

Exploring the Potential of Artificial Intelligence in Graphic Design: Opportunities and Challenges for the Ghanaian Academic Landscape

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Abstract: *The purpose of this study is to analyse the application of artificial intelligence (AI) in the field of graphic design and its consequences for the academic environment in Ghana. Specifically, we will be focusing on Ghana. This article presents an overview of AI in graphic design, focusing on its applications, highlighting its advantages and drawbacks, as well as the ethical questions that surround its utilization. This paper investigates the present condition of graphic design education in Ghana and addresses the ways in which artificial intelligence (AI) might improve the learning experience of students, increase their design abilities, and prepare them for the demands of the global labour market. The article also discusses the difficulties that are connected with incorporating AI into graphic design education in Ghana, such as the absence of adequate technological infrastructure and the requirement for instructors to acquire additional skills as well as update their existing ones. In conclusion, the study makes some suggestions as to how the academic environment in Ghana might make use of AI to promote graphic design education and contribute to the socio-economic growth of the country.*

Keywords: *artificial intelligence, graphic design, education, Ghana, academic landscape, upskilling, reskilling, ethics, job market, socio-economic development.*

I. Introduction

The development of computer systems that are capable of doing activities that traditionally require human intellect, such as visual perception, speech recognition, decision-making, and natural language processing, is what is referred to as artificial intelligence (AI) (Kapoor, 2019). Artificial intelligence (AI) systems are meant to learn from data and improve their performance over time, which allows them to adapt to new circumstances and tackle complicated issues (Kshetri, 2018). Rule-based systems, machine learning, and deep learning are some of the several forms of artificial intelligence that may be studied. There are also more types. Rule-based systems make judgments based on pre-defined rules and logic (Russell & Norvig, 2021), whereas machine learning algorithms employ statistical methods to learn from data and improve their accuracy over time (Russell & Norvig, 2021). (Alpaydin, 2020). Deep learning is a subfield of machine learning that simulates the way in which information is processed in the human brain by employing computer programs that model neural networks similar to those found in the human brain (Goodfellow, Bengio, & Courville, 2016). The healthcare, financial, industrial, and transportation sectors are just some of the many fields that can benefit from AI's vast variety of applications (Brynjolfsson & McAfee, 2017). It has the ability to increase efficiency, accuracy, and decision-making in a range of situations, and it may be used to automate regular processes, analyse massive volumes of data, and aid with the resolution of complicated issues (Lee et al., 2018). Concerns have been raised,

however, regarding the ethical and societal consequences of AI, in particular in respect to problems with bias, transparency, and accountability (Floridi et al., 2018).

The use of artificial intelligence (AI) has resulted in tremendous improvements in the field of graphic design. As a result, designers now have access to strong tools and automation capabilities that may help them optimize their workflow and improve their creative output (Wang et al., 2020). There are many different fields in which artificial intelligence (AI) has the potential to bring about major improvements. The following are some of the most important advantages of AI:

1. **Automation:** Systems that are driven by AI are able to automate mundane and repetitive operations, freeing up human employees to focus on work that is more complicated and creative. Because of this, higher production, efficiency, and cost savings are all possible outcomes.
2. **Improved decision-making:** AI is able to process and analyse massive volumes of data at a rate that is far quicker than that of humans. This enables AI to recognize patterns and generate predictions that can enhance decision-making in a range of industries, including finance, healthcare, and manufacturing.
3. **Personalization:** Customers may be provided with more customized experiences with the usage of AI, which may include the recommendation of products or services based on the customers' interests and previous actions.
4. **Enhanced safety:** Artificial intelligence may be used to monitor and analyse data in real time, allowing for the identification of possible safety concerns and the prevention of accidents. This technology might, for example, be implemented in self-driving cars or in industrial settings.
5. **Improved healthcare:** The application of AI to analyse patient data and provide assistance in diagnosis, therapy planning, and medication discovery has the potential to result in more accurate diagnoses and therapies that are also more successful.
6. **Increased accessibility:** By making available assistive technology to people with impairments, such as voice recognition and text-to-speech software, artificial intelligence (AI) may make the world a more accessible place.

II. DISCUSSION

In general, artificial intelligence has the potential to bring about major benefits in a range of fields, including greater production, increased efficiency, and enhanced creativity. Nevertheless, it is essential to take into account the possible ethical and societal ramifications of AI and to make certain that technology is utilized in a responsible and open-minded manner. There are numerous potential advantages that may be gained by using artificial intelligence (AI), but there are also some drawbacks that need to be taken into consideration. The following is a list of the most important restrictions that must be considered about AI (Mittelstadt, 2016).

Knowledge and comprehension are severely lacking: The fact that AI systems are dependent on data and algorithms, as well as the fact that their effectiveness is proportional to the quality and completeness of the inputs, are both constraints of the technology. It is possible that an AI system's accuracy and usefulness will be reduced if it does not have access to essential data, or if the data it does have is biased, partial, or wrong. This can lead to mistakes, prejudices, or judgments that are erroneous, all of which have the potential to have harmful repercussions for both people and society as a whole (Nature, 2021). To overcome this constraint, there is a need for more investments in data quality and data infrastructure, as well as initiatives to tackle biases and errors in data. Additionally, there is a need for more efforts to address inaccuracies and biases in data. In addition, there is

a requirement for continuous monitoring and evaluation of AI systems to ensure that they are functioning correctly and effectively, and that they are not sustaining or amplifying any pre-existing biases or inequalities. This is necessary to ensure that AI does not perpetuate or exacerbate any biases or inequalities.

Lack of creativity and intuition: Artificial intelligence systems, in general, are not capable of the same level of creativity and intuition as human beings. As a result, they may have difficulty performing tasks that require abstract thinking, emotional intelligence, or decision-making in complex, ambiguous situations (Stanford News, 2018). AI can be very effective at certain types of tasks, such as data analysis and pattern recognition; however, it is not yet capable of the kind of creativity and intuition that is frequently required in fields such as art, design, and innovation. This is despite the fact that AI can be very effective at certain types of tasks, such as data analysis and pattern recognition (BBC Future, 2020). Because AI systems are often built on pre-defined algorithms and rules, their capacity to develop really original or inventive solutions might be hindered as a result. Although there have been some promising developments in the use of artificial intelligence for creative tasks, such as the generation of music or artwork, these systems are still limited in their ability to replicate the kind of creative thinking and intuition that comes naturally to humans. For example, while there have been some promising developments in the use of AI for creative tasks, such as the generation of music or artwork. To overcome this limitation, continued investments in research and development of AI systems that are able to support creative and intuitive tasks are required. Additionally, efforts must be made to ensure that AI is used in a way that complements and enhances human creativity and innovation, rather than attempting to replace it.

Dependence on technology: In order to perform their functions, AI systems must rely on technology. As a result, these systems are susceptible to technical errors, hacking, and other problems that can undermine their efficiency and precision. There is a possibility that, as AI grows more pervasive in our everyday lives, we will develop an unhealthy dependence on this technology and become less able to operate normally in the absence of it (MIT Sloan Management Review, 2018). This might put us in a position where we are unduly dependent on AI systems to make choices or carry out activities, which could have adverse effects if these systems were to fail or become dysfunctional for any reason. In addition, there is the possibility that AI may be utilized as a replacement for human connection, which will further erode people's social abilities as well as their relationships with one another (World Economic Forum, 2020). In order to solve this constraint, there is a need for a balanced approach to the development and usage of AI systems. This approach should acknowledge the advantages of this technology while also noting the possible hazards that may be associated with it. This may mean making steps to guarantee that people continue to have control over AI systems and that AI technologies are designed to assist human decision-making and creativity rather than replace it. It may also encompass initiatives to promote digital literacy and education, with the goal of ensuring that users are equipped with the skills and information necessary to make effective and responsible use of AI systems.

Ethical concerns: There are questions about the ethical and social implications of AI, including issues of prejudice, transparency, privacy, and accountability. There are also concerns surrounding the ethical and legal aspects of AI. It is imperative that these concerns be addressed if artificial intelligence is to be utilized in a way that is both ethical and fair. In this context, "efforts to address issues of prejudice and privacy" may include "efforts to promote openness and accountability in the creation and use of AI systems," and "efforts to address issues of transparency and accountability." It may also involve the development of ethical guidelines and frameworks to guide the use of AI, as well as the establishment of regulatory frameworks to ensure that AI is used in a responsible and ethical manner. Lastly, it may involve the creation of a regulatory framework to ensure that AI is used in a responsible and ethical manner (Nature, 2018; MIT Technology Review, 2021, Forbes, 2021; & Harvard Business Review, 2020).

Job displacement: According to Ford (2015), there is a possibility of job displacement as well as changes to the labor market as artificial intelligence becomes increasingly capable of automating regular jobs. This may have

enormous repercussions on both the social and economic systems. As artificial intelligence (AI) systems become increasingly capable of performing tasks that were previously done by humans, there is a risk that many jobs will become automated, leading to job losses and economic disruption, according to a report published by the McKinsey Global Institute. [Citation needed] [Citation needed] (McKinsey Global Institute, 2017). This danger is most severe in sectors of the economy that are highly dependent on routine or repeated activities, such as the manufacturing, transportation, and customer service sectors. In these fields, artificial intelligence systems may be utilized to automate jobs such as working on manufacturing lines, driving, and providing basic responses to questions asked by customers. However, according to study conducted by the World Economic Forum, it is essential to keep in mind that even if AI has the potential to eliminate certain occupations, it also has the potential to generate new employment and sectors (World Economic Forum, 2018). For instance, the creation and maintenance of AI systems itself require individuals with specialized skills. Additionally, new businesses may arise to support the development and use of AI. New industries may emerge to support the development and use of AI. It is imperative that investments be made in retraining and reskilling programs in order to assist people in making the transition to new jobs and sectors in order to mitigate the danger of job displacement (World Economic Forum, 2018). The creation of new sectors and employment possibilities that are less likely to be taken over by robots can also get backing from national governments and private businesses. Additionally, in order to ensure that individuals have access to economic stability in the face of fast technological development, it may be necessary to explore measures such as universal basic income or employment guarantee programmes.

High costs: Creating and deploying AI systems may be a pricey endeavour since it calls for considerable investments in infrastructure, the gathering of data, and the experience of specialist personnel. Developing AI systems is a difficult and pricey process that requires large investments in research and development, as well as in hardware and software (Caliskan et al., 2017). In addition, it's possible that AI systems may require constant maintenance and updates in order to guarantee their continued efficiency and safety. Because of this, the total cost of creating and utilizing AI systems may end up being higher (Manyika et al., 2018). According to a paper published by the McKinsey Global Institute, the high expenses associated with AI may prevent certain individuals or organizations, especially those with minimal financial means, from having access to it (Manyika et al., 2017). In a similar vein, a study conducted by the Information Technology and Innovation Foundation suggests that this could potentially create a divide between those who have the financial means to create and use artificial intelligence and those who do not, potentially exacerbating already existing social and economic disparities (Atkinson & Castro, 2018). To overcome this constraint, it is essential to engage in research and development to find ways to reduce the cost of artificial intelligence and increase its availability. This might entail the development of open-source AI platforms or the promotion of cooperation and the sharing of knowledge between researchers, corporations, and governments. Additionally, policies such as tax incentives or subsidies could be used to encourage the development and use of AI in fields such as healthcare or education, which are areas in which its potential benefits may be particularly significant. These fields include areas in which the potential benefits of AI could be particularly significant. It is essential to take into account the constraints of artificial intelligence in addition to the potential advantages it may offer, and to strive toward the development of AI systems that are efficient, ethical, and egalitarian. The development of artificial intelligence (AI) generates a number of ethical concerns that need to be taken into consideration. The following is a list of some of the most important ethical concerns with AI:

Bias: The data and techniques that AI systems are built on can only provide them with so much objectivity. In the event that the data is biased or inadequate, the AI system has the potential to continue or even magnify existing biases, which may result in outcomes that are unjust or discriminating (Nature, 2018). During the creation and implementation of AI systems, there are various opportunities for bias to be introduced. For instance, if the data that is used to train an AI system has biases, then the model that is produced may reflect those biases and may even increase them. In a similar vein, if the algorithms that are used to analyse the data themselves are biased, this can also lead to results that are skewed (Mittelstadt et al., 2016). It is also possible

for biases to be introduced into AI systems during their design and implementation. This may occur during the selection of characteristics, the setting of thresholds, and the interpretation of outcomes, for example. It is necessary to be aware of these possible sources of bias and to take actions to reduce them, such as through careful data selection, algorithm design, and testing. It is also vital to be aware of the potential consequences of these potential sources of bias. In addition, it is essential to take into account the social and ethical consequences of the application of AI and to make certain that the advantages derived from its usage are fairly distributed.

Transparency: Understanding how artificial intelligence systems arrive at their conclusions can be challenging, especially when dealing with intricate machine learning models. Due to the lack of openness, it may be difficult to recognize and handle any possible ethical concerns that may arise. According to MIT Technology Review, one of the issues that many AI systems have is that they can be difficult to read or understand, especially for individuals who are not specialists in the field (MIT Technology Review, 2021). When it comes to ensuring that AI systems are making judgments that are both ethical and fair, this might provide a challenge. For instance, there are situations in which an AI system may be making judgments according to considerations that are not immediately obvious or clear to human observers (Barocas and Selbst, 2016). This might make it more difficult to recognize possible biases or ethical problems and find solutions to solve them. In order to overcome this obstacle, artificial intelligence (AI) systems require increased levels of both openness and interpretability. This might entail establishing ways for describing how a particular AI system arrived at its conclusion or suggestion, as well as methods for spotting any biases or inaccuracies in the system's output. In addition, there is a need for more education and awareness surrounding the use of AI, with the goal of assisting in the preparation of individuals and organizations to be able to make well-informed decisions on the application of AI.

Privacy: Effective operation of AI systems frequently requires vast volumes of data, which might create issues over individuals' right to privacy and the safety of their data (Forbes, 2021). It is critical to guarantee that individuals have control over their personal data and that it is used in a responsible and open manner. It is also essential to ensure that individuals know how their data is being used. This can entail the implementation of stringent data governance and security measures, as well as giving users with clear information about how their data will be used and enabling them the option to opt-in or opt-out of particular uses of their data. In addition, there is a requirement for more regulation and monitoring of the use of AI in order to assist in the protection of the legal rights and personal privacy of persons (Wang, Yao and Li, 2019). This can involve establishing clear standards and guidelines for the collection, use, and sharing of data, as well as providing individuals with greater transparency and control over how AI systems use their data. Additionally, this can involve establishing clear standards and guidelines for the collection, use, and sharing of data.

Accountability: It can be difficult to determine who is responsible for the actions of AI systems, particularly in situations in which decisions are made on their own, which can make it difficult to establish accountability for any negative outcomes that may result from the use of AI. This is one of the challenges that comes with the use of AI systems (Harvard Business Review, 2020). For the purpose of overcoming this obstacle, it is necessary to define distinct channels of responsibility for the application of AI systems. This might entail creating explicit principles and standards for the development and deployment of AI systems, as well as designating certain persons or groups that are accountable for supervising their application (Wachter, Mittelstadt&Floridi 2017). In addition, there is a need for more openness and supervision surrounding the use of artificial intelligence (AI), in order to assist in ensuring that its usage is in accordance with the moral and legal norms that are now in place (Mittelstadt et al., 2016). This can entail the establishment of processes for monitoring and auditing the usage of artificial intelligence systems, as well as providing humans with a way of disputing choices made by AI systems that may be harmful or unjust.

Autonomy: It is necessary to evaluate the ethical consequences of this level of autonomy, particularly in fields such as healthcare, finance, and law enforcement, as AI systems grow more capable of making choices on their

own. One cause for worry is the possibility that autonomous decision-making by AI systems might lead to unjust or harmful outcomes. This is especially true if the systems in question were not created or programmed with ethical concerns in mind throughout the development process. For instance, autonomous artificial intelligence systems can be helpful in diagnosis and treatment, but there are worries over the possibility of choices being prejudiced or inaccurate, which could result in people being harmed (Kaufmann & Schulz, 2020). In a similar vein, autonomous systems may be utilized in the financial industry for the purpose of detecting fraudulent activity and doing risk assessments; however, there are some worries surrounding the possibility that these systems could perpetuate existing biases (Liu et al., 2020). Autonomous systems have the ability to be utilized in law enforcement for predictive policing and decision-making; nevertheless, there are worries surrounding the possibility that these systems might perpetuate racial bias and other types of bias (Angwin et al., 2016). In order to address these issues, there is a pressing need for more control and regulation of the application of AI systems in the aforementioned sensitive sectors, as well as in other similarly delicate domains. This can entail the establishment of explicit ethical rules and standards for the use of artificial intelligence, as well as the provision of humans with a way of contesting judgments made by AI systems that may be hurtful or unjust. In addition, there is a demand for increased transparency and accountability in relation to the use of artificial intelligence (AI), with the goal of ensuring that individuals are able to comprehend the choices that are being made by these systems and have the ability to question those choices when necessary.

Human dignity: The necessity of ensuring that AI systems protect human dignity and promote human well-being is one of the most important ethical factors that must be taken into account throughout the creation and utilization of AI systems. To do this, AI systems need to be conceived of and utilized in a way that accords persons respect and dignity, and that acknowledges the fundamental value and autonomy they possess. For instance, Floridi and Cowls (2019) reported that an AI system used in the workplace should not be used to monitor or track employees in a way that violates their privacy or dignity, or that treats them as if they were merely cogs in a machine. This recommendation was based on the findings of Floridi and Cowls (2019), who found that AI systems should not be used to monitor or track employees in this manner. In a similar vein, an artificial intelligence system that is utilized in law enforcement should not be employed in a way that unfairly or unjustly targets specific persons or groups on the basis of their ethnicity, gender, or any other feature. There is a need for clear ethical guidelines and standards for the development and use of artificial intelligence systems, as well as ongoing monitoring and oversight to ensure that these guidelines are being followed. This is necessary to guarantee that AI systems will promote human dignity and well-being (Floridi & Cowls, 2019). In addition, there is a pressing need for increased engagement with a wide variety of stakeholders, such as individuals and communities that may be impacted by the application of AI, in order to guarantee that their points of view and worries are taken into consideration during the process of designing and implementing these systems (European Commission, 2019).

It is vitally necessary that these ethical concerns be addressed in order to guarantee that artificial intelligence will be created and put to use in a responsible and ethical way that will be to the overall benefit of society. In recent years, there has been tremendous development in the field of graphic design education in Ghana. Currently, a number of institutions and colleges in Ghana offer programs in graphic design at the diploma, undergraduate, and graduate levels (Osafo, 2019). The goal of these programs is to provide students with the expertise and information they need to achieve success as graphic designers in both the domestic and international employment markets. Typography, branding, web design, print design, and digital media are just a few of the topics that are frequently covered in these types of programs. A few of the programs also provide students with the opportunity to obtain practical experience by way of internships and partnerships with other businesses. However, there are still a number of obstacles that need to be overcome in order to make certain that students get the very finest education that is available and are adequately equipped for the requirements of the competitive global labour market.

AI has the potential to improve the educational experience of graphic design students in Ghana in a number of ways. One of these ways is by giving students access to powerful tools and automation capabilities, which can help students improve their design skills while also streamlining their workflow. For instance, an article published in the *Journal of Education and Practice* notes that AI-powered design software can automate repetitive tasks such as resizing images, creating mockups, and generating layouts. This enables students to focus on more creative and strategic aspects of the design process, as the article points out (Adebowale et al., 2021). Additionally, AI can help students learn more successfully by delivering individualized feedback and recommendations based on their specific learning requirements and preferences. This feedback and recommendations may be tailored to the student's unique learning profile. For instance, AI-powered tutoring systems are able to adapt to the speed and style of learning preferred by the student, offering focused feedback and direction to assist the student in improving their abilities and overcoming any deficiencies they may have. Kovanović et al (2019).

Additionally, AI has the potential to provide students access to a larger variety of design tools and inspiration from all around the world. Students are able to build a more global perspective on design by using AI-powered design platforms, which may, for instance, propose sources of design inspiration and trends from various nations and cultures. However, it is essential to point out that the incorporation of AI into graphic design education in Ghana also poses ethical considerations that need to be addressed in order to avoid any potential fallout. When developing and putting into practice AI-powered design tools and processes, these challenges—which include concerns regarding bias, transparency, privacy, and accountability—need to be taken into consideration. Students in Ghana will have access to sophisticated tools, tailored feedback, and worldwide inspiration thanks to the implementation of AI in graphic design education. This has the potential to completely transform the field. The fact that scholars and practitioners in the area of graphic design have acknowledged the potential for AI to change graphic design education is evidence that these truths are true. For instance, Cipolla-Ficarra and colleagues (2021) propose in their study that AI-powered design tools have the potential to improve both the creative output and the amount of work that graphic designers are able to get done. In a similar vein, the authors of a research that was conducted by Wong and colleagues (2019) suggest that AI has the potential to change design education by giving students with access to global design trends as well as cultural influences. It is essential, however, to approach the incorporation of AI in a responsible and ethical manner in order to guarantee that the advantages are maximized while simultaneously limiting the dangers and difficulties.

By introducing AI tools and technology into graphic design education, Ghana's academic landscape may harness artificial intelligence to promote graphic design education and contribute to the country's socio-economic growth. This can be accomplished through the following steps: Courses that instruct students how to use AI-powered tools for graphic design should be included into academic institutions in Ghana. Some examples of these types of products are Adobe Sensei, the AI-powered design tools offered by Canva, and CorelDRAW's AI-assisted bitmap-to-vector tracing. Students will be able to become adept in the use of AI, which will allow them to improve their design abilities and accelerate the design process. The application of AI in order to make designs more accessible: AI may assist designers in creating designs that are more accessible by analysing user data to guarantee that designs are simple and straightforward to comprehend and employ (Chen et al., 2020). By introducing AI into the design process, Ghanaian designers are able to produce designs that are more user-friendly and inclusive, which can contribute to an improvement in the country's general digital literacy. There is a need for more study in the field of design driven by AI. Research into AI-powered design, which may include generative design, design automation, and AI-driven creativity, should be encouraged in Ghana's academic institutions. Not only will this move the area of graphic design forward, but it will also contribute to the growth of the country in terms of technical innovation and competitiveness.

Academic institutions and private businesses ought to work together more often. Academic institutions in Ghana should work together with industry partners to develop graphic design solutions powered by artificial

intelligence that are capable of addressing real-world challenges. In addition to assisting students in obtaining practical experience that will better prepare them for employment in the design sector, this will also contribute to the overall growth and development of the economy of the country. The understanding of AI ought to be encouraged among design experts. The use of artificial intelligence (AI) and its applications in graphic design should be made more accessible to design professionals in Ghana. This will make it easier for them to keep up with the most recent technological developments and trends in the industry, as well as provide them the ability to develop designs that are both more efficient and effective. Academic institutions in Ghana are able to make a contribution to the socio-economic development of the country and better prepare students for employment in the design sector if they include AI into the graphic design education they provide.

III. CONCLUSION AND RECOMMENDATIONS

In conclusion, artificial intelligence has the ability to completely change the educational landscape of graphic design in Ghana by giving students access to more powerful tools, more tailored feedback, and worldwide inspiration. The use of artificial intelligence (AI) in graphic design education can improve students' creative abilities, productivity, and ability to solve problems, as well as better prepare them for employment in the quickly advancing design sector (Asare-Kyire and Cho, 2021). However, it is essential to approach the integration of AI in a responsible and ethical manner, taking into mind concerns such as data protection, transparency, and bias (Wang and Wachter, 2020). When this is done, academic institutions in Ghana will be able to guarantee that the advantages of AI are maximized while also limiting the possible dangers and obstacles. In the long run, the implementation of AI into graphic design education has the potential to make a contribution to the socio-economic development of Ghana as well as to assist in the establishment of a design sector that is more inventive, accessible, and inclusive.

Nevertheless, it is essential to approach the incorporation of AI in a responsible and ethical manner in order to guarantee that the advantages are maximized while simultaneously limiting the dangers and difficulties. Absolutely, it is absolutely essential to approach the incorporation of AI in graphic design education in Ghana in a responsible and ethical manner in order to guarantee that the advantages are maximized while simultaneously reducing the possible hazards and issues that may arise. When integrating AI-powered tools and technologies in the classroom, it is essential to keep in mind the many ethical and societal issues that may arise as a result of the usage of artificial intelligence in any industry or sector (Bostrom & Yudkowsky, 2014; UNESCO, 2021).

One of the most important aspects to take into account is the possibility that AI-enabled technologies will serve to perpetuate pre-existing prejudices and forms of discrimination, particularly if the algorithms are taught to do their tasks using biased data (Mueller, 2021). It is crucial to ensure that the data sets used to train the algorithms are varied and representative, and that the algorithms themselves are periodically inspected and evaluated for bias. Mitigate this risk by ensuring that the data sets used to train the algorithms are diverse and representative. There is also the possibility that AI will have an effect on career opportunities in the design business. Tools that are driven by artificial intelligence (AI) have the potential to make designers' jobs easier while also increasing the rate at which they do their work. However, there is a danger that these tools might also eventually replace human designers in some fields. To combat this issue, schools need to focus on providing kids with a well-rounded education that teaches them a variety of skills and subjects in addition to technical expertise in AI-powered technologies. In a similar vein, although specialists in robotics predict that artificial intelligence and machine learning will have a substantial long-term influence on design work, actual designers will not be replaced by robots within the next ten years at the earliest. As a result of changes in the business, the function of a designer has shifted from creator to curator (Team, 2021). When it comes to deploying AI-powered technologies in the classroom, it is crucial to make sure that data privacy and security are given the utmost importance. This requires the implementation of stringent security mechanisms to secure student data and the guarantee that it will only be used for educationally acceptable reasons. By taking a responsible and ethical

approach to the incorporation of AI into graphic design education in Ghana, we can ensure that the benefits are maximized while simultaneously minimizing the risks and challenges, and we can also create a design industry that is more equitable, innovative, and sustainable in the country.

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