

AI USE CASES IN EDUCATION

AI Use Cases in Education: A Critical Analysis of Current Trends

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SUMMARY: THIS ANALYSIS EXPLORES THE BURGEONING FIELD OF AI USE CASES IN EDUCATION, EXAMINING ITS TRANSFORMATIVE POTENTIAL AND INHERENT CHALLENGES. IT CRITICALLY ASSESSES CURRENT TRENDS, FOCUSING ON BOTH THE BENEFITS – PERSONALIZED LEARNING, AUTOMATED ASSESSMENT, AND ENHANCED ACCESSIBILITY – AND THE RISKS – ALGORITHMIC BIAS, DATA PRIVACY CONCERNS, AND THE POTENTIAL DISPLACEMENT OF HUMAN EDUCATORS. THE ARTICLE CONCLUDES BY EMPHASIZING THE NEED FOR ETHICAL CONSIDERATIONS AND RESPONSIBLE IMPLEMENTATION TO MAXIMIZE THE POSITIVE IMPACT OF AI IN EDUCATION WHILE MITIGATING POTENTIAL HARMS.

1. INTRODUCTION: THE RISE OF AI IN EDUCATION

THE INTEGRATION OF ARTIFICIAL INTELLIGENCE (AI) INTO EDUCATION IS RAPIDLY EVOLVING, PRESENTING BOTH EXCITING OPPORTUNITIES AND SIGNIFICANT CHALLENGES. AI USE CASES IN EDUCATION ARE BECOMING INCREASINGLY DIVERSE, RANGING FROM PERSONALIZED LEARNING PLATFORMS TO AI-POWERED ASSESSMENT TOOLS. THIS CRITICAL ANALYSIS EXAMINES THE CURRENT TRENDS IN AI USE CASES IN EDUCATION, EXPLORING THEIR IMPACT ON TEACHING, LEARNING, AND THE OVERALL EDUCATIONAL LANDSCAPE. WE WILL DELVE INTO THE BENEFITS AND DRAWBACKS, ADDRESSING ETHICAL CONSIDERATIONS AND OFFERING A FORWARD-LOOKING PERSPECTIVE ON THE FUTURE OF AI IN EDUCATION.

2. AI Use Cases: Transforming the Learning Experience

SEVERAL KEY AI USE CASES IN EDUCATION ARE RESHAPING HOW STUDENTS LEARN AND HOW EDUCATORS TEACH:

PERSONALIZED LEARNING: AI ALGORITHMS CAN ANALYZE STUDENT PERFORMANCE DATA TO IDENTIFY INDIVIDUAL LEARNING STYLES, STRENGTHS, AND WEAKNESSES. THIS ENABLES THE CREATION OF CUSTOMIZED LEARNING PATHWAYS, PROVIDING TAILORED CONTENT, PACING, AND FEEDBACK. AI TUTORS CAN OFFER PERSONALIZED SUPPORT, ADDRESSING INDIVIDUAL NEEDS AND CHALLENGES IN REAL-TIME. EXAMPLES INCLUDE PLATFORMS THAT ADAPT THE DIFFICULTY OF EXERCISES BASED ON STUDENT PERFORMANCE OR PROVIDE TARGETED RECOMMENDATIONS FOR FURTHER STUDY.

AUTOMATED ASSESSMENT: AI CAN AUTOMATE THE GRADING OF OBJECTIVE ASSESSMENTS LIKE MULTIPLE-CHOICE TESTS AND SHORT-ANSWER QUESTIONS, FREEING UP EDUCATORS' TIME FOR MORE ENGAGING ACTIVITIES LIKE INDIVIDUAL STUDENT INTERACTION AND LESSON PLANNING. AI-POWERED SYSTEMS CAN ALSO PROVIDE DETAILED FEEDBACK ON STUDENT WORK, HIGHLIGHTING AREAS FOR IMPROVEMENT AND IDENTIFYING MISCONCEPTIONS. THIS AUTOMATION IMPROVES EFFICIENCY AND ALLOWS FOR MORE FREQUENT ASSESSMENT, ENABLING QUICKER IDENTIFICATION OF LEARNING GAPS.

ENHANCED ACCESSIBILITY: AI CAN MAKE EDUCATION MORE ACCESSIBLE TO STUDENTS WITH DISABILITIES. AI-POWERED TOOLS

CAN TRANSLATE TEXT INTO SPEECH, PROVIDE REAL-TIME CAPTIONING, AND CREATE PERSONALIZED LEARNING MATERIALS TAILORED TO SPECIFIC NEEDS. THIS FOSTERS INCLUSIVITY AND ENSURES THAT ALL STUDENTS HAVE EQUAL OPPORTUNITIES TO SUCCEED. FOR EXAMPLE, AI CAN GENERATE ALTERNATIVE FORMATS FOR LEARNING MATERIALS, SUCH AS AUDIO VERSIONS OF TEXTBOOKS FOR VISUALLY IMPAIRED STUDENTS.

INTELLIGENT TUTORING SYSTEMS: THESE SYSTEMS LEVERAGE AI TO PROVIDE PERSONALIZED TUTORING, OFFERING IMMEDIATE FEEDBACK AND ADAPTING TO THE STUDENT'S LEARNING PACE. THEY CAN SIMULATE HUMAN TUTORS, OFFERING EXPLANATIONS, ANSWERING QUESTIONS, AND PROVIDING GUIDANCE. SUCH SYSTEMS CAN BE PARTICULARLY EFFECTIVE IN SUBJECTS REQUIRING SIGNIFICANT PRACTICE, LIKE MATHEMATICS OR LANGUAGE LEARNING.

3. CHALLENGES AND ETHICAL CONSIDERATIONS OF AI IN EDUCATION

DESPITE THE POTENTIAL BENEFITS, THE IMPLEMENTATION OF AI IN EDUCATION PRESENTS SEVERAL CHALLENGES:

ALGORITHMIC BIAS: AI ALGORITHMS ARE TRAINED ON DATA, AND IF THAT DATA REFLECTS EXISTING SOCIETAL BIASES, THE ALGORITHMS WILL PERPETUATE AND EVEN AMPLIFY THOSE BIASES. THIS CAN LEAD TO UNFAIR OR DISCRIMINATORY OUTCOMES FOR CERTAIN GROUPS OF STUDENTS. ADDRESSING ALGORITHMIC BIAS REQUIRES CAREFUL DATA CURATION AND ONGOING MONITORING OF AI SYSTEMS FOR EQUITABLE PERFORMANCE.

DATA PRIVACY AND SECURITY: THE USE OF AI IN EDUCATION INVOLVES THE COLLECTION AND ANALYSIS OF VAST AMOUNTS OF STUDENT DATA. PROTECTING THE PRIVACY AND SECURITY OF THIS DATA IS CRUCIAL. ROBUST DATA SECURITY MEASURES AND TRANSPARENT DATA GOVERNANCE POLICIES ARE ESSENTIAL TO ENSURE ETHICAL DATA HANDLING.

TEACHER DISPLACEMENT CONCERNS: WHILE AI CAN AUGMENT TEACHER ROLES, CONCERNS EXIST REGARDING POTENTIAL JOB DISPLACEMENT. IT'S CRUCIAL TO FOCUS ON HOW AI CAN ENHANCE, RATHER THAN REPLACE, THE ESSENTIAL HUMAN ELEMENT OF TEACHING—EMPATHY, EMOTIONAL INTELLIGENCE, AND NUANCED UNDERSTANDING OF INDIVIDUAL STUDENTS. THE EMPHASIS SHOULD BE ON USING AI TO EMPOWER TEACHERS, NOT REPLACE THEM.

THE "BLACK BOX" PROBLEM: UNDERSTANDING HOW COMPLEX AI ALGORITHMS ARRIVE AT THEIR DECISIONS CAN BE DIFFICULT. THIS "BLACK BOX" PROBLEM MAKES IT CHALLENGING TO IDENTIFY AND ADDRESS POTENTIAL BIASES OR ERRORS. TRANSPARENCY AND EXPLAINABILITY IN AI SYSTEMS ARE CRUCIAL FOR BUILDING TRUST AND ACCOUNTABILITY.

4. CURRENT TRENDS AND FUTURE DIRECTIONS

THE FIELD OF AI USE CASES IN EDUCATION IS RAPIDLY EVOLVING. SEVERAL KEY TRENDS ARE SHAPING ITS FUTURE:

INCREASED ADOPTION OF AI-POWERED TOOLS: MORE EDUCATIONAL INSTITUTIONS ARE ADOPTING AI-POWERED TOOLS FOR VARIOUS PURPOSES, FROM PERSONALIZED LEARNING TO AUTOMATED ASSESSMENT.

FOCUS ON ETHICAL AI: THERE'S A GROWING EMPHASIS ON ETHICAL CONSIDERATIONS IN THE DEVELOPMENT AND IMPLEMENTATION OF AI IN EDUCATION. INSTITUTIONS ARE DEVELOPING GUIDELINES AND BEST PRACTICES TO ENSURE RESPONSIBLE USE.

INTEGRATION OF AI WITH OTHER EDTECH TOOLS: AI IS INCREASINGLY BEING INTEGRATED WITH OTHER EDUCATIONAL TECHNOLOGIES, CREATING MORE COMPREHENSIVE AND EFFECTIVE LEARNING PLATFORMS.

DEVELOPMENT OF EXPLAINABLE AI (XAI): RESEARCH IS FOCUSED ON MAKING AI SYSTEMS MORE TRANSPARENT AND UNDERSTANDABLE, ADDRESSING THE "BLACK BOX" PROBLEM.

HUMAN-AI COLLABORATION: THE FUTURE OF AI IN EDUCATION LIES IN EFFECTIVE COLLABORATION BETWEEN HUMANS AND AI, LEVERAGING THE STRENGTHS OF BOTH TO ENHANCE THE LEARNING EXPERIENCE.

5. CONCLUSION

AI USE CASES IN EDUCATION HOLD IMMENSE POTENTIAL TO REVOLUTIONIZE HOW WE TEACH AND LEARN. HOWEVER, REALIZING THIS POTENTIAL REQUIRES CAREFUL CONSIDERATION OF THE ETHICAL IMPLICATIONS AND CHALLENGES ASSOCIATED WITH AI IMPLEMENTATION. BY ADDRESSING ALGORITHMIC BIAS, ENSURING DATA PRIVACY, AND FOSTERING HUMAN-AI COLLABORATION, WE CAN HARNESS THE POWER OF AI TO CREATE A MORE EQUITABLE, ACCESSIBLE, AND EFFECTIVE EDUCATION SYSTEM FOR ALL. THE FOCUS SHOULD BE ON LEVERAGING AI TO AUGMENT, NOT REPLACE, THE CRUCIAL ROLE OF HUMAN EDUCATORS, ENSURING THAT TECHNOLOGY SERVES TO ENHANCE THE LEARNING EXPERIENCE AND EMPOWER BOTH TEACHERS AND STUDENTS. THE RESPONSIBLE DEVELOPMENT AND IMPLEMENTATION OF AI IN EDUCATION ARE PARAMOUNT TO MAXIMIZING ITS BENEFITS WHILE MITIGATING POTENTIAL HARMS.

FAQs

1. WHAT ARE THE MAIN BENEFITS OF USING AI IN EDUCATION? AI OFFERS PERSONALIZED LEARNING EXPERIENCES, AUTOMATED ASSESSMENT, ENHANCED ACCESSIBILITY, AND INCREASED EFFICIENCY FOR TEACHERS.
1. WHAT ARE THE POTENTIAL RISKS OF USING AI IN EDUCATION? ALGORITHMIC BIAS, DATA PRIVACY CONCERNS, AND POTENTIAL TEACHER DISPLACEMENT ARE KEY RISKS.
1. HOW CAN WE ADDRESS ALGORITHMIC BIAS IN AI EDUCATION TOOLS? CAREFUL DATA CURATION, ONGOING MONITORING OF AI SYSTEMS FOR EQUITABLE PERFORMANCE, AND DIVERSE DEVELOPMENT TEAMS ARE CRUCIAL.
1. HOW CAN WE ENSURE DATA PRIVACY AND SECURITY IN AI EDUCATION APPLICATIONS? ROBUST SECURITY MEASURES, TRANSPARENT DATA GOVERNANCE POLICIES, AND COMPLIANCE WITH RELEVANT REGULATIONS ARE ESSENTIAL.
1. WILL AI REPLACE TEACHERS? NO, AI IS INTENDED TO AUGMENT TEACHER ROLES, NOT REPLACE THEM. THE HUMAN ELEMENT OF TEACHING REMAINS IRREPLACEABLE.
1. WHAT IS THE "BLACK BOX" PROBLEM IN AI? IT REFERS TO THE DIFFICULTY IN UNDERSTANDING HOW COMPLEX AI ALGORITHMS ARRIVE AT THEIR DECISIONS, MAKING IT HARD TO IDENTIFY AND ADDRESS BIASES OR ERRORS.
1. HOW CAN AI IMPROVE ACCESSIBILITY IN EDUCATION? AI CAN TRANSLATE TEXT TO SPEECH, PROVIDE REAL-TIME CAPTIONING, AND GENERATE PERSONALIZED LEARNING MATERIALS FOR STUDENTS WITH DISABILITIES.
1. WHAT ARE SOME EXAMPLES OF AI-POWERED ASSESSMENT TOOLS? AUTOMATED ESSAY GRADING SYSTEMS, AI-POWERED PLAGIARISM DETECTORS, AND SYSTEMS THAT PROVIDE DETAILED FEEDBACK ON STUDENT WORK.

1. WHAT IS THE FUTURE OF AI IN EDUCATION? THE FUTURE LIES IN HUMAN-AI COLLABORATION, FOCUSING ON ETHICAL AI DEVELOPMENT, AND INTEGRATION WITH OTHER EdTech TOOLS.

RELATED ARTICLES:

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 **ai use cases in education: Artificial Intelligence in Education** Wayne Holmes, Maya Bialik, Charles Fadel, 2019-02-28 The landscape for education has been rapidly changing in the last years: demographic changes affecting the makeup of families, multiple school options available to children, wealth disparities, the global economy demanding new skills from workers, and continued breakthroughs in technology are some of the factors impacting education. Given these changes, how can schools continue to prepare students for the future? In a world where information is readily available online, how can schools continue to be relevant? The emergence of Artificial Intelligence (AI) has exacerbated the need to have these conversations. Its impact on education and the multiple possibilities that it offers are putting pressure on educational leaders to reformulate the school curriculum and the channels to deliver it. The book *Artificial Intelligence in Education, Promises and Implications for Teaching and Learning* by the Center for Curriculum Redesign immerses the reader in a discussion on what to teach students in the era of AI and examines how AI is already demanding much needed updates to the school curriculum, including modernizing its content, focusing on core concepts, and embedding interdisciplinary themes and competencies with the end goal of making learning more enjoyable and useful in students' lives. The second part of the book dives into the history of AI in education, its techniques and applications -including the way AI can help teachers be more effective, and finishes on a reflection about the social aspects of AI. This book is a must-read for educators and policy-makers who want to prepare schools to face the uncertainties of the future and keep them relevant. --Amada Torres, VP, Studies, Insights, and Research, National Association of Independent School (NAIS) The rapid advances in technology in recent decades have already brought about substantial changes in education, opening up new opportunities to teach and learn anywhere anytime and providing new tools and methods to improve learning outcomes and support innovative teaching and learning. Research into artificial intelligence and machine learning in education goes back to the late 1970s. Artificial intelligence methods were generally employed in two ways: to design and facilitate interactive learning environments that would support learning by doing, and to design and implement tutoring systems by adapting instructions with respect to the students' knowledge state. But this is just the beginning. As *Artificial Intelligence in Education* shows, AI is increasingly used in education and learning contexts. The collision of three areas - data, computation and education - is set to have far-reaching consequences, raising fundamental questions about the nature of education: what is taught and how it is taught. *Artificial Intelligence in Education* is an important, if at times disturbing, contribution to the debate on AI and provides a detailed analysis on how it may affect the way teachers and students engage in education. The book describes how artificial intelligence may impact on curriculum design, on the individualisation of learning, and on assessment, offering some tantalising glimpses into the future (the end of exams, your very own lifelong learning companion) while not falling victim to tech-hype. The enormous ethical, technical and pedagogical challenges ahead are spelt out, and there is a real risk that the rapid advances in artificial intelligence products and services will outstrip education systems' capacity to understand, manage and integrate them appropriately. As the book concludes: We can either leave it to others (the computer scientists, AI engineers and big tech companies) to decide how artificial intelligence in education unfolds, or we can engage in productive dialogue. I commend this book to anyone concerned with the future of education in a digital world. --Marc Durando, Executive Director, European Schoolnet

ai use cases in education: AI and education Miao, Fengchun, Holmes, Wayne, Ronghuai Huang, Hui Zhang, UNESCO, 2021-04-08 Artificial Intelligence (AI) has the potential to address some of the biggest challenges in education today, innovate teaching and learning practices, and ultimately accelerate the progress towards SDG 4. However, these rapid technological developments inevitably bring multiple risks and challenges, which have so far outpaced policy debates and regulatory frameworks. This publication offers guidance for policy-makers on how best to leverage the opportunities and address the risks, presented by the growing connection between AI and education. It starts with the essentials of AI: definitions, techniques and technologies. It continues with a detailed analysis of the emerging trends and implications of AI for teaching and learning,

including how we can ensure the ethical, inclusive and equitable use of AI in education, how education can prepare humans to live and work with AI, and how AI can be applied to enhance education. It finally introduces the challenges of harnessing AI to achieve SDG 4 and offers concrete actionable recommendations for policy-makers to plan policies and programmes for local contexts. [Publisher summary, ed]

ai use cases in education: An Introduction to Artificial Intelligence in Education

Shengquan Yu, Yu Lu, 2021-11-29 This book systematically reviews a broad range of cases in education that utilize cutting-edge AI technologies. Furthermore, it introduces readers to the latest findings on the scope of AI in education, so as to inspire researchers from non-technological fields (e.g. education, psychology and neuroscience) to solve education problems using the latest AI techniques. It also showcases a number of established AI systems and products that have been employed for education. Lastly, the book discusses how AI can offer an enabling technology for critical aspects of education, typically including the learner, content, strategy, tools and environment, and what breakthroughs and advances the future holds. The book provides an essential resource for researchers, students and industrial practitioners interested and engaged in the fields of AI and education. It also offers a convenient handbook for non-professional readers who need a primer on AI in education, and who want to gain a deeper understanding of emerging trends in this domain.

ai use cases in education: OECD Digital Education Outlook 2021 Pushing the Frontiers with Artificial Intelligence, Blockchain and Robots OECD, 2021-06-08 How might digital technology and notably smart technologies based on artificial intelligence (AI), learning analytics, robotics, and others transform education? This book explores such question. It focuses on how smart technologies currently change education in the classroom and the management of educational organisations and systems.

ai use cases in education: Fostering Communication and Learning With Underutilized Technologies in Higher Education Ali, Mohammed Banu, Wood-Harper, Trevor, 2020-09-04 Higher education is undergoing radical changes with the arrival of emerging technology that can facilitate better teaching and learning experiences. However, with a lack of technical awareness, technophobia, and security and trust issues, there are several barriers to the uptake of emerging technologies. As a result, many of these new technologies have been overlooked or underutilized. In the information systems and higher education domains, there exists a need to explore underutilized technologies in higher education that can foster communication and learning. Fostering Communication and Learning With Underutilized Technologies in Higher Education is a critical reference source that provides contemporary theories in the area of technology-driven communication and learning in higher education. The book offers new knowledge about educational technologies and explores such themes as artificial intelligence, digital learning platforms, gamification tools, and interactive exhibits. The target audience includes researchers, academicians, practitioners, and students who are working or have a keen interest in information systems, learning technologies, and technology-led teaching and learning. Moreover, the book provides an understanding and support to higher education practitioners, faculty, educational board members, technology vendors and firms, and the Ministry of Education.

ai use cases in education: Revolutionizing Education in the Age of AI and Machine Learning Habib, Maki K., 2019-09-15 Artificial Intelligence (AI) serves as a catalyst for transformation in the field of digital teaching and learning by introducing novel solutions to revolutionize all dimensions of the educational process, leading to individualized learning experiences, teachers playing a greater role as mentors, and the automation of all administrative processes linked to education. AI and machine learning are already contributing to and are expected to improve the quality of the educational process by providing advantages such as personalized and interactive tutoring with the ability to adjust the content and the learning pace of each individual student while assessing their performance and providing feedback. These shifts in the educational paradigm have a profound impact on the quality and the way we live, interact with each other, and

define our values. Thus, there is a need for an earnest inquiry into the cultural repercussions of this phenomenon that extends beyond superficial analyses of AI-based applications in education. Revolutionizing Education in the Age of AI and Machine Learning addresses the need for a scholarly exploration of the cultural and social impacts of the rapid expansion of artificial intelligence in the field of education including potential consequences these impacts could have on culture, social relations, and values. The content within this publication covers such topics as AI and tutoring, role of teachers, physical education and sports, interactive E-learning and virtual laboratories, adaptive curricula development, support critical thinking, and augmented intelligence and it is designed for educators, curriculum developers, instructional designers, educational software developers, education consultants, academicians, administrators, researchers, and professionals.

ai use cases in education: Artificial Intelligence Applications in Distance Education

Kose, Utku, 2014-07-31 This book seeks to examine the efforts made to bridge the gap between student and educator with computer applications through an in-depth discussion of applications employed to overcome the problems encountered during educational processes--Provided by publisher.

ai use cases in education: Artificial Intelligence in Education Matthew N.O. Sadiku,

Sarhan M. Musa, Uwakwe C. Chukwu, 2022-01-27 The quest for building an artificial brain developed in the fields of computer science and psychology. Artificial intelligence (AI), sometimes called machine intelligence, refers to intelligence demonstrated by machines, while the natural intelligence is the intelligence displayed by humans and animals. Typically, AI systems demonstrate at least some of the following human behaviors: planning, learning, reasoning, problem solving, knowledge representation, perception, speech recognition, decision-making, language translation, motion, manipulation, intelligence, and creativity. Artificial intelligence is an emerging technology which the educational sector can benefit from. In this book, we consider the applications of AI in key areas of education. Artificial intelligence in education (AIED) refers to the application of AI technologies in educational settings to facilitate teaching, learning, or decision making. AI will impact the education field in the areas of administration, instruction, and personalized, and individualized learning applications. In this book, AI is specifically applied in the following key educational sectors: education, natural sciences, social sciences, computer science, engineering, business, and medicine.

ai use cases in education: Understanding the impact of artificial intelligence on skills

development UNESCO International Centre for Technical and Vocational Education and Training, 2021-04-02

ai use cases in education: Business Trends in Practice Bernard Marr, 2021-11-15 WINNER

OF THE BUSINESS BOOK OF THE YEAR AWARD 2022! Stay one step ahead of the competition with this expert review of the most impactful and disruptive business trends coming down the pike Far from slowing down, change and transformation in business seems to come only at a more and more furious rate. The last ten years alone have seen the introduction of groundbreaking new trends that pose new opportunities and challenges for leaders in all industries. In Business Trends in Practice: The 25+ Trends That Are Redefining Organizations, best-selling business author and strategist Bernard Marr breaks down the social and technological forces underlying these rapidly advancing changes and the impact of those changes on key industries. Critical consumer trends just emerging today—or poised to emerge tomorrow—are discussed, as are strategies for rethinking your organisation's product and service delivery. The book also explores: Crucial business operations trends that are changing the way companies conduct themselves in the 21st century The practical insights and takeaways you can glean from technological and social innovation when you cut through the hype Disruptive new technologies, including AI, robotic and business process automation, remote work, as well as social and environmental sustainability trends Business Trends in Practice: The 25+ Trends That Are Redefining Organizations is a must-read resource for executives, business leaders and managers, and business development and innovation leads trying to get - and stay - on top of changes and disruptions that are right around the corner.

ai use cases in education: *Teaching AI* Michelle Zimmerman, 2018-12-15 Get the tools, resources and insights you need to explore artificial intelligence in the classroom and explore what students need to know about living in a world with AI. For many, artificial intelligence, or AI, may seem like science fiction, or inherently overwhelming. The reality is that AI is already being applied in industry and, for many of us, in our daily lives as well. A better understanding of AI can help you make informed decisions in the classroom that will impact the future of your students. Drawing from a broad variety of expert voices from countries including Australia, Japan, and South Africa, as well as educators from around the world and underrepresented student voices, this book explores some of the ways AI can improve education. These include educating learners about AI, teaching them about living in a world where they will be surrounded by AI and helping educators understand how they can use AI to augment human ability. Each chapter offers activities and questions to help you deepen your understanding, try out new concepts and reflect on the information presented. Links to media artifacts from trusted sources will help make your learning experience more dynamic while also providing additional resources to use in your classroom. This book: • Offers a unique approach to the topic, with chapter opening scenes, case studies, and featured student voices. • Discusses a variety of ways to teach students about AI, through design thinking, project-based learning and STEM connections. • Includes lesson ideas, activities and tools for exploring AI with your students. • Includes references to films and other media you can use in class to start discussions on AI or inspire design thinking and STEM projects. In *Teaching AI*, you'll learn what AI is, how it works and how to use it to better prepare students in a world with increased human-computer interaction.

ai use cases in education: *Artificial Intelligence and Tutoring Systems* Etienne Wenger, 2014-05-12 *Artificial Intelligence and Tutoring Systems: Computational and Cognitive Approaches to the Communication of Knowledge* focuses on the cognitive approaches, methodologies, principles, and concepts involved in the communication of knowledge. The publication first elaborates on knowledge communication systems, basic issues, and tutorial dialogues. Concerns cover natural reasoning and tutorial dialogues, shift from local strategies to multiple mental models, domain knowledge, pedagogical knowledge, implicit versus explicit encoding of knowledge, knowledge communication, and practical and theoretical implications. The text then examines interactive simulations, existing CAI traditions, and learning environments. The manuscript elaborates on knowledge communication, didactics, and diagnosis. Topics include knowledge presentation and communication, pedagogical contexts, target levels of didactic operations, behavioral and epistemic diagnosis, and aspects of diagnostic experience. The publication is a dependable reference for researchers interested in the computational and cognitive approaches to the communication of knowledge.

ai use cases in education: *The Economics of Artificial Intelligence* Ajay Agrawal, Joshua Gans, Avi Goldfarb, Catherine Tucker, 2024-03-05 A timely investigation of the potential economic effects, both realized and unrealized, of artificial intelligence within the United States healthcare system. In sweeping conversations about the impact of artificial intelligence on many sectors of the economy, healthcare has received relatively little attention. Yet it seems unlikely that an industry that represents nearly one-fifth of the economy could escape the efficiency and cost-driven disruptions of AI. *The Economics of Artificial Intelligence: Health Care Challenges* brings together contributions from health economists, physicians, philosophers, and scholars in law, public health, and machine learning to identify the primary barriers to entry of AI in the healthcare sector. Across original papers and in wide-ranging responses, the contributors analyze barriers of four types: incentives, management, data availability, and regulation. They also suggest that AI has the potential to improve outcomes and lower costs. Understanding both the benefits of and barriers to AI adoption is essential for designing policies that will affect the evolution of the healthcare system.

ai use cases in education: *Deep Learning for Coders with fastai and PyTorch* Jeremy Howard, Sylvain Gugger, 2020-06-29 Deep learning is often viewed as the exclusive domain of math PhDs and big tech companies. But as this hands-on guide demonstrates, programmers comfortable with Python can achieve impressive results in deep learning with little math background, small amounts

of data, and minimal code. How? With fastai, the first library to provide a consistent interface to the most frequently used deep learning applications. Authors Jeremy Howard and Sylvain Gugger, the creators of fastai, show you how to train a model on a wide range of tasks using fastai and PyTorch. You'll also dive progressively further into deep learning theory to gain a complete understanding of the algorithms behind the scenes. Train models in computer vision, natural language processing, tabular data, and collaborative filtering Learn the latest deep learning techniques that matter most in practice Improve accuracy, speed, and reliability by understanding how deep learning models work Discover how to turn your models into web applications Implement deep learning algorithms from scratch Consider the ethical implications of your work Gain insight from the foreword by PyTorch cofounder, Soumith Chintala

ai use cases in education: Artificial Intelligence Harvard Business Review, 2019 Companies that don't use AI to their advantage will soon be left behind. Artificial intelligence and machine learning will drive a massive reshaping of the economy and society. What should you and your company be doing right now to ensure that your business is poised for success? These articles by AI experts and consultants will help you understand today's essential thinking on what AI is capable of now, how to adopt it in your organization, and how the technology is likely to evolve in the near future. Artificial Intelligence: The Insights You Need from Harvard Business Review will help you spearhead important conversations, get going on the right AI initiatives for your company, and capitalize on the opportunity of the machine intelligence revolution. Catch up on current topics and deepen your understanding of them with the Insights You Need series from Harvard Business Review. Featuring some of HBR's best and most recent thinking, Insights You Need titles are both a primer on today's most pressing issues and an extension of the conversation, with interesting research, interviews, case studies, and practical ideas to help you explore how a particular issue will impact your company and what it will mean for you and your business.

ai use cases in education: Data Science in Education Using R Ryan A. Estrellado, Emily Freer, Joshua M. Rosenberg, Isabella C. Velásquez, 2020-10-26 Data Science in Education Using R is the go-to reference for learning data science in the education field. The book answers questions like: What does a data scientist in education do? How do I get started learning R, the popular open-source statistical programming language? And what does a data analysis project in education look like? If you're just getting started with R in an education job, this is the book you'll want with you. This book gets you started with R by teaching the building blocks of programming that you'll use many times in your career. The book takes a learn by doing approach and offers eight analysis walkthroughs that show you a data analysis from start to finish, complete with code for you to practice with. The book finishes with how to get involved in the data science community and how to integrate data science in your education job. This book will be an essential resource for education professionals and researchers looking to increase their data analysis skills as part of their professional and academic development.

ai use cases in education: Artificial Intelligence in Healthcare Adam Bohr, Kaveh Memarzadeh, 2020-06-21 Artificial Intelligence (AI) in Healthcare is more than a comprehensive introduction to artificial intelligence as a tool in the generation and analysis of healthcare data. The book is split into two sections where the first section describes the current healthcare challenges and the rise of AI in this arena. The ten following chapters are written by specialists in each area, covering the whole healthcare ecosystem. First, the AI applications in drug design and drug development are presented followed by its applications in the field of cancer diagnostics, treatment and medical imaging. Subsequently, the application of AI in medical devices and surgery are covered as well as remote patient monitoring. Finally, the book dives into the topics of security, privacy, information sharing, health insurances and legal aspects of AI in healthcare. - Highlights different data techniques in healthcare data analysis, including machine learning and data mining - Illustrates different applications and challenges across the design, implementation and management of intelligent systems and healthcare data networks - Includes applications and case studies across all areas of AI in healthcare data

ai use cases in education: *Digital Technology Advancements in Knowledge Management*

Gyamfi, Albert, Williams, Idongesit, 2021-06-18 Knowledge management has always been about the process of creating, sharing, using, and applying knowledge within and between organizations. Before the advent of information systems, knowledge management processes were manual or offline. However, the emergence and eventual evolution of information systems created the possibility for the gradual but slow automation of knowledge management processes. These digital technologies enable data capture, data storage, data mining, data analytics, and data visualization. The value provided by such technologies is enhanced and distributed to organizations as well as customers using the digital technologies that enable interconnectivity. Today, the fine line between the technologies enabling the technology-driven external pressures and data-driven internal organizational pressures is blurred. Therefore, how technologies are combined to facilitate knowledge management processes is becoming less standardized. This results in the question of how the current advancement in digital technologies affects knowledge management processes both within and outside organizations. *Digital Technology Advancements in Knowledge Management* addresses how various new and emerging digital technologies can support knowledge management processes within organizations or outside organizations. Case studies and practical tips based on research on the emerging possibilities for knowledge management using these technologies is discussed within the chapters of this book. It both builds on the available literature in the field of knowledge management while providing for further research opportunities in this dynamic field. This book highlights topics such as human-robot interaction, big data analytics, software development, keyword extraction, and artificial intelligence and is ideal for technology developers, academics, researchers, managers, practitioners, stakeholders, and students who are interested in the adoption and implementation of new digital technologies for knowledge creation, sharing, aggregation, and storage.

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learning, heutagogy in the classroom, flexible curriculum, assessment, e-learning, reflective learning, action learning and research, and heutagogy in professional practice settings.

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ai use cases in education: *The Fourth Industrial Revolution* Klaus Schwab, 2017-01-03 World-renowned economist Klaus Schwab, Founder and Executive Chairman of the World Economic Forum, explains that we have an opportunity to shape the fourth industrial revolution, which will fundamentally alter how we live and work. Schwab argues that this revolution is different in scale, scope and complexity from any that have come before. Characterized by a range of new technologies that are fusing the physical, digital and biological worlds, the developments are affecting all disciplines, economies, industries and governments, and even challenging ideas about what it means to be human. Artificial intelligence is already all around us, from supercomputers, drones and virtual assistants to 3D printing, DNA sequencing, smart thermostats, wearable sensors and microchips smaller than a grain of sand. But this is just the beginning: nanomaterials 200 times stronger than steel and a million times thinner than a strand of hair and the first transplant of a 3D printed liver are already in development. Imagine “smart factories” in which global systems of manufacturing are coordinated virtually, or implantable mobile phones made of biosynthetic materials. The fourth industrial revolution, says Schwab, is more significant, and its ramifications more profound, than in any prior period of human history. He outlines the key technologies driving this revolution and discusses the major impacts expected on government, business, civil society and individuals. Schwab also offers bold ideas on how to harness these changes and shape a better future—one in which technology empowers people rather than replaces them; progress serves society rather than disrupts it; and in which innovators respect moral and ethical boundaries rather than cross them. We all have the opportunity to contribute to developing new frameworks that advance progress.

ai use cases in education: *Powering the Digital Economy: Opportunities and Risks of Artificial Intelligence in Finance* El Bachir Boukherouaa, Mr. Ghiath Shabsigh, Khaled AlAjmi, Jose Deodoro, Aquiles Farias, Ebru S Iskender, Mr. Alin T Mirestean, Rangachary Ravikumar, 2021-10-22 This paper discusses the impact of the rapid adoption of artificial intelligence (AI) and machine learning (ML) in the financial sector. It highlights the benefits these technologies bring in terms of financial deepening and efficiency, while raising concerns about its potential in widening

the digital divide between advanced and developing economies. The paper advances the discussion on the impact of this technology by distilling and categorizing the unique risks that it could pose to the integrity and stability of the financial system, policy challenges, and potential regulatory approaches. The evolving nature of this technology and its application in finance means that the full extent of its strengths and weaknesses is yet to be fully understood. Given the risk of unexpected pitfalls, countries will need to strengthen prudential oversight.

ai use cases in education: Turning Point Darrell M. West, John R. Allen, 2021-10-19 Artificial Intelligence is here, today. How can society make the best use of it? Until recently, artificial intelligence sounded like something out of science fiction. But the technology of artificial intelligence, AI, is becoming increasingly common, from self-driving cars to e-commerce algorithms that seem to know what you want to buy before you do. Throughout the economy and many aspects of daily life, artificial intelligence has become the transformative technology of our time. Despite its current and potential benefits, AI is little understood by the larger public and widely feared. The rapid growth of artificial intelligence has given rise to concerns that hidden technology will create a dystopian world of increased income inequality, a total lack of privacy, and perhaps a broad threat to humanity itself. In their compelling and readable book, two experts at Brookings discuss both the opportunities and risks posed by artificial intelligence--and how near-term policy decisions could determine whether the technology leads to utopia or dystopia. Drawing on in-depth studies of major uses of AI, the authors detail how the technology actually works. They outline a policy and governance blueprint for gaining the benefits of artificial intelligence while minimizing its potential downsides. The book offers major recommendations for actions that governments, businesses, and individuals can take to promote trustworthy and responsible artificial intelligence. Their recommendations include: creation of ethical principles, strengthening government oversight, defining corporate culpability, establishment of advisory boards at federal agencies, using third-party audits to reduce biases inherent in algorithms, tightening personal privacy requirements, using insurance to mitigate exposure to AI risks, broadening decision-making about AI uses and procedures, penalizing malicious uses of new technologies, and taking pro-active steps to address how artificial intelligence affects the workforce. Turning Point is essential reading for anyone concerned about how artificial intelligence works and what can be done to ensure its benefits outweigh its harm.

ai use cases in education: The ABCs of How We Learn: 26 Scientifically Proven Approaches, How They Work, and When to Use Them Daniel L. Schwartz, Jessica M. Tsang, Kristen P. Blair, 2016-07-26 Selected as one of NPR's Best Books of 2016, this book offers superior learning tools for teachers and students, from A to Z. An explosive growth in research on how people learn has revealed many ways to improve teaching and catalyze learning at all ages. The purpose of this book is to present this new science of learning so that educators can creatively translate the science into exceptional practice. The book is highly appropriate for the preparation and professional development of teachers and college faculty, but also parents, trainers, instructional designers, psychology students, and simply curious folks interested in improving their own learning. Based on a popular Stanford University course, The ABCs of How We Learn uses a novel format that is suitable as both a textbook and a popular read. With everyday language, engaging examples, a sense of humor, and solid evidence, it describes 26 unique ways that students learn. Each chapter offers a concise and approachable breakdown of one way people learn, how it works, how we know it works, how and when to use it, and what mistakes to avoid. The book presents learning research in a way that educators can creatively translate into exceptional lessons and classroom practice. The book covers field-defining learning theories ranging from behaviorism (R is for Reward) to cognitive psychology (S is for Self-Explanation) to social psychology (O is for Observation). The chapters also introduce lesser-known theories exceptionally relevant to practice, such as arousal theory (X is for eXcitement). Together the theories, evidence, and strategies from each chapter can be combined endlessly to create original and effective learning plans and the means to know if they succeed.

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Higher Education Choi, Dong Hwa, Dailey-Hebert, Amber, Estes, Judi Simmons, 2020-07-31 For the last decade, virtual reality has been utilized in diverse fields such as entertainment, medicine, and industry. Recently, virtual reality has been applied in educational settings in order to transform student learning and experiences through such methods as building prototypes using digital devices or exploring new cultures through immersive interactions. Teachers who can incorporate virtual reality into their classrooms can provide their students with more meaningful learning experiences and can witness higher engagement. Current and Prospective Applications of Virtual Reality in Higher Education is a cutting-edge academic research book that provides comprehensive research on the integration of virtual reality in education programs and establishes foundations for course design, program development, and institutional strategic planning. The book covers an overall understanding and approach to virtual reality in education, specific applications of using virtual reality in higher education, and prospects and issues of virtual reality in the future. Highlighting a wide range of topics such as gamification, teacher training, and virtual reality, this book is ideal for teachers, instructional designers, curriculum developers, academicians, program developers, administrators, educational software developers, policymakers, researchers, education professionals, and students.

ai use cases in education: Artificial Intelligence in Practice Bernard Marr, 2019-04-15 Cyber-solutions to real-world business problems Artificial Intelligence in Practice is a fascinating look into how companies use AI and machine learning to solve problems. Presenting 50 case studies of actual situations, this book demonstrates practical applications to issues faced by businesses around the globe. The rapidly evolving field of artificial intelligence has expanded beyond research labs and computer science departments and made its way into the mainstream business environment. Artificial intelligence and machine learning are cited as the most important modern business trends to drive success. It is used in areas ranging from banking and finance to social media and marketing. This technology continues to provide innovative solutions to businesses of all sizes, sectors and industries. This engaging and topical book explores a wide range of cases illustrating how businesses use AI to boost performance, drive efficiency, analyse market preferences and many others. Best-selling author and renowned AI expert Bernard Marr reveals how machine learning technology is transforming the way companies conduct business. This detailed examination provides an overview of each company, describes the specific problem and explains how AI facilitates resolution. Each case study provides a comprehensive overview, including some technical details as well as key learning summaries: Understand how specific business problems are addressed by innovative machine learning methods Explore how current artificial intelligence applications improve performance and increase efficiency in various situations Expand your knowledge of recent AI advancements in technology Gain insight on the future of AI and its increasing role in business and industry Artificial Intelligence in Practice: How 50 Successful Companies Used Artificial Intelligence to Solve Problems is an insightful and informative exploration of the transformative power of technology in 21st century commerce.

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and entrepreneurs from around the world who have ignored the failed promises of memorization and, instead, utilize new science-backed methods and technologies that benefit all children, from those who struggle to honor students. Rewiring Education presents a bold vision for the future of education, looking at promising emerging technologies and how we—as parents, teachers, and voters—can ensure children are provided with opportunities and access to the relevant, creative, collaborative, and challenging learning environments they need to succeed.

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David D. Luxton, 2015-09-10 Artificial Intelligence in Behavioral and Mental Health Care summarizes recent advances in artificial intelligence as it applies to mental health clinical practice. Each chapter provides a technical description of the advance, review of application in clinical practice, and empirical data on clinical efficacy. In addition, each chapter includes a discussion of practical issues in clinical settings, ethical considerations, and limitations of use. The book encompasses AI based advances in decision-making, in assessment and treatment, in providing education to clients, robot assisted task completion, and the use of AI for research and data gathering. This book will be of use to mental health practitioners interested in learning about, or incorporating AI advances into their practice and for researchers interested in a comprehensive review of these advances in one source. - Summarizes AI advances for use in mental health practice - Includes advances in AI based decision-making and consultation - Describes AI applications for assessment and treatment - Details AI advances in robots for clinical settings - Provides empirical data on clinical efficacy - Explores practical issues of use in clinical settings

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Inaya Jaafar, James Pedersen, 2021 This book examines a variety of pertinent topics that look at the present and future roles of technology in the classroom to assist educators, educational leaders, and instructional designers in establishing future-ready learning, today--

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Dawson, Maurice, Tabona, Oteng, Maupong, Thabiso, 2022-02-04 Developing nations have seen many technological advances in the last decade. Although beneficial and progressive, they can lead to unsafe mobile devices, system networks, and internet of things (IoT) devices, causing security vulnerabilities that can have ripple effects throughout society. While researchers attempt to find solutions, improper implementation and negative uses of technology continue to create new security threats to users. Cybersecurity Capabilities in Developing Nations and Its Impact on Global Security brings together research-based chapters and case studies on systems security techniques and current methods to identify and overcome technological vulnerabilities, emphasizing security issues in developing nations. Focusing on topics such as data privacy and security issues, this book is an essential reference source for researchers, university academics, computing professionals, and upper-level students in developing countries interested in the techniques, laws, and training initiatives currently being implemented and adapted for secure computing.

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Technological adaptability is the ability to learn technology quickly and with confidence. This workbook, designed for those who are uncomfortable with technology, will provide basic technical skills, establishing a solid foundation for the continued growth in technological adaptability.

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development studies a synthesis and overview of the topic along with relevant reflections.

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ai use cases in education: The future of education: Integrating AI in the classroom Balasubramanian Thiagarajan, 2024-10-07 In recent years, **Artificial Intelligence (AI)** has rapidly transformed many industries, and education is no exception. As the world embraces the digital age, AI is poised to become an integral part of the educational landscape, reshaping how we teach, learn, and manage educational systems. This book, *The Future of Education: Integrating AI in the Classroom*, explores the profound impact AI is having on education and offers a glimpse into the future of learning in an AI-driven world. The journey to transform education through AI has only just begun, but the potential is immense. AI offers unparalleled opportunities to personalize learning, automate administrative tasks, and create smarter, more engaging learning environments. Through AI, educators can identify the unique needs of each student, providing customized learning paths that adjust in real-time based on a student's progress. Meanwhile, AI-powered tools allow teachers to focus more on inspiring creativity, critical thinking, and problem-solving, rather than getting bogged down in time-consuming tasks like grading. This book delves into these opportunities and challenges, providing educators, administrators, and policymakers with insights into the current and future applications of AI in education. It highlights how AI is helping to create more equitable learning environments, enabling even the most underserved students to access high-quality education. At the same time, the book discusses the ethical considerations of AI—ensuring that the use of AI technologies is inclusive, unbiased, and respects students' privacy. Through practical strategies and real-world applications, this book offers a roadmap for integrating AI into the classroom effectively. It is designed to empower educators with the knowledge and tools to harness AI in ways that enhance teaching and learning, foster collaboration, and drive educational innovation. As we embark on this exciting journey, it is essential to recognize that AI will not replace teachers but instead serve as a powerful tool to augment their capabilities. By doing so, we can ensure that the future of education is not only more efficient but also more personalized, engaging, and impactful for every learner.

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novel theoretical tools and concepts while giving concise proofs even for relatively advanced topics. Foundations of Machine Learning is unique in its focus on the analysis and theory of algorithms. The first four chapters lay the theoretical foundation for what follows; subsequent chapters are mostly self-contained. Topics covered include the Probably Approximately Correct (PAC) learning framework; generalization bounds based on Rademacher complexity and VC-dimension; Support Vector Machines (SVMs); kernel methods; boosting; on-line learning; multi-class classification; ranking; regression; algorithmic stability; dimensionality reduction; learning automata and languages; and reinforcement learning. Each chapter ends with a set of exercises. Appendixes provide additional material including concise probability review. This second edition offers three new chapters, on model selection, maximum entropy models, and conditional entropy models. New material in the appendixes includes a major section on Fenchel duality, expanded coverage of concentration inequalities, and an entirely new entry on information theory. More than half of the exercises are new to this edition.

ai use cases in education: Handbook of Research on Equity in Computer Science in P-16 Education Keengwe, Jared, Tran, Yune, 2020-11-13 The growing trend for high-quality computer science in school curricula has drawn recent attention in classrooms. With an increasingly information-based and global society, computer science education coupled with computational thinking has become an integral part of an experience for all students, given that these foundational concepts and skills intersect cross-disciplinarily with a set of mental competencies that are relevant in their daily lives and work. While many agree that these concepts should be taught in schools, there are systematic inequities that exist to prevent students from accessing related computer science skills. The Handbook of Research on Equity in Computer Science in P-16 Education is a comprehensive reference book that highlights relevant issues, perspectives, and challenges in P-16 environments that relate to the inequities that students face in accessing computer science or computational thinking and examines methods for challenging these inequities in hopes of allowing all students equal opportunities for learning these skills. Additionally, it explores the challenges and policies that are created to limit access and thus reinforce systems of power and privilege. The chapters highlight issues, perspectives, and challenges faced in P-16 environments that include gender and racial imbalances, population of growing computer science teachers who are predominantly white and male, teacher preparation or lack of faculty expertise, professional development programs, and more. It is intended for teacher educators, K-12 teachers, high school counselors, college faculty in the computer science department, school administrators, curriculum and instructional designers, directors of teaching and learning centers, policymakers, researchers, and students.

ai use cases in education: Artificial Intelligence for HR Ben Eubanks, 2018-12-03 HR professionals need to get to grips with artificial intelligence and the way it's changing the world of work. From using natural language processing to ensure job adverts are free from bias and gendered language to implementing chatbots to enhance the employee experience, AI has created a variety of opportunities for the HR function. Artificial Intelligence for HR empowers HR professionals to leverage this potential and use AI to improve efficiency and develop a talented and productive workforce. Outlining the current technology landscape as well as the latest AI developments, this book ensures that HR professionals fully understand what AI is and what it means for HR in practice. Covering everything from recruitment and retention to employee engagement and learning and development, Artificial Intelligence for HR outlines the value AI can add to HR. It also features discussions on the challenges that can arise from AI and how to deal with them, including data privacy, algorithmic bias and how to develop the skills of a workforce with the rise of automation, robotics and machine learning in order to make it more human, not less. Packed with practical advice, research and case studies from global organizations including Uber, IBM and Unilever, this book will equip HR professionals with the knowledge they need to leverage AI to recruit and develop a successful workforce and help their businesses thrive in the future.

ai use cases in education: Learning with e's Steve Wheeler, 2015-01-16 In an age where

young people seem to have a natural affinity with smartphones, computer games and social media, teachers and lecturers face a big challenge - or a golden opportunity. How can new technology promote learning, engage students and motivate them to sustain a lifelong career in learning? For educators everywhere, our challenge is to take devices that have the potential for great distraction and boldly appropriate them as tools that can inspire and engage. On the back of Steve's hugely popular blog, also named 'Learning with 'e's', he shows how the world of learning is changing, and how new technology - and you and I - can make a difference. The proliferation of digital technologies and cultures is having a profound impact on learning, prompting questions which need answers. How will technology change our conceptions of learning? How will new ways of learning impact upon our uses of technology? How will teachers and lecturers' roles change; what will they need to know; and what will we see learners doing in the future? Grounded in his research and in pedagogical theory, Steve explores the practical ways in which technology is influencing how we learn, and looks toward emerging trends to examine what the future of learning may look like. Subjects covered include: learning with technology, theories for the digital age, digital literacies, pedagogical theories and practices, new and emerging technologies, new learning architectures, changing education, global educators, a 21st century curriculum. For teachers, lecturers, learning and development professionals and anybody who wants to be inspired by the new ways learning is being revolutionised through the use of new and emerging technologies.

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ISO - WHAT IS ARTIFICIAL INTELLIGENCE (AI)?

AI SPANS A WIDE SPECTRUM OF CAPABILITIES, BUT ESSENTIALLY, IT FALLS INTO TWO BROAD CATEGORIES: WEAK AI AND STRONG AI. WEAK AI, OFTEN REFERRED TO AS ARTIFICIAL NARROW INTELLIGENCE (ANI) OR NARROW AI, ...

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