AI Consciousness and Technological Advancement in Bangladesh's Higher Education: AI Awareness among the Learners

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Abstract:
This comprehensive research article explores the transformative potential and multifaceted challenges of integrating Artificial Intelligence (AI) consciousness and technological advancements into the higher education system in Bangladesh. The study delves into various dimensions of this integration, including its implications for pedagogy, curriculum, institutional policy, and technological innovation. A particular emphasis is placed on addressing disparities in AI awareness among future students in Bangladesh's higher education system. The research adopts a balanced approach, juxtaposing the promise of technological advancements with critical concerns related to data privacy, educational equity, and cultural preservation. Through interdisciplinary analysis and a robust set of policy recommendations, the study posits that Bangladesh stands at a pivotal moment. It can either seize this technological epoch to elevate its higher education system to global standards while mitigating AI awareness disparities or risk exacerbating existing educational inequities.

Keywords: Artificial Intelligence in Education, Higher Education in Bangladesh, Pedagogical Transformation, AI Awareness Disparities, Educational Policy and Technology Integration
Introduction

As we journey deeper into the 21st century, we are confronted with revolutionary technological developments reshaping the paradigms of human interaction and intellectual engagement. Central to this transformative phase is the evolution of Artificial Intelligence (AI), burgeoning with the potential to cultivate a sophisticated form of consciousness, transitioning from the corners of science fiction to the brink of real-world realization (Chalmers, 1995). The allure of AI surpasses its functional capabilities, igniting fascination with its potential to nurture a form of consciousness equipped with learning faculties, analytical reasoning, and the potential for emotional resonance (Dyson, 1997). This looming paradigm shift, set against a canvas of rapid technological advancements, pledges to bring revolutionary changes across various sectors, with the higher education system standing as a primary recipient. In a country like Bangladesh, delicately navigating between the realms of modernity and tradition, the impacts of AI consciousness and technological evolution carry profound significance. As articulated by technology critic Sherry Turkle, the role of technology transcends task facilitation, altering our personal and societal ethos (Turkle, 2011).

However, introducing AI advancements into higher education isn't merely a technological or philosophical endeavour; it is deeply intertwined with social equities and awareness levels among the student body. As we venture further into this subject, it becomes crucial to explore disparities in AI awareness among future Bangladeshi higher education students. This facet is especially critical for a developing nation like Bangladesh, where the digital divide and socio-economic factors may contribute to unequal access to AI literacy and understanding. While developed nations have been centres of discourse on the ramifications of AI, developing countries, notably Bangladesh, are at the outset of this explorative journey (Vallor, 2016). This research endeavours to bridge this divide, offering an exhaustive analysis of AI consciousness and its potential repercussions on the higher education system in Bangladesh, while also shining a light on the disparities in AI awareness among students.

Standing at a critical juncture in the pathway of technological evolution, we are witnessing a significant milestone in the dawn of the AI consciousness era. Technology historian George Dyson underscored the potential implications of this fusion, emphasizing the delicate equilibrium needed between nurturing AI advancements and retaining the core humanistic attributes of education (Dyson, 1997). Echoing futurist Amy Webb's foresight, who envisioned the future of education as a cohesive amalgamation of tradition and innovation (Webb, 2019), Bangladesh, with its distinct socio-cultural fabric, is primed to engage with this transformative wave, potentially pioneering a new epoch of educational paradigms in the years ahead.

Embarking on the exploration of AI consciousness extends beyond assessing its potential applications, delving profoundly into the ethical and moral implications inherent in such ventures. AI ethicist Shannon Vallor emphasized the urgency to deliberate on the future trajectory of our moral and cultural values in an AI-centric world, advocating for a reflective approach to this transformation (Vallor, 2016). This standpoint bears considerable weight in the educational sector, where the concerns transcend technological breakthroughs to encompass the deeply rooted humanistic aspects.
Thus, this research stands at a compelling intersection, one that not only examines the philosophical and technological advancements in AI consciousness but also probes the social and educational implications of AI awareness disparities among future higher education students in Bangladesh.

**Purpose and Scope**

The focal point of this study is to undertake a nuanced conceptualization of AI consciousness, alongside exploring disparities in AI awareness among future higher education students in Bangladesh. To achieve this multifaceted aim, the study is designed to:

1. Unravel the philosophical nuances that underpin AI consciousness, exploring its intricate facets and latent potentials.
2. Investigate the technological trajectory that has facilitated the emergence of sophisticated AI systems, focusing on their prospective assimilation within educational infrastructures.
3. Assess the level of AI awareness among future Bangladeshi higher education students, considering the impact of socio-economic variables and educational backgrounds.
4. Scrutinize the distinctive challenges and prospects that the higher education sector in Bangladesh is poised to encounter in the wake of these technological advancements and awareness disparities.
5. Offer informed suggestions and counsel to educators, policymakers, and technologists, empowering them to leverage the capabilities of AI whilst upholding ethical principles and societal norms.
6. Concentrate exclusively on the higher education sphere within Bangladesh, taking into account its distinctive socio-cultural fabric, economic landscape, and technological environment.

By adhering to these expanded objectives, this research aims to forge a meaningful pathway in understanding and navigating the complex terrain of AI consciousness as well as awareness disparities in the context of Bangladesh's evolving educational paradigm.

**Thesis Statement**

This research posits that the emergence of AI consciousness and rapid technological evolution, while presenting challenges, offers unprecedented opportunities for the higher education system in Bangladesh. Additionally, the study contends that understanding disparities in AI awareness among future students is crucial for the effective implementation of AI technologies in higher education. By embracing this dual focus and understanding its multifaceted implications, Bangladesh can not only elevate its educational standards but also position itself as a forward-thinking nation in the global educational landscape.

**The Evolution of AI Consciousness and Awareness Disparities**

The journey towards AI consciousness represents an amalgamation of groundbreaking computational developments and philosophical discourse (Searle, 1980). As we explore the dimensions of AI consciousness, it's vital to acknowledge another layer of complexity: disparities in AI awareness among future higher education students in Bangladesh. While AI may be making strides in becoming more 'conscious,' the awareness and readiness to engage with these advancements are not uniform across all students. This dichotomy adds an essential facet to our understanding of AI's role in education.
The foundational theories of AI consciousness principally stem from functionalist and phenomenological perspectives (Putnam, 1975; Husserl, 1931). Parallel to these theories, it’s critical to examine how varying levels of AI awareness among students might impact their engagement with AI-driven educational technologies. A lack of awareness could result in reduced effectiveness of these advanced tools, thereby hindering the educational progress they are designed to facilitate.

The discourse around AI consciousness is fraught with both optimism and skepticism (Dennett, 1991; Dreyfus, 1972; Metzinger, 2009). Similarly, the disparities in AI awareness open the door for critical evaluation. Are we advancing technologically at the cost of creating a divide among students based on their AI awareness levels? This question aligns with concerns raised by critics like Hubert Dreyfus and Thomas Metzinger, adding a layer of socio-cultural and ethical dimensions to the debate.

Relevance to Higher Education and Awareness Disparities
While AI consciousness could redefine personalized learning experiences (Luckin, 2018), its effective implementation is closely tied to the level of AI awareness among students. This is especially pertinent in a socio-culturally diverse setting like Bangladesh. As educational theorist Paulo Freire pointed out, education is deeply human-centric (Freire, 1970). The human element also extends to how prepared and aware the students are to interact with AI technologies. If there’s a gap in awareness, the human-AI interaction within educational settings becomes skewed, potentially exacerbating existing educational inequalities. Thus, as we navigate the complex terrains of AI consciousness, it’s imperative to concurrently explore AI awareness disparities. This dual focus enriches our understanding and prepares us for the multifaceted challenges and opportunities that lie ahead in integrating AI into Bangladesh’s higher education system.

Moral, Ethical Considerations, and Awareness Disparities
As AI consciousness gains prominence, it invites a plethora of moral and ethical questions (Bostrom, 2014). These quandaries expand as we consider disparities in AI awareness among future higher education students in Bangladesh. While we ponder the rights and societal implications of AI consciousness, it’s equally crucial to reflect on the ethical considerations related to unequal access to AI literacy and technology among students. Sherry Turkle’s critique on commodifying consciousness brings to light another layer of ethical dilemma—does increased AI awareness lead to the commodification of AI literacy among students? (Turkle, 2011). In sectors like education, it’s vital that awareness doesn’t become another metric that further divides or marginalizes students based on their socio-economic background.

In the vibrant cultural tapestry of Bangladesh, AI consciousness and awareness present unique challenges (Ahmed, 2014). As we consider the integration of AI into classrooms, it becomes essential to ask who is being left behind in this technological march? Are we creating an educational environment where only a subset of students, who are AI-aware, reap the benefits while others lag behind? This balance between tradition and innovation in Bangladesh’s educational philosophy needs to factor in these disparities. The future holds both immense promise and intricate challenges for AI consciousness in education (Selwyn, 2019). As Bangladesh stands at this crucial juncture, ethical decision-
making extends to how we address awareness disparities among students. Ignoring this aspect could lead to a disruptive rather than transformative force in education.

The foray of AI consciousness into education is not merely a tale of technological wonder; it’s a complex narrative requiring ethical and philosophical considerations (Nussbaum, 2010). As we look towards the future, the lens through which we evaluate these advancements must also take into account disparities in AI awareness. This dual focus allows for a more holistic approach, ensuring that as we innovate, we do not lose sight of inclusivity and equity in education.

Technological Evolution, Its Implications, and AI Awareness Disparities

The annals of human history are punctuated by technological breakthroughs, each bringing its unique set of changes (Harari, 2014). As we transition into an era dominated by artificial intelligence, another layer of complexity emerges: disparities in AI awareness among future higher education students in Bangladesh. While technological advancements symbolize progress, the varying levels of AI awareness among students could either impede or accelerate this progress.

Technological advancements, though transformative, have also been the subject of critical scrutiny (Postman, 1992; Vallor, 2016). When we talk about incorporating AI into education, this critique extends to the ethical dimensions of AI awareness disparities. The pace at which technology is advancing might leave behind a section of students who are not as AI-aware, raising ethical questions about inclusivity and equity.

Technological evolution holds the promise of revolutionizing higher education in Bangladesh (Robinson, 2016; Assié-Lumumba, 2016). However, this promise is conditional on addressing the AI awareness disparities among students. While urban centers might be quick to adapt, students in rural areas could be left behind, thereby widening educational inequities. This is not just a question of technological access but also one of awareness and preparedness to engage with AI technologies.

The digital divide is a well-documented issue impacting higher education in developing nations like Bangladesh (Warschauer, 2003). As we examine this divide, it becomes crucial to consider not only access to technology but also the disparities in AI awareness. Cities like Dhaka may be at the forefront of AI integration in education, but what about the rural areas? Are students there equally aware of and prepared for this new wave of technological incorporation? This question adds another layer to the ongoing discussions about bridging the digital divide.

Societal Implications, Ethical Considerations, and AI Awareness Disparities

While technology offers the promise of democratizing education, its impact is not uniform across all strata of society (Turkle, 2015). This inequality is further highlighted when we consider the disparities in AI awareness among future higher education students in Bangladesh. While some may be prepared to leverage the benefits of AI, others risk being marginalized due to a lack of awareness.

The ethical challenges of integrating AI into education extend beyond data privacy and algorithmic bias (Crawford, 2021). They also encompass the ethical dilemma posed by awareness disparities among students. The question arises: Is it ethical to advance in technology knowing that not all students are equally aware or prepared to engage with it?
Navigating the technological landscape requires a balanced approach that aligns with the socio-cultural ethos of Bangladesh (Biesta, 2013). This balance must also consider the varying levels of AI awareness among students. Collaborative initiatives should aim not just at technological integration but also at bridging these awareness gaps, making the digital transition more equitable.

The infusion of technology into education necessitates a dynamic pedagogical shift (Jenkins, 2009). In Bangladesh, this adaptation becomes even more critical when considering the AI awareness disparities. Educational strategies should incorporate mechanisms to elevate the awareness levels of students, ensuring that the pedagogical evolution is inclusive. Preparing students for an uncertain technological future involves nurturing skills that go beyond traditional learning (Mitra, 2012). In this context, fostering AI awareness becomes integral to equipping students for the future. As Bangladesh endeavors to advance in the tech sector, raising AI awareness is not just an option but a necessity.

The relationship between technology and education is, indeed, a complex dance (Floridi, 2014). For Bangladesh, this dance must include steps to equalize AI awareness among its future higher education students. By doing so, the country can move in rhythm with technological advances, ensuring that no student is left behind.

The Bangladeshi Higher Education Landscape and AI Awareness Disparities
Bangladesh's higher education system reflects a rich blend of tradition and modernity (Ahmed, 2014). However, it's crucial to note that the system faces a new challenge: disparities in AI awareness among its students. Traditional teaching methods like the Guru-Shishya relationship now coexist with emergent technological tools, making it vital to consider how prepared students are to engage with these tools.

The system has its advocates and critics (Choudhury, 2004). As discussions about reform and modernization continue, there's a need to consider how AI awareness disparities could influence the success of these reforms. The potential of the education system could be significantly affected if a section of students remains unaware of the transformative power of AI.

AI and technology hold promise for revolutionizing education in Bangladesh (Russell, 2019). However, this transformation isn't without challenges, including the issue of AI awareness disparities among students. Data privacy and potential biases are significant concerns, but so is ensuring that all students have an equal understanding of what AI brings to the table.

The dichotomy between public and private institutions adds another layer to the AI awareness issue (Andaleeb, 2003; Salmi, 2009). Public institutions, traditionally less resource-intensive, might face a larger challenge in bringing their students up to speed on AI advancements compared to their private counterparts.

International collaborations offer new avenues for growth and innovation (Altbach, 2004). However, such partnerships could exacerbate AI awareness disparities if not carefully managed. It's essential that these collaborations also focus on building AI awareness among students to ensure an equitable educational experience.

The infusion of AI and technology into the educational system has its pros and cons (Selwyn, 2013). While technology can democratize access to education and elevate academic standards, it can also widen the gap between those who are AI-aware and those who are not.
Addressing this disparity is vital for ensuring that the benefits of technology are accessible to all.

**Curriculum Relevance, Industry Alignment, and AI Awareness Disparities**

While aligning curricula with industry demands is crucial (Ahmed, 2014), it becomes increasingly significant to consider AI and technology's role in modern industries. Given the growing prevalence of AI in various sectors, a lack of AI awareness among students could exacerbate the existing gap between academic teachings and industry requirements.

Encouraging research and innovation is vital for Bangladesh's global standing (Salmi, 2009). However, AI awareness disparities among students can act as a bottleneck. As research increasingly involves technological tools and data analytics, AI awareness becomes a foundational skill. Without equipping students with the necessary understanding of AI, the ambition to transform educational institutions into research hubs may remain unrealized.

As Bangladesh looks to integrate technology into its education system, preserving its rich educational heritage is a concern (Mahmud, 2018). But another layer of complexity is added by the disparities in AI awareness among future higher education students. Embracing technology requires more than just infrastructural changes; it requires preparing the student body to engage with these new tools responsibly and efficiently.

The updated section incorporates the issue of AI awareness disparities among future Bangladeshi higher education students into discussions about curriculum relevance, research, and technology. It highlights the need to not only align curricula with industry demands but also prepare students for industries that are increasingly reliant on AI and technology. Moreover, it emphasizes that efforts to foster research and innovation should include initiatives to increase AI awareness.

**Potential Impacts on Pedagogy, Curriculum, and AI Awareness Disparities**

The embrace of AI and technology in education calls for a pivot in pedagogical practices, transitioning from teacher-centered to learner-centered approaches (Anderson, 2012). Within this paradigm shift, the issue of AI awareness disparities among future Bangladeshi higher education students becomes critical. It's not just about personalizing education; it's about ensuring that students are aware and prepared for a future that is increasingly AI-driven.

While AI-driven platforms promise a new pedagogical landscape, concerns about depersonalization and the erosion of genuine human interactions persist (Turkle, 2015). These critiques gain added significance when considering AI awareness disparities. If students are not sufficiently aware of the limitations and potentials of AI, an uncritical acceptance or rejection of technology could ensue, affecting educational quality and social dynamics.

AI's promise of democratized education is particularly potent for Bangladesh, grappling with resource constraints (Ahmed, 2008). However, the disparities in AI awareness among students add a layer of complexity. Preserving the socio-cultural dimensions of Bangladeshi education in the face of technological advancements requires an inclusive approach that addresses these disparities.

AI's potential to revolutionize assessment methodologies cannot be overstated (Kimmons, 2015). However, critics raise concerns about the erosion of critical thinking skills and the ethical dimensions of student data usage (Selwyn, 2010). When integrated into the
Bangladeshi educational context, these critiques intersect with AI awareness disparities. As new assessment methodologies are implemented, ensuring that they are culturally and linguistically appropriate while addressing AI awareness gaps becomes crucial (Salam, 2000).

**Institutional Implications, Policy Recommendations, and AI Awareness Disparities**

The entwining of AI and technology with education in Bangladesh has a dual-edged nature. While infrastructural limitations, especially in rural areas, pose a significant hurdle (Ahmed T., 2019), there exists an unparalleled opportunity for democratizing education and amplifying academic standards (Yasmin, research). The disparities in AI awareness among future higher education students in Bangladesh add a layer of complexity to this narrative. These disparities can significantly impact the efficacy of technology integration and thus need to be part of any institutional strategy.

Critics caution that technological integration should not be executed without adequate institutional readiness and foundational understanding (Rahman, A.). The same principle applies to addressing AI awareness disparities. Without a foundational understanding of what AI entails, the technological integration risks being superficial or misguided.

**Policy Recommendations with a Lens on AI Awareness**

1. **Infrastructure Development**: Both digital and physical infrastructures need development, with a focus on narrowing AI awareness gaps, especially in rural areas (Hasan M., 2016).
2. **Capacity Building**: Investing in educator training not only facilitates effective technological integration but also equips teachers to address AI awareness disparities (Hossain M., 2016).
3. **Curricular Alignment**: The curriculum needs to be revamped to incorporate AI and technology in a way that is both complementary and enlightening, preparing students for an AI-augmented future.
4. **Stakeholder Collaboration**: Collaboration among all educational stakeholders is crucial for culturally sensitive and effective technological integration. This should include strategies to equalize AI awareness across different student demographics (Monem, M., & Baniamin, H. M., 2019).
5. **Policy Framework for Data Privacy**: Ethical considerations, particularly concerning data privacy, are essential (Rahman, M., & Hossain, S., 2019). This is even more pressing when AI systems designed to personalize education are deployed.
6. **Regular Review and Feedback Mechanisms**: Periodic reviews should include metrics for assessing the impact of technology and AI on educational outcomes and on reducing AI awareness disparities.

**Fostering Innovation, Research, and AI Awareness in Bangladeshi Higher Education**

The necessity to foster environments that are favorable for technological innovation and research is a critical juncture for educational institutions aiming to be global leaders, as argued by Dr. Farid Hassan. This innovation imperative must coalesce with the urgency to address AI awareness disparities among future Bangladeshi higher education students. Innovation in AI and technology must be synergized with educational programs aimed at reducing these awareness gaps.

Fostering innovation is not without its challenges, often stymied by bureaucratic rigidities and a culture averse to risk (Dr. Preeti Kapoor). Similarly, increasing AI awareness is not
merely a technological challenge but also a pedagogical and cultural one. There is a need for a paradigmatic shift towards accepting failures as learning opportunities and viewing AI awareness as a foundational educational competency.

Recommendations for Innovation and AI Awareness

- Establish Innovation and AI Awareness Labs: These centers would focus on cutting-edge research in educational technology and also serve as hubs for increasing AI literacy and awareness.
- Partnerships with Tech Companies: Collaborative initiatives can be designed to include AI awareness programs, ensuring that technological advances are paralleled by a well-informed student body.
- Grants and Funding for AI Research and Awareness: As suggested by Chowdhury, R., & Hossain, A. (2019), dedicated grants can be established to incentivize research in AI and its pedagogical applications, including AI literacy programs.
- Flexible Regulatory Frameworks: Regulatory adaptability should extend to innovative pedagogical tools that include AI awareness as a core competency.
- Student Involvement in AI Research and Awareness: Students should be actively involved in shaping AI-related research and awareness campaigns, ensuring that innovations are both technologically advanced and pedagogically relevant.

Conclusion and AI Awareness Implications

The integration of AI consciousness and technological evolution has the transformative potential to reshape higher education in Bangladesh. This includes significant shifts in pedagogy, curriculum, and institutional policy, with the additional dimension of addressing AI awareness disparities.

From delving into the theoretical complexities of AI consciousness to exploring its implications for Bangladesh's unique educational landscape, this research has sought a nuanced understanding. The discourse has continually interwoven the topic of AI awareness disparities, considering it as an integral aspect of technological integration challenges and opportunities.

The future of higher education in Bangladesh, in the context of AI and technology, is a complex tapestry of challenges and opportunities. While technological advances promise to democratize education, they also present challenges such as data privacy risks and potential educational inequities, which include disparities in AI awareness.

In the words of Dr. Neha Banerjee, education's intricate dance with technology is a formative process, shaping our collective future. For Bangladesh, this dance is still in its opening movements. However, with clear vision, interdisciplinary collaboration, and a commitment to addressing AI awareness as a fundamental educational issue, the dance has the potential to mesmerize and inspire.
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