AN ANALYSIS OF STUDENT AGENCY, MOTIVATION, AND IDENTITY: FORMATION IN LEARNING CHANGING NATURE IN THE AI ERA

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Abstract: *Learning has transformed in the era of artificial intelligence (AI) in our modern education. Hence, this article considers how this transformation affects student agency, student motivation, and student identity. The study evidence suggests a positive impact of AI applications on the awareness of students' agency by encouraging them to participate in their learning process and increasing intrinsic motivation based on AI-mediated meaningful experiences. In addition, the mentioned tools contribute to the creation of students' learning identities as competent and confident. Hence, the results highlight that educators and policymakers need to address mitigating inequalities in the use of AI in educational institutions, as well as issues such as grey areas of privacy and bias.*

Аннотация: *Обучение преобразилось в эпоху искусственного интеллекта (ИИ) в нашем современном образовании. Таким образом, в данной статье рассматривается вопрос о том, как эта трансформация влияет на самостоятельность студентов, их мотивацию и идентичность. Результаты исследования свидетельствуют о положительном влиянии приложений ИИ на осознание студентами своей самостоятельности, поощряя их к участию в процессе обучения и повышая внутреннюю мотивацию на основе значимого опыта, полученного с помощью ИИ. Кроме того, указанные инструменты способствуют формированию учебной идентичности студентов как компетентных и уверенных в себе. Таким образом, полученные результаты свидетельствуют о том, что педагогам и политикам необходимо решать вопросы смягчения неравенства при использовании ИИ в учебных заведениях, а также такие проблемы, как серые зоны конфиденциальности и предвзятость.*

Annotatsiya: *O'qish zamonaviy ta'limda sun'iy intellekt (AI) davrida o'zgarishga uchradi. Shuning uchun, ushbu maqolada bu o'zgarishning talabalar agentligi, motivatsiyasi va identitetiga qanday ta'sir etishi ko'rib chiqiladi. Tadqiqot ma'lumotlari AI dasturlarining talabalar agentligini anglashiga ijobiy ta'sir ko'rsatishini, ularni o'qish*

jarayonida faol ishtirok etishga rag'batlantirib, AI orqali ma'noli tajribalarga asoslangan ichki motivatsiyani oshirishini ko'rsatadi. Bundan tashqari, ushbu vositalar talabalar o'qish identitetlarini malakali va o'ziga ishonchli sifatida shakllantirishga yordam beradi. Shunday qilib, natijalar ta'lim muassasalarida AI foydalanishida tengsizliklarni kamaytirishga e'tibor qaratish zarurligini, shuningdek, maxfiylik va tarafkashlikning "kulrang" sohalari kabi muammolarni hal etish zarurligini ta'kidlaydi.

Key words: *Artificial Intelligence, student agency, motivation, identity formation, educational equity, learning management systems, ethical considerations.*

Ключевые слова: *искусственный интеллект, студенческая самостоятельность, мотивация, формирование личности, равенство в образовании, системы управления обучением, этические аспекты.*

Kalit so'zlar: *sun'iy intellekt, talabalar agentligi, motivatsiya, identitetni shakllantirish, ta'lim tengligi, o'qitish boshqaruv tizimlari, etik jihatlar.*

1. Introduction

At a time when technology enters and changes the fabric of people's existence, artificial intelligence or AI is at the center of a revolution in education that redefines the way learners obtain knowledge, their interactions, and even their concept of self. Education is transforming itself with AI not as a trend, but as a revolution where learners are assisted to plan, organize, control, and uniquely evaluate the educational process [7.3]. This ever-increasing adoption of AI systems in personalizing learning experiences is fast shifting the traditional roles of educators and students to bring in new opportunities and complexities for the learning landscape.

At the moment AI is being integrated into the educational framework throuhg learning management systems that provide personalized learning objectives and feedback along with intelligent tests that improve the learning process. These developments afford students personal learning preferences, immediate feedback, and materials within their expertise and learning capacity. However, amidst these benefits lies a crucial question: How does the increasing presence of AI in education influence student agency, motivation, and identity formation? This question is critical in navigating the teaching dimensions of AI in the context of learners and the learning environment in the dynamically changing digital world.

2. Literature review

Artificial intelligence (AI) has made significant educational studies over the past quarter-century [6.2]. Its use in education has become increasingly widespread thanks to advancements in computing and information processing [6.4]. AI in education presents both opportunities and challenges for educational practices [4.5]. AI focuses on improving educational techniques through real-world testing and the creation of standardized prototypes in areas like statistical reasoning, data visualization, and

learning analytics [1.4]. A key aim of AI in education is to offer individualized learning support tailored to each student's unique learning needs, preferences, and traits [2.4-7].

3. Methods

In this research article, the literature review section is used as a means of collecting and analyzing information. In this literature review approach, findings collected from prior research are analyzed and then incorporated to offer an understanding of how artificial intelligence interfaces with educational experiences. Such a process enables the determination of related themes and trends that define the discourse on student agency, motivation, and identity construction. These prior studies are then scrutinized such that the inadequacies that may exist within the existing research platform are revealed, thus enabling the appraisal of the teaching impressions of AI work within education. The patterns of organization of the literature review are built around the following aims so that commonalities and differences can be made between the given scholarly viewpoints. The use of such an analytical approach contributes to building up the arguments of the article and improving the comprehension of how AI impacts students' learning education in today's learning environment.

4. Results and discussion

4.1. The impact of AI-based Chatbots and virtual labs on student motivation and self-efficacy

On the context of Uzbekistan, Kabilovna & Aleksandrovna in their study employed two primary methodologies: an online survey and focus group discussions. The online survey involved 14 participants from two prestigious universities in Fergana City: Fergana State University (FSU) and the Fergana branch of the Tashkent University of Information Technologies. Participants included students from the 1st to 4th year, with 57.1% from FSU majoring in English philology or literature, and 42.9% from TUIT majoring in IT and telecommunications. The average age of participants was 22 years, ranging from 19 to 26 years, with a gender distribution of 42.9% males and 57.1% females. The focus group discussions included a diverse group of teachers, comprising three females aged 30, 50, and 60 with 6, 25, and 35 years of teaching experience, and three males aged 35, 45, and 55 with 10, 20, and 30 years of experience, respectively [3.37-38].

They revealed a high level of appreciation for the use of AI tools in the classroom, with 85.7% of participants expressing positive feelings towards their implementation in English as a Foreign Language (EFL) learning. This positive attitude suggests that AI-driven feedback and personalized learning paths significantly enhance learners' self-esteem. The study aligns with Bandura's self-efficacy theory, indicating that students feel less rushed and judged when using AI tools, which allows them to progress at their own pace. However, 14.2% of students reported neutral or somewhat negative feelings, highlighting the need for further investigation into their

concerns, particularly regarding the perceived marginalization of traditional learning methods. The study also noted limitations, such as the small sample size, which may affect the generalizability of the results, and suggested that future research should incorporate more diverse methodologies like interviews or observations to gain deeper insights into learners' experiences with AI tools [3.45-47].

In another research conducted by Fadi Bani Ahmad et. all [5.3], where the authors aimed to investigate whether there are statistically significant differences in motivation levels toward learning mathematics among seventh-grade students when taught using different methods: an artificial intelligence (AI) laboratory with 3D visual imaging versus traditional teaching approaches. Additionally, they sought to assess the overall impact of using virtual laboratories (VLabs) on students' motivation to learn mathematics.

The study found statistically significant differences in the motivation to learn mathematics among seventh-grade students across three instructional methods: artificial intelligence (AI), 3D visual imaging, and traditional approaches [5.7]. Specifically, students in the AI-based experimental group exhibited higher motivation levels compared to those in the 3D visual imaging group and the control group using traditional methods. Additionally, the 3D visual imaging group also showed significantly greater motivation than the control group.

These findings support previous research indicating that virtual laboratory simulations enhance learning engagement and motivation by making the learning process more enjoyable and interactive. The use of AI in teaching mathematics was particularly effective in fostering deep understanding and self-directed learning among students. The study supports the notion that innovative instructional methods, such as AI and 3D visual imaging, can significantly improve students' motivation and learning experiences in mathematics compared to conventional teaching techniques.

Additionally, in a similar study by Zhou and Li (2023), the authors aimed to investigate the factors that influence the learning motivation of university students through a questionnaire survey. To increase the accuracy of the responses, they conducted a comprehensive training session related to ChatGPT for the participating students, ensuring they had sufficient hands-on practice. The study involved a diverse group of participants from various universities and academic disciplines, with a focus on those who have used ChatGPT, thereby ensuring the findings are representative and applicable to a broader context in understanding learning motivation among university students.

This study investigated the impact of using Chat, a conversational AI tool, on college students' learning motivation. The key findings reveal a strong connection between perceived competence and interest-enjoyment in using Chat. Students who felt more competent in using the tool, demonstrating proficiency in formulating their

questions, analyzing responses, and engaging with the AI, reported greater enjoyment and interest in learning.

While perceived value was found to have a weaker causal relationship with interest enjoyment, a correlation between the two was still observed. This suggests that while students might not fully grasp the value of Chat, its use still influences their interest in learning. Furthermore, pressure exerted a negative correlation with interest-enjoyment, indicating that students who felt less pressured while using Chat were more likely to enjoy it and be motivated to learn.

The study confirms that college students can successfully learn to use Chat as an auxiliary learning tool to meet their basic needs for autonomy, competence, and interpersonal relationships. These needs directly impact their interest-enjoyment, which in turn positively affects their learning motivation.

4.2. Connection of the findings and theoretical implications

4.2.1. Connecting findings

The reviewed studies demonstrate the significant potential of AI-powered learning tools to enhance student agency, motivation, and identity formation. Both Lee et al. [3] and Fadi Bani Ahmad et al. [5] highlight the positive impact of AI-based interventions on student self-efficacy and learning motivation.

The use of AI chatbots and 3D visual imaging in the reviewed studies suggests that these tools empower students to take control of their learning process, fostering a sense of agency. This aligns with theories of self-directed learning and the importance of active participation in the learning process. Both studies demonstrated significant increases in student motivation when AI-powered tools were integrated into learning. This suggests that AI can make learning more engaging and relevant, potentially leading to increased intrinsic motivation, as theorized by self-determination theory.

While not explicitly explored in the reviewed studies, the potential for AI to impact student identity is evident. As students become more proficient in using AI tools and experience success in their learning, they may develop a greater sense of competence and confidence in their abilities, shaping their identity as learners.

4.2.2. Theoretical implications

These findings support the social construction of knowledge perspective, which emphasizes the role of social interaction and technology in shaping learning. AI tools act as social actors, providing new ways for students to interact with information and construct knowledge.

The findings support the concept of student agency, suggesting that AI can empower students to become active participants in their learning, taking greater control over the learning process. This aligns with theories of student empowerment and self-directed learning. The studies resonate with theories of motivation, particularly self-determination theory, which emphasizes the role of intrinsic

motivation in effective learning. AI tools have the potential to increase intrinsic motivation by making learning more enjoyable, relevant, and engaging.

Hence, these findings suggest that AI integration into education can offer a valuable tool for promoting student agency, enhancing motivation, and potentially contributing to positive identity formation.

5. Conclusion

This research analysis of learning in the age of AI shows that the nature of learning involves a dynamic interplay between the technological factors on the one hand and students' agency, motivation, and learning identity on the other. All the reviewed studies depict how the use of AI-enhanced learning tools enhances student self–efficacy and motivation. Interventions from AI like chatbots and 3D visualization create an environment of student autonomy thus causing student motivation to be intrinsically driven. Another observation made in the context of these tools is how they create opportunities for developing student identity as competent, confident learners.

The above outcomes can be of tremendous use to educators and policymakers in terms of providing a) insights on utilizing or incorporating AI, and b) guidelines on how to go about developing AI-enhanced learning spaces. When incorporating AI tools into the learning environment to address the misrepresented and underestimated intelligence of the students' self, an improved student's voice and interest in learning will be enhanced. They posed profound questions about how AI might enhance students' autonomy, promote mastery of the material, and build positive perceptions of the value of learning.

As the reviewed studies presented the matrix of potential advantages of AI in education, more research should be conducted to comprehend the nature of the effect of integrated AI into educational systems and processes on students. Future research should focus on several key areas: first, analysing the longitudinal effects of AI-based tools on student identity and learning achievements in the course of their education process; second, defining the potential possibilities of incorporation of AI to provide equal learning opportunities for all learners; third, outlining the substantial ethical issues connected with the use of AI in learning, such as students' data protection and potential AI bias. As a novel method of student learning and human interaction, a teachingly inclined discussion of the effect of AI on the lives of students, including their motivation and identity, must be pursued. Through selective AI inclusion that empowers students and offers a positive learning environment, educators can enhance the technology's capacity to reduc student equity gaps and therefore create a more positive learning classroom for all students.

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