

Research Article

Effort vs. Automation: The Core Conflict of AI in Education

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Abstract

The rapid spread of advanced Artificial Intelligence has entered our schools. Large Language Models, in particular, are now common. This new reality has started a major argument. Many supporters praise these new tools. They see a future of great efficiency. They imagine lessons tailored to each student. They speak of new ways to access information. This paper, however, presents a different and cautionary position. The thoughtless acceptance of AI in learning is a mistake. It creates a deep and dangerous conflict. This conflict is between the attractive ease of machine work and the necessary goodness of human mental effort. This article will examine the problem from a few angles: thinking, feeling, and morals. It argues that automation driven by AI directly damages the central goals of schooling. These goals include the building of sharp minds, the strengthening of intellectual toughness, and the support of genuine self-discovery. The actual path of learning is what matters most. The struggle is important. The frustration is important. The revisions are important. The final moment of clarity is important. These are not mere annoyances for a machine to fix. This difficult path is the only way true knowledge is built. It is the very method by which the human intellect is shaped. This work takes apart the hidden downsides of letting machines do our thinking for us. It also studies the resulting decay of the bond between a teacher and a student. It will also counter the frequent arguments that call any resistance a simple fear of technology. The final point is this. For schooling to keep its ability to change people, educators and their institutions must make a choice. They must thoughtfully create teaching methods that put human work first. They must protect the hard but essential struggle of learning from the empty, effortless world of automation.

Keywords

Artificial Intelligence (AI), Education Technology (EdTech), Cognitive Offloading, Productive Struggle, Pedagogy, Ethical AI

1. Introduction

The world of schooling is undergoing a major change. This change is driven by the quick progress and widespread use of Artificial Intelligence, especially Large Language Models (LLMs). These clever AI systems are now a reality. Platforms like ChatGPT are an example. They are no longer just theories. They are basic tools actively reshaping how knowledge is spread, acquired, and tested [25]. Their abilities go past simple text creation. They can interpret and handle human language on a new scale. They are growing into

multimodal applications. These applications smoothly join images, video, and audio. This growth into different data formats shows a key shift. It moves AI from small uses to complete educational answers.

The market shows this quickened adoption. The global AI in EdTech market, for example, is projected to have huge growth. It is expected to climb from 3.65 billion US dollars in 2023 to an estimated 92.09 billion US dollars by 2033. This shows a remarkable Compound Annual Growth Rate of

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38.1% [26]. This large financial commitment shows the assumed worth and certainty of AI's place in education. North America, in particular, has risen as a leading force in this area. It captured over 37% of the market share in 2023 [14]. This points to a strong technological base and a receptive school system. Furthermore, the widespread nature of AI is obvious in its administrative work. More than 50% of schools and universities already use AI for operational jobs. Their main goal is to improve the quality of education [33]. This widespread and speeding use of AI is not a hypothetical future. It is a present reality. This means any discussion of its "uncritical adoption" is not a cautionary tale but an urgent contemporary concern. The speed at which these technologies are deployed often gets ahead of the creation of regulatory frameworks. This leaves educational institutions largely unready to fully check the tools or address their long-term effects [43]. This immediate and widespread shift establishes the critical background for examining the central conflict at hand.

Supporters of AI in education often champion its power to remake learning. They point to improved efficiency. They mention new levels of personalization. They talk about better accessibility [2, 10]. The pull of these benefits is undeniable. AI promises to streamline hard tasks. This frees educators. They can then focus on more effective teaching activities. It offers the chance for learning experiences made carefully for individual student needs. This helps engagement and finally leads to improved school results [27]. However, this very promise of efficiency and personalization, while attractive on the surface, presents a quiet but serious paradox. The seductive ease of automation is designed to simplify and quicken learning. It may accidentally hide deeper, more harmful costs to the basic workings of intellectual growth. The immediate appeal of an easy learning environment risks hiding the key part that struggle, effort, and mental friction play in the construction of real knowledge [3, 40].

This paper argues that the unthinking embrace of AI-driven automation creates a dangerous conflict. The conflict is between this alluring ease and the necessary goodness of intellectual effort. The core purposes of education are the building of critical thinking [42], the development of intellectual resilience [7], and the support of authentic self-creation [16]. These goals are not merely made better by AI. They are, in fact, actively harmed by its widespread application. The "process" of learning is marked by struggle [28]. It is marked by frustration [21, 29], revision [3, 37], and eventual breakthrough. It is not an inconvenient problem to be automated away. Instead, it is the very furnace in which real knowledge is made and human intellect is sharpened [7, 9]. This article will deconstruct the hidden costs of outsourcing mental labor. It will analyze the resulting corrosion of the teacher-student relationship. It will also challenge the simple dismissal of these arguments as mere Luddism. Ultimately, it seeks to show that for education to keep its power to change people, teaching frameworks must consciously and

with purpose reaffirm the primacy of human effort. This would safeguard the good struggle of learning from the frictionless void of automation.

2. The Promise of Automation

The entry of AI and Large Language Models (LLMs) into the school system has been pushed by a strong story of great benefits. This story is mainly about better efficiency. It speaks of new levels of personalization. It also points to expanded access [10, 20]. These good points are not just theories. A growing amount of research and real-world uses support them. The evidence shows AI's power to make operations smoother and improve what students learn [2].

AI and LLMs are quickly finding more uses in schools. They are moving past simple tools. They are becoming key parts of learning systems. One of the most common uses is Personalized Learning. AI systems are good at tailoring learning activities to the specific needs, skills, and interests of each student [18]. Adaptive learning platforms are a clear example of this personalization. They constantly collect and study student performance data. They modify content and speed in real time. This dynamic change makes sure learners get material that is not too easy or too hard. It keeps them in a perfect zone for engagement [19]. Clear examples of platforms using personalized learning include Khan Academy and Duolingo. They adjust exercises and learning paths to a user's progress and style. Intelligent Tutoring Systems (ITS) work alongside personalized learning. These AI-powered systems give one-on-one teaching help. They watch student input. They present fitting assignments. They provide useful feedback [27]. ITS change for individual learning styles. They give custom support and challenges. This can lower the fear students might feel in regular classrooms. Their spread across many subjects, from mathematics to computer programming, hints at a possible new idea of the teacher's job. Automated Assessments and Feedback are another big application. AI systems can automatically grade assignments, tests, and written work. They deliver quick and specific feedback to students [12]. This power greatly lowers the manual work for teachers. It improves grading accuracy and sameness. It also makes feedback faster. This lets students understand and fix mistakes more quickly. Natural Language Processing (NLP) methods let AI check detailed parts of written work, like grammar, clarity, and how it relates to the prompt. Beyond single student work, AI also does well in Content Generation and Curriculum Development. LLMs can quickly make whole courses, quizzes, lesson plans, and even certification programs in minutes. This work used to take months [24]. This automation can greatly cut down content creation time. It allows platforms to grow learning material for world audiences. It helps change content for many languages and different learning levels without much human work. From an operational view, AI brings large Administrative Efficiencies. Federal agencies use LLMs to

improve how they make policy and do their work. This ranges from disaster management to internal workflows [44]. In schools, AI makes tasks like admissions, resource planning, and record keeping smoother. This frees educators to focus more on teaching and direct student help [10]. Also, AI's power for Predictive Analytics and Decision-Making is changing institutional plans. LLMs study huge amounts of performance data. They find students who are struggling. They predict dropout risks. They make course lists better. They personalize learning experiences on a big scale [1]. This data-driven method allows for more informed business choices and early actions. This ultimately improves student retention plans. The change in AI in education is also marked by steps forward in Multimodal Fusion and Autonomous Agents. Beyond text, AI is more and more joining images, video, and audio within single models. This holds great promise for different uses. At the same time, the creation of independent AI agents capable of dynamic task breakdown, context retention with memory units, and constant self-improvement shows a shift. This shift is toward more forward-looking and advanced AI assistance in school settings [46].

Quantifiable Benefits

The practical good of AI integration in schooling is supported with convincing numbers. These figures together help create the idea of AI as a very helpful and effective tool. Better personalized learning is a central benefit. Surveys show that a high percentage of people believe AI greatly improves personalized learning [31]. Research also shows that personal learning made possible by changing technologies leads to better completion rates. It also shortens the time needed to learn difficult ideas [17]. This power to make educational material fit individual learners is a strong reason for AI's use. It does this by studying performance patterns and learning preferences. It directly fixes the problems of a single approach in regular education. The huge focus on personalized learning in market reports and research shows its assumed importance and attraction [14]. Improved school results are also seen again and again with AI use. Students using ITS for mathematics, for instance, have shown large improvement in scores compared to traditional classroom teaching [17, 27]. A study by the Department of Education found that ITS users did better than a large part of students who got regular instruction [23]. More generally, adaptive

learning systems have shown good effects on overall school performance. There have been specific gains in subjects like mathematics and science [17]. These numbers present a clear, fact-based case for AI's good effect on student success.

More student engagement and motivation are also direct results of AI's interactive and changing nature. Using ITS has been connected to more time spent on tasks. It also connects to less off-task behavior. There are also reports of higher student motivation levels [11]. In addition, game-like parts within ITS have been shown to increase student persistence on hard problems. This comes with better retention of knowledge [34]. AI personalized learning has been found to greatly increase both student motivation and school performance. There are clear gains among different student groups [17]. This direct link between AI-driven quickness and later improvements in student engagement and motivation forms a core factual argument for AI's benefits. Better accessibility is another praised part of AI in education. Surveys show seen improvements in accessibility because of AI tools [31]. Changing learning technologies have proven especially helpful for different learners. They help students with learning disabilities get results closer to those of their peers without disabilities. This is a big improvement over regular teaching settings [17]. AI actively helps make education fair by making content meet individual student needs. It makes sure that learners of different abilities and backgrounds get the support they require. Finally, improved teaching efficiency is a benefit reported by many educators. A high percentage of teachers agree that AI helps increase their teaching efficiency [31]. Teachers using ITS report saving a lot of time each week on grading and testing work [17]. Also, a large part of teachers using adaptive learning platforms report feeling they do their jobs better. They also mention a better ability to find and fix student difficulties [31]. This smaller amount of office work is meant to free up teachers to focus on more interactive and personalized teaching. The growing reach of AI, moving from simple text automation to multimodal fusion and independent agents that can plan difficult tasks, shows that AI's abilities are not staying the same [46]. This change suggests that the seen benefits of efficiency, personalization, and accessibility will keep growing. This will make the "seductive ease of automation" an ever stronger force in schooling.

Table 1. Summary of Key AI Benefits in Education.

Category	Metric/Finding	Supporting Data (Examples from cited sources)
Efficiency	Reduced content production time	Significant reduction reported [24]
Efficiency	Time saved on grading/assessment	Average time saved reported in studies on adaptive systems [17]
Personalized Learning & Engagement	Perceived enhancement of personalized learning	High percentage agree [31]

Category	Metric/Finding	Supporting Data (Examples from cited sources)
Personalized Learning & Engagement	Improved completion rates & time-to-mastery via personalized learning	Improvements reported [17]
Personalized Learning & Engagement	Increased time on task with ITS	Increases reported in studies on ITS [11]
Personalized Learning & Engagement	Higher student motivation levels with ITS	Higher motivation reported [11]
Personalized Learning & Engagement	AI personalized learning increased student motivation & academic performance	Significant gains reported [17]
Improved Academic Outcomes	Average improvement in mathematics scores with ITS	Improvements reported [17, 27]
Improved Academic Outcomes	ITS users performed better than traditional instruction recipients	Better than a substantial majority reported [23]
Improved Academic Outcomes	Overall academic performance improvement with adaptive learning	Positive effect sizes reported [17]
Accessibility & Equity	Perceived improvements in accessibility	High percentage noted improvements [31]
Accessibility & Equity	Learning outcomes for students with disabilities closer to peers via adaptive systems	Outcomes closer to peers without disabilities reported [17]
Teacher Support	Teachers acknowledge AI's role in increasing teaching efficiency	High percentage acknowledged [31]
Teacher Support	Teachers using adaptive platforms felt more effective	High percentage reported feeling more effective [31]

3. The Cognitive Erosion

The measurable good that AI brings to education is certainly convincing. The data is hard to argue with. It paints a picture of a useful and effective tool. Yet, a more careful study uncovers a different and troubling story. This is the possibility for automation driven by AI to wear away our basic mental functions. This process would directly harm the development of sharp thinking. It would weaken the strength of our minds when faced with a challenge. The very quickness that makes these new systems so appealing is a problem. That quickness might actually be its most harmful quality. This is especially true when we consider the goal of true, lasting knowledge. The easy path it offers is a direct threat to the core of learning.

3.1. Deconstructing Cognitive Offloading and Its Impact on Critical Thinking and Problem-Solving

A primary concern is the phenomenon of cognitive offloading, where individuals transfer mental effort to external aids, in this case, AI tools [35]. Excessive dependence on AI for tasks that traditionally require deep cognitive engagement may diminish critical-thinking skills and independent prob-

lem-solving abilities. Research has identified a significant negative correlation between the frequency of AI tool usage and critical-thinking scores [30]. This trend is particularly pronounced among younger participants, who exhibit a higher dependence on AI tools and consequently lower critical-thinking scores compared to older age groups [30]. This pattern suggests that consistent reliance on AI may hinder the development of foundational cognitive skills, posing a direct challenge to the integrity of higher education and the authenticity of student work.

While AI can efficiently process and analyze data, it frequently lacks the nuanced understanding and creativity inherent in human cognition. This limitation is particularly evident in complex or subjective assignments, where AI tools may struggle to appreciate subtleties like literary analysis or emotional impact [25]. The convenience of readily available AI-generated solutions can lead students to bypass the deep cognitive engagement necessary for genuine problem-solving [6]. This reduction in cognitive effort can result in a superficial understanding of the material, hindering the development of deeper problem-solving skills and potentially leading to passive learning behaviors where students do not actively seek solutions or develop perseverance. Moreover, AI applications can inadvertently impose rigid frameworks, thereby constraining creative thinking and innovation by limiting students' ability to explore novel solutions outside of predefined structures.

3.2. The Inverse Correlation Between Confidence in AI and Critical Thinking

A particularly concerning dynamic emerges from the relationship between a user's confidence in AI and their own critical thinking abilities. Research indicates an inverse correlation: the higher an individual's confidence in AI, the lower their critical thinking scores [30]. Conversely, a higher degree of self-confidence in one's own abilities correlates with a greater use of critical thinking [30]. This finding reveals a dangerous cognitive disconnect. As users become more reliant on and confident in the outputs of AI, their own critical engagement with information and problems diminishes. This creates a false sense of intellectual mastery, where the perceived efficiency derived from AI masks a decline in actual human competence. This dynamic is especially worrying for younger learners, who are in critical stages of forming foundational cognitive habits and developing independent thought processes [30]. If left unaddressed, this could have profound long-term societal implications for intellectual capacity and problem-solving capabilities.

3.3. The Shift from Deep Understanding and Knowledge Construction to Superficial Learning

The ease of AI is a problem. It generates content and provides answers quickly. This helps move learning away from a real grasp of a topic. It pushes students toward a more surface-level way of learning [6]. AI-made content can cause students to favor memorizing facts. They do this just to complete their work. They stop trying to truly comprehend the material. They do not think about how to use it later. This happens because learning with AI is so smooth. Immediate solutions are always available. This removes the need for students to struggle with difficult ideas. They do not have to make mistakes. They are not pushed to think about their work. These processes are essential for deep learning. Their removal is a serious loss [3, 40].

The material made by AI also has its own dangers. Its power to show existing biases or forms of prejudice, which come from its training data, is a serious concern. This can quietly stop students from forming their own opinions. It can stop them from making their own statements. This can lead to biased learning experiences [43]. This information is often not checked. Students might accept it without question. This can cause misunderstandings. It can harm the learning process. The convenience of AI also hurts a student's desire for self-reflection. It damages their motivation for critical review. The frequent use of AI for school tasks lessens the push to go deeper into information. It weakens their drive to build analytical skills. The long-term effects of this change are a worry. Studies show that AI users can perform worse on a behavioral level. They do worse than groups who did not use AI or used search engines.

3.4. The Role of Cognitive Load Theory in Understanding Learning Efficacy and How AI Might Mismanage It

Cognitive Load Theory (CLT) provides a way to see how teaching plans affect learning. It says that human working memory is limited [39]. Good teaching design, according to CLT, should manage our mental resources. It should stop us from feeling overloaded. It should help us learn well. This is especially true when we are dealing with difficult material [22, 40]. CLT points to three kinds of mental load. The first is intrinsic load, which comes from the difficulty of the material itself. The second is extraneous load, which is caused by bad teaching methods. The third is germane load, a good kind of load that helps build mental models and leads to real learning [41]. AI and Machine Learning (ML) have been shown to make learning much better. They do this by managing mental load on their own. They provide personal instruction. They also change learning paths based on current data [18, 19]. AI-run adaptive learning systems can manage mental load. They do this by changing teaching materials. They support students working on difficult ideas. They provide quick feedback. These systems are very good at lowering extraneous mental load (ECL). They do this by automating jobs, simplifying content, and offering feedback at just the right time. This frees up our thinking space [17]. Yet, the very success of AI in lowering mental load creates a serious problem. Reducing extraneous load is good. But the smooth nature of AI's instant answers is a threat. It threatens to skip the needed struggle that is key for building germane cognitive load (GCL). This is the load needed for making mental models and for true learning [3, 28]. AI's ability to give "quick answers" and "immediate solutions" can get in the way of necessary mental friction. This friction comes from facing doubt, making mistakes, and thinking hard about one's work. Taking away this good struggle may seem fast. But it leads to surface-level learning. Students just memorize facts. They do not build real knowledge. The danger is that AI's "improvements" may accidentally remove the very ways the human mind is built. It transforms the good struggle of learning into an empty, smooth space.

4. Disengagement, Motivation, and the Value of Struggle

The pervasive integration of AI in education extends its impact beyond cognitive functions to the affective domain, influencing student motivation, engagement, and the psychological value derived from the learning process. The promise of "frictionless learning," while alluring, carries a significant affective toll, potentially diminishing intrinsic motivation and undermining the indispensable role of struggle and perseverance.

4.1. How Frictionless Learning Can Diminish Intrinsic Motivation and Self-Efficacy

The ease and speed offered by AI tools can quietly harm a student's inner drive. They can also damage a student's belief in their own abilities [6]. AI gives solutions right away. This removes the need for students to think about their own work. It stops them from checking it carefully. This hurts their motivation to study a topic in more detail. This frequent use of AI for school tasks can lessen a student's own drive. It stops them from building analytical skills. It can lead to a more passive way of learning. In this state, students do not actively look for answers. They do not learn how to persevere. The way we interact with AI can also create an emotional distance. The feedback from AI is often repetitive. It is not personal. This can lower a student's emotional connection to their work. It can also reduce their motivation [32]. This problem is made worse by more time spent with software instead of human teachers. This can lead to feelings of being disconnected and alone. This kind of loneliness can lower a student's drive. It could even be a factor in students leaving school. They miss the emotional warmth that a human teacher provides. They miss the personal connection. The psychological effects also include more anxiety and stress. They include social isolation and even unstable mental health. This is especially true when tests run by AI create more worry about performance [5, 32]. A key part of this emotional toll is the loss of authorship. It is a loss of mental investment. Studies on using LLMs for writing show that users feel less ownership of the work. This is compared to people who did not use AI [38]. This suggests that when the thinking work is handed over to AI, the personal link to the final product becomes weaker. If students do not feel like the work is their own, their inner drive to engage with learning will likely fade. This leads to them disengaging from their studies. It leads to a more surface-level approach to schooling. The summary of this paper states a central idea. The "process" of learning is what matters. The struggle is important. The frustration is important. The revision is important. The final breakthrough is important. This is the very way that real knowledge is made [7, 9]. AI provides smooth solutions. It short-circuits this necessary cycle of effort and reward. This directly lessens a student's inner motivation. It also harms the growth of key non-thinking skills like persistence and grit.

4.2. The Indispensable Role of "Productive Struggle," Frustration, and Perseverance in Learning

Learning is not just about getting facts. It is about building knowledge. This building process is active. It often involves challenge. It requires effort [3, 9]. There is a teaching method called "productive struggle". It gives students tasks. These

tasks are just a little harder than what they already know. This pushes them to try again and again. They must work through their annoyance to find answers [28]. This planned difficulty builds sharp thinking. It helps with staying on a task. It teaches self-control. It helps create a belief in one's ability to grow. This leads to a better grasp of the subject. It can even cause physical brain growth through myelin production [28]. It moves students past just taking in information. They begin to wrestle with difficult ideas. Frustration has a part in this process. People often see it as bad. But it is a necessary part of learning. It is the feeling of being stopped from reaching a goal. It brings on feelings of annoyance. It can also cause a loss of confidence [21]. In schools, this feeling can appear in a couple of ways. One comes from not being able to solve a problem. The other is related to failing a test [29]. Long or unsolved frustration can be harmful. But a certain kind of frustration is good. It is sometimes called "pleasant frustration". This happens when a task is very hard but can be solved. This can be a good and motivating force for learning [11]. This kind of annoyance is key for building mental toughness. This is the ability to bounce back and do well even when things are hard. Grit is also connected to this idea of struggle. It is a quality not measured by thinking tests. It is about steady effort. It is about a constant interest in goals that take a long time to reach [8]. Studies regularly connect grit to good school results. It often foretells success better than IQ scores [8]. The continued work and steady interest are very important. This is true even when a person fails or has setbacks. These qualities are needed to gain real skill. The danger of AI's easy answers is that they skip these key moments. They go around the struggle. This takes away a student's chance to build grit. It stops them from learning how to keep going.

4.3. The Importance of Revision and Iteration as Mechanisms for Meaningful Knowledge Construction

The path of learning is naturally one of repetition. Revision is a key part of building real knowledge. Revision is not just about fixing errors. It is a hard, repeating process. It involves the major growth of a text's ideas, its structure, and its design [37]. This work often needs many drafts. It needs feedback from other students and teachers. It requires going back to the source materials. This can lead to a complete change of the first ideas and arguments. It is a skill that must be learned. It needs a lot of time and practice to get good at it [37]. In the same way, repetition and revision are basic parts of good learning. They help with understanding. They make memory stronger. They also build a student's confidence [3]. A student works with new ideas again and again. This helps the basic knowledge become solid. This lets information move from short-term to long-term memory. It does this by creating strong paths in the brain. Revision adds to this. It helps with making things better. It helps with building

knowledge. It helps with thinking back on one's work. It lets students check what they know and find the gaps in their own learning [3]. The convenience offered by AI tools, which can automate parts of writing and give instant feedback, comes with a hidden price. The price is to our ability to think about our own thinking. When AI makes these repeating processes fast or skips them, students lose important chances. They miss the chance to check their own work and to think about it. These are the very ways they find holes in what they know, make their thinking sharper, and learn to control themselves [15]. These thinking-about-thinking skills are needed for learning throughout life. They are needed for facing new challenges. The "frictionless void" that automation promises removes the need for deep, repeating work. It accidentally takes away from learners the very processes that help minds grow and build toughness. In the end, it hurts their ability for real self-creation.

5. The Ethical Quagmire

The integration of AI in education, while offering numerous benefits, introduces a complex array of ethical challenges that threaten to undermine the foundational principles of fairness, equity, and trust within learning environments [43, 45]. These concerns span data privacy, algorithmic bias, academic integrity, and the very nature of the teacher-student relationship.

5.1. Concerns Regarding Data Privacy, Security, and Student Surveillance in AI-Powered Systems

AI systems in schools require the gathering of huge amounts of private student data. This information covers personal details, school records, behavior patterns, and in some cases, even biometric information [32]. This large-scale data collection creates serious privacy dangers. These dangers include the chance of someone getting the data without permission, data breaches, and the wrong use of student information for things outside of education, like for business purposes [43]. A particularly hidden worry is the possibility of "constant surveillance." When students are always monitored by AI systems, it can create a widespread feeling of being watched. This can lead to a lack of trust in their schools. It could also change their behavior [32]. This environment can make students less willing to speak freely or act genuinely. It creates the feeling of an unsafe space for free expression. The problem is made worse by the fact that many schools, especially those in areas with fewer resources, often do not have the money or skill to put strong data protection plans in place. This leaves student data at risk [43]. Handling these key privacy worries needs a plan with many parts. Solutions must include a focus on informed consent and openness. This means making sure students and parents are fully aware of what data is collected. They must know

how it is stored and what it will be used for [43]. Following principles of data minimization is important. This means collecting only the data that is needed. It also means regularly deleting extra information to lower risks. In addition, strong data security rules, like encryption, access control, and regular security checks, are needed to protect sensitive information. School policies should also contain options for students and parents to say no to having their data collected and used by AI systems.

5.2. Algorithmic Bias and Its Perpetuation of Inequalities, Exacerbating the Digital Divide

A basic moral worry with AI in schools is algorithmic bias. This can lead to unfair or prejudicial results [43, 45]. AI systems are only as fair as the data they are trained on. If this training data has its own biases, it is a problem. If it does not properly show the cultural or economic variety of the student body, the AI will surely continue and even grow these existing biases in what it produces [4]. For example, AI grading systems may like certain writing styles. They might also wrongly label writing from non-native English speakers as made by AI. This can lead to unfair claims of copying [36]. This can cause AI systems to fail to meet the special learning needs of students from groups that are not well-represented. This puts students who are already at a disadvantage in a worse position in tests and in tracking their progress [43]. This problem is deeply connected to the digital divide. The good use of AI tools in schools often needs dependable internet access. It requires powerful computers. It requires current software [45]. Students in country areas, from poorer families, or at schools with fewer resources often do not have these basic technological needs. As a result, these students are shut out from the good things AI learning can offer. This makes existing inequalities worse. It further pushes aside communities that are already at a disadvantage [43]. The high first costs of setting up advanced AI systems also limit their availability. This often puts them outside the budget of many schools, especially those in areas with fewer resources. Fixing these unfair situations needs a unified effort. Solutions include large investments in digital infrastructure. This is especially true in country and poorer areas. The goal is to widen internet availability and to provide the needed technology [45]. The creation of low-cost AI-based learning tools and open-source educational AI solutions is very important. In addition, it is necessary to put in place inclusive rules that make fair access to technology a priority. This includes building digital skills through teacher training programs and community work. It also means making sure that AI creators use varied datasets to lessen algorithmic bias [43]. Moral AI frameworks must be set up to control AI applications. These frameworks must ensure fairness and inclusion. There must also be openness in how AI makes decisions to handle worries about bias.

5.3. Academic Integrity and the Authenticity of Student Work

The arrival of generative AI has created new and serious challenges for school honesty. It deeply questions the realness of student work [6, 25]. AI's power to make human-like text means that AI-made content could possibly get past traditional copying detection software. This makes it hard for teachers to tell the difference between student-made and AI-made work [36]. This brings up worries about widespread cheating. It also raises concerns about a possible lowering of the worth of school degrees. The problem is made harder by the difficulty in telling apart proper AI help from clear academic dishonesty. AI tools can give useful feedback or improve a presentation. But they can also make the lines of authorship unclear [6]. For example, a lot of editing by an AI writing helper might change a student's writing style enough to set off AI-based authorship detection systems. This can lead to false accusations [36]. In addition, contract cheating services are changing. Some ghostwriters copy student writing styles. Others complete assignments slowly over time. This makes it harder for traditional AI plagiarism checkers to catch them [13]. The limits of current AI plagiarism detection tools also add to the problem. They depend on existing databases. They may have trouble with languages other than English or with specialized terms from certain fields [36]. To protect school honesty, a plan with many parts is needed. Openness and clear talk about AI use are very important. Schools must publish clear rules on academic honesty. They must address AI tool use directly in their course outlines [6]. Students should be fully told about the effects of using AI-powered systems. They must also give informed consent [43]. Teachers should build AI literacy among students. They should teach them how AI works, its limits, and the importance of responsible use. They should present AI as a tool to help learning, not as a shortcut [25]. A key change in testing methods is also needed. Instead of just grading final products, schools should focus on process-based grading. This would track students' progress and involvement over time [6]. This includes making students critically engage with AI tools. They must give their own reasons and check the facts in AI-made content. The idea of "disclosed authorship" is becoming more popular. Students must clearly show how and where they used generative AI in their work. This lets teachers grade problem-solving ability and critical thinking in partnership with AI [25]. Human oversight and action are still essential. AI should support, not replace, traditional ways of grading student work. There must be human review of AI-made results before any punishment is given [43].

5.4. The Corrosion of the Teacher-Student Relationship

The use of AI offers efficiencies. It also presents a serious danger to the teacher-student bond. This bond is at risk of

wearing away. It could become a mere exchange of services. It could lose its human warmth [32]. This connection was historically built on direct, personal meetings. Teachers did more than just pass on information. They were also important sources of emotional help. They gave psychological guidance. They offered emotional care. They did this by watching a student's changes and problems [5]. AI, however, has its own limits. It cannot handle emotional communication well. It cannot provide human-like care. AI teaching helpers can give fast answers. They can give school support. But they cannot sense emotional states from body language. They cannot offer the true psychological comfort that a human teacher gives [32]. This causes a drop in direct face-to-face interaction. It creates a feeling of being disconnected from the learning experience. Studies show that a large number of instructors are worried. They are concerned that AI lessens personal contact. This could make the teacher-student connection weaker. Students feel that interactions with AI are not personal. They feel the talks are just a transaction [31]. The move toward online and data-driven talks, while convenient, can create an emotional distance. Students' growing reliance on AI for assignments, feedback, and problem-solving lowers their direct interaction with teachers. This leads to a lack of emotional connection [5]. When students have difficulties, they may turn to mechanical conversations with AI. They do not get human emotional support. Their psychological changes and emotional needs are overlooked. This can cause students to feel isolated. They may feel anxious or doubt themselves. They do not get the encouragement a human teacher would provide [5, 32]. To fight this decay, teachers must consciously strengthen emotional care. They must work to improve students' emotional knowledge. Putting in place open data management and privacy protection rules can build teacher-student trust. This trust is basic to a healthy connection [43]. A human-first design method for AI use is very important. This makes sure that AI supports, not replaces, human skill and judgment. It also makes sure that decisions affecting people are made or reviewed by humans [43, 45]. The part of human teachers as coaches and guides remains essential. It is necessary for learning that is meaningful, moral, and truly absorbing [25].

5.5. The Philosophical Rupture: Redefining Knowledge and Authentic Self-Creation

The use of AI in education is more than just a new technology. It is a major break in the basic ideas of teaching. It changes how we think about learning and making knowledge [25, 32]. For hundreds of years, schooling has been based on human-first ways of knowing. The teacher was the main source of knowledge. The learner asked questions in a planned way. AI goes against these old ways. It moves the center of power from human teachers to machine processes. AI-made content changes the classroom. Changing learning systems change the classroom. Automatic feedback systems

change the classroom. This brings up big worries. We worry about depending on AI. We worry about the shrinking part for human teachers. This break makes old lines fuzzy. The line between human thought and machine work is now blurry. The line between teaching and computing is blurry. The line between real knowing and just seeing patterns is blurry. If AI can “teach,” what is left for human teachers to do? The new way of new thinking must go past a wrong choice. The choice is not just between human minds and machine minds. Instead, AI should be seen as something that adds to human thought. It should be a partner in making knowledge. It should not be a replacement for schooling [5, 25].

This new way of thinking is needed to support genuine self-making within the learning process. Learning that is real stresses the creation of school experiences that are like real-life situations. This lets students work on difficult problems and build practical skills. It moves beyond just passing on information [16]. It places a strong stress on sharp thinking, problem-solving, and student freedom. It encourages looking back on one's own work and self-checking [5, 16]. When learning is real, students are more involved. They are more motivated. They are more invested. This closes the gap between what is learned in theory and what is used in practice. Generative AI can be a spark for real learning. This happens when it is used in a thoughtful way. It can help redesign courses and support student involvement [5, 25]. This means creating learning activities that are real in their setting, matching real-world jobs. The tasks should be complex and not clearly defined. They should require sharp thinking. Their effect should need teamwork and knowledge from different fields. Their worth should involve self-reflection and personal values [16]. This method changes the student's part. They are no longer just passive listeners. They become involved learners who get knowledge from both teachers and AI. This helps build self-belief [5]. The part of the teacher changes too. They are no longer the only experts. They become guides who help students work with AI as an active partner that adds to human intelligence [25]. This supports a “community of inquiry” which has cognitive, social, and teaching presence. It makes possible student involvement and participation that leads to real learning.

The risk is still there, however. AI's ability to give instant answers threatens to short-circuit the very thinking processes that are the base of deep learning and genuine self-making [6, 30]. Students may no longer need to wrestle with difficult problems. An AI tutor can provide step-by-step solutions. The inner good of struggle in learning is then broken [28]. This shows the need for teachers to build AI literacy. They must do this for both students and themselves. This means supporting a critical grasp of AI's abilities and limits. It means setting up moral guidelines that line up AI's use with human-focused values instead of just goals of pure efficiency [43]. The philosophical conversation must go on. It must question and improve educational models as AI changes. This is to make sure it serves as a spark for deeper, more

meaningful learning, rather than just a machine for automation.

6. Refuting Luddism

The discourse surrounding AI in education often falls into a simplistic dichotomy: either an uncritical embrace of its promises or a wholesale rejection rooted in technophobia, often labeled as Luddism. However, a nuanced understanding acknowledges that AI is not a fleeting trend but a transformative force that is already deeply embedded in society and will continue to grow [25]. Therefore, the critical discussion is not about whether to adopt AI, but how to integrate it responsibly to maximize its potential while safeguarding the core values of humanistic education [43, 45].

6.1. Distinguishing Thoughtful Critique from Technophobia

To call these worries about AI's effect on learning a simple fear of new things is a mistake. It ignores a growing amount of scholarly work. It also ignores the experience of teachers. Careful thought is not about throwing away technology. It is about seeing its limits. It is about knowing its dangers. This ensures we use it in a right and good way [43]. The argument is not about stopping the use of AI. It is about guiding how it is brought into our schools. It should help the growth of the human mind. It should not replace it. A steady, human-first method is needed [45]. This way of seeing accepts AI as a strong tool. It can add to human abilities. But it needs careful handling. We must avoid unplanned bad results. The goal is to use the quickness of AI. We must do this without giving up what makes education human. This includes kindness. It includes sharp thinking. It also includes the special kind of grasp that only a human teacher can provide.

6.2. AI as a Catalyst for Pedagogical Innovation, Not a Replacement

AI is not a replacement for human teachers. It can be a spark for new ways of teaching. It frees teachers to do more difficult work. This may also lower their burnout [10]. AI tools can do the regular office work. They can plan lessons. They can make content. They can give first feedback. This gives teachers more time for direct talks with students. They can give specific help. They can also support the emotional and social growth of students [10]. AI can act like a helpful partner for students. It gives quick feedback on their ideas or papers. It works as a constant learning helper, even after school hours [25]. It can help with scientific debates by helping students find proof. At the same time, it makes them check the facts and judge the information made by the AI [5]. This method presents AI as a tool for discovery, not an easy way out. It pushes students to stay involved in how they learn. When students use AI to make their presentations or

writing better, it lets them think about the main plans. They can think about the logic of their work. They do not get stuck on small points of style. In this way, AI becomes a partner in making knowledge. It is not a replacement for human mental work [5, 25].

This partnership can only happen if students and teachers understand AI. This knowledge is not just about the technical parts of AI. It is also about its moral, social, and cultural effects [43]. Students need certain skills. They need the thinking ability to judge what AI produces. They need the creativity to work with AI in a good way. They need the moral base to ask about its place in the world. This is needed to live in an AI-filled world with sureness and a clear direction. The “Human-AI-Human” (HAIH) method, for example, suggests a path. It starts with human questions. It uses AI to produce work. It always ends with human thought, human changes, and human grasp of the result [25]. This plan shows that AI is a strong tool. But it only makes learning better if students and teachers accept this human-first way.

6.3. The Imperative of Human-Centric Design and Ethical Frameworks

The good use of AI in schools depends on a conscious effort. We must develop human-first design rules. We must also follow strong moral plans. AI systems are not neutral. They show the values and biases of the people who made them. They also show the biases in the data they learned from [43]. For this reason, using AI must be based on clear moral rules. These rules must put human values and abilities first. They should be more important than just being fast [45]. World groups like UNESCO have stressed the importance of human control. They have stressed accountability. They have also stressed moral use in how AI is made and used in schools [43]. UNESCO’s AI Competency Framework for Teachers, for instance, points to care, trustworthiness, responsibility, and accountability as key rules. This makes sure that AI works as a helping tool. It should not replace what teachers do or their decisions [43]. Moral guidelines must line up with human-focused values. They should not be based only on goals of speed. This is to make sure that AI makes intellectual growth better, not smaller.

The Human-Centric AI-First (HCAIF) teaching plan gives a useful guide. It shows how to use generative AI while keeping human-focused values. This plan stresses preparing students to use AI to support their learning over time. It helps build sharp thinking, moral awareness, and real-world problem-solving skills [5]. It calls for a balanced use where AI-helped activities are matched with human-led workshops. This makes sure that human teachers stay as essential coaches and guides. They keep sharp thinking and human connection alive [5, 25]. This forward-looking method for using AI is grounded in moral thoughts. It is grounded in a promise to help people thrive. It is the only workable way forward for schooling.

7. Conclusion

The use of Artificial Intelligence in our schools presents a large problem. It questions the very point of learning. AI does offer some good things. It brings speed. It offers personal lessons. It makes information easier to get. A careful look, however, shows a deep conflict. The conflict is between the tempting ease of machines and the needed goodness of mental work. The study of the thinking, feeling, and moral sides of this problem points to a clear conclusion. The unthinking use of AI is a danger. It hurts the main goals of schooling. These goals are the building of sharp minds, the growth of mental toughness, and the support of genuine self-discovery.

On a thinking level, the attraction of easy learning is a problem. It leads to people giving their mental work to AI tools. This reliance is shown to be connected to lower thinking skills. This is especially true for younger students. The quick answers that AI gives go around the needed good struggle. They also skip the useful mental load that is needed for real knowing and for building mental models. This leads to surface learning. It does not lead to making real knowledge. A dangerous gap also appears. A person's growing trust in AI is linked to their own thinking skills going down. This creates a wrong sense of mental ability.

From an emotional standpoint, letting AI do the thinking work lessens a student's inner drive. It also hurts their belief in themselves. The non-personal nature of AI talks can lead to feeling distant. It can lead to feelings of being alone. It can also lead to a weaker sense of ownership over one's work. The actual path of learning is key. The struggle is important. The frustration is important. The revision is important. The final moment of success is important. This path is not an annoyance to be skipped. It is the very way that persistence, grit, and self-awareness are built. When AI gets in the way of this effort and reward cycle, it harms learners. It takes away the good experiences that build mental toughness and self-control.

On a moral level, the wide use of AI in schools brings a swamp of problems. Gathering huge amounts of private student data creates serious privacy and safety risks. It builds a setting of possible watching that can break trust. Machine biases, taken from training data, threaten to continue and grow existing unfairness. This makes the digital gap worse and harms students who are already at a disadvantage. School honesty faces new challenges as AI-made content makes it hard to know who the author is. It also makes detection harder. Also, the teacher-student connection is at risk of decay. It can change from a warm, human bond to a simple exchange of services. This happens as AI's limits in emotional talk become clear. On a deeper level, AI challenges human-first ways of knowing. This requires a new way of thinking. This new way sees AI as a partner in making knowledge, not a substitute for the human mind.

In the end, for schooling to keep its power to change peo-

ple, teachers and institutions must make a choice. They must thoughtfully create teaching methods that put human work first. This requires moving past a simple rejection of AI. It means adopting a human-first approach. This method would use AI carefully as a tool for new ideas, not just for automation. It demands building AI knowledge in all people. It requires setting up strong moral guidelines based on human values. It also means creating learning settings where the struggle, the frustration, the revision, and the final breakthrough are not automated away. They must be cherished as the very ways that real knowledge is made and the human mind is shaped. Protecting this good struggle from the smooth world of automation is the most important task. This is to ensure that education continues to build sharp thinking, mental toughness, and genuine self-discovery for future generations.

Abbreviations

AI	Artificial Intelligence
LLMs	Large Language Models
CAGR	Compound Annual Growth Rate
ITS	Intelligent Tutoring Systems
NLP	Natural Language Processing
CLT	Cognitive Load Theory
ECL	Extraneous Cognitive Load
GCL	Germane Cognitive Load
ML	Machine Learning
HAIH	Human-AI-Human
HCAIF	Human-Centric AI-First

Author Contributions

Mohammed Zeinu Hassen is the sole author. The author read and approved the final manuscript.

Conflicts of Interest

The author declares no conflicts of interest.

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Biography



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