Chapter 1

Considering Artificial Intelligence in Higher Education

Defining Intent and Audience

Artificial intelligence (AI) will fundamentally reshape the landscape of higher education during the next decade, making it more efficient and attuned to the challenges of the 21st century (Michel-Villarreal et al., 2023). This chapter provides an overview of the transformative impacts AI will have on programs in institutions of higher education that prepare special educators and related service providers. This includes research-intensive universities, liberal arts colleges, community colleges, technical institutes, and vocational schools. The primary focus of this chapter is to serve as an initial cornerstone for advancing discussion on the impact of AI in higher education. The intended audience for this chapter includes faculty members, researchers, and higher education leadership that support the development of special educators, early intervention, related service personnel, and leadership or doctoral preparation programs.

AI will Impact Higher Education

Higher education aims primarily to teach the next generation of workforce employees, conduct basic and applied research, and support the regional, national, and international constituents they serve. AI is projected to change how leadership, faculty, and staff conduct business (Wang et al., 2021). One of the most significant impacts of AI in teaching is the enhancement of personalized learning experiences (Crompton & Burke, 2023). AI-driven systems can analyze individual student performance, understand students' unique learning needs, and adapt instructional materials to meet these needs. This personalized approach not only caters to students' diverse abilities but also aids in identifying areas in which they struggle, allowing for timely intervention and support.

AI has the potential to automate administrative tasks like grading, writing reports, and

providing students with feedback (Zawacki-Richter et al., 2019). For example, AI can analyze students' responses to an exam and autograde their performance. This allows instructors to focus more on teaching and less on repetitive administrative duties.

AI also provides opportunities to enhance students' critical thinking skills. For example, writing a lesson plan is a foundational exercise in many special education teacher preparation programs. This activity is no longer necessary because AI can write a lesson plan in under a minute. It is more beneficial for instructors to show preservice teachers how to generate a lesson plan and then ask them to analyze it in small groups. The discussion allows critical analysis and discourse to enhance students' understanding of the content.

From a research perspective, AI will revolutionize the methodology and scope of scientific research at research-intensive universities. Advanced data analytics, predictive modeling, and AI automation can significantly enhance the efficiency and accuracy of research processes (Xu et al., 2021). Imagine a conversational AI methodologist for the social sciences who supports and guides researchers as they design new studies or run data analyses. Researchers will be able to receive personalized support from a dedicated team of experts who are AI agents. This technological leap will democratize educational research, accelerate the pace of discovery, and open new avenues for interdisciplinary studies.

In liberal arts colleges, where the focus often lies on arts and humanities, AI introduces new pedagogical approaches to art, video, audio, and the production of creative work. AI-driven tools can provide new methods to support innovative approaches to editing, presenting, and publishing creative works. This technology enables a more accessible educational environment. The integration of AI in the curriculum of liberal arts colleges ensures students are well-equipped with essential skills and knowledge to navigate and contribute to a rapidly evolving digital world.

Community colleges serve as crucial access points to the community for many students, including those with disabilities. Like other institutions of higher education, these schools can leverage AI to streamline administrative processes and enhance student support services within local school districts. AI-powered platforms can assist with career counseling, course selection, and academic advising tailored to each student's unique needs and goals. This individualized support is instrumental in improving student outcomes, retention rates, and overall educational quality in community colleges.

Finally, technical institutes and vocational schools focusing on practical and skill-based education can harness AI to refine their teaching methodologies. AI can simulate real-world scenarios, provide interactive learning experiences, and teach complex technical skills. For instance, AI-driven simulations in education, engineering, health care, and information technology can offer students hands-on experience in a controlled yet realistic environment. This approach enhances skill acquisition and prepares students for the demands of the modern workforce in a risk-free environment.

What Should Higher Education Constituents Know?

Institutions of higher education should be proactive as they strategically plan to integrate

AI. It is critically important to consider how decisions affect all individuals, including individuals with disabilities.

Instructors and Professors

Higher education instructors should be keenly aware of AI's transformative impact on instruction, particularly regarding the pedagogical transformations associated with its adoption. Adaptive learning systems, AI tutors, and advanced data analytics will help instructors gain insight into student performance. However, privacy considerations and transparent use policies are essential for ensuring the ethical adoption of AI algorithms (Bond et al., 2024). Instructors must be knowledgeable about data security, ethics, and the implications of using AI in an educational context. This understanding is crucial for preparing future special education teachers to responsibly navigate the evolving educational landscape.

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Researchers

Researchers need to understand AI's profound implications for advancing academic inquiry. AI can process vast data sets much more efficiently than traditional methods, allowing researchers to uncover new insights and patterns. For instance, AI's ability to analyze complex, large-scale data can lead to groundbreaking discoveries in fields like education. Researchers should also be cognizant of the ethical considerations and potential biases inherent in AI technologies and ensure their work adheres to high standards of integrity and objectivity.

Administrators

Administrators should focus on the strategic implementation of AI to enhance institutional efficiency and effective student outcomes. AI can support data-driven decision-making in areas such as enrollment management, where predictive analytics can forecast student enrollment trends, or facility management, where AI can optimize energy use and reduce operational costs. Additionally, AI can provide targeted recruitment and strategic retention practices by analyzing current students. Administrators must navigate the challenges of integrating AI, including budgeting for new technologies, training staff, and ensuring compliance with privacy and data protection policies.

Staff Members

Staff members in student services and support roles should be equipped to utilize AI tools to enhance student experiences. AI can be used in personalized learning platforms to tailor educational content to individual student needs or in advising systems to provide customized academic and career advice. Staff should also be prepared for the evolving nature of their roles as AI automates certain administrative tasks,

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allowing them to focus more on direct student engagement and support.

Students

Students should be informed about how AI can augment their learning experience and prepare them for a workforce increasingly reliant on AI and machine-learning competencies. They should seek opportunities to gain AI literacy, regardless of their major, as this knowledge will become fundamental across all professions. For example, a speech and language pathology student may learn how AI is used in healthcare data analysis or personalized advertising. Similarly, an occupational therapy student may explore AI's role in optimizing diagnostic analysis to enhance patient care.

Preparing for AI Integration

Every person in the university can begin to prepare for AI today. This action may start by reviewing the resources on the Center for Innovation, Design, and Digital Learning website and learning about AI. You are encouraged to initiate the discussion with your colleagues. Consider the following ideas.

Play With, Learn, and Use AI Technology

For faculty in higher education, embracing AI can significantly enrich teaching and research, allowing them to integrate AI tools into their teaching methods to create more dynamic and personalized learning experiences. For example, using AI-driven analytics, faculty can track students' learning progress, identify areas where students struggle, and alter their teaching methods accordingly. In research, AI can be a powerful tool in data analysis, helping process large data sets. For instance, a Science, Technology, Engineering, and Mathematics class could use AI to analyze genetic sequences. In contrast, a history instructor might use natural language processing to sift through vast archives of historical texts with a summary on

the text's most important aspects.

Begin Planning Strategically

Administrators in higher education have a pivotal role in overseeing the strategic adoption of AI. They can initiate the implementation of AI systems for campus management, such as using predictive analytics for enrollment planning or AI-driven tools for resource allocation and facility management. Additionally, administrators can focus on establishing partnerships with tech companies to facilitate the integration of AI in educational settings and stay abreast of the latest developments in AI technology.

Start Discussions Among All Faculty and Staff

Begin formal and informal conversations within and across groups in higher education. Hosting coffee, lunches, and AI gatherings with colleagues, including faculty and staff, provides a way to talk informally about the potential of AI. Including support staff in these conversations is essential to ensure the institution is prepared to integrate this new technology. Staff members, including those in administrative and support roles, can leverage AI to improve operational efficiency and student services. For instance, AI-powered chatbots can answer student queries, reducing the workload on support staff and providing students with instant assistance. AI can help manage resources and provide better user experiences for disability support services, library staff, and IT services. AI can also assist with personalizing student support to enhance the overall educational experience.

Considerations for Higher Education Administrators, Faculty, and Staff

There are several critical questions higher education administrators, faculty, and staff

property correctly are important.

Integration With Current Systems

How will AI systems integrate with educational and administrative platforms such as learning management systems? Seamless integration is essential for the practical usability of AI tools. Before investing in technology systems, assess how these tools will work with current systems.

Impact on Curriculum and Pedagogy

How will AI change teaching methods and curriculum design? Faculty should explore how AI can enhance pedagogy, including supporting greater use of personalized learning or adaptive assessments. Faculty members also should consider how the curriculum may need to evolve to include AI literacy and related skills.

Student Preparedness for an AI-Driven World

Are students adequately prepared for a future in which AI is ubiquitous? Integrating AI into the learning process enhances students in all fields of study to gain skills in understanding of the benefits and pitfalls of the technology.

Costs and Return on Investment

What are the financial implications of implementing AI? Administrators need to consider the costs of AI solutions and weigh them against potential benefits, such as improved efficiency, enhanced learning outcomes, and future readiness.

Training and Support

What training and support will faculty and staff need? The successful adoption of AI technologies requires faculty and staff to be adequately trained to use these tools effectively. Understanding the scope of this training and the support structures needed is crucial.

Impact on Employment

How might AI affect roles and responsibilities within the institution? It is important to consider how AI can automate certain tasks and the subsequent effects on staff and faculty.

Long-Term Sustainability

How sustainable is the adoption of AI in terms of technological updates and ongoing

Summary of Questions to Consider

How does the AI system address ethical concerns and potential biases?

What measures are in place to protect data privacy and security?

How did students and educators contend with cheating before the advent of AI?

How will AI systems integrate with educational and administrative platforms such as learning management systems?

How will AI change teaching methods and curriculum design?

Are students adequately prepared for a future in which AI is ubiquitous?

What are the financial implications of implementing AI?

What training and support will faculty and staff need?

How might AI affect roles and responsibilities within the institution?

How sustainable is the adoption of AI in terms of technological updates and ongoing maintenance?

Conclusion

This chapter highlighted a brief overview of the impact of AI on higher education, highlighting its potential to transform educational programs, particularly for special educators and related service providers across various types of institutions. It emphasizes AI's role in enhancing efficiency and responsiveness to 21st-century challenges through personalized learning, automation of administrative tasks, and support for critical thinking skills. Additionally, AI's influence extends to research methodologies, offering advanced analytics and automation to accelerate discovery and innovation. The text addresses the importance of ethical considerations, data privacy, and the integration of AI into current systems, urging educators, researchers, administrators, and students to embrace AI literacy and consider its implications for teaching, learning, and administrative processes. It also outlines practical steps for higher education stakeholders to prepare for AI integration, including strategic planning, engaging with AI technology, and fostering discussions on AI's potential and challenges.

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