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The Role of Personal Autonomy in the Development of Transformative Competencies in Students

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Abstract: *Transformative skills (such as critical thinking or adaptability) are relevant themes in contemporary education, and personal autonomy is often associated with them. Personal autonomy in students is a topic explored in psychology, pedagogy, and educational sciences, focusing primarily on their ability to make decisions, manage their own resources, and act independently in various contexts. Through this research, we aim to investigate the role of personal autonomy in the development of transformative skills in adolescents, reflecting on how freedom of choice, self-regulation and individual responsibility contribute to the development of critical thinking and adaptability to change in modern society. The scientific approach will use a mixed format (qualitative and quantitative) and a range of methods, such as: questionnaires for students (to measure autonomy, motivation, and developed competencies); case studies (interviews with teachers and students from schools with democratic practices); natural experiments (comparison of two classes of students from a high school in Chisinau with a contingent of 268 people - one using traditional methods, and the other with autonomous activities). The questionnaire was divided into three dimensions in order to monitor the cognitive, social and emotional, and methodological autonomy of students. It is important to note that the 268 students come from urban areas, from high school and from the humanities profile. The questionnaire was divided into three dimensions in order to monitor students' cognitive, social and emotional, and methodological autonomy. The data collected allowed us to identify significant differences between students with high versus low autonomy (those with higher autonomy developed more creativity or resilience).*

Keywords: *students, high school, educational methods, teaching strategies, personal autonomy.*

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Introduction

Jean Piaget (1965), one of the most influential developmental psychologists, demonstrated that a child's autonomy is closely linked to their cognitive development. He showed how progressing through the stages of development enables the child to move from complete dependence on adults toward independent thinking and the ability for self-determination - Table 1.

Table 1. The Connection Between Cognitive Stages and Autonomy According to Piaget's Theory

Stage	Age	Reflection of Autonomy
Sensorimotor	0–2 years	Through physical exploration of the environment, the child begins to understand causality ("I can affect the world")
Preoperational	2–7 years	Develops mental representations, but thinking is still rigid and egocentric. Autonomy is limited
Concrete Operational	7–11 years	Logic emerges based on concrete experiences. The child can anticipate consequences and make simple decisions
Formal Operational	11+ years	Ability to think abstractly (hypotheses, moral principles) enables full autonomy in reasoning and action

Lev Vygotsky, another prominent scholar who studied this phenomenon, introduced the concept of the "zone of proximal development," demonstrating how the competence of adults or peers can provide tailored support to students on their path toward autonomy. Richard Ryan and Edward L. Deci (2000), through Self-Determination Theory, argued that autonomy is one of the basic psychological needs (alongside competence and relationship-building) essential for motivation and well-being. Autonomy, from a behaviorist perspective, is not represented as an internal state, but rather as a repertoire of learned behaviors. Thus, according to classical behaviorist theory, autonomous behaviors are learned through conditioning: for example, classical conditioning (Pavlov), which suggests that the development of automatic reactions can occur in specific contexts; operant conditioning (Skinner) – reinforcing desired behaviors (for instance, solving a task without assistance). However, cognitivists and constructivists criticize behaviorism for reducing autonomy to a set of learned reactions, ignoring internal processes such as motivation, intention, or self-reflection. In this context, we

can mention that authentic autonomy actually involves conscious choice, not just reactions to stimuli, which behaviorism does not fully explain.

Paulo Freire made an essential contribution to the humanization of education and the promotion of critical thinking, but his idealism, according to opinions formulated by certain authors, raises issues, as it is difficult to apply in rigid and underfunded educational systems; it may overlook the concrete cognitive needs of students in favor of a continuous reflective process, or it may remain a provocative educational ideal that requires adaptations and supplements in contemporary pedagogical practice. Thus, in his work *Cultural Literacy: What Every American Needs to Know* (Hirsch, 1988), Hirsch criticizes Freire's vision for underestimating structured cognitive education and argues that an exclusive focus on critical thinking and dialogue may overlook the need to accumulate fundamental knowledge, which is essential for democratic participation. Likewise, Diane Ravitch, in her work *Left Back: A Century of Failed School Reforms* (Ravitch, 2000), although progressive in many respects, warns that educational idealism (including that inspired by Freire) may lead to the decline of academic standards and to an education that is more ideological than intellectually rigorous. David Labaree, in his work *Someone Has to Fail: The Zero-Sum Game of Public Schooling* (Labaree, 2010), suggests that education cannot correct social inequalities in isolation, and Freire is perceived as overestimating the power of schools in the process of social transformation.

This research aims to examine the role of personal autonomy in developing transformative competencies in adolescents, focusing on how freedom of choice, self-regulation, and individual responsibility contribute to fostering critical thinking, adaptability to change in modern society, and the capacity to initiate both personal and social change (personal and social agency).

Research Objectives:

- To identify the level of autonomy among high school students by analyzing current educational practices (e.g., the degree of freedom in making school-related decisions).
- To analyze and determine the connection between autonomy and transformative competencies, based on key theories (Self-Determination Theory – Ryan & Deci, 2000: fulfillment of the need for autonomy; socio-constructivist approaches – Vygotsky(1978), Freire (2023): the role of the environment in empowerment) (Fisher & Frey, 2008).
- To evaluate the impact of student-centered pedagogical methods that promote autonomy: project-based learning; self-assessment and reflective feedback; student participation in civic engagement projects.

- To formulate recommendations for educational policy development aimed at curriculum revision and teacher training, with an emphasis on fostering student autonomy.

The relevance of the research lies in the need to shift the educational process from a control-centered model to one centered on the student, aiming to develop transformative competencies essential for society in the era of globalization and uncertainty (e.g., climate crises, technological changes). In this context, students will be provided with the opportunity to become active agents in their own lives, rather than passive recipients. The research is original and interdisciplinary, combining scientific elements from educational psychology, critical pedagogy (Freire, 2023), and sociology of change, while also having a practical character, as it proposes an operational framework for schools (a guide of good practices).

Research Hypothesis: It is assumed that a high level of autonomy, combined with the use of pedagogical methods that encourage choice and personal responsibility among students, will contribute more effectively to the development of transformative competencies (e.g., systemic thinking, social empathy).

Research Methodology. The acceptance and support of students' personal autonomy not only involve recognizing its value in the educational process but also implementing concrete teaching strategies to systematically cultivate it. In this context, the school environment becomes a space for authentic learning only to the extent that the student is placed at the center of the educational act, and learning is seen as a personal and meaningful experience.

The mechanism for supporting student autonomy in the school environment involves the adoption of: student-centered teaching methods (project-based learning, problem-based learning, independent or collaborative research) that offer students the freedom to explore, choose, and make their own decisions, while also developing responsibility and critical thinking; self-assessment and reflection, which are essential for students to become aware of their learning process (through reflective journals, portfolios, or self-assessment rubrics), allowing them to analyze their performance, recognize their progress, and set new goals; empowering students by involving them in decisions related to the educational process (choosing topics, organizing activities, setting evaluation criteria), which will contribute to developing an attitude of active engagement and ownership of their educational path; active learning, which facilitates the transformation of students from passive information receivers to active participants, capable of exploring, asking questions, collaborating, and creating.

This mechanism will support the development of initiative, thinking autonomy, and adaptability in students, which are key traits of transformative competencies. Thus, actively supporting autonomy in a school environment is not an isolated act, but a complex pedagogical approach integrated into the organizational culture of the educational institution, in the teacher-student relationship, and in each stage of the educational process.

Research Results. To achieve the first objective of the research, we developed and administered a questionnaire to a group of 268 high school students. The questionnaire was divided into three dimensions to assess the level of autonomy among students by analyzing current educational practices, specifically: cognitive autonomy, social and emotional autonomy, and methodological autonomy (Table 3). It is important to note that the 268 students come from urban areas, from high school and from the humanities. Autonomy was assessed through self-report questionnaires, and transformative skills through practical tasks assigned to the students. The research followed ethical principles to protect the rights, confidentiality and well-being of the participants in the sociological questionnaire, while being informed about the purpose of the study, the procedures, the benefits and the potential risks. The students (and parents) were also informed that they could abandon the study at any time, without consequences. The research results were stored in a secure manner and reported without individual identification of the participants.

The concept of transformative competencies derives from the theories of Jack Mezirow (1989) and refers to students' ability to critically analyze their experiences, values, and beliefs in order to bring about changes in thinking and action (Murayama et al., 2016). These competencies are oriented toward adaptability, critical thinking, innovation, empathy, responsibility, and active engagement. In developing the sociological questionnaire applied to students, including the interviews conducted with them, we took these aspects into account, as well as the thematic correlation: personal autonomy ↔ transformative competencies, as reflected in Table 2.

Table 2. Thematic Correlation: Personal Autonomy ↔ Transformative Competencies

Aspect	**Personal Autonomy**	**Contribution to Transformative Competencies**
Cognitive	Making one's own decision	Critical thinking, problem solving
Motivational	Self-determination and self-regulation	Initiative, self-directed learning
Axiological	Embracing personal values	Reshaping belief systems
Social	Responsible interaction	Civic engagement, empathy, collaboration

Table 3. Sociological questionnaire administered to students

Cognitive Autonomy		**Social and emotional autonomy**		**Methodological autonomy**	
Questions	Response options	**Questions**	Response options	**Questions**	Response options
Do you set clear learning objectives for yourself?	Yes No	Do you work well in a team without waiting for detailed instructions?	Yes No	Do you use active learning techniques (mind maps, summaries, flashcards)?	Yes No
Do you organize your study time efficiently?	Never Always	Do you take responsibility for your mistakes and try to learn from them?	Never Always	Do you adjust your learning strategies based on the subject's difficulty?	Never Always
Do you use various sources (books, videos, articles) to better understand a topic?	Yes No	Can you manage stress in assessment situations (exams, presentations)?	Never Always	Do you plan stages for long-term projects (research papers, projects)?	Yes No
Do you self-assess your knowledge before tests/exams?	Never Always	Do you express your viewpoint in discussions, even if it differs from your peers'?	Yes No	Do you frequently review your notes, not just before exam sessions?	Yes No
Do you note down received questions and seek answers independently before asking the teacher for help?	Yes No	Do you motivate yourself to engage with less interesting subjects?	Yes No	Do you use technology (apps, educational platforms) to learn effectively?	Yes No

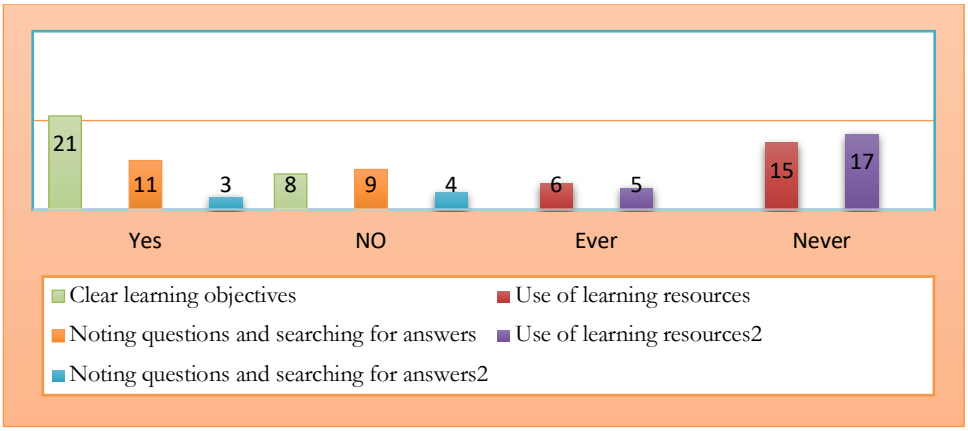


Figure 1. Measuring cognitive autonomy in students

From data collected and represented in Figure 1 we can observe that the index of cognitive autonomy measurement in students monitored in the research is low for the criteria analyzed (using learning sources 9%; marking questions and searching for answers individually 4%; organizing study time efficiently 6%; self-assessment of knowledge before the exam 5%), therefore in this situation it is recommended that teachers should provide consistent support to develop students' independence, to proceed to replace traditional teaching with home videos and practical discussions in class.

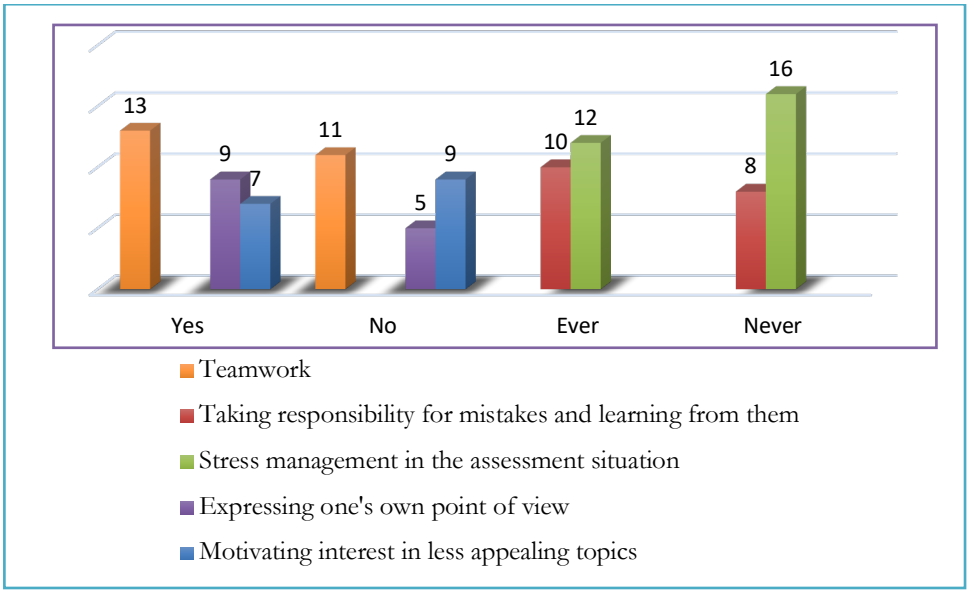


Figure 2. Measuring students' social and emotional autonomy

Regarding the data on monitoring and measuring the level of social and emotional autonomy of the students according to the selected criteria we can mention that it is medium, moderate (teamwork - 13%, expressing views - 9%, managing stress during exams - 12%) showing that students have initiatives in various learning situations, but still need guidance.

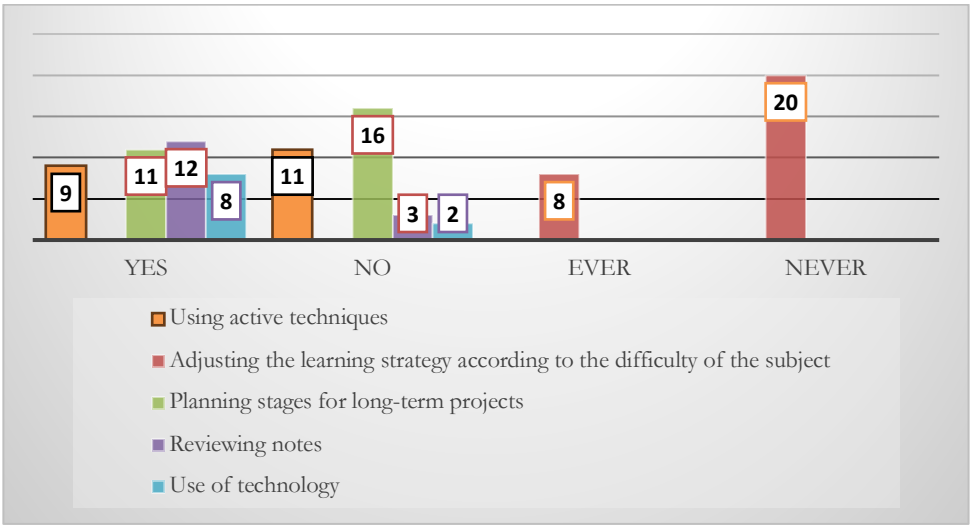


Figure 3. Measuring methodological autonomy

The data presented in Figure 3 highlight that students' methodological autonomy is low, with: (use of active learning techniques: 9%, adjustment of learning strategies 8% compared to planning stages for longer-term projects- 11% and technology use 2%). Therefore, it is essential for educators to focus on enhancing students' ability to select and adapt learning methods based on their individual needs, styles, and preferences. This approach fosters responsibility and active engagement in the learning process, enabling students to become more independent and motivated. It is important to mention that before applying the sociological questionnaire, we measured the students' personal autonomy prior to the intervention. Specifically, we checked whether the average autonomy scores were equal between the groups. Table 4 presents the data regarding the means and standard deviations obtained before the experiment.

Table 4. Means of Students' Personal Autonomy and Standard Deviations Before the Intervention

Group	N	Average autonomy (M)	Standard deviation (AS)
Experimental	130	6.9	1.2
Control	138	7.2	1.3

From Table 4, we can observe a slight difference between the mean scores of students' personal autonomy (6.9 versus 7.2), but this difference is not statistically significant. Furthermore, the initial balance between the groups was verified by comparing the means of personal autonomy. The application of an independent samples t-test showed that the difference was not significant ($t(266) = -1.96$, $p = 0.051$), confirming that the randomization was effective. The variances were homogeneous (Levene's $p = 0.45$). The Levene's test allowed us to check whether the two groups (experimental vs. control) had equal variances (similar dispersion), which is an important assumption for the classical independent samples t-test. The p-value of 0.45 in Levene's test indicates that the dispersion of autonomy scores is similar between the two groups, confirming a key assumption for the classical t-test.

According to the Self-Determination Theory (Ryan & Deci, 2000) autonomy is an important element for intrinsic motivation and individual well-being, therefore as a learner experiences it, he/she will become more capable by identifying new critical questions to different problems (construction), reconstructing knowledge based on personal experiences (recontextualization) and acting in a more empowered way (social transformation).

Lev Vygotsky stated that autonomy does not develop in isolation, but through interaction with the social environment. In this context, the connection between autonomy and the formation of transformative competences in learners is reflected in collaborative learning and dialog, which can facilitate changing perspectives (transformative competence) and develop critical thinking through the negotiation of meanings in a given social context (Vygotsky, 1978).

For Freire, the connection between autonomy and transformative competences is essential, as autonomy is acquired through empowerment, and empowerment requires the development of critical, creative and

collaborative competences. Thus, education, in the author's view, must be a liberating tool that promotes dialog, stimulating students to reflect critically on reality and build their own autonomy. The author also sees autonomy not only as independence, but also as the ability to criticize and transform oppressive structures, implying awareness and commitment to emancipatory action.

Following these views, we monitored in the research the development of transformative competences in students along the following dimensions: their ability to critically analyze social and economic structures (27% gave affirmative answers to this issue); the development of confidence in their own ability to intervene in reality in order to build an autonomous destiny (16% gave positive answers); the encouragement of dialogue and collaboration through participation in a collective process of empowerment, recognizing that autonomy does not mean isolation but involvement in the community; the promotion of creativity and adaptability, being able to reinvent solutions in changing contexts (45%); 12% of respondents gave negative answers to the three aspects - Figure 4.

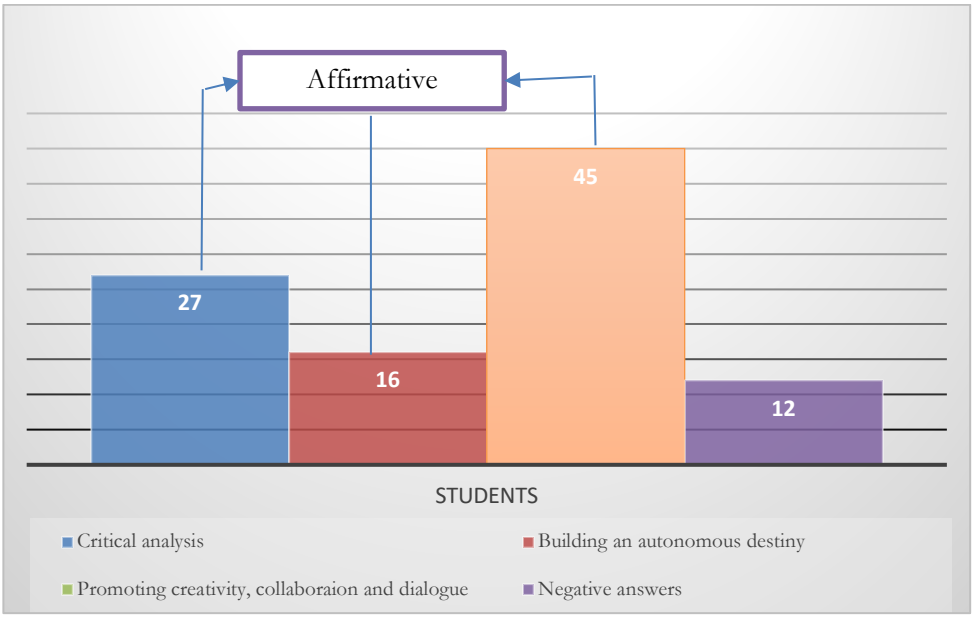


Figure 4. Monitoring indicators according to Freire's theory

According to the data collected and the answers given by the students, it could be observed that they are able to identify the existence of inequalities in society (e.g. access to educational resources, poverty, passive

victims and not actors of change, etc.), putting them in a situation where they are not able to make critical analysis. In the chapter on developing confidence in one's own capacity to intervene in reality in order to build an autonomous destiny, it could be observed that it would be important if teachers constantly contributed to stimulating pupils' awareness of not finding themselves in the role of "spectators" of life, but rather as active agents who can (re)build the world around them. A high indicator in terms of value was recorded in the promotion of creativity and adaptability, with pupils mentioning the importance of being able to reinvent solutions in changing contexts (at least they try).

In Table 5 we present some practical examples of pedagogical activities that develop critical thinking (in the idea of Freire).

Table 5. Practical examples of pedagogical activities that develop critical thinking (in the vein of Freire).

Dimension	Activity	Real examples	Development competencies
Critical Awareness (Understanding Structures)	"Why are there inequalities in education?"	Students compare resources available in schools from different districts and seek causes (finance, policy).	Systemic analysis; identifying privileges and oppressions.
Personal Agency (Confidence in One's Capacity to Act)	"Power biography"	Students reflect on personal experiences where they effected change, such as organizing a campaign.	Self-reflection; recognition of personal power.
Collective Action (Engagement in Social Change)	**Role-Playing: Who Decides?**	Simulation of a local council meeting where students negotiate the school budget.	Negotiation; solidarity; understanding power dynamics.

Table 6 presents various assessment tools designed to measure the impact of active learning methods, including autonomy, project-based learning, reflective feedback, and civic engagement.

Table 6. Assessment tools to measure the impact of active learner-centered methods

Pedagogical method	What do we assess?	Assessment tools	Practical example
Project-Based Learning (PBL)	- Ability to apply knowledge in real-world contexts - Collaboration and resource management - Creativity and problem-solving	- Portfolios documenting project stages - Systematic observation of team interactions	Project: "Recycling System in the School" Evaluation based on questions like: How well did they identify solutions? How did they involve the community?
Self-Assessment and Reflective Feedback	- Awareness of personal strengths and areas for improvement - Ability to give/receive constructive feedback	- Reflective journals (students note what they learned and how they've progressed) - Self-assessment scale (e.g., "On a scale from 1 to 5, how well did you manage conflicts in the team?") - Structured discussions in pairs/small groups	Activity: "Letter to Myself" At the end of the semester, students compare their progress to their initial goals.
Civic Engagement Projects	- Level of involvement in social issues - Ability to initiate collective actions - Awareness of impact on the community	- Pre/post surveys (e.g., "How often did you participate in civic actions before/after the project?") - Interviews with community members (parents, local representatives) - Photo/video documentation of the process and results	Project: "Campaign for a Safe School Campus" Measured by number of petition signatures or changes implemented by school officials.

The use of assessment tools in research allowed us to record important data for validating and supporting the hypothesis. Thus, students have portfolios containing worksheets on various topics, which show that they are able to manage their time for specific projects, this fosters problem-solving skills and self-discipline (67% of the monitored students demonstrated these abilities). Additionally, students presented reflective journals (through which they assessed their learning progress), which helped promote autonomy, motivation, and perseverance (33%). It is also important to mention that autonomy is not granted to students abruptly, but rather

built gradually, adapting to their developmental level with the necessary support provided by the teacher. Table 7 presents some practical applications in this regard, which can be applied to different subject areas.

Table 7. The optimal combination between freedom and explicit modeling in the early stages of learning

Subject Area	Explicit Modeling	Teacher-Controlled Freedom
Mathematics	Step-by-step demonstration of the algorithm	Choice between 2–3 similar problems
Science	Guided experiment (predetermined steps)	Choice of materials or variables
Literature	Model analysis of a poem	Choosing the theme for their own commentary

In the context of Self-Determination Theory (Ryan & Deci, 2000), it can be stated that freedom without competence generates anxiety, whereas explicit modeling satisfies the need for competence, thereby allowing autonomy to follow. To optimize learning in the early stages, scientific studies (Sweller, 2016) recommend starting with explicit modeling by the teacher, as it reduces cognitive overload; later, 2–3 choices can be introduced to activate students' intrinsic motivation, and finally, there can be a gradual transition to open-ended tasks as their competencies develop. We present below a framework for implementing guided autonomy in the subject area of Science for (12th-grade students). To diagnose their knowledge level in the initial phase, we applied basic skills assessment tests (e.g., graph interpretation, hypothesis formulation) and a self-perception questionnaire (to identify how often students use external resources—such as studies, articles—to explore a particular problem in-depth in this subject). The data collected allowed us to divide the students into three groups for differentiation: (Group A – Advanced, Group B – Intermediate, Group C – Beginners). We then structured autonomy progressively across three phases (Explicit modeling, Teacher-guided support, Controlled autonomy). Table 8 presents the data obtained during these three phases.

Table 8. Progressive Structuring of Student Autonomy in the subject "Science"

Explicit Modeling	**Analysis of a study, graph creation; Teacher's Role; models steps, formulates hypotheses, provides control, facilitates argumentation and conclusions Assessment**	**A**	**B**	**C**
		23	35	42
Guided Teacher Support	Small group projects (with worksheets) Teacher's role: Monitors progress every 2 weeks Partial student freedom through choice of analysis methods Assessment	28	49	23
Controlled Autonomy	Individual projects with flexible requirements (students propose a research question validated by the teacher; and choose from 3 investigation methods Mandatory use of scientific resources Teacher's role: check the work submitted by students	36	43	21

Based on the data collected across the three phases and the analysis of specialized literature, we can affirm that the transition from a dependent stage (where students require explicit guidance) to an independent stage (where they manage their own learning) is an evolutionary process, grounded in principles from developmental psychology, neuroscience, and pedagogy. In the application carried out for the Science subject with 12th-grade students, we note that in the *first, dependent phase* (A-23, B-35, C-42), the teacher selects the topic and provides students with a detailed protocol; in the *second, transitional phase* (A-28, B-49, C-23), students choose between two options, and the teacher evaluates the quality of the data collected; in the *independent phase* (A-36, B-43, C-21), students formulate their own research proposals and use scientific databases to validate their methods thus (becoming autonomous in their learning process).

Conclusions

In conclusion, we can assert that student-centered educational environments support the development of transformative competencies such as (critical thinking, adaptability, creativity, and social responsibility), within these environments, students can make authentic choices (e.g., community-impact projects), take calculated risks (e.g., testing an unconventional hypothesis), or reflect on failures (through metacognition). Moreover, the key mechanisms through which autonomy fosters transformative competencies include: intrinsic motivation (autonomy activates the dopaminergic system, encouraging perseverance (Ryan & Deci, 2000); knowledge transfer (students

who structure their own learning apply knowledge in new contexts (interdisciplinary solutions to global problems); cognitive resilience (students learn to make decisions under uncertainty, training their mental flexibility). Importantly, autonomy works only when it is progressive (adapted to the students' developmental level), equipped with resources (access to information, mentoring), and accompanied by systematic reflection (e.g., digital portfolios with self-assessment). The accumulated data reflect that students with high personal autonomy (measured by self-determination scales, learning choices) have more developed transformative skills (critical thinking, adaptability, creativity). Moreover, students involved in non-formal activities (projects, volunteering) can develop more autonomy and social skills. Personal autonomy is a fundamental condition for the development of transformative competencies—without the ability to reflect, make decisions, and act responsibly, the student cannot become an agent of their own learning and change. Therefore, a transformation of the school environment is necessary to cultivate autonomy: trust in students, space for choice, reflective practices, and formative assessment. Educational programs should aim to gradually develop autonomy alongside the development of cognitive, social, and moral skills.

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