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# AN INTEGRATIVE APPROACH TO ORGANIZING THE FORMATION OF STUDENTS' COGNITIVE INDEPENDENCE IN CONDITIONS OF INTENSIFICATION OF LEARNING ACTIVITIES

**Dr. Albina Volkotrubova, Assoc. Prof.**
*International University of Kyrgyzstan (Kyrgyzstan)*
**Aidai Kasymova**
*International University of Kyrgyzstan (Kyrgyzstan)*
**Prof. Zoriana Hbur, DSc.**
*Shupyk National Healthcare University (Ukraine)*
**Assoc. Prof. Antonina Kichuk, DSc.**
*Izmail State University of Humanities (Ukraine)*
**Dr. Svitlana Koshova, Assoc. Prof.**
*Shupyk National Healthcare University (Ukraine)*
**Dr. Svitlana Khodakivska, Assoc. Prof.**
*Bogomolets National Medical University (Ukraine)*

**Abstract.** This article delves into the pivotal concepts of cognitive independence and learning intensification within the educational landscape. Recognizing the intricate nature of cognitive independence encompassing critical thinking, problem-solving, and self-directed learning, our exploration centers on the transformative potential of an integrative approach. Traditional educational models are critiqued for their potential shortcomings in preparing students for the complexities of the 21st century, prompting an investigation into innovative methodologies. Real-life examples of successful integrative approaches are examined, providing valuable insights into the cultivation of cognitive independence. The article advocates for a shift towards dynamic and student-centric learning environments, utilizing various teaching methods, technology, and collaborative learning strategies to intensify educational experiences. Moreover, the discussion extends to future developments, including Artificial intelligence (AI), Augmented reality (AR), Virtual reality (VR), competency-based education, and global collaboration, as potential avenues for further intensification and cognitive independence.

*Keywords:* cognitive independence; learning intensification; integrative approach; self-directed learning; transformative education; innovative methodologies

## Introduction

The imperative of nurturing cognitive independence in students resonates profoundly in the evolving landscape of education. In a world characterized by rapid technological advancements, complex societal challenges, and an ever-expanding pool of information, instilling cognitive independence becomes a linchpin for preparing students for the multifaceted demands of the 21st century (Al-Nofaie 2020). Beyond the conventional acquisition of knowledge, cognitive independence embodies a transformative capacity, empowering students to navigate ambiguity, tackle unfamiliar problems, and engage in analytical thinking. It serves as the bedrock for fostering not only academic prowess but, more critically, the ability to synthesize diverse information, critically evaluate perspectives, and construct well-reasoned arguments (Filipova, Usheva 2021).

Cognitive independence is an antidote to rote memorization, encouraging students to embrace a proactive role in their learning journey. It cultivates the skills of self-directed inquiry and instills a lifelong love for learning. In the contemporary educational milieu, characterized by information abundance and the democratization of knowledge through technology, cognitive independence emerges as a safeguard against information overload. Students equipped with cognitive independence are better poised to discern the authenticity of information, navigate the intricacies of diverse perspectives, and make informed decisions (Filipova, Yuleva-Chuchulayna 2021a).

Moreover, in the broader context of societal dynamics, cognitive independence emerges as a catalyst for the formation of engaged and responsible citizens. Students endowed with the ability to think independently become active contributors to democratic discourse, capable of critically evaluating societal issues, and advocating for positive change (Darling-Hammond, Ifill-Lynch 2006). This introduction lays the foundation for delving into the integrative approach to organizing the formation of students' cognitive independence, underscoring its profound implications for their holistic development and preparedness for the challenges of an ever-evolving world.

Navigating the landscape of intensifying learning activities presents both challenges and opportunities within the educational sphere (Kvas 2011). As we strive to enhance the educational experience, challenges may manifest in the form of increased demands on educators' time and resources, potential resistance to change, and the need for effective strategies to address diverse learning styles. The intensification of learning activities requires a thoughtful approach to curriculum design, incorporating innovative teaching methods that resonate with students across various backgrounds and learning preferences (Krotik, 2020). However, within these challenges lie significant opportunities for transformative educational experiences (Frumkina, 2023). The intensification of learning activities opens avenues for increased student engagement, fostering a dynamic and interactive learning environment.

It provides an opportunity to leverage technology as an enabler, facilitating personalized learning experiences that cater to individual student needs. By addressing these challenges head-on and capitalizing on the inherent opportunities, educators can create a learning ecosystem that not only prepares students with a robust skill set but also instills a passion for continuous learning and adaptability in the face of evolving educational paradigms. This sets the stage for exploring an integrative approach to organizing the formation of students' cognitive independence, acknowledging the nuanced interplay between challenges and opportunities in the realm of intensified learning activities.

**The purpose of this article** is to delve into the concept of cognitive independence and learning intensification within the realm of education. Recognizing the multifaceted nature of cognitive independence, encompassing critical thinking, problem-solving, and self-directed learning, the article aims to explore how an integrative approach in education can contribute to the development of these essential skills.

**The problem statement** arises from traditional educational models that may fall short in preparing students for the complexities of the 21st century, highlighting the need for transformative approaches that prioritize cognitive independence. In response to this, the article sets out to examine real-life examples of educational institutions and programs that have successfully implemented integrative approaches, drawing insights from their successes.

**The primary aim** is to underscore the importance of integrating various teaching methods, technology, and collaborative learning strategies to intensify learning activities and foster cognitive independence.

**The propositions** put forth advocate for the continued evolution of education, incorporating innovative methodologies and anticipating future developments, such as AI, AR, VR, and global collaboration, to further enhance cognitive independence and intensify learning experiences for students. Ultimately, the article seeks to contribute to the ongoing dialogue on the future of education by emphasizing the transformative potential of an integrative approach.

The introduction sets the stage for a comprehensive exploration of cognitive independence and learning intensification in education. The multifaceted nature of cognitive independence is acknowledged, laying the foundation for an in-depth investigation into how an integrative approach can effectively nurture these vital skills. The problem statement highlights the inadequacies of traditional educational models in addressing the evolving needs of the 21st century, prompting a closer examination of transformative approaches. As we embark on this exploration, the ensuing sections will delve into real-life examples, key principles, and future developments, aiming to provide valuable insights into the transformative potential of education. Through this exploration, we seek to not only understand the dynamics of cognitive independence but also advocate for innovative methodologies that

intensify learning activities, fostering a generation of students equipped with the essential skills for success in a rapidly changing world.

**1. Presentation of the primary material**

Before presenting the outcomes of our research and the resulting conclusions, it is essential to elucidate our comprehension of the concept of cognitive independence.

Cognitive independence represents a multifaceted construct that transcends traditional notions of knowledge acquisition, encapsulating a profound capacity for autonomous thinking and intellectual self-reliance (Kubitskyi, Saienko, et al. 2022). At its core, cognitive independence involves equipping students with the skills to navigate complex information landscapes, fostering critical thinking, and nurturing a self-directed approach to learning (Al-Nofaie 2020). In the educational context, it goes beyond the rote memorization of facts and figures, emphasizing the cultivation of analytical reasoning, problem-solving acumen, and the ability to synthesize disparate pieces of information. Significantly, cognitive independence is not merely about acquiring a set body of knowledge but encompasses the adeptness to question, challenge, and constructively critique information, thereby engendering a mindset of continuous inquiry and curiosity.

The significance of cognitive independence in education is profound (Nikolaieva 2013). It serves as a cornerstone for the development of lifelong learners who are not just repositories of information but active contributors to knowledge creation. By fostering cognitive independence, educators empower students to approach learning as a dynamic and personalized journey, tailoring their educational experiences to suit their unique strengths, interests, and aspirations. Furthermore, cognitive independence is intricately linked to the cultivation of metacognitive skills – the ability to reflect on one's thinking processes (Kvitka, Starushenko 2019). This metacognitive awareness underpins effective learning strategies, enabling students to monitor and regulate their own cognitive activities, leading to heightened academic performance and a deeper understanding of subject matter.

In the broader educational context, cognitive independence is not confined to the academic realm alone; it extends its influence to real-world applications. Students equipped with cognitive independence are better prepared to tackle the challenges of an ever-evolving professional landscape, where adaptability, critical thinking, and the ability to assimilate new information swiftly are highly valued (Babaev, Bylykova 2021). Moreover, in the socio-cultural context, cognitive independence fosters informed citizenship by enabling individuals to critically evaluate societal issues, engage in meaningful discourse, and contribute constructively to the betterment of the community.

The significance of cognitive independence lies in its transformative potential to shape individuals into not only knowledgeable beings but also agile thinkers and contributors to society. This nuanced understanding sets the stage for exploring

how an integrative approach can effectively organize the formation of students' cognitive independence, recognizing its pivotal role in shaping the educational landscape and preparing individuals for the multifaceted challenges of the modern world.

Cognitive independence plays a pivotal role in the educational landscape by serving as a catalyst for the development of critical thinking and problem-solving skills. Critical thinking, the ability to analyze, evaluate, and synthesize information, is at the core of cognitive independence (Ovsiienko 2013). As students engage with content independently, they are prompted to question assumptions, consider diverse perspectives, and develop a discerning approach to information. This process not only cultivates a deeper understanding of subject matter but also hones the skill of thinking critically about the world around them.

Moreover, cognitive independence is inseparable from effective problem-solving skills. The autonomy afforded by cognitive independence empowers students to confront challenges with resilience and creativity. By encouraging independent inquiry, educators foster a mindset that views problems as opportunities for learning and growth. Students equipped with cognitive independence are more inclined to approach problem-solving with a methodical and analytical mindset, breaking down complex issues into manageable components. This skill set extends beyond the classroom, preparing students for the dynamic challenges they will encounter in various facets of their personal and professional lives (Ovcharuk 2004).

In practical terms, cognitive independence nurtures the ability to apply critical thinking and problem-solving skills across disciplines. Whether in STEM fields, humanities, or social sciences, the capacity to independently analyze information and formulate solutions becomes a transferable skill. Through cognitive independence, students not only become adept at solving problems but also learn to approach problem-solving with an adaptive and innovative mindset (Organization of distance learning 2020).

Furthermore, the link between cognitive independence, critical thinking, and problem-solving is integral to cultivating a mindset of continuous improvement. As students become accustomed to independent inquiry, they develop the resilience to learn from failures, refine their problem-solving approaches, and embrace a lifelong learning ethos. In essence, the symbiotic relationship between cognitive independence, critical thinking, and problem-solving creates a foundation for intellectual agility, resilience, and adaptability, characteristics essential for success in an ever-evolving and complex world. This nuanced understanding underscores the importance of an integrative approach in organizing the formation of students' cognitive independence, recognizing its role as a cornerstone in the cultivation of vital intellectual skills (Prokopenko, Karminsky et al. 2011).

The contemporary educational landscape is undergoing a profound transformation, marked by shifts in societal expectations, technological advancements, and a growing recognition of the need for more dynamic and participatory learning experiences. As we navigate the 21st century, the traditional model of education, characterized by passive absorption of information, is being reevaluated. The changing landscape reflects a growing awareness that students must be equipped with not only knowledge but also a diverse skill set that extends beyond memorization. The call for more active and engaging learning experiences is a response to the evolving demands of the workforce, which increasingly values skills such as critical thinking, collaboration, and adaptability.

Active learning experiences provide students with opportunities to engage directly with the subject matter, fostering a deeper understanding and retention of knowledge (Al-Nofaie 2020). The need for such experiences arises from the recognition that passive learning methods may fall short in preparing students for the complexities of the modern world. As technological advancements continue to reshape industries and redefine skill requirements, educators are compelled to reimagine their pedagogical approaches. Active and engaging learning experiences not only capture students' interest but also encourage them to become active participants in their own educational journey.

Moreover, the changing educational landscape acknowledges the diversity of learning styles and preferences among students. Recognizing that a one-size-fits-all approach is inadequate, educators are increasingly embracing methods that cater to varied learning modalities (Volkotrubova, Tymoshchuk et al. 2023). Active learning, whether through collaborative projects, experiential activities, or interactive technologies, allows for a more personalized and inclusive educational experience. This shift aligns with the understanding that fostering cognitive independence requires an environment where students can explore, question, and apply knowledge in ways that resonate with their individual strengths and interests.

The exploration of the changing educational landscape underscores the imperative for a pedagogical shift towards more active and engaging learning experiences (Babaev, Bylykova 2021). The traditional paradigm of education is giving way to an approach that values not only the content delivered but also the process through which students actively construct their understanding. This recognition lays the foundation for an integrative approach to organizing the formation of students' cognitive independence, acknowledging the symbiotic relationship between pedagogical evolution and the imperative for more dynamic and engaging learning environments.

Intensifying learning activities represents a paradigm shift in education, bringing forth a multitude of benefits for comprehensive student development. At the forefront of these advantages is the heightened engagement experienced by

students when learning is intensified. Active involvement in the learning process not only captures students' attention but also cultivates a sense of curiosity and intrinsic motivation. This engagement is a catalyst for fostering a love for learning, transforming education from a passive endeavor into a dynamic and participatory experience (Popova 2016).

Furthermore, the intensification of learning activities contributes significantly to the development of critical skills essential for success in the 21st century. As students grapple with challenging tasks, collaborate on projects, and actively problem-solve, they inherently develop critical thinking, communication, and teamwork skills. These competencies extend beyond the realm of academia, becoming invaluable assets in the professional world where adaptability and collaborative aptitude are highly prized.

Intensified learning activities also nurture a deeper understanding of subject matter. By immersing students in hands-on experiences, educators provide them with the opportunity to apply theoretical knowledge to real-world situations. This experiential learning not only enhances retention but also encourages a holistic comprehension of concepts, as students witness the practical implications of what they study. This transformative learning experience contributes to the development of a well-rounded individual capable of applying knowledge in diverse contexts (Al-Nofaie 2020).

Moreover, the intensification of learning activities supports the cultivation of essential life skills. Students exposed to challenging and interactive learning environments are better equipped to manage stress, overcome obstacles, and develop resilience. These skills are integral not only for academic success but also for navigating the complexities of personal and professional life. As students encounter and overcome challenges in the learning process, they build a foundation for lifelong learning and adaptability.

In addition, intensified learning activities contribute to the creation of a positive and inclusive learning culture. Collaborative projects, interactive discussions, and hands-on activities foster a sense of community within the classroom, promoting diversity of thought and mutual respect among students. This social aspect of intensified learning activities enhances the overall learning experience, providing students with the interpersonal skills necessary for effective communication and collaboration in the globalized world.

The benefits of intensifying learning activities are manifold, encompassing enhanced engagement, skill development, deeper understanding, and the cultivation of life skills. This paradigm shift acknowledges the evolving needs of students and aligns with the broader goals of education in preparing individuals for success in a dynamic and interconnected world. The recognition of these benefits sets the stage for exploring an integrative approach to organizing the formation of students' cognitive independence, recognizing the transformative impact of intensified learning activities on holistic student development.

**Barriers to cognitive independence**

The development of cognitive independence in students encounters several common obstacles that educators must navigate to foster a truly empowering learning environment. One significant challenge is the prevalence of standardized testing and curriculum constraints, which often prioritize rote memorization over the cultivation of critical thinking. The emphasis on high-stakes assessments can limit educators' flexibility in exploring alternative, more student-centric teaching methods, hindering the organic growth of cognitive independence. Moreover, the traditional lecture-based model of education can be an obstacle in itself, as it tends to reinforce a passive learning approach, where students are recipients of information rather than active participants in the knowledge-building process (Popova, Jin 2020).

Another barrier to the development of cognitive independence is the pervasive fear of failure within the educational system. The pressure to succeed academically and the fear of making mistakes can stifle students' willingness to take intellectual risks and engage in independent inquiry. This fear-driven culture undermines the development of resilience and adaptability, crucial components of cognitive independence. Additionally, the lack of emphasis on metacognitive skills, such as self-reflection and awareness of one's own thinking processes, poses a hurdle to the development of cognitive independence. Students may not be adequately equipped to monitor and regulate their learning strategies, hindering their ability to take control of their cognitive development.

Furthermore, the influence of external factors, such as socioeconomic disparities and inadequate access to educational resources, can pose substantial obstacles to the cultivation of cognitive independence. Students facing economic hardships may have limited access to extracurricular activities, enrichment programs, or advanced educational technologies, impeding their exposure to diverse learning experiences (Babaev, Bylykova 2021). This lack of equity in educational opportunities further exacerbates existing disparities in cognitive development, hindering the realization of cognitive independence for all students.

The increasing prevalence of distraction in the digital age poses yet another challenge. The omnipresence of smartphones and other digital devices can divert students' attention away from focused, independent learning. The constant influx of information from various sources may overwhelm students, making it challenging to discern credible information and develop a discerning, independent mindset.

The identification of common obstacles to the development of cognitive independence highlights systemic challenges within the educational structure, including assessment practices, pedagogical approaches, socio-economic disparities, and the impact of digital distractions (Sydorenko 2018). Addressing these obstacles requires a comprehensive and multifaceted strategy to create an environment conducive to the organic growth of cognitive independence

among students. Recognizing and overcoming these challenges sets the stage for an integrative approach to organizing the formation of students' cognitive independence, emphasizing the need for systemic change and a student-centric paradigm in education.

The intensification of learning activities, while promising in its potential benefits, encounters several external factors that may pose challenges to its effective implementation within the educational landscape. Financial constraints stand out as a significant obstacle, as the incorporation of innovative technologies, hands-on experiences, and collaborative projects often requires additional resources. School districts and educational institutions may face limitations in funding, hindering their ability to invest in the necessary tools and infrastructure that would facilitate the intensification of learning activities.

Another external factor is the resistance to change within established educational systems (Edutopia, 2021). Traditional pedagogical methods and structures may be deeply ingrained, and educators, administrators, and even parents may exhibit apprehension or reluctance towards adopting more intensive and interactive learning approaches. This resistance can stem from concerns about disruptions to established routines, uncertainties about the effectiveness of new methods, or a lack of professional development opportunities to equip educators with the skills necessary for implementing intensified learning activities.

Policy constraints and standardized testing requirements also contribute to hindrances in the intensification of learning activities. Educational policies that prioritize standardized assessments may inadvertently limit the time and flexibility available for educators to implement more engaging and participatory learning experiences (Prokopenko, Sadivnychyi, et al. 2022). The pressure to adhere to strict curricular guidelines and meet predefined benchmarks can impede the exploration of innovative teaching methods that would otherwise contribute to the intensification of learning activities.

Moreover, the digital divide poses a considerable external challenge. Inequitable access to technology and the internet creates disparities among students, with those lacking access being at a disadvantage in participating in digitally intensified learning experiences (Babaev, Bylykova 2021). The exacerbation of existing socio-economic disparities further complicates efforts to create a level playing field for all students, hindering the realization of inclusive and accessible intensified learning activities.

The external factor of limited professional development opportunities for educators must also be considered. Teachers are at the forefront of implementing intensified learning activities, and their preparedness and confidence in utilizing innovative methods are crucial. Inadequate training and professional development may impede educators' ability to effectively integrate technology, design engaging activities, and create a conducive environment for intensified learning.

The external factors that hinder the intensification of learning activities encompass financial constraints, resistance to change, policy limitations, the digital divide, and insufficient professional development opportunities. Addressing these challenges requires a holistic approach that involves not only providing the necessary resources but also fostering a supportive culture that encourages experimentation and continuous improvement within the educational system. Recognizing and mitigating these external factors sets the stage for an integrative approach to organizing the formation of students' cognitive independence, emphasizing the need for systemic change and a collaborative effort to overcome external barriers to intensified learning activities.

**Integrative approach to learning**

Introducing an integrative approach to organizing learning activities represents a transformative paradigm that seeks to synergize various educational elements for a more holistic and effective learning experience. At its core, an integrative approach entails the deliberate blending of diverse pedagogical methods, technological tools, and collaborative strategies to create a cohesive and dynamic educational environment. This approach recognizes that learning is a multifaceted process and aims to harness the strengths of different instructional techniques to cater to the diverse needs and learning styles of students.

One key aspect of an integrative approach is the incorporation of technology as an enabler for intensified learning activities. Interactive platforms, multimedia resources, and educational applications can enhance engagement, provide real-world context, and facilitate personalized learning experiences (Babaev, Bylykova 2021). Integrating technology also allows for the seamless integration of collaborative tools, breaking down physical barriers and fostering virtual teamwork, essential skills for the modern interconnected world.

Moreover, an integrative approach involves the intentional integration of project-based learning, where students are presented with real-world problems and engage in hands-on, collaborative projects to develop critical thinking and problem-solving skills. This approach encourages active participation, self-directed inquiry, and the application of knowledge in practical scenarios. The combination of technology and project-based learning creates a symbiotic relationship, amplifying the effectiveness of both methods in fostering cognitive independence.

An essential component of the integrative approach is the recognition of the teacher's role as a facilitator and guide rather than a sole disseminator of information. Educators become orchestrators of a learning ecosystem, curating a diverse array of resources, experiences, and opportunities for students to explore. This shift in the teacher's role emphasizes the importance of cultivating a learning environment that nurtures curiosity, independent thinking, and a growth mindset.

An integrative approach promotes interdisciplinary connections, recognizing that knowledge is interconnected across various subjects. Integrating different disciplines encourages students to see the interconnectedness of information, fostering a holistic understanding of complex concepts. This approach encourages educators to collaborate across disciplines, creating a more cohesive and comprehensive educational experience.

An integrative approach to organizing learning activities signifies a departure from isolated teaching methods towards a more synergistic and student-centered educational model. By combining technology, project-based learning, interdisciplinary connections, and a redefined role for educators, this approach aims to create an environment that not only intensifies learning activities but also cultivates cognitive independence among students. The introduction of an integrative approach sets the stage for exploring innovative educational practices that address the evolving needs of students in a rapidly changing world.

The enhancement of cognitive independence is intricately linked to the thoughtful integration of diverse teaching methods, technology, and collaborative learning strategies within the educational framework (Filipova, Yuleva-Chuchulayna 2021b). By combining these elements, educators can create a dynamic and synergistic learning environment that fosters the development of cognitive independence among students. One effective approach involves incorporating active learning techniques, such as flipped classrooms and inquiry-based learning, where students take an active role in exploring topics independently and then come together in the classroom to engage in discussions, problem-solving, and collaborative activities.

Technology plays a pivotal role in this integration, offering a myriad of tools and platforms to amplify the learning experience. Virtual learning environments, educational apps, and online resources provide avenues for self-directed exploration, allowing students to delve deeper into subjects of interest at their own pace. Simultaneously, technology facilitates collaborative learning through online platforms, enabling students to engage in virtual discussions, share resources, and work collectively on projects irrespective of physical constraints. The integration of technology, thus, not only intensifies learning activities but also provides students with the autonomy to navigate their educational journey.

Collaborative learning further enhances cognitive independence by emphasizing interpersonal skills, teamwork, and shared problem-solving. Group projects, peer-to-peer teaching, and collaborative problem-solving activities encourage students to articulate their thoughts, consider diverse perspectives, and collectively arrive at solutions. This collaborative approach not only mirrors real-world scenarios but also cultivates essential skills such as communication, negotiation, and conflict resolution, contributing to the holistic development of students' cognitive independence.

Moreover, a blended learning approach, combining traditional classroom instruction with online components, provides a flexible and personalized learning

experience. This model allows students to access resources, engage in discussions, and participate in interactive activities both in and outside the classroom. Blended learning recognizes the diverse learning styles and paces of students, empowering them to take control of their learning journey and fostering a sense of responsibility for their academic progress.

The combination of various teaching methods, technology, and collaborative learning creates a synergistic educational environment that intensifies learning activities while nurturing cognitive independence. The integration of active learning, technology-enabled self-directed exploration, and collaborative endeavors acknowledges the multifaceted nature of learning and provides students with a comprehensive toolkit to navigate their educational journey autonomously. This approach sets the stage for an integrative approach to organizing the formation of students' cognitive independence, underscoring the transformative potential of a well-balanced and student-centric educational paradigm.

**Practical strategies for implementation**

Practical implementation of the integrative approach to enhance cognitive independence necessitates a thoughtful blend of teaching strategies and technological tools. One exemplary strategy is the incorporation of project-based learning (PBL), where students engage in hands-on projects that require critical thinking, collaboration, and problem-solving. For instance, educators can design projects that span multiple disciplines, encouraging students to apply knowledge from various subjects to real-world scenarios. This approach not only intensifies learning activities but also fosters cognitive independence by placing students in the role of active participants and problem solvers.

Another practical example is the utilization of flipped classrooms. In this approach, educators leverage technology to deliver instructional content outside the classroom, such as through pre-recorded lectures or online resources. Classroom time is then dedicated to interactive activities, discussions, and collaborative projects. This inverted model not only allows students to engage with content at their own pace but also fosters deeper understanding through active participation during class, promoting cognitive independence by emphasizing self-directed learning.

Incorporating technology-enhanced formative assessments is another practical strategy. Platforms that offer quizzes, polls, and interactive assessments provide real-time feedback to both educators and students. This iterative feedback loop enables students to identify areas of strength and weakness, fostering a proactive approach to their learning journey. Additionally, educators can tailor their instructional approaches based on the immediate needs of the students, promoting personalized learning and cognitive independence (Sydorenko 2017).

Educators can also integrate VR and AR into the learning environment. Virtual field trips, immersive simulations, and interactive AR applications provide students with experiential learning opportunities, transcending the traditional boundaries of the classroom. This not only intensifies learning activities but also cultivates cognitive independence by offering students the chance to explore and interact with content in ways that go beyond traditional methodologies.

Moreover, the use of online collaborative platforms can facilitate group projects and discussions, encouraging students to collaborate irrespective of physical proximity. Tools like Google Workspace, Microsoft Teams, or other project management platforms enable real-time collaboration, document sharing, and asynchronous communication. Such platforms not only intensify collaborative learning but also empower students to take ownership of their projects, enhancing their cognitive independence.

Lastly, professional development opportunities for educators are crucial. Training sessions and workshops on integrating technology, designing project-based assessments, and fostering collaborative learning can equip educators with the skills necessary for successful implementation of the integrative approach. By nurturing educators' understanding and proficiency in these methodologies, schools can ensure sustained and effective integration of the integrative approach to enhance cognitive independence among students.

Providing practical examples and strategies for educators involves a combination of project-based learning, flipped classrooms, technology-enhanced formative assessments, virtual and AR applications, online collaborative platforms, and professional development initiatives. This comprehensive approach sets the stage for an integrative and transformative educational experience, ensuring that cognitive independence becomes a central focus in the teaching and learning process.

Project-based learning (PBL), flipped classrooms, and other innovative methods play pivotal roles in reshaping the educational landscape by intensifying learning activities and fostering cognitive independence. Project-based learning is a dynamic strategy where students engage in hands-on projects that address real-world problems or scenarios. This method encourages critical thinking, collaboration, and independent inquiry as students take an active role in defining and solving complex issues. For instance, a science project that involves designing and conducting experiments not only intensifies learning but also empowers students to apply scientific principles in a practical context, cultivating cognitive independence.

Flipped classrooms represent a paradigm shift where traditional instructional methods are inverted. Educators leverage technology to deliver instructional content outside of the classroom, often through pre-recorded lectures or online resources, allowing students to consume the material at their own pace. Classroom time is then dedicated to interactive activities, discussions, and collaborative projects. This approach not only intensifies learning activities but also encourages self-directed

learning as students take responsibility for their own understanding of the content, promoting cognitive independence by shifting the locus of control to the learners.

In addition to PBL and flipped classrooms, other innovative methods contribute significantly to cognitive independence. Inquiry-based learning, for example, encourages students to pose questions, investigate, and construct their own understanding of the material. By engaging in the process of inquiry, students become active participants in the learning journey, honing their research skills and critical thinking abilities. Similarly, game-based learning integrates educational content into game formats, making learning enjoyable and immersive. This approach intensifies the learning experience by combining entertainment with education, allowing students to explore and apply knowledge in a gamified context, thereby fostering cognitive independence through intrinsic motivation.

Furthermore, experiential learning, such as internships, field trips, and service-learning projects, brings real-world context to the educational experience. By directly engaging with practical applications of knowledge, students not only intensify their learning but also develop problem-solving skills, adaptability, and a deeper understanding of the subject matter. This hands-on approach encourages students to take ownership of their learning, contributing to the cultivation of cognitive independence.

Collaborative learning methods also play a vital role in intensifying learning activities and fostering cognitive independence (Content and Language Integrated Learning at School in Europe, 2022). Group projects, peer-to-peer teaching, and collaborative problem-solving activities create an environment where students learn from each other and collectively contribute to the learning process. This collaborative approach not only mirrors real-world scenarios but also nurtures interpersonal skills, teamwork, and the ability to consider diverse perspectives, essential components of cognitive independence.

In summary, project-based learning, flipped classrooms, and other innovative methods serve as transformative approaches in education, intensifying learning activities and cultivating cognitive independence among students. These methodologies empower learners to take an active role in their education, encouraging critical thinking, problem-solving, and a proactive approach to learning. As education continues to evolve, the incorporation of these innovative methods marks a shift towards a more student-centric and dynamic learning experience.

**Case studies**

Several educational institutions and programs worldwide have successfully implemented integrative approaches, showcasing the transformative impact of combining various teaching methods, technology, and collaborative learning strategies. The High-Tech High network in California, for instance, is renowned for its commitment to project-based learning and integration of technology. Students at

High Tech High engage in interdisciplinary projects that require critical thinking, problem-solving, and collaboration, exemplifying how an integrative approach can foster cognitive independence. The success of High-Tech High has spurred the adoption of similar models in other regions, highlighting the replicability and scalability of integrative methods.

Singapore's FutureSchools@Singapore initiative is another noteworthy example (FutureSchools@Singapore, 2021). This program integrates technology into the curriculum to create an immersive and interactive learning experience. Students have access to cutting-edge technologies such as VR and AR for hands-on learning. The program also emphasizes collaborative projects and self-directed inquiry, providing students with a comprehensive toolkit for cognitive independence. The success of FutureSchools@Singapore underscores the potential of an integrative approach to prepare students for the challenges of a technology-driven future.

Furthermore, Finland's educational system is often cited as a global exemplar of an integrative approach. The Finnish model emphasizes collaborative learning, personalized education plans, and a reduced emphasis on standardized testing. Teachers in Finland are encouraged to employ innovative teaching methods, including project-based learning and technology integration, to enhance student engagement and foster critical thinking. The holistic and student-centered nature of the Finnish education system aligns with the principles of an integrative approach, resulting in consistently high levels of student performance and satisfaction.

The Quest to Learn (Q2L) school in New York City provides a distinctive example of game-based learning as an integral part of the curriculum (Quest to Learn 2021). Q2L incorporates game design principles into lessons, leveraging the motivational power of games to intensify learning activities. Students engage in interactive quests, simulations, and collaborative projects that not only make learning enjoyable but also cultivate cognitive independence by encouraging students to explore, experiment, and apply knowledge in creative ways.

Moreover, the International Baccalaureate (IB) program is recognized for its integrative and inquiry-based approach to education International (Baccalaureate Organization, 2021). The IB curriculum emphasizes interdisciplinary connections, inquiry-driven learning, and global perspectives. Students in IB programs are encouraged to explore topics in-depth, engage in collaborative projects, and connect their learning to real-world issues. The success and global recognition of the IB program illustrate how an integrative approach can be implemented on a broad scale to prepare students for diverse challenges.

New Tech Network is a national non-profit organization that supports schools in implementing an innovative model centered around project-based learning, technology integration, and a collaborative culture. Schools in the NTN network emphasize hands-on projects, teamwork, and the use of technology to intensify learning activities and foster cognitive independence.

International Foundation is a non-profit organization in India that focuses on hands-on, experiential learning for students. They operate mobile science labs that travel to rural schools, providing students with access to interactive science experiments, project-based learning activities, and collaborative projects. Agastya's approach exemplifies the integration of experiential learning to enhance cognitive independence (Agastya International Foundation, 2021).

The Montessori method is an integrative educational approach that emphasizes individualized learning, hands-on activities, and a multi-age classroom structure. Montessori schools around the world follow principles that promote independence, self-directed learning, and collaborative engagement, fostering cognitive independence from an early age.

Big Picture Learning is an educational organization that promotes personalized, student-centered learning (Big Picture Learning, 2021). Their approach involves internships, real-world projects, and individualized learning plans. The emphasis on student interests, mentorship, and experiential learning aligns with the principles of an integrative approach, providing students with opportunities to explore and develop cognitive independence.

Green School in Bali, Indonesia, is an example of an eco-focused and holistic educational institution that integrates sustainability, environmental education, and project-based learning (Green School Bali, 2021). The curriculum is designed to connect students with nature and real-world challenges, encouraging them to explore solutions collaboratively. The school's emphasis on interdisciplinary learning and environmental consciousness aligns with the integrative approach, fostering cognitive independence with a global perspective.

These real-life examples demonstrate the viability and success of integrative approaches in diverse educational settings. Whether through project-based learning, technology integration, game-based learning, or interdisciplinary programs, these institutions and programs showcase the transformative potential of an integrative approach to intensify learning activities and foster cognitive independence among students. Their experiences serve as inspiration for educators and policymakers seeking to create dynamic and student-centered learning environments that align with the demands of the 21st century.

**Future directions**

The future of cognitive independence and learning intensification holds exciting possibilities as education continues to evolve in response to societal, technological, and pedagogical advancements. One potential development lies in the further integration of AI and adaptive learning technologies. AI-driven platforms have the potential to personalize learning experiences, providing tailored content and feedback based on individual student needs. This not only intensifies learning by catering to diverse learning styles but also empowers students to take greater

control over their educational journey, fostering cognitive independence through adaptive and personalized pathways.

AR and VR are poised to play a significant role in intensifying learning activities and enhancing cognitive independence. Immersive experiences facilitated by AR and VR can transport students to virtual environments, enabling them to explore concepts in depth and engage with simulations that mirror real-world scenarios. This experiential learning approach not only intensifies the educational experience but also nurtures cognitive independence by encouraging students to apply theoretical knowledge in practical, simulated settings.

The rise of competency-based education (CBE) represents another potential future development. CBE focuses on students mastering specific skills or competencies rather than progressing through a fixed curriculum based on time. This approach intensifies learning by allowing students to advance at their own pace, emphasizing mastery over memorization. Competency-based education inherently fosters cognitive independence, as students take responsibility for demonstrating their understanding before progressing to more advanced concepts.

Furthermore, the continued evolution of interdisciplinary and cross-disciplinary approaches is likely to intensify learning activities. Breaking down traditional subject silos and encouraging students to explore connections across disciplines fosters a holistic understanding of complex topics. This integrative approach not only intensifies learning but also nurtures cognitive independence by encouraging students to view problems from multiple perspectives and apply knowledge in a contextually rich manner.

Global collaboration and the democratization of education through online platforms hold promise for intensifying learning activities on a global scale. Collaborative projects, virtual exchanges, and shared educational resources enable students to engage with diverse perspectives and cultures, fostering cognitive independence by broadening their worldview and preparing them for a globally interconnected future.

The future developments in the field of cognitive independence and learning intensification are likely to be shaped by technological innovations, personalized learning approaches, interdisciplinary strategies, and global connectivity. As education continues to adapt to the needs of the 21st century, these developments hold the potential to create dynamic and student-centric learning environments that empower individuals to become lifelong learners, critical thinkers, and contributors to a rapidly evolving global society.

The exploration of cognitive independence and learning intensification underscores the transformative potential of an integrative approach in education. Key takeaways from this examination include the recognition that cognitive independence is a multifaceted skill encompassing critical thinking, problem-solving, and self-directed learning. Learning intensification, achieved through active,

engaging methodologies, technology integration, and collaborative strategies, is integral to nurturing cognitive independence. Real-life examples, ranging from institutions like High Tech High to initiatives such as Finland's educational model, showcase the success of integrative approaches in diverse contexts.

The importance of an integrative approach lies in its ability to create dynamic and student-centric learning environments that align with the demands of the 21st century. By combining various teaching methods, technology, and collaborative learning, educators can empower students to become active participants in their education, fostering curiosity, resilience, and a lifelong love for learning. The incorporation of innovative methods, including project-based learning, flipped classrooms, and interdisciplinary connections, not only intensifies learning activities but also prepares students for a complex and rapidly changing world.

Looking toward the future, potential developments in AI, AR, VR, competency-based education, and global collaboration offer exciting avenues for further intensifying learning and nurturing cognitive independence. As education continues to evolve, the importance of an integrative approach becomes increasingly evident in preparing students for a future where adaptability, critical thinking, and interdisciplinary skills are paramount.

The key takeaways emphasize that an integrative approach is not merely a pedagogical choice but a fundamental shift in the educational paradigm. It is a recognition that education must go beyond the transmission of information to cultivate essential skills, attitudes, and competencies that empower individuals to thrive in a complex and interconnected world. The importance of an integrative approach lies in its capacity to shape students into independent thinkers, lifelong learners, and contributors to a global society, ultimately preparing them for the challenges and opportunities of the future.

**2. Recommendations and suggestions**

In response to the multifaceted challenges posed by traditional educational models, the following recommendations emerge as integral pathways for the successful implementation of an integrative approach to education. Recognizing the dynamic nature of cognitive independence and the evolving landscape of learning, these recommendations provide a strategic framework for educators, institutions, and policymakers to intensify learning activities and foster the crucial skills required for the 21st century.

**Table 1.** Recommendations as integral pathways for the successful implementation of an integrative approach to education

| № | Recommendations | Description |
|---|---|---|
| 1. | Implement integrative teacher training programs | Establish comprehensive teacher training initiatives that focus on equipping educators with the necessary skills to implement integrative approaches. Emphasize the importance of technology integration, collaborative strategies, and innovative methodologies. |
| 2. | Promote interdisciplinary curriculum design | Encourage the development of interdisciplinary curriculum designs that emphasize the interconnectedness of subjects. Foster collaborations between departments to create holistic learning experiences that intensify student understanding. |
| 3. | Foster a culture of continuous professional development | Cultivate a culture of continuous professional development among educators. Support and incentivize ongoing learning opportunities, workshops, and collaborative activities to keep educators updated on emerging trends and pedagogical advancements. |
| 4. | Integrate technology strategically | Advocate for the strategic integration of technology in the classroom. Select and implement technologies that enhance learning experiences, personalize education, and intensify student engagement without compromising the development of cognitive independence. |
| 5. | Encourage student-centric assessment practices | Shift assessment practices towards student-centric methods that measure cognitive skills, problem-solving abilities, and critical thinking. Move away from relying solely on traditional standardized testing to provide a more accurate representation of student capabilities. |
| 6. | Facilitate collaborative learning opportunities | Create environments that foster collaborative learning experiences. Implement group projects, peer-to-peer teaching, and community engagement activities to intensify learning and cultivate interpersonal skills, teamwork, and cognitive independence through shared problem-solving. |
| 7. | Explore partnerships with industry and community organizations | Establish partnerships with industry and community organizations to provide students with real-world applications of their learning. Implement internships, projects, and mentorship programs to intensify the learning experience by connecting theoretical knowledge to practical contexts. |
| 8. | Advocate for policy changes | Advocate for policy changes at institutional and governmental levels to support and incentivize the implementation of integrative approaches. Encourage policy frameworks that promote flexibility in curriculum design, assessment methods, and professional development. |

*Source:* Author's development

By adopting these recommendations, educational institutions can contribute to the widespread adoption of integrative approaches, fostering cognitive independence and intensifying learning experiences for students.

The recommendations outlined herein collectively form a blueprint for transforming the educational landscape. By incorporating these strategies, educators can propel students towards cognitive independence, equipping them with the skills necessary for success in an ever-changing world. Embracing interdisciplinary collaboration, leveraging technology strategically, and fostering a culture of continuous improvement are key pillars in the journey towards a holistic, student-centric education. As these recommendations become integrated into the fabric of educational practices, the potential for intensified learning experiences and the cultivation of cognitive independence will flourish, shaping a generation of learners poised to meet the challenges and opportunities of the future with resilience and innovation.

In addition to the specific recommendations outlined, several overarching suggestions emerge from the exploration of cognitive independence and learning intensification. Firstly, fostering a culture of open communication and collaboration among educators, administrators, and policymakers is crucial. This includes regular forums for sharing best practices, discussing challenges, and collectively envisioning the future of education. Encouraging a mindset shift towards viewing failures as opportunities for learning and improvement is equally essential. This perspective supports experimentation with new methodologies and the continuous refinement of teaching strategies.

Moreover, institutions are encouraged to prioritize research and development initiatives focused on educational innovation. By investing in studies that assess the effectiveness of integrative approaches, technology integration, and collaborative learning, educational stakeholders can gain valuable insights to inform decision-making and drive continuous improvement. Additionally, creating platforms for student feedback and involvement in shaping their educational experiences is key. Students should be active participants in the ongoing dialogue about the methods that best resonate with their learning preferences and needs.

Furthermore, global collaboration among educational institutions can provide a rich source of inspiration and diverse perspectives. Establishing partnerships with international schools, participating in collaborative projects, and engaging in cross-cultural exchanges can contribute to a broader understanding of effective teaching methodologies. Lastly, staying attuned to emerging trends in education, such as advancements in technology, pedagogical research, and evolving workforce demands, will allow institutions to adapt proactively and ensure their educational practices remain relevant and impactful.

These suggestions offer a holistic perspective on cultivating an environment conducive to cognitive independence and learning intensification. By embracing a collaborative, innovative, and globally informed approach, educational institutions can position themselves at the forefront of transformative education, preparing students for success in an ever-evolving world.

**Conclusions and summary**

In conclusion, this article has traversed the intricate terrain of cognitive independence and learning intensification, emphasizing the transformative potential of an integrative approach in education. The recognition of cognitive independence as a multifaceted skill, coupled with an exploration of real-life examples and recommendations, underscores the significance of reshaping educational paradigms. By integrating various teaching methods, technology, and collaborative learning strategies, educators can intensify learning activities, nurturing cognitive independence and essential skills for the 21st century.

The examples of successful integrative approaches showcased the adaptability of these methodologies across diverse cultural and educational contexts. From High Tech High's project-based learning to Finland's holistic educational model, these instances serve as beacons illuminating the path toward student-centric, dynamic learning environments. The recommendations, presented in both narrative and tabular form, provide actionable insights for educators, administrators, and policymakers to implement transformative changes in education.

Looking forward, the article suggests that the future of education holds exciting possibilities, including the strategic integration of AI, AR, VR, and competency-based education. These innovations have the potential to further intensify learning activities, providing personalized, immersive experiences that foster cognitive independence. The overarching suggestions underscore the importance of a collaborative culture, a proactive approach to research and development, student involvement, global perspectives, and staying abreast of emerging trends.

This article advocates for a shift in educational practices - a move away from traditional models towards a future where cognitive independence is nurtured through dynamic, innovative approaches. By embracing these principles, educational stakeholders can contribute to the creation of empowered, critical thinkers ready to navigate the challenges and opportunities of the evolving global landscape. This exploration serves as a testament to the transformative power of education in shaping the minds and capabilities of future generations.

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✉ **Dr. Albina Volkotrubova, Assoc. Prof.**
ORCID iD: 0000-0002-8343-719X
WoS Researcher ID: IUQ-5157-2023
International University of Kyrgyzstan
Bishkek, Kyrgyzstan
E-mail: avolkotrubova@gmail.com

✉ **Aidai Kasymova**
ORCID iD: 0009-0005-9882-8467
WoS Researcher ID: JWA-4448-2024
International University of Kyrgyzstan
Bishkek, Kyrgyzstan
E-mail: aidaikasymova555@gmail.com

✉ **Prof. Zoriana Hbur, DSc.**
ORCID iD: 0000-0003-4536-2438
WoS Researcher ID: U-9676-2019
Shupyk National Healthcare University
Kyiv, Ukraine
E-mail: zoranagbur@gmail.com

✉ **Antonina Kichuk, DSc., Assoc. Prof.**
ORCID iD: 0000-0002-2657-661X
WoS Researcher ID: FDY-5141-2022
Izmail State University of Humanities
Izmail, Ukraine
E-mail: tonya82kichuk@gmail.com

✉ **Dr. Svitlana Koshova, Assoc. Prof.**
ORCID iD: 0000-0002-7637-431
WoS Researcher ID: H-1337-2016
Shupyk National Healthcare University
Kyiv, Ukraine
E-mail: svet.lana.koshova@gmail.com

✉ **Dr. Svitlana Khodakivska, Assoc. Prof.**
ORCID iD: 0000-0002-0082-6561
WoS Researcher ID: ABC-5172-2021
Bogomolets National Medical University
Kyiv, Ukraine
E-mail: svet.lana.koshova@gmail.com