Zeer & Popova, 2015).

As depicted in **Figure 5**, this tripartite model supports psychological self-determination and allows students to contextualize their learning within a broader life narrative. It aligns with the central tenets of developmental psychology, recognizing that self-knowledge, situational awareness, and future planning are key to sustained educational success.
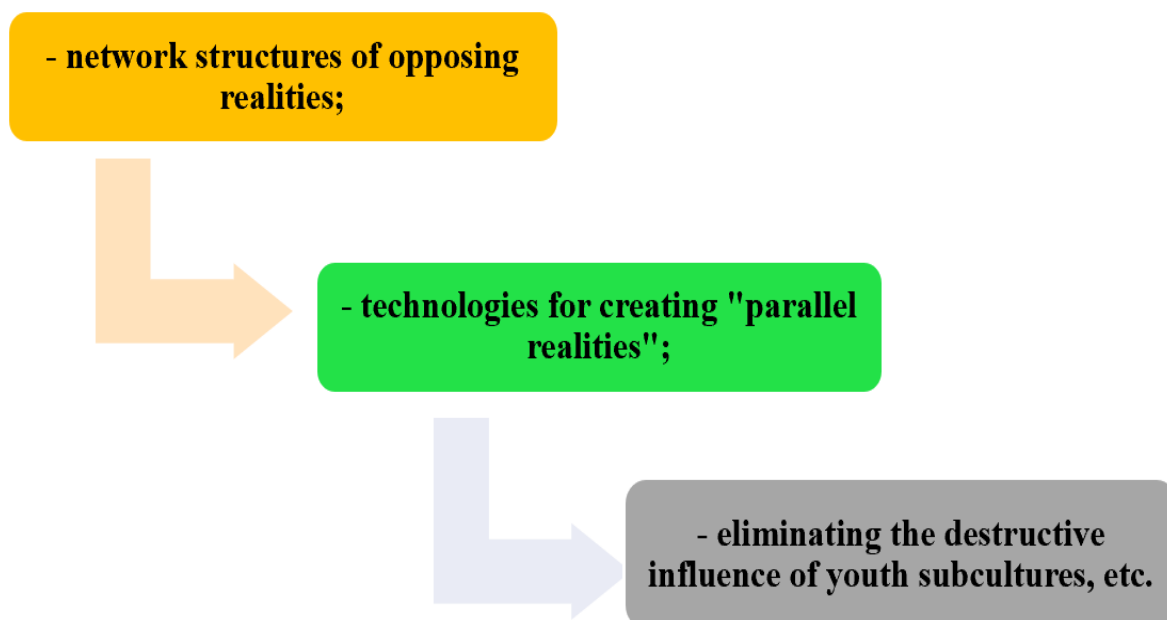
- network structures of opposing realities;

- technologies for creating "parallel realities";

- eliminating the destructive influence of youth subcultures, etc.

Figure 5. Technologies for managing youth realities: counter-networks, parallel realities, and subculture mitigation.

3.5. Implementation of Individual Educational Trajectories: A Multi-Stage Approach

The application of the technological platform and its modules requires a structured, stage-by-stage approach. The research project employed four distinct but interrelated stages to ensure a comprehensive understanding of students' psychological and professional development. These stages are as follows:

(i) Information and Analytical Stage. At this foundational stage, the goal was to help students understand the value of developing an individualized educational trajectory that aligns with their personal interests and psychological characteristics. Teachers assumed the role of tutors and guided students through vocational orientation courses and reflective exercises. This stage emphasized the collection of biographical data and self-perception essays, such as "Self-Regulation in My Vocational Education," allowing learners to initiate the process of self-directed planning (Yurevich, 2008). This stage also helped map students' general cultural and professional competencies as outlined in the national education standards. It established a baseline understanding of how well students could already articulate their educational and professional goals.

(ii) Diagnostic Stage. This phase involved in-depth psychological assessments conducted by educational psychologists in collaboration with tutors.

(iii) Projective Stage. At this point, learners began to actively construct their educational plans, integrating insights from previous stages. With access to a flexible curriculum and elective modules, students created Individual Educational Programs (IEPs) tailored to their needs.

(iv) Formative Stage. The final stage emphasized the formation of professional and educational competencies that would enable students to continue learning and adapting throughout life.

For the diagnostic stage, a series of validated psychometric tools were used:

(i) Locus of Control Inventory to assess the degree to which students perceive control over their educational outcomes.

(ii) Self-Regulation Style Questionnaire to evaluate goal-setting behavior, impulse control, and long-term planning tendencies.

(iii)   Differentiated Self-Perception Measures to understand levels of assertiveness, resilience, and communication in social contexts.

(iv)   Need for Achievement Scale to assess motivational strength and professional ambition.

The results of these diagnostic instruments allowed educators to identify patterns of readiness for self-education, levels of independence, and the presence or absence of a defined career strategy (Kochan & Kunkel, 1998; Koldaev, 2013).

The collaborative interpretation of these results between student and tutor was critical in fostering mutual understanding and establishing the trust needed for the subsequent stages. For the projective stage, these programs reflected both variable coursework and extracurricular initiatives, including professional navigation mini-projects and forecasting activities such as:

(i)   "Social and Professional Navigation"

(ii)   "Reflection of My Past"

(iii)   "Key Events in My Biography"

(iv)   "Anticipating My Career Path"

Each project was supported by guidance from tutors and focused on connecting academic learning with real-world applications. This ensured that students were not simply following preset academic tracks but were co-designing their learning journeys based on a personalized vision of success. For the formative stage, key competencies developed during this phase included:

(i)   Understanding the social relevance of their future profession

(ii)   Independently seeking consulting and professional development resources

(iii)   Planning educational and career pathways

(iv)   Exercising professional behavior in various social contexts

(v)   Navigating labor market shifts with agility and confidence

The tutor's role transitioned into one of advisory and strategic support, ensuring that students were not only reaching goals but were also developing a capacity for self-renewal and lifelong learning. This formative stage was essential in solidifying the student's ability to manage uncertainty, build adaptive strategies, and maintain personal coherence amidst evolving demands.

3.6. Evaluating Forecast and Implementation Outcomes

The culmination of the psychological monitoring model is represented in Figure 6, which illustrates the reflective and evaluative functions of implementing individual educational trajectories. This figure summarizes how students and educators assess the success of the individualized educational process through a structured evaluation framework. This figure illustrates the key criteria used to assess the success of individualized educational trajectories within a technological platform. The criteria include the completeness of prognostic components, monitoring of generalized professional and educational competencies, and evaluation of interactions among all participants involved in the psychological monitoring process. **Figure 6** outlines five key components:

(i)   Completeness of Prognostic Activity Components: This aspect evaluates whether students have meaningfully forecasted their professional future, including career aspirations, expected competencies, and the socio-professional identity they hope to develop. The success of this component indicates the depth and realism of the learner's projected educational journey.

(ii)   Monitoring of Generalized Competencies: The model emphasizes continuous tracking of general cultural, personal, and vocational competencies developed during the

learning process. This includes monitoring communicative, organizational, analytical, and practical abilities, aligned with the core goals of modern education (Eugenijus, 2023).

(iii) Interaction Among Key Actors: As the figure shows, the collaboration between tutors, psychologists, and students is a crucial indicator of success. The quality of interaction (defined by trust, shared responsibility, and responsiveness) directly influences the coherence and adaptability of the educational path (Popova, 2014).

(iv) Justification of the Individual Forecast Project: The extent to which the learner's self-directed plan (e.g., "My Professional Future") aligns with their evolving interests, abilities, and external circumstances is assessed here. The figure notes that although forecasting is probabilistic, its accuracy can be strengthened through reflective revision and structured feedback.

(v) Feasibility and Flexibility of Implementation: Finally, this part of the model measures how viable and sustainable the proposed educational trajectory is. Factors include institutional support, curriculum adaptability, access to resources, and alignment with labor market trends (Zeer & Popova, 2015).

These criteria allow for a comprehensive reflection on the individual's learning journey, enabling educators to guide necessary adjustments while reinforcing student agency. In sum, **Figure 6** provides a framework for ongoing course correction, ensuring that educational paths remain relevant, coherent, and empowering.
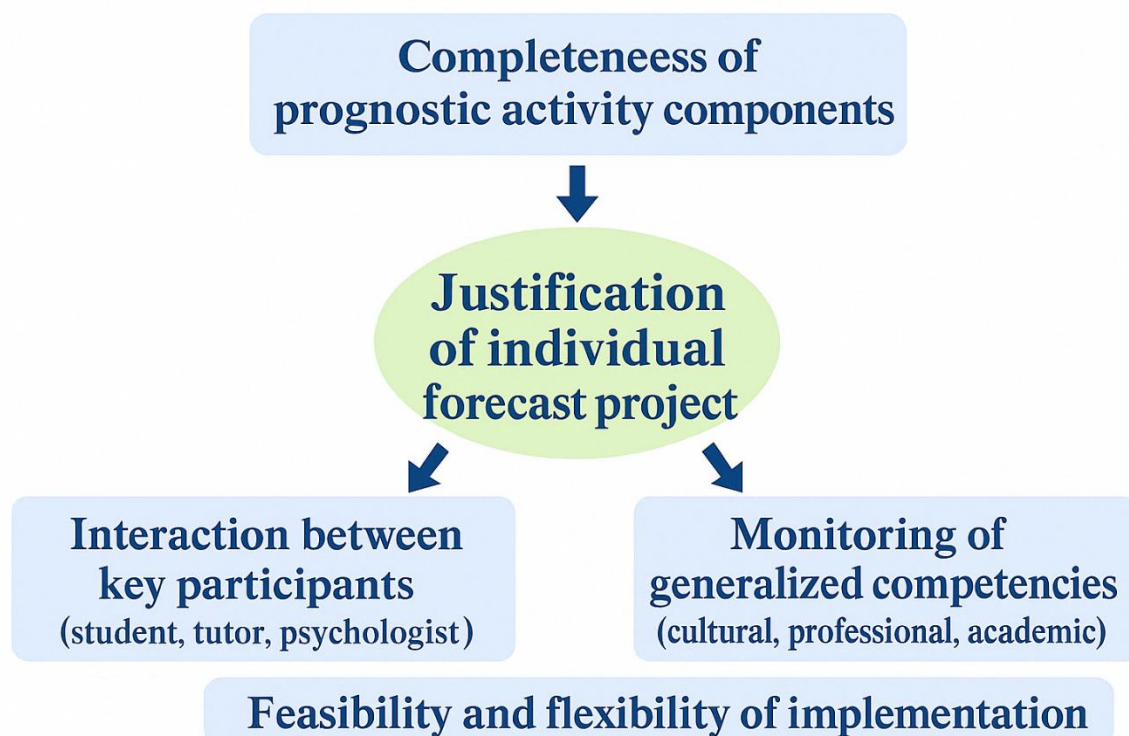

Figure 6. Criteria for evaluating the implementation of individual educational trajectories

3.7. Summary of Results

The findings of the study reveal that the technological platform for implementing students' educational trajectories functions effectively when built upon comprehensive psychological monitoring and active collaboration among educational stakeholders. The structural-semantic model (including psychological diagnostics, forecasting tools, reflective practices, and modular customization) demonstrates high adaptability to students' evolving needs.

Across each stage (analytical, diagnostic, projective, and formative) students showed increased awareness of their capabilities, stronger goal orientation, and improved decision-making regarding their academic and professional futures. The platform supports self-regulation, critical reflection, and long-term motivation, equipping students with tools to succeed in unpredictable socio-professional environments.

Furthermore, the introduction of minor programs as modular enhancements allowed for the integration of soft skills, emotional intelligence, and interdisciplinary knowledge. This aligns with the demands of a post-industrial society that values adaptability, creativity, and continuous learning (Antyukhova, 2020).

The combined use of qualitative tools (essays, self-assessment, stories) and quantitative diagnostics (scales and surveys) provided robust data, validating the impact of the approach. **Figures 1 through 6** visually support the theoretical concepts, illustrating each phase of development and implementation within the platform.

The implementation of individual educational trajectories within a technological platform reflects a dynamic response to the demands of post-industrial society and the evolving expectations of modern learners. The discussion of findings reveals that personalized educational models not only provide flexibility in curriculum design but also foster student autonomy, motivation, and future-oriented thinking (Konanchuk, 2013; Jonker *et al.*, 2020). Through the integration of psychological monitoring, students can better align their learning experiences with personal goals and professional aspirations. This monitoring ensures that individual development is not only tracked but also meaningfully guided throughout the educational process (Zeer & Popova, 2015).

Figure 6 summarizes key criteria for evaluating the effectiveness of such implementations. The inclusion of factors such as prognostic activity, interaction monitoring, and competence tracking demonstrates the multifaceted nature of educational personalization. These elements enable educators and tutors to holistically assess student growth in alignment with educational standards and psychological readiness (Popova, 2014).

Importantly, this model encourages the formation of professional versatility, a necessary trait in an unpredictable labor market. Antyukhova (2020) argues that modern specialists must be socially and professionally mobile, capable of adapting to various professional settings. The technological platform discussed in this study supports such adaptability through modular learning, career forecasting, and strategic educational planning (Koldaev, 2013).

The adaptive, meaning-making, and developing functions highlighted in Figure 2 support this framework. They show how educational platforms should not only transfer knowledge but also promote psychological well-being and self-actualization (Yurevich, 2008). This is echoed in the work of Minyurova (2008), who emphasized the role of psychology in supporting students' vocational trajectories.

The integration of minors (illustrated in **Figures 4** and **5**) demonstrates the platform's role in enhancing interdisciplinary and intrapersonal skills. These include psychodiagnostics, career navigation, and counteracting socio-cultural challenges, particularly among youth (Eugenijus, 2023). These features underscore the broader societal function of education in fostering resilience, innovation, and responsibility among learners.

In conclusion, the technological platform enables a transition from rigid educational structures to adaptive, student-centered models. The results reinforce the idea that when students are empowered to design their learning paths with psychological support, the outcome is not merely academic success, but the formation of competent, reflective, and future-ready individuals (Tan *et al.*, 2017; Kochan & Kunkel, 1998).

4. CONCLUSION

The research demonstrates that the integration of technological platforms for implementing individual educational trajectories marks a significant evolution in modern pedagogy. These platforms, enriched with psychological monitoring tools and personalized educational planning, offer students flexible and adaptive learning environments aligned with their unique cognitive, emotional, and professional profiles. By guiding students through self-designed educational pathways, supported by tutors and counselors, this approach fosters autonomy, self-regulation, and a forward-looking orientation toward lifelong learning and career development.

The use of structured psychological observation, as presented in the figures, enables a deeper understanding of each student's progress, readiness, and development trajectory. Through minors and modular learning systems, students gain professional versatility, metacognitive awareness, and improved decision-making skills, all essential in navigating the demands of a post-industrial, digitalized world.

This model also reflects the shifting educational paradigm from institutional standardization to individualized competency-building, with students at the center of the learning process. Ultimately, technological platforms grounded in psychological principles enable a more responsive, inclusive, and transformative form of education that equips learners not just with knowledge but with the adaptability and insight needed for an ever-changing global society.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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