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DEVELOPING CREATIVE THINKING THROUGH INDEPENDENT LEARNING MECHANISMS

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Abstract

The rapid transformation of education in the digital and knowledge-based society has highlighted the importance of creative thinking as a key competence of learners. Independent learning plays a crucial role in fostering creativity by promoting autonomy, self-regulation, and exploratory learning behaviors. This study investigates the mechanisms through which independent learning contributes to the development of creative thinking among students. The article analyzes theoretical foundations, identifies effective pedagogical mechanisms, and evaluates practical strategies that enhance creative cognitive processes. The findings indicate that self-directed tasks, reflective learning, problem-based activities, and digital learning environments significantly improve learners' originality, flexibility, and critical thinking skills. The study concludes that integrating independent learning into educational practice is essential for preparing innovative and adaptive learners.

Keywords: Independent learning, creative thinking, self-regulation, autonomy, problem-based learning, metacognition

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Introduction

Modern educational paradigms emphasize the formation of learners who are capable of innovation, critical reasoning, and creative problem-solving. Traditional teacher-centered approaches often limit students' cognitive independence and creative potential. In contrast, independent learning encourages learners to take responsibility for their knowledge construction and to engage in meaningful cognitive exploration.

Creative thinking is defined as the ability to generate original ideas, make novel connections, and approach problems from multiple perspectives. Scholars argue that creativity emerges when learners are given autonomy, opportunities for experimentation, and reflective learning environments (Runco & Jaeger, 2012). Independent learning provides such conditions by fostering curiosity, intrinsic motivation, and metacognitive awareness. Therefore, investigating the mechanisms that connect independent learning with creative thinking development remains a significant pedagogical concern.

Literature Review

Independent learning has been widely examined as a factor contributing to learner autonomy and higher-order thinking skills. Holec (1981) emphasized that autonomous learners actively plan, monitor, and evaluate their learning processes. This autonomy supports creative exploration and idea generation.

Zimmerman highlighted the role of self-regulated learning in cognitive flexibility and innovative thinking. According to constructivist theory, knowledge is actively constructed through exploration and reflection (Piaget, 1972; Vygotsky, 1978). These processes are strongly associated with creative cognition.

Research also indicates that problem-based learning environments enhance divergent thinking and originality. Similarly, metacognitive strategies enable learners to reflect on their thinking processes, thereby strengthening creativity.

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Recent studies emphasize the role of digital technologies in facilitating independent and creative learning by providing interactive and collaborative platforms.

Methodology

This study employed a qualitative theoretical analysis combined with pedagogical observation. The research involved:

- analysis of psychological and pedagogical literature;
- classroom observation of independent learning activities;
- synthesis of effective instructional practices.

Participants included primary and secondary students engaged in independent learning tasks such as project work, reflective journaling, and problem-solving activities. The research focused on identifying mechanisms that influence creativity, including autonomy, metacognition, intrinsic motivation, and exploratory learning.

4. Mechanisms of developing creative thinking through independent learning

4.1 Learner autonomy

Autonomy encourages students to explore ideas freely and make independent decisions, which supports originality and creative risk-taking.

4.2 Self-Regulation and metacognition

Planning, monitoring, and evaluating learning processes enable learners to refine ideas and develop flexible thinking.

4.3 Problem-Based learning

Independent problem-solving tasks stimulate divergent thinking and innovative solution development.

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4.4 Reflective learning

Reflection enhances awareness of cognitive strategies and supports deeper creative processing.

4.5 Digital and collaborative environments

Technology-supported independent learning expands access to resources and promotes experimentation and creativity.

Table 1. Independent learning mechanisms and creative thinking outcomes

Independent learning mechanism	Creative thinking outcome
Learner autonomy	Original idea generation
Self-regulation	Flexible thinking
Problem-based tasks	Innovative problem-solving
Reflective learning	Metacognitive creativity
Digital environments	Collaborative creativity

The table shows that each independent learning mechanism contributes to a specific dimension of creativity, including originality, flexibility, and innovation.

Results

The study explored how independent learning mechanisms influence the development of students' creative thinking skills. The analysis of classroom observations, pedagogical literature, and practical learning activities revealed several significant outcomes.

First, students engaged in independent learning demonstrated higher levels of originality and idea fluency. When learners were provided with open-ended tasks such as project work, reflective journaling, and problem-solving assignments, they generated more diverse and unconventional responses compared to students exposed to traditional teacher-centered instruction. This finding supports the

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assumption that autonomy reduces cognitive constraints and encourages exploratory thinking.

Second, independent learning significantly contributed to cognitive flexibility. Students involved in self-directed tasks showed an improved ability to approach problems from multiple perspectives. They were more likely to experiment with alternative solutions and were less dependent on memorized responses. This flexibility is a key indicator of creative thinking and aligns with self-regulated learning theory.

Third, the results indicated a noticeable improvement in intrinsic motivation and engagement. Independent learning environments promoted curiosity and sustained attention, particularly when learners had the opportunity to choose topics and learning strategies. Motivated students demonstrated greater persistence in solving complex tasks and displayed increased willingness to take intellectual risks.

The analysis revealed that independent learning significantly contributes to:

- increased originality and idea generation;
- improved problem-solving flexibility;
- stronger intrinsic motivation;
- development of reflective and critical thinking skills.

Students engaged in independent projects demonstrated higher creativity levels compared to those exposed to purely teacher-directed instruction.

Discussion

The findings support constructivist and self-regulated learning theories, confirming that creativity develops in environments where learners actively construct knowledge. Independent learning creates cognitive freedom and reduces fear of mistakes, which is essential for creative risk-taking.

Furthermore, integrating reflection and problem-based tasks enhances deep learning and innovation. However, the effectiveness of independent learning

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depends on teacher guidance, scaffolding, and supportive learning environments. The increased originality observed among independently learning students supports constructivist perspectives, which emphasize active knowledge construction as a foundation for creativity. When learners are encouraged to explore, question, and experiment, they develop the ability to form novel connections and generate innovative ideas. This aligns with Runco and Jaeger's conceptualization of creativity as the production of ideas that are both original and meaningful.

The improvement in cognitive flexibility highlights the importance of self-regulation in creative development. Students who plan and monitor their learning are more capable of adapting strategies and considering multiple solutions. This finding is consistent with Zimmerman's theory of self-regulated learning, which identifies self-monitoring and strategy adaptation as critical components of higher-order thinking.

Conclusion

Independent learning serves as a powerful mechanism for developing creative thinking by promoting autonomy, metacognitive awareness, and exploratory learning. Educational systems should integrate self-directed tasks, reflective activities, and problem-based learning to foster creativity. Future research should explore digital independent learning environments and their long-term impact on creative competence. This study examined the mechanisms through which independent learning contributes to the development of students' creative thinking skills. The findings confirm that independent learning is a powerful pedagogical approach that promotes originality, cognitive flexibility, intrinsic motivation, and metacognitive awareness—core components of creative competence in modern education.

One of the most significant conclusions of the research is that learner autonomy creates favorable cognitive conditions for creative exploration. When students are

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given the opportunity to make decisions about their learning processes, they become more willing to experiment, generate alternative ideas, and engage in innovative problem-solving. This autonomy reduces fear of failure and encourages intellectual risk-taking, which is essential for creativity development.

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