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Impact of the use of artificial intelligence on the autonomy of students at National Institute of Youth, Physical Education and Sport (INJEPS) in Benin

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Abstract

As artificial intelligence becomes increasingly integrated into educational practices, questions arise regarding its true impact on learning processes. This research seeks to analyze the influence of excessive use of artificial intelligence on the autonomy of INJEPS students in their academic learning. The specific objectives are to assess the extent to which frequent reliance on artificial intelligence contributes to student disengagement in the learning process, and to identify its effects on the development of cognitive skills among INJEPS students. To achieve this, a mixed-method study was conducted involving students, teachers, and academic administrators. The sampling techniques employed were accidental sampling and purposive snowball sampling. The collected data were analyzed using a framework grounded in the theories of Deci & Ryan (1985) and Sweller (1988). The findings reveal a significant decline in students' perceived autonomy following the regular integration of AI into their academic work, as well as a gradual erosion of cognitive abilities.

Keywords: Artificial Intelligence; Autonomy; Cognitive Aspects; Academic work; Students

1. Introduction

The advent of artificial intelligence (AI) in various sectors has marked a significant shift in how societies function and develop (Bertolucci, 2023). Artificial intelligence is considered an innovative technology that reduces errors and improves the user experience in diverse fields, including education (Heudin, 2017). In the field of education, according to Diallo (2023: 9), "the integration of AI represents a potentially disruptive turning point, with profound implications for teaching and learning." This assertion aligns perfectly with that of Romero, Heiser, and Lepage (2023), who state that the adoption of AI-based technologies in the education system indicates a desire to innovate and improve teaching practices through the personalization and increased efficiency that AI can offer. Within this dynamic, the integration of AI in education raises complex and essential questions. In particular, it is crucial to consider what role human skills will continue to play in a world where machines can perform strategic analyses with unparalleled speed and accuracy. While AI proponents emphasize its potential to revolutionize teaching practices, some observers fear that widespread adoption could lead to the gradual replacement of human cognitive abilities by increasingly powerful algorithms.

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However, this technological advancement raises questions about its long-term impact, particularly on students' ability to remain autonomous in their educational journey.

Indeed, autonomy in learning is a key skill, defined by Holec (1981: 3) as "the ability of an individual to take charge of their own learning." This autonomy relies on elements such as time management, decision-making, and self-regulation. However, with the emergence of AI in educational environments, some researchers (Selwyn, 2019; Luckin et al.) (2016) question the risk of increased student dependence on these technologies. While AI can enhance their autonomy by providing tools tailored to their specific needs, it could also limit their ability to solve problems independently or develop critical thinking. These questions become even more relevant in the context of higher education institutions, where students are encouraged to become autonomous and responsible learners. In Benin, specifically at the National Institute of Youth, Physical Education and Sport (INJEPS), this situation takes on a particular dimension. Students at this institute are training to become professionals in education and sport, two fields where the ability to learn independently and adapt to change is crucial. The introduction of AI into their learning could therefore have a significant impact on their personal and professional development. It is essential to examine how these future educators perceive and use these technologies, and to what extent they influence their autonomy.

In general, this research aims to analyze the influence of excessive use of artificial intelligence on the autonomy of INJEPS students in their learning.

Specifically, it will:

- Examine to what extent the frequent use of artificial intelligence promotes student disengagement from the learning process;
- Identify the effects of artificial intelligence on the development of cognitive skills among injeps students.

2. Materials and Methods

2.1. Nature of the Research

The research conducted is a mixed-methods study, combining qualitative and quantitative approaches. Qualitative research allows for an in-depth exploration of the research topic with participants capable of providing objectively relevant information. Quantitative research provides statistical and numerical data from a large number of participants. The investigations were carried out on clearly identified target groups.

2.2. The Study Population

The study population is defined by Angers (1997) as "an element having one or more characteristics in common that distinguish it from other elements on which the research focuses." Explicitly, it consists of all the actors, units, or objects that are potentially involved in the study. For the purposes of this research, the study population is composed of three target groups:

- Students;
- Teachers;
- Cademic administrators

The first target group was chosen because they are directly involved in this research, as the impact of excessive AI use will directly affect their autonomy. Next, teachers were selected because they are privileged observers of the evolution of their students' practices and skills. Their perspective is crucial for understanding our research. Finally, academic administrators were selected because they are responsible for defining educational policies and overseeing the proper functioning of the institution. Their viewpoint is also essential for understanding our research topic.

2.3. Sampling methods and techniques

In this research, both probabilistic and non-probabilistic sampling methods were used. Based on chance, the probabilistic sampling method led to the selection of a specific category of target populations to be considered in this research. This is precisely the first target group: students. For this method, the random sampling technique was used. The students were selected randomly following the process used to determine the sample size.

However, the second target group (teachers) and the third target group (academic administrators) were selected using a purposive snowball sampling technique within a non-probability sampling method. This sampling technique was chosen due to the significant amount of information to be gathered from this target group.

2.3.1. Sample Size

The research was conducted with students, teachers, and academic administrators. The objective was to reach a degree of saturation to demonstrate the relevance of our topic. Therefore, regarding the use of accidental selection, one hundred and twenty (120) students participated in our survey because we lacked reliable information on the number of students who excessively use AI in their learning, which would allow us to determine reliable data. Conversely, reasoned snowball sampling was used to identify the five (5) teachers and three (3) academic administrators whom we interviewed to obtain reliable information.

For this research, the total sample size is one hundred and twenty-eight (128) subjects. It is presented in the table below:

Table 1 Presentation of sample size

Target category	Sampling techniques	Tools used	Sample size
Students	Accidental choice	Questionnaire	120
Teachers	A reasoned choice	Maintenance guide	05
Academic leaders			03
Total			128

Source: Field Data 2025

2.4. Data collection techniques and tools

Adopting a methodological approach combined with the use of specifically appropriate tools, with a view to the effectiveness of this research, allows for data collection and the achievement of the expected results. Thus, within the framework of this research, three techniques are used: literature review, interviews (using an interview guide as a tool during the data collection phase), and questionnaires (a series of questions).

2.4.1. Literature review

This research focused on data collection regarding the impact of excessive AI use on the autonomy of students at INJEPS (National Institute for Youth, Popular Education and Sport). The literature review consisted of identifying and exploring general and specific works and various studies conducted on different aspects of the topic. This approach allowed us to structure the theoretical background of the work.

2.4.2. The Interview

The objective of this research being to analyze the influence of the excessive use of artificial intelligence on the autonomy of INJEPS students in their learning, interviews were used as a data collection method with two target groups (teachers and academic administrators). Their use allows for a deeper understanding of the information than a questionnaire could provide. An interview guide consisting of specific themes was the primary tool in this research. It was administered to the teachers and academic administrators and also provided additional and reliable information on the subject. It primarily revolves around themes such as:

- Perception of AI in the educational context;
- Uses and institutional framework of AI;
- Student disengagement from the learning process;
- Effects on the development of cognitive skills;
- Institutional stance and recommendations

2.4.3. The questionnaire

The questionnaire is a quantitative data collection technique that takes the form of a series of questions asked in a specific order. It allows for directive questioning of individuals and the collection of quantitative data for subsequent numerical comparisons. We used the questionnaire to gather specific information from INJEPS students. It focuses on:

- Use of AI in studies;
- Perception of dependence and autonomy;
- Obstacle to the development of critical skills (reflection, decision-making, self-regulation)

3. Results

3.1. Use of Artificial Intelligence in studies

The results of this study reveal interesting information regarding students' use of Artificial Intelligence (AI). The study goes on to ask students to define AI. The following graph presents the various results obtained.

It appears that 85% of students define it as "a technology that allows machines to simulate human intelligence." This result shows that students have a relatively accurate perception of AI, particularly regarding its ability to simulate human actions such as thinking and learning. However, there is also a significant proportion of 9% of students who believe that AI refers to "a robot capable of thinking for itself." This further illustrates the influence of popular stereotypes on the understanding of modern technologies, although these ideas are gradually being nuanced by improved academic knowledge. Finally, 4% of students perceive AI as a tool exclusively reserved for computer engineers, demonstrating a narrow view of the technology.

The survey also revealed that AI is used very frequently in an academic setting. It was found that 68% of respondents use AI tools daily, while 24% use them weekly. Only 4% of students use AI monthly, and 4% rarely consult it. These figures show that for the majority of students, AI is an almost daily tool in their learning processes.

An academic official explains:

- “AI has become indispensable in students’ daily lives, particularly for conducting quick research or writing academic papers. The use of these tools has become the norm.”
- Academic Director at INJEPS, May 2025

An instructor adds:

- “As for my observations, yes, unfortunately, I have noticed an increasingly frequent use of these tools. It has almost become the norm for certain assignments. Students use them for research, writing, and even sometimes for solving problems that normally require real thought. It’s quite blatant.” Instructor at INJEPS, May 2025
- This observation by the instructor is corroborated by the survey results, which show that 68% of students use AI daily and 24% weekly. This indicates not only frequent use, but also a shift in academic culture where AI is becoming an essential tool for the majority of students.

When it comes to choosing which AI tool to use, 72% of students opt for ChatGPT, a choice that reflects the popularity of this text generation tool due to its flexibility and ability to provide detailed answers on a wide variety of topics. Other tools such as Gemini (11%) and Perplexity (9%) are also used, but to a lesser extent. This dominance of ChatGPT underscores its effectiveness and central role in students' academic practices.

Similarly, a teacher stated: "ChatGPT is by far the students' preferred tool. Its ability to generate relevant and tailored answers to complex questions makes it an indispensable asset." (Teacher at INJEPS, May 2025)

When asked about their first action when faced with academic work requiring reflection, 59% of students reported using an AI tool to obtain an immediate result. This trend is followed by 32% who prefer to conduct internet research, and 9% who consult documents in a library.

No student chose to ask for help from a resource person. This data shows that for a majority of students, AI is perceived as a quick shortcut to completing an academic task, thus reducing their reliance on other, more traditional methods such as manual research or discussions with experts. One teacher emphasizes: “The use of AI is now systematic. Students no longer seek solutions on their own, but prefer to obtain instant results through these tools.” (Teacher at INJEPS, May 2025)

Regarding the use cases of AI, students primarily use these tools for homework (46%) and writing presentations (30%). 11% use it to summarize texts, and 9% use it for translations. A small percentage, 2%, use it to develop their ideas further.

This demonstrates that AI is largely perceived as a tool to assist in the completion of academic tasks, rather than as a catalyst for reflection or creativity. One teacher observes: “AI is becoming an increasingly common way to finish assignments quickly, but it doesn’t seem to encourage personal reflection or intellectual investment.” Teacher at INJEPS, May 2025

3.2. Perception of dependence and autonomy

3.2.1. Difficulty of producing academic work without using AI

The question of the difficulty in producing academic work without using Artificial Intelligence (AI) elicited revealing responses regarding how students perceive their relationship with these technological tools.

Among the respondents, 56% of students indicated that they have difficulty producing academic work without AI, which shows that a significant majority of them consider this technology an essential support in their learning processes. On the other hand, 44% of students stated that they did not experience any difficulty in completing their academic tasks without AI, which suggests that a significant proportion of students continue to maintain a certain degree of autonomy in carrying out their work.

This result highlights the extent to which AI has been integrated into students' academic practices, as for many, the tool has become so essential that it is no longer perceived as a mere resource, but as a facilitator of the intellectual process. AI thus appears to reduce the cognitive effort required to complete certain academic tasks, such as information retrieval, idea structuring, and content writing. Indeed, students tend to rely more and more on the capabilities of these tools to accelerate the completion of their assignments, which, in the long run, may hinder their intellectual autonomy.

3.2.2. Substantial use of AI to generate parts of assignments

When students are asked about their use of Artificial Intelligence (AI) to generate a substantial portion of their assignments without modification, the results reveal a marked trend toward using the tool as an intellectual facilitator, sometimes at the expense of personal reflection and adaptation.

Indeed, 65% of students admit to having already allowed AI to generate a significant portion of their work without making any substantial changes. This figure highlights a passive use of the tool, where AI is perceived as a quick and efficient solution for completing academic tasks without deep intellectual engagement. On the other hand, 19% of students state that they have never allowed AI to generate parts of their assignments without modification, while 16% admit that they do so "sometimes." These results suggest that while a majority of students use AI to generate a significant portion of their work, a considerable proportion either refrain from this practice or adopt it only occasionally. This could reflect a growing awareness of the importance of intellectual effort in the learning process and the need to adapt the outputs provided by AI to ensure a genuine understanding and mastery of the concepts.

3.2.3. Main perceived advantage of using AI

56% of students state that AI saves them time, and 20% also highlight rapid access to a wide variety of information as a significant advantage. These students perceive AI as a tool that facilitates the search for relevant information, often in seconds, thus reducing the time spent searching through different sources. 15% of students believe that AI improves the quality of their work, particularly in terms of writing and structuring ideas. This suggests that AI is perceived not only as a way to speed up tasks, but also as a way to improve the quality of the results obtained, notably through the real-time suggestions and corrections it offers. 9% state that AI is available at any time, even outside of class hours.

The main perceived advantage of using Artificial Intelligence (AI) for students is clearly time savings, a factor that emerges prominently in the survey results. This result reflects how students use AI as a tool to optimize their academic tasks, particularly by accelerating the research, writing, and problem-solving processes.

3.2.4. Impact of AI on the ability to structure ideas and write independently

The impact of Artificial Intelligence (AI) on students' ability to structure their ideas and write independently is a key question in analyzing the effects of AI on intellectual autonomy. The survey results reveal worrying trends regarding this dimension of learning.

Indeed, 50% of students report that their ability to structure their ideas has weakened "somewhat" since using AI, while 22% say it has weakened "a lot." Conversely, 17% believe their ability to structure their ideas has not weakened, and 11% think it has weakened "moderately." These results suggest that frequent use of AI has a significant impact on students' autonomy in the crucial phase of structuring their ideas.

3.2.5. Estimating AI dependency

The question regarding students' estimation of their dependence on Artificial Intelligence (AI) in their academic journey revealed interesting trends in the use of this technology.

56% of students reported relying on it "a little," while 28% felt they relied on it "a lot." Finally, 16% of respondents considered themselves not at all dependent on AI. These results indicate that the majority of students recognize, to some degree, a certain form of dependence on AI in their learning process. However, most of them do not consider this dependence excessive or problematic at this stage.

4. Discussion

The analysis of the results of this study is conducted in light of the hypotheses and the theories of self-determination (Deci & Ryan, 1985) and cognitive load (Sweller, 1988). This analysis highlights how the use of Artificial Intelligence (AI) affects students' autonomy and their ability to develop cognitive skills essential to their learning. Through a combination of quantitative data from the questionnaire, qualitative observations gathered during interviews, and relevant psychological theories, this analysis provides a better understanding of the effects of AI on students' motivation, intellectual engagement, and cognitive development.

4.1. Impact of AI on student autonomy

One of the main concerns of this research is to determine how the use of Artificial Intelligence (AI) influences student autonomy. In this regard, the results obtained in this research clearly indicate that AI, while facilitating certain academic tasks, appears to lead to a significant reduction in students' intellectual autonomy.

Before the frequent use of AI, the majority of students (67%) considered themselves autonomous in their learning processes. However, after regularly integrating AI into their work, 46% of students now perceive themselves as only "moderately autonomous." This decrease in autonomy manifests as a reduction in personal involvement in the learning process. Instead of taking the initiative in information retrieval, structuring their ideas, and conducting their own independent research, many students have allowed themselves to be guided by AI to obtain immediate and often pre-formatted answers.

An academic official highlights a key point by stating that AI "makes tasks so easy that they no longer have to force themselves to search for solutions." Academic official at INJEPS, May 2025

This statement underscores the fact that AI, through instant responses to students' needs, deprives them of the opportunity to engage in cognitive effort. AI thus becomes an indispensable tool, but its regular use prevents students from actively investing in their learning. This results in a loss of their ability to solve problems independently and to develop critical thinking skills, which are essential for in-depth learning.

The verbatim comments collected from teachers reinforce this observation, as one of them indicates: “AI does everything for them, which prevents them from personally engaging in their studies.” – Teacher at INJEPS, May 2025

This cognitive passivity sets in when students systematically rely on AI to perform tasks such as information retrieval, writing, or problem-solving, instead of completing them independently.

This dynamic of dependence on AI fits perfectly within the theoretical framework of self-determination proposed by Deci & Ryan (1985). According to this theory, autonomy is a fundamental psychological need directly linked to intrinsic motivation. This means that, for students to be truly engaged and motivated in their learning, they must have the opportunity to make their own choices, take initiative, and organize their efforts. However, when they allow AI to define the structure and content of their work, they lose their decision-making power. They then become mere passive recipients of the results produced by the technology, thus depriving their learning process of its autonomous and personal character.

Self-determination theory echoes the notion of intrinsic motivation, which implies that student engagement is maximized when they actively influence their learning path. In this case, AI, by facilitating immediate responses, removes students' power to regulate their own learning, thereby reducing the satisfaction of their need for autonomy. This hinders their intrinsic motivation and deprives them of the intellectual fulfilment that comes from autonomous decision-making. The loss of this control can lead to decreased engagement in academic tasks, which negatively affects the depth and sustainability of learning.

This loss of autonomy has significant repercussions on student motivation. Indeed, when AI replaces students' intellectual efforts, they no longer feel the need to invest in a process of personal reflection. Deci and Ryan (1985) emphasize that satisfying the need for autonomy is crucial for fostering active engagement and intrinsic motivation. When students rely excessively on AI to solve problems and complete academic tasks, this intellectual autonomy is compromised. AI cannot replace the cognitive effort required to understand and fully integrate information. Vallerand (1997) supports this view, explaining that the loss of autonomy can lead to a reduction in intrinsic motivation, making learning less engaging and significantly less productive in the long run.

Without this autonomy, students' motivation may decrease, thus reducing the depth of their learning and their ability to develop skills essential for their academic success. This dynamic of cognitive dependence is particularly concerning because learning should be an active, not passive, process. Using AI as a foundation could tempt students to settle for a superficial understanding, without engaging in deeper cognitive processes. This phenomenon aligns with the work of Miller (1956), who demonstrated that active engagement in information processing stimulates long-term memory, while excessive reliance on immediate solutions like AI hinders this consolidation.

Thus, the growing dependence on AI raises the question of maintaining a balance between the beneficial use of technology and preserving students' intellectual autonomy. It becomes imperative to regulate the use of AI so that it does not become a substitute for personal engagement and critical thinking, but rather a supplementary tool that complements, not replaces, students' cognitive efforts.

4.2. AI use and cognitive dependence

65% of students admit to using AI to generate a substantial portion of their assignments without making any significant changes. This trend highlights a marked cognitive passivity, where AI becomes a substitute for the intellectual effort required for independent thinking. In other words, instead of encouraging critical thinking, AI seems to facilitate a way of working where students accept the machine's solutions without question, making personal initiative less common. Teachers at INJEPS share this concern. One of them testifies: "Students use it for their research, writing, and even sometimes to solve problems that normally require genuine thought." (INJEPS Teacher, May 2025)

This observation clearly illustrates how AI is taking over academic tasks that should be opportunities for students to actively engage in a cognitive process. This systematic reliance on AI for activities such as information retrieval, content creation, and even complex problem-solving prevents students from developing essential skills related to critical thinking, analysis, and information synthesis.

This dynamic of cognitive passivity is also supported by Sweller's (1988) cognitive load theory. According to this theory, learning depends on a delicate balance between the information processed by working memory and the cognitive effort required to integrate that information. When AI is used excessively, it induces extrinsic cognitive overload by simplifying the learning process and reducing the need for students to use their cognitive abilities to organize, analyze, or synthesize information independently. In other words, AI acts as an intellectual crutch, allowing students to process information without having to organize or deeply understand it.

This has direct consequences on students' ability to retain information permanently and integrate it into their long-term memory. Miller (1956), in his work on working memory, argues that the capacity to process information is limited. When this capacity is reduced by the use of AI, students are less inclined to make the cognitive efforts that facilitate the memorization and integration of new knowledge. Thanks to the immediate and prefabricated solutions provided, AI eliminates the need to actively process information, which hinders the development of strong memory and deep understanding. This phenomenon is all the more concerning because it inhibits the relevant cognitive load (germane), the kind that promotes deep learning. By reducing the need to invest in reflection and comprehension, AI limits students' ability to develop essential cognitive skills.

An instructor at INJEPS highlights this concern:

"AI does all the work for them, but it prevents them from delving deeper into their thinking." (INJEPS Instructor, May 2025)

This lack of cognitive effort can have a detrimental effect on long-term cognitive skills, such as problem-solving, critical thinking, and creativity. These skills are necessary not only in academic settings but also in professional life, where the ability to analyze complex information and propose innovative solutions is essential. AI raises concerns about the long-term consequences for students' intellectual autonomy and their ability to engage in deeper and more complex thought processes.

In conclusion, while AI offers quick and efficient solutions for completing certain academic tasks, its excessive use risks diminishing the cognitive effort required for in-depth learning. This phenomenon raises important questions about the impact of this cognitive automation on students' intellectual autonomy, their ability to think critically, and their capacity to solve problems independently – essential skills in both academic and professional settings.

4.3. An Evolving Dependency and its Implications for Autonomy

The survey results highlight a worrying phenomenon: a growing dependence of students on Artificial Intelligence (AI). According to the data in Figure 11, 56% of students report being "somewhat dependent" on AI, while 28% admit to being "very dependent." This trend shows that for a majority of students, AI is now an essential tool in their academic journey. However, this phenomenon of dependence raises concerns, especially since it is still relatively moderate but could intensify as the use of AI becomes increasingly integrated into their studies.

An academic official sheds light on this dynamic, stating:

"AI has become indispensable for a large proportion of students, but this dependence can be harmful if it is not managed." "Academic Director at INJEPS, May 2025"

This remark highlights an important point: if the use of AI is not regulated, it could lead to even greater dependence, which would affect students' autonomy in their cognitive processes. In the long term, this dependence could reduce their ability to think for themselves, relying solely on AI-generated solutions without deep intellectual engagement.

This phenomenon of cognitive dependence echoes the work of several authors on the risks associated with excessive technology use. According to Carr (2010), excessive technology use can diminish concentration and affect individuals' ability to solve problems independently. In *The Shallows: What the Internet Is Doing to Our Brains*, Carr argues that increasing dependence on technological tools impairs individuals' ability to focus on long and complex tasks, as these tools offer instant gratification that hinders the development of long-term thinking. From this perspective, the excessive use of AI in an academic setting could have similar effects, reducing the depth of students' thinking.

Carr (2010) argues that technological tools, while practical and effective, act as a cognitive crutch. AI, through the instant and pre-programmed solutions it offers, deprives students of the opportunity to actively engage in the learning process. As a result, they increasingly rely on technology, preventing them from developing critical thinking strategies and solving complex problems independently.

One student testifies:

"Before AI, I was more autonomous, but now AI simplifies things so much that I think less." (Students at INJEPS, May 2025)

This statement perfectly illustrates the phenomenon of the automation of thought: AI, by facilitating the search for instant solutions, limits students' personal involvement. They are becoming less and less inclined to think for themselves, contenting themselves with the answers produced by AI without questioning their relevance or the underlying cognitive processes.

This shift in thinking habits is concerning, as it reflects a gradual loss of the ability to think independently. By reducing the mental effort required to complete academic tasks, AI risks restricting students' autonomy and making them less capable of adapting to complex intellectual challenges that demand deep critical thinking. Sweller's work (1988), through cognitive load theory, highlights the importance of optimally managing cognitive effort. By simplifying cognitive tasks, AI can decrease the relevant (german) cognitive load, which is essential for the learning process. Indeed, this

relevant load, which enables a deeper understanding and integration of knowledge, is reduced when students rely too heavily on the immediate answers provided by AI.

Thus, while AI can be a valuable asset for optimizing certain tasks, its excessive use can hinder the acquisition of cognitive skills essential for academic and professional success. In an increasingly complex and dynamic professional environment, the ability to solve problems independently, to think critically, and to adapt to new situations are indispensable skills. However, by allowing AI to handle a large portion of their intellectual work, students risk losing these crucial skills, which are highly sought-after qualities in the workplace.

4.4. Loss of Cognitive Skills and Reduced Critical Thinking

One of the major concerns of this research lies in the reduction of critical thinking among students, a phenomenon particularly evident in their approach to academic work. According to the results in Figure 15, 57% of students believe that AI has significantly reduced their ability to develop their own judgment. This phenomenon clearly indicates a shift in students' cognitive effort towards the technological tool, thus creating a form of cognitive passivity. Students often accept AI-generated solutions without question, which has significant consequences for the acquisition of critical thinking skills. Indeed, they are less and less encouraged to analyze, question, or reformulate the answers proposed by the machine, which limits their intellectual engagement.

One teacher highlights this problem by stating:

"AI gives them the answer, but they don't take the time to reflect on its basis or question it." (Teacher at INJEPS, May 2025)

This observation perfectly summarizes one of the main effects of AI: it becomes a substitute for students' own reflection, thus depriving them of the opportunity to develop critical judgment. By relying on AI to solve problems and produce answers, students do not exercise their critical thinking skills, which are essential for their intellectual development. This phenomenon aligns with Deci and Ryan's (1985) self-determination theory, which explains that cognitive autonomy is a key factor in students' intrinsic motivation. Autonomy is defined here as an individual's ability to make decisions and actively engage in the learning process. When AI replaces personal reflection, students are deprived of their cognitive autonomy, thereby reducing their involvement in learning and limiting the development of critical thinking skills.

Furthermore, the increasing reliance on AI, while simplifying certain aspects of the academic process, can have negative repercussions on the skills needed in the professional world. In an increasingly complex and dynamic work environment, the ability to adapt, think critically, and solve problems independently is essential. However, by allowing AI to perform much of their intellectual work, students fail to develop these crucial skills, as Carr (2010) points out. Carr argues that excessive use of digital technologies leads to "cognitive overload," impairing the ability to think deeply and maintain sustained concentration. As a result, students may lack the creativity, independent judgment, and flexibility needed to navigate a demanding professional environment. Research by Miller et al. (2016) on learning and technology use in educational settings supports this observation. They assert that excessive use of technologies like AI can lead to a gradual loss of certain essential cognitive skills, such as critical thinking and the ability to independently solve complex problems. In a professional setting, these skills are crucial not only for resolving ambiguous and unforeseen situations but also for adapting to the ever-changing challenges of the job market.

Thus, while the increasing reliance on AI to solve problems or complete tasks certainly simplifies the academic process, it significantly hinders the acquisition of cognitive skills essential for deep learning. Sweller (1988), in his theory of cognitive load, explains that when students delegate a large part of their cognitive work to technology, they reduce their "relevant cognitive load" (germane), that is, the mental effort devoted to understanding and integrating new information. This decrease in cognitive engagement, by not demanding the intellectual capacity of students, leads to superficial learning, where students are less likely to remember and deeply understand what they learn.

The results of this study therefore raise concerns about the long-term consequences of the automation of thought. If students increasingly rely on AI for their intellectual work, they risk not only failing to develop the essential skills for in-depth learning, but also losing their ability to make independent judgments and demonstrate creativity—qualities indispensable in an increasingly demanding academic and professional environment. These risks could also impact their future employability, where critical thinking and adaptability are crucial for meeting the complex challenges of the workplace.

4.5. The Paradoxical Effect of AI on Time Management and Cognitive Autonomy

One of the most frequently cited advantages of using Artificial Intelligence (AI) among students is the optimization of their time management. 56% of students perceive AI as a way to save time, a factor particularly appreciated in the context of often urgent and complex academic tasks. This time saving is indeed a valuable asset, especially in an environment where students juggle multiple responsibilities. However, this apparent benefit masks a major paradox: while AI facilitates the rapid completion of certain tasks, it simultaneously reduces the cognitive effort required for in-depth understanding and lasting learning of the content.

Indeed, the use of AI, while convenient, simplifies the knowledge acquisition process by providing instant information and answers without students having to actively engage their cognitive abilities. This dynamic often leads to superficial learning, where students are satisfied with the quick solutions offered by AI, without taking the time to analyze or reflect deeply on the subject matter. An academic leader highlights this paradox, stating:

"AI is an excellent tool for accelerating research, but it doesn't push students to think critically and explore topics in depth." (Academic Leader, May 2025) This observation underscores how AI replaces students' active cognitive engagement, thus depriving them of the opportunity to deepen their thinking. This phenomenon can be analyzed in light of cognitive load theory (Sweller, 1988). According to this theory, learning is most effective when the relevant cognitive load is maximized, that is, the mental effort required to actively process information and integrate it into lasting knowledge. However, AI, by automating certain tasks, reduces the need for in-depth reflection and thus decreases this relevant cognitive load. In other words, by obtaining immediate answers from AI, students are not required to actively process and integrate information, which limits the depth of their learning.

The self-determination theory (Deci & Ryan, 1985) also helps to better understand this paradoxical effect. When AI takes over the majority of intellectual tasks, students are less motivated to demonstrate personal initiative and become active participants in their learning. They become passive recipients of information, which hinders their intrinsic motivation—the motivation linked to the satisfaction of the learning process itself. According to Deci & Ryan, intrinsic motivation is strongly linked to autonomy, a fundamental need that is met when students actively participate in their learning. By delegating too many tasks to AI, students risk losing their cognitive autonomy, which affects their motivation and engagement.

Thus, while AI offers undeniable time savings, it can, paradoxically, harm the quality of learning by reducing the need for active thinking and in-depth exploration of subjects. This phenomenon underscores the importance of regulating the use of AI in an educational context to ensure that students do not sacrifice the depth of their thinking for the sake of oversimplifying their cognitive processes.

5. Conclusion

The impact of Artificial Intelligence (AI) on the autonomy and cognitive abilities of students at INJEPS (National Institute for Youth, Popular Education and Sport) is a major issue in the context of integrating new technologies into teaching practices. Through this study, we sought to analyze how excessive or unregulated use of AI can affect students' autonomy, their engagement in the learning process, and the development of their essential cognitive skills. The results obtained, both quantitative and qualitative, have allowed us to answer the hypotheses formulated and to better understand the implications of AI use in higher education.

The first hypothesis, that excessive use of AI could reduce students' autonomy and hinder their active engagement in learning, was largely confirmed. The survey results show a significant decrease in students' perceived autonomy after the regular integration of AI into their academic work. The second hypothesis, which posits that intensive use of AI can lead to a gradual loss of students' cognitive abilities, was also validated by the results of this study. The data collected show that excessive use of AI leads to an automation of thought processes, where students, instead of actively processing information and developing problem-solving skills, rely on the immediate answers generated by the tool. This cognitive passivity, while facilitating certain academic tasks, impairs the acquisition of essential skills such as critical thinking, creativity, problem-solving, and the ability to make informed decisions. This phenomenon fits perfectly within the framework of Sweller's (1988) cognitive load theory, which suggests that excessive externalization of cognitive load to AI can lead to reduced intellectual engagement among students, thereby hindering their deep learning and long-term retention.

Indeed, AI simplifies the learning process by reducing the cognitive effort required to organize, analyze, and synthesize information. However, this extrinsic cognitive overload, caused by the automation of simple academic tasks, prevents

students from developing the relevant cognitive load necessary for deep learning and knowledge integration. Thus, while AI may make learning faster and more efficient in the short term, it presents significant long-term risks, particularly for the development of critical thinking, creativity, and cognitive adaptability—essential skills in an increasingly complex academic and professional environment.

In light of these findings, it is important to consider strategies for guiding the use of AI in teaching practices. Suggestions from academic leaders, teachers, and students point to the need for awareness workshops, training modules on digital ethics and the critical use of AI, as well as revisions to assessment methods. These recommendations aim to encourage moderate and thoughtful use of AI, positioning it as a support tool rather than a substitute for students' cognitive skills. Promoting assessments that require personal reflection, oral presentations, portfolios, or collaborative projects could be a way to maintain students' intellectual engagement and foster genuine cognitive autonomy.

In short, AI represents a powerful and promising tool in the context of higher education. However, its excessive and unregulated use can have detrimental effects on students' autonomy and their long-term cognitive development. To ensure that AI is a beneficial learning tool, it is essential to guide its use strategically by integrating teaching practices that foster student autonomy, critical thinking, and creativity. The challenge lies in finding a balance between using AI as a teaching aid and actively engaging students intellectually, in order to preserve the fundamental values of education and ensure lasting and enriching learning.

Compliance with ethical standards

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Disclosure of conflict of interest

All the authors acknowledge that there is no conflict of interest. They all agree with what is written in this article. In accordance with the requirements of transparency and scientific integrity, we, the authors of this study, declare that we have no conflict of interest, whether financial, commercial or otherwise, that could influence the results or interpretations of our research on initiation rites in Benin, thus guaranteeing the independence and objectivity of our work and ensuring the credibility of our conclusions

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