



# Chapter 6

## Ethical Considerations in Applying AI and Data Science in Education


**S. Baghavathi Priya**

 <https://orcid.org/0000-0001-9168-7810>  
*Amrita Vishwa Vidyapeetham, India*


**T. Harinderan**

 <https://orcid.org/0009-0007-6553-9153>  
*Amrita Vishwa Vidyapeetham, India*

**Faiz Rahaman**

 <https://orcid.org/0009-0006-9798-0181>  
*Amrita Vishwa Vidyapeetham, India*

**M. Tamilselvi**

 <https://orcid.org/0000-0001-6400-6098>  
*University of Technology and Applied Sciences, Oman*

### ABSTRACT

*Artificial Intelligence (AI) by applying Data Science in rapidly moving times, is a pedagogy that shifts and changes administrative aspects in the education sector. These include machine learning and deep learning; hence, these have significantly enhanced data-driven decision-making, although several ethical concerns are emerging. Major key issues within these are algorithmic biases, privacy of students, and lack of transparency within AI-driven decisions. Challenges That Confront Educational Institutions: Lack of quality datasets; overfitting in AI models. Fairness, transparency, and the security of data are enabled through ethical guidelines, which would mean periodic auditing, methods of mitigating bias, and a continuous process of integrating AI in schools by involving stakeholders. Ongoing monitoring will ensure that indeed AI's outcomes could be positive, meeting education-focused objectives coupled with ethics.*

DOI: 10.4018/979-8-3693-8292-9.ch006

## **1. INTRODUCTION**

### **1.1 Overview of AI and Study of Data Science in Education**

Artificial Intelligence (AI) and Data Science are revolutionizing education by providing personalized learning, automating routine administrative tasks, making learners' progress visible through data analyses, and much more. This section analyzes their contribution to the reshaping of teaching, learning, and educational management processes and identifies the challenges they present. However, most of the existing studies lack a broad-based critique of their methodologies, and poorly explored areas include the cultural and social implications of AI in education.

### **1.2 Background of the AI and Data Science in the field of Education**

AI-enabled education is the application of filters and models for the purpose of improving activities in learning. Artificial Intelligence refers to the concept that guides one in designing systems meant to perform tasks that are thought to require intelligence, for example, solving problems and making decisions, as well as understanding languages. Its essence is the science of collecting insights from big amount sets of data using the methods of statistical analysis, machine learning, and predictive modelling. AI and Data Science application for the analysis of educational data, which is made up of actual student performance and more to create actionable insights for improvement. This is learner-centered learning: For it individualizes the educational experience based on information garnered from each learner, providing more focused and effective learning pathways.

### **1.3 Importance of Ethical Considerations**

This lies in the common trajectory of technological advancement. In the early parts of the 1990s, the focus was on adaptive learning systems and intelligent tutoring. However, over the past fifteen years or so, machine learning has become more advanced to facilitate scale-up learning opportunities. Thus, while there are more digital education sites and more big data, schools have been applying AI into their structures to design more efficient ways to learn and administer. Major milestones include the increase of Massive Open Online Courses (MOOCs), tutoring systems powered by artificial intelligence, and assessment tools that evolve and adapt.

### **1.4 Importance of the Research**

This paper discusses whether the use of AI and Data Science poses an ethics issue in the way these technologies alter learning and teaching methods as well as administrative procedures in academy. The research will examine the benefits and challenges of introducing AI while charting a critical analysis of its effects upon the students, educators, and institutions, with recommendations for ethical AI governance. The scope will be a review of related literature, case studies of AI application in education, and future trajectories of these technologies.

22 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/ethical-considerations-in-applying-ai-and-data-science-in-education/370077](http://www.igi-global.com/chapter/ethical-considerations-in-applying-ai-and-data-science-in-education/370077)

## Related Content

---

### Human Action Recognition Using Median Background and Max Pool Convolution with Nearest Neighbor

Bagavathi Lakshmi and S. Parthasarathy (2019). *International Journal of Ambient Computing and Intelligence* (pp. 34-47).

[www.irma-international.org/article/human-action-recognition-using-median-background-and-max-pool-convolution-with-nearest-neighbor/225769](http://www.irma-international.org/article/human-action-recognition-using-median-background-and-max-pool-convolution-with-nearest-neighbor/225769)

### An Intelligent Particle Swarm Optimization for Fuzzy Based Heterogeneous Radio Access Technology (RAT) Selection

J. Preethi and S. Palaniswami (2012). *International Journal of Intelligent Information Technologies* (pp. 23-42).

[www.irma-international.org/article/intelligent-particle-swarm-optimization-fuzzy/74828](http://www.irma-international.org/article/intelligent-particle-swarm-optimization-fuzzy/74828)

### Query Expansion Using Medical Information Extraction for Improving Information Retrieval in French Medical Domain

Aicha Ghoulam, Fatiha Barigou, Ghalem Belalemand Farid Meziane (2018). *International Journal of Intelligent Information Technologies* (pp. 1-17).

[www.irma-international.org/article/query-expansion-using-medical-information-extraction-for-improving-information-retrieval-in-french-medical-domain/204950](http://www.irma-international.org/article/query-expansion-using-medical-information-extraction-for-improving-information-retrieval-in-french-medical-domain/204950)

### AI, Sustainability Mandates, and the Intensification of Logistical Work

Anh Ngoc Le (2026). *Impacts of AI on Employment and Skills in Logistics* (pp. 1-26).

[www.irma-international.org/chapter/ai-sustainability-mandates-and-the-intensification-of-logistical-work/407346](http://www.irma-international.org/chapter/ai-sustainability-mandates-and-the-intensification-of-logistical-work/407346)

### Conceptual Graphs Based Approach for Subjective Answers Evaluation

Goonjan Jain and D.K. Lobiyal (2017). *International Journal of Conceptual Structures and Smart Applications* (pp. 1-21).

[www.irma-international.org/article/conceptual-graphs-based-approach-for-subjective-answers-evaluation/189218](http://www.irma-international.org/article/conceptual-graphs-based-approach-for-subjective-answers-evaluation/189218)