Use of AI in Industries and Organizations:
2025

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Introduction: AI is Here and Being Used Everywhere

Fifty-one percent of companies are now using AI (mainly for content creation, customer support, and improved process automation), (Hostinger, 2025) and "92% of companies plan to invest more in generative AI over the next 3 years" (McKinsey & Company, 2025, p. 3). Within the academic world of research, 45 to 59% of researchers are currently using AI in different ways to assist with their research processes (ideation, information review, feedback, and more), (Wiley, 2025). The importance of AI skills within research has become a necessity across multiple fields, especially within the area of medicine/health (R&M, 2025). Yet AI is starting to be used across all businesses and organizations in that it is improving efficiencies, enhancing processes and capabilities, and even helping with strategic long-range planning/decision making.

The Need for AI Literacy Skills

Virtually all nations and international groups have already expressed the imperative need for all people to develop foundational AI Literacy skills in order to be knowledgeable citizens, effective researchers, and competitive in the work force: United Nations (UN, 2024), USA (AI.gov, 2024; Exec. Order 14141, 2025), EU (AI Act, 2024), BRICKS (Holtzmann & Voort, 2025; Mahrenbach & Papa, 2024), Asia (Fitriani, 2024), China (China News, 2024), Africa (UNESCO, 2024), Russia/BRICS (Bryanski, 2024), India (NS, 2024).

Having AI Literacy skills is important in order to be able to fully access information online, to enhance teaching and learning, to gain self-directed educational agency, to increase efficiency/effectiveness in the work place, to be aware of and overcome issues such as overreliance, environmental impacts, deepfakes, bias, and ethical considerations (Anders, 2023). All students and employees must develop these needed AI skills and additional subskills (both foundational AI Literacy and field specific AI skills) in order to be able to adapt and thrive in our new technologically advanced world that is continually being infused with additional applications of generative AI.

Document Purpose and Layout

The purpose of this document, "Use of AI in Industries and Organizations: 2025," is to help academia and industry to identify the real need and specific requirements that all students and employees require. Some faculty and leadership have either not believed or are not aware of how much AI is already being used around the world by most businesses and organizations. This document provides evidence (with references) on how AI is specifically being used in different fields. This information can then be used to establish and enhance educational and training protocols, curriculums, and initiatives to ensure that students and employees are being professionally developed to succeed.

By realizing how generative AI is already being used in the workforce and other organizations (via the large number of references taken from multiple sources to include research journals and ongoing surveys), academia can ensure that they are fully preparing students to succeed; in this way academia can lead in a proactive manner as opposed to becoming irrelevant in this quickly evolving AI infused world.

Due to knowledge now being so easy to obtain through digital resources to include AI, corporate and academic education needs to focus on experiential learning using hands-on, engaging pedagogical techniques to give students real experiences so that they are ready to work, research, and develop.

This document presents a listing of popular fields in industries and organizations to include higher education, followed by a breakdown of how generative AI is currently used within those fields and what the needed generative AI skills and subskills are which are required by students and employees to fully compete and succeed within these field. A full listing of information sources (with links) are listed at the end of this document.

Popular Fields of Study and Industries Identified and Focused On

1. Marketing/Communications/Writing
2. Healthcare: Doctor/Registered Nurse
3. Computer Software Engineer/AI Specialist
4. Teaching: K-12/Higher Education/Corporate Trainer
5. Engineering: Electrical/Mechanical
6. Operations Manager
7. Cyber Security Specialist
8. Business/Economy/Accounting
9. Lawyer/Legal Practitioner
10. Politics/Government

Top ten list is a conglomeration from multiple sources: US. News (Cabral, 2024), Forbes (Wells, 2024), Indeed (Gafner, 2024), World Economic Forum (WEF, 2025), and other research.

Use of Generative AI Within Specific Fields & Needed Skills/Subskills

1. Marketing/Communications/Writing *(Basis, 2024; SM, 2025; Society of Authors, 2024; State of Business Communication, 2024)*

Content Creation and Idea Development
70% of marketers are already using generative AI because it is a powerful aid in generating high-quality content across various formats, including text, images, and videos. Marketers and writers are leveraging AI tools to produce engaging blog posts, social media content, and even advertisements in an effective and efficient manner, saving time and costs. This capability allows for rapid development of multiple ideas and the creation of multiple variations, with different types of personalization to ensure that various types of writing and marketing campaigns can be tailored to diverse audiences and platforms.

Review, Personalization, and Targeting
A powerful application of generative AI is in assistance with review/feedback of created content. Through the use of an enhanced prompt with specific guidance, AI provides a much needed second pair of eyes to help create the best content possible. Generative AI itself is also used to help analyze customer data, to help marketers and writers create personalized experiences for users. AI classifies customers based on their behaviors and preferences, enabling targeted email campaigns and tailored content that then better resonates with specific segments of the audience. This level of personalization enhances customer engagement and increases conversion rates.

Data Analysis and Insights
Generative AI is being used to process and summarize large amounts of research data, providing marketers and writers with actionable insights. This capability is essential for understanding market trends, consumer behavior, public sentiment, and/or campaign performance. By automating data analysis, marketers and writers can focus more on content, strategy, and creative aspects rather than getting bogged down in data management.

Customer Engagement and Support
Properly tuned AI-driven question-answering systems enhance customer service by providing instant responses to questions. This technology can improve customer satisfaction and experience by ensuring that the information received is accurate and quickly provided, allowing human resources to focus on more complex customer interactions.

Campaign Optimization
Generative AI aids in optimizing marketing campaigns by analyzing performance metrics and suggesting adjustments. This includes identifying which content performs best, predicting future trends, and enabling marketers to make data-driven decisions that enhance overall campaign effectiveness.

- **Technical Proficiency**
  - **Prompt Engineering:** ability to create effective/efficient prompts (use of an advanced prompt formula) to achieve the best outcomes
  - **Data Analysis:** Understanding how to interpret AI-generated data/insights to inform strategies and content decisions
- **Creative Direction**
  - **Content Curation:** Skills in selecting and editing/refining AI-generated content to ensure it aligns with personal or brand voice, tone, and marketing/writing goals
  - **Visual and Multimedia Creation:** Knowledge of current AI tools and how to best select future tools for use in AI media creation *(AI image, video, and audio)*
- **Strategic Thinking:**
  - Ability to use AI for audience analysis and leverage AI insights for developing targeted marketing campaigns and customer engagement strategies
- **Ethical Considerations:**
  - Responsible use and awareness of the legal/ethical implications of using AI in marketing, including issues related to bias and misinformation
- **Continuous Learning and Adaptability:**
  - Understanding and commitment to lifelong learning dealing with AI technologies and their proper utilization
- **Communication Skills:**
  - To be able to best interact with a team and AI experts to optimize AI applications in marketing and to create compelling stories/narratives, maintaining proper voice
- **Critical Thinking**
  - **Evaluating AI Outputs:** Ability to critically assess AI-generated content and insights, ensuring validity, quality, and relevance before implementation
  - **Problem-Solving:** Skills in identifying issues and opportunities in AI applications to enhance writing/marketing effectiveness

2. Healthcare: Doctor/Registered Nurse *(Leleko & Chupryna, 2024; Pierce, 2024; R&M, 2025; World Economic Forum, 2024)*

Diagnostic Assistance

Generative AI is being used as a powerful diagnostic assistant by analyzing vast amounts of medical data, including imaging studies (X-rays and MRIs). It is interpreting these scans and providing healthcare professionals with detailed insights and suggestions, enhancing the accuracy of diagnoses. This capability allows for quicker and more data-driven decision-making, which is particularly beneficial in identifying both common and rare medical conditions.

Personalized Treatment Plans

Generative AI has been used in the creation of highly personalized treatment plans by combining patients' health records, genetic information, and clinical notes. By identifying

patterns and predicting disease trajectories, AI is recommending optimal treatment strategies personalized to individual patients, maximizing treatment efficacy/minimizing adverse effects.

Drug Discovery and Development
Generative AI has accelerated the identification of potential new medicines and vaccines. By assisting with research in many ways to include analyzing existing data. AI is streamlining the process of selecting new drugs for clinical trials, significantly reducing the time it takes to bring new treatments to market.

Enhancing Patient-Provider Communication
AI tools are improving communication between patients and healthcare providers by interpreting patient speech in real-time and translating complex medical jargon into simpler terms. This facilitates enhanced understanding and engagement during medical consultations, which greatly enhances the patient experience.

Training and Upskilling
Generative AI is being used in multiple ways to help with medical training. By combining generative AI with virtual and augmented reality, medical education has become greatly enhanced while also reducing costs. Healthcare professionals are learning their medical processes as well as learning how to supervise AI models and integrate them into daily routines, which is essential for maximizing the benefits of AI in clinical settings.

Aspect	AI in Healthcare	Generative AI in Healthcare
Definition	Broad use of machine learning, deep learning, and other AI technologies to improve healthcare processes.	Specialized subset of AI that creates new content, such as data, images, and simulations, based on learned patterns.
Key Applications	Predictive analytics Medical imaging Personalized medicine Administrative automation Clinical decision support	Drug discovery and development Synthetic data generation Medical imaging enhancement Virtual patients Natural language processing (NLP)
Primary Benefits	Enhanced diagnostic accuracy Improved operational efficiency Personalized treatment plans Reduced administrative burden Predictive healthcare insights	Accelerated drug discovery Improved data quality with synthetic data Enhanced medical imaging Realistic simulations for training and clinical trials Advanced NLP applications
Data Utilization	Analyzes existing data to derive insights and predictions.	Generates new data or content based on existing data patterns.
Technology	Includes machine learning, deep learning, NLP, and robotic process automation (RPA).	Utilizes Generative Adversarial Networks (GANs), variational autoencoders (VAEs), and transformer models.
Implementation	Typically involves integrating AI algorithms into existing healthcare workflows and systems.	Requires developing generative models that can create new, useful content for various healthcare applications.

Comparing benefits provided by AI vs. Generative AI (Leleko & Chupryna, 2024)

NEEDED AI SKILLS/SUBSKILLS:

- **Data Literacy**
  - **Understanding Data Sources:** Knowledge of various data types (e.g., electronic health records, imaging data) and their relevance in clinical decision-making
  - **Data Interpretation**: Ability to interpret AI-generated insights and understand statistical summaries to inform diagnoses and treatment plans
- **AI and Technology Proficiency**
  - **Familiarity with AI Tools:** Training with specific generative AI healthcare applications, such as diagnostic tools and patient management systems
  - **Integration Skills:** Ability to incorporate AI tools into daily workflows, ensuring they complement clinical practices rather than disrupt them
- **Ethical & Regulatory Awareness**
  - **Understanding AI Ethics:** Knowledge of ethical considerations surrounding AI use, including data privacy, consent, and bias mitigation
  - **Regulatory Compliance:** Awareness of legal responsibilities and obligations related to AI in healthcare, ensuring adherence to standards and regulations
- **Communication Skills**
  - **Patient Communication:** Ability to effectively communicate AI-generated info to patients in an understandable manner, fostering trust and engagement
  - **Interprofessional Collaboration:** Skills to collaborate with other healthcare professionals and AI specialists to optimize patient care and outcomes
- **Critical Thinking and Problem Solving**
  - **Evaluating AI Recommendations:** Critical assessment of AI outputs to determine their applicability and validity/reliability in specific clinical contexts
  - **Decision-Making:** Ability to make informed decisions using AI insights and clinical judgment, particularly in complex cases, while also avoiding overreliance
- **Continuous Learning and Adaptability**
  - **Staying Updated:** Commitment to ongoing education about new tools/techniques, advancements, and application of AI technology in healthcare
  - **Flexibility:** Adaptability to new roles/responsibilities as AI continues to evolve
- **Patient-Centered Care**
  - **Empathy and Compassion:** Ability to ensure that AI tools enhance rather than replace the empathetic relationship between providers and patients
  - **Personalized Treatment Approaches:** Utilizing AI to develop tailored treatment plans that consider individual patient needs and preferences

3. Computer Software Engineer/ AI Specialist *(Brady, 2024; EU Commission, 2024; Graham, 2024; KMS, 2024; U.S. Office of Educational Technology, 2024)*

Automating Repetitive Coding Tasks
Generative AI models like GitHub Copilot and Amazon Web Serves (AWS) CodeWhisperer are automatically generating code for common functions and features in response to natural language prompts or existing code snippets. This allows engineers to focus on higher-level design and problem-solving rather than repetitive coding.

Improving Code Quality and Efficiency
By analyzing code patterns, generative AI is suggesting optimizations, identifying potential issues, and generating comprehensive test cases. This helps engineers write cleaner, more efficient code while improving test coverage.

Accelerating Prototyping and Experimentation
Generative AI enables rapid prototyping by generating working code from simple descriptions or sketches. This allows engineers to quickly explore ideas and iterate on designs, speeding up the development process.

Enhancing Collaboration and Knowledge Sharing
AI-powered coding assistants help share knowledge and best practices across engineering teams by suggesting relevant code examples and design patterns (especially through custom data sets). This promotes consistency and reuse while effectively onboarding new team members.

Expanding Accessibility to Programming
Generative AI is making coding more intuitive/accessible through natural language interfaces, which is democratizing and enhancing software development. This is opening up programming to a wider audience and enabling more people to build custom applications.
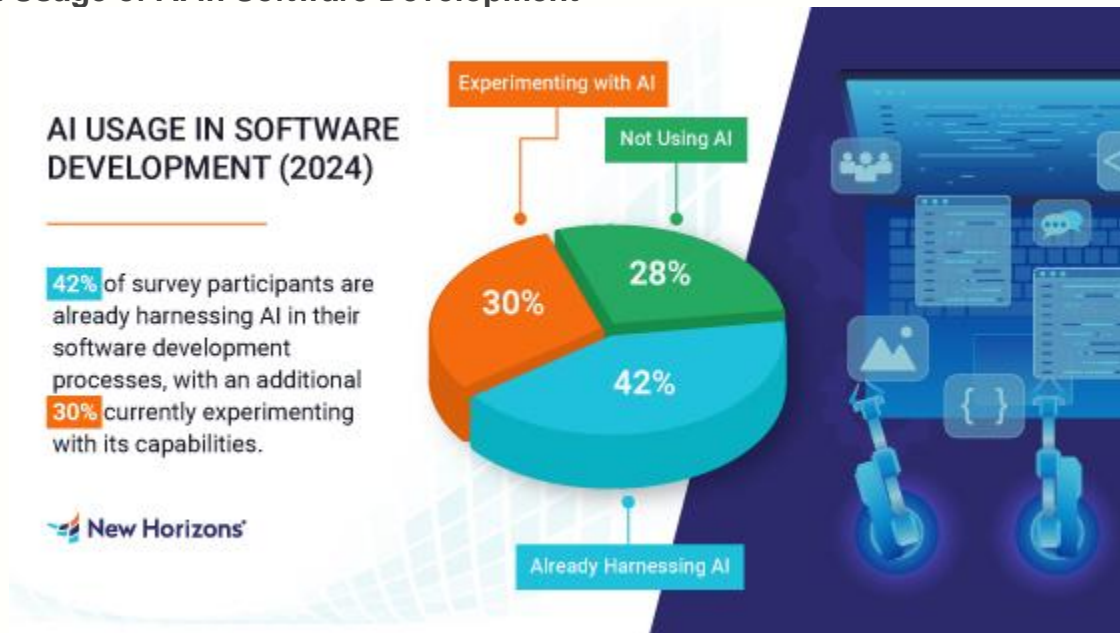
NEEDED AI SKILLS/SUBSKILLS:

- **Prompt Engineering**
  - Using and developing advanced prompt formulas to optimize output of different generative AI models
  - Understanding the nuances of overall architecture, input design, system prompts, and data sets to achieve desired results from AI systems
- **Model Optimization**
  - Techniques for understanding and improving the efficiency/performance of AI models
  - Skills in fine-tuning pre-trained models for specific applications
- **Critical Thinking & AI Ethics**
  - Techniques and processes to address energy usage and environmental impacts
  - Knowledge of ethical considerations in AI development, including bias mitigation, access/usability, and responsible AI usage
  - Understanding policies, regulations, and compliance related to AI technologies
- **Security Awareness**

- o Understanding potential vulnerabilities in AI systems and implementing measures to minimize risks
  - o Skills in developing secure AI applications and environments that protect user data
- **Collaboration and Communication**
  - o Ability to work in interdisciplinary teams, translating technical concepts for non-technical stakeholders
  - o Strong communication/presentation skills to facilitate collaboration on AI projects
- **Evolving of Skills and Adaptability**
  - o Staying Updated: An understanding of ongoing needs to master traditional computer engineering skills and to adapt to the ever-changing AI landscape
  - o Flexibility: Evolving roles and concentrations as AI changes and improves

Current Usage of AI in Software Development

AI USAGE IN SOFTWARE DEVELOPMENT (2024)

42% of survey participants are already harnessing AI in their software development processes, with an additional 30% currently experimenting with its capabilities.

New Horizons

Experimenting with AI
Not Using AI
30%
28%
42%
Already Harnessing AI

Current Usage and Experimentation of AI in Software Development (Karl, 2024)

4. Teaching: K-12/Higher Edu./Corporate Trainer *(Mowreader, 2024;* Ramani, 2024; *U.S. Office of Educational Technology, 2024, Walter, 2024; Wiley, 2025)*

Course Alignment/Development: Generative AI is being used by many faculty to assist with the creation of a courses as well as with course alignment (student learning outcomes creation, assessment creation, and correlating pedagogical activities). Generative AI, when properly prompted is serving as a helpful assistive instructional designer.

Curriculum Integration: Many educators are incorporating the use of generative AI tools like ChatGPT, into lesson plans to help facilitate interactive hands-on learning experiences. Using generative AI as a simulator/scenario-maker, practice aid,

feedback assistant, and more, allows students to engage with content dynamically and gain experience in addition to knowledge.

Customized Learning Experiences: Different educational institutions throughout the world are using AI to create personalized learning and training experiences through curriculum enhancements and needed scaffolding. This customization helps in addressing the diverse needs of both students and employees, to enhance understanding, experience, and overall learning outcomes.

Skill Development: Many schools, universities, and companies have recognized that teaching students how to use AI effectively can enhance their capabilities and employability. Schools are increasingly focusing on AI literacy to include critical thinking, equipping students/employees to effectively and creatively use AI tools in a responsible manner.

Research Assistance: Faculty and other researchers are using AI for tasks such as brain storming, outlining, research question generation/fine-tuning, literature reviews, data analysis, and even drafting sections of research papers. This AI use is enhancing efficiency and productivity across academia and the private sector.

NEEDED AI SKILLS/SUBSKILLS:
- **Technical Proficiency**
    - **AI Literacy:** Understanding different components of AI such as societal effects, how to use various AI tools and platforms, and how to create effective prompts through the use of advanced prompt formulas. Recognizing the different capabilities of AI and understanding what it can & can't do
    - **Data Management:** Skills in handling, analyzing, and interpreting data generated by AI systems to inform teaching practices, but maintaining the human-in-the-loop
- **Critical Thinking**
    - **Analytical Skills:** The attention to detail to properly evaluate AI-generated content for accuracy/relevance, recognizing potential biases/errors ("hallucinations")
    - **Problem-Solving:** Developing strategies to address challenges and prevent issues that can arise from the improper use of AI in educational practices (overreliance, cognitive outsourcing, academic misconduct)
- **Adaptability and Flexibility**
    - **Embracing Change:** Willingness to adapt teaching methods (pedagogy) and curricula in response to continually evolving AI technologies and workforce requirements; focusing more on student-centered educational experiences
    - **Experimentation:** Openness to trying new tools and approaches to creatively enhance teaching and learning for the improvement of learning outcomes
- **Collaboration and Communication**
    - **Teamwork:** Ability to work with diverse colleagues to share insights and best practices dealing with AI integration into teaching and learning.
    - **Effective Communication:** Clearly conveying the processes, benefits, and limitations of AI to diverse audiences (students, peers, parents, employees, bosses, etc.), to foster a collaborative and effective learning environment
- **Ethical Considerations**

- o **Digital Citizenship**: Understanding the implications of AI on access to information, privacy, data security, and ethical use in educational settings
- o **Responsible AI Use:** Teaching students about the ethical use of AI tools, physical/environmental impacts, avoidance of AI deepfakes/propaganda, and fostering a culture of responsible use of technology
- **Instructional Design**
  - o **Content Creation:** Ability to effectively utilize AI to generate lesson plans, assessments, and educational materials tailored to diverse learning needs
  - o **Personalized Learning**: Ability to create customized learning experiences and appropriate scaffolding for individual student strengths and weaknesses
- **Emotional Intelligence**
  - o **Empathy & Support:** Recognizing the emotional and social needs of students, especially as they interact with different types of multimodal AI technologies
  - o **Mentorship:** Guiding students in appropriate use of AI, helping them develop critical AI literacy skills for civil digital citizenship and the future workforce
- **Continuous Learning**
  - o **Professional Development:** Setting the example to other students by committing to ongoing education about emerging AI technologies and process, along with their applications in education
  - o **Reflective Practice:** Regularly assessing and refining one's teaching practices in light of new AI developments and educational research
  - o Share best practices by being part of a community of practice/inquiry

5. Engineering: Electrical/Mechanical *(Ambadekar et al., 2025; Amtec, 2025; Bonyuet, 2024; Chandratreya, 2024; Horner, 2024; WEF, 2025b; Yao, 2025)*

Design Optimization: Generative AI is already widely used in mechanical engineering for design optimization. Tools like Autodesk's Generative Design allow engineers to enter specific constraints and objectives, after which the AI generates multiple design alternatives. This capability has been shown to accelerate the design process and often results in more efficient and innovative solutions compared to traditional methods.

Circuit Design Automation: In electrical engineering, generative AI is being used to automate circuit design through platforms like Cadence and KiCad. These tools allow engineers to optimize electrical circuits quickly, reducing the time and effort required for manual design processes. This is particularly beneficial in complex projects requiring heightened precision and efficiency.

Predictive Maintenance: Generative AI is also being employed for predictive maintenance in mechanical systems. AIs are now analyzing data from machinery, so as to forecast potential failures, enabling engineers to perform maintenance proactively rather than reactively. This approach helps reduce costs, downtime, and improve equipment overall reliability.

Information Summarization: Different types of engineers are using generative AI to summarize extensive technical documents and research papers. Tools like Sharly quickly

extract key information from large datasets, saving engineers significant time in research and allowing them to focus on critical decision-making aspects of their projects.

Enhanced Signal Processing: In the realm of telecommunications, generative AI is assisting electrical engineers by enhancing signal processing techniques, improving communication systems' efficiency. Software such as MATLAB and GNU Radio utilize AI to optimize data transmission and reception, which is vital in today's interconnected world.

NEEDED AI SKILLS/SUBSKILLS:

- **Technical Proficiency**
    - **AI Enhanced Software Skills:** Familiarity with computer-aided design (CAD) tools that incorporate generative design capabilities, such as Autodesk and SolidWorks, enables students to apply AI in design optimization. Engineering specialties will need proficiency with other AI software like Cadence, KiCad, and others
    - **Prompt Engineering Skills:** Ability to use advanced prompts and multiple prompting techniques will be needed in order to address different problems
    - **Simulation Techniques:** Learning how to simulate designs (some coding skills) and analyze performance outcomes using different generative AI tools will be beneficial for all engineers along with knowledge of aspects of AI infused robotics
- **Interdisciplinary Collaboration**
    - **Teamwork and Communication:** Engineers will need to collaborate with data scientists, software engineers, business stakeholders, and others. Developing strong communication skills will facilitate effective teamwork in AI projects
- **Critical Thinking and Ethical Considerations in AI**
    - Critical thinking along with multiple subskills such as attention to detail, questioning, logic, validity/reliability checking, and reflection will need to be developed on an ongoing bases to properly work with AI
    - **Understanding AI Ethics:** Knowledge of ethical issues related to AI, including bias, data privacy, overreliance avoidance, fairness, and ensuring systems maintain a human-in-the-loop, and fairness, in AI solutions in real-world scenarios.
- **Continuous Learning and Adaptability**
    - **Staying Updated:** All engineers must cultivate a growth mindset of continuous learning to keep pace with new tools, techniques, and best practices.

6. Operations Manager (Cherian, 2024; IBM, 2024; Kim et al., 2025; Sun et al., 2025)

Automated Insights and Forecasting: Generative AI is already being used to analyze large datasets, enabling operations managers to extract usable insights and make informed decisions. This technology identifies trends and patterns that may not be immediately apparent to human analysts. This facilitates enhanced resource allocation and strategic planning.

Process Optimization: Operations managers are using generative AI to optimize existing processes by automating routine tasks. This includes automating customer support, which allows human resources to focus on more strategic initiatives. The

technology is being used to generate responses, manage inquiries, and provide tailored content, improving overall efficiency, all in a friendly/supportive way.

Real-Time Problem Solving: Generative AI systems are being used to monitor operations continuously, identifying issues as they arise and suggest solutions. This proactive approach reduces downtime and enhances the responsiveness of operations teams, allowing them to focus on strategic problem-solving rather than time-consuming troubleshooting.

Defining Use Cases and Operational Strategy: Operations managers are developing an ongoing cohesive strategy for increased deployment of generative AI. This involves identifying specific use cases that align with long-term business goals and establishing metrics to measure success. Creating this disciplined approach to implementation is helping organizations avoid pitfalls and maximizing the technology's capability and potential.

Change Management: The successful integration of generative AI is requiring significant change management efforts. Operations managers are focusing on communication and training to ensure that staff are comfortable with new technologies. This includes upskilling employees to work alongside AI systems effectively, fostering a culture of innovation and adaptability.

NEEDED AI SKILLS/SUBSKILLS:

- **Technical Proficiency: Data Analysis, & Interpretation Skills**
    - Prompt engineering along with data preprocessing and cleaning techniques skills
    - Statistical analysis and pattern recognition
    - Ability to interpret AI-generated insights
    - Critical thinking to validate automated recommendations
- **AI Systems Management Understanding**
    - Understanding AI capabilities and limitations (overall AI Literacy)
    - Experience configuring and optimizing AI tools for different applications
    - Ability to integrate AI solutions with existing systems
    - Skills to monitor AI performance and address issues (creativity/problem solving)
- **Co-Process Engineering with AI**
    - Process mapping and workflow analysis to better understand the system
    - Identifying automation opportunities (where AI can be effectively used)
    - Redesigning workflows to incorporate accurate AI enhancements
    - Measuring and optimizing AI-enhanced processes on an ongoing basis
- **Strategic AI Implementation Skills**
    - Use case identification and prioritization
    - Return on Investment (ROI) calculations for AI initiatives
    - Creating AI adoption roadmaps (overall plans with specific steps)
    - Aligning AI capabilities with business objectives
- **Change Management for AI Adoption Skills**
    - Stakeholder communication and engagement (professional communication)
    - Training program development: enhanced teaching and learning skills
    - Managing resistance to technological change through empathetic means
    - Creating collaborative human-AI workflows (teamwork skills)

- **AI Ethics & Governance Skills**
  - Understanding AI bias & fairness issues (ensure alignment with company values)
  - Data privacy/security considerations and regulatory compliance knowledge
  - Establishing ethical AI use guidelines to ensure company values/morals

7. Cyber Security Specialist *(Camacho 2024; Dimitriadis, 2024; Hussain et al., 2025; Sivalakshmi, & Hassan, 2025; Townsend, 2025; WEF, 2025; Yoong, 2025)*

Automation: AI is transforming cybersecurity by automating repetitive tasks, accelerating threat detection and response, and improving the accuracy of security measures. It plays a pivotal role in processing vast amounts of data to uncover potential threats and anomalies that might elude human analysts, enabling organizations to stay ahead of sophisticated cyberattacks. AI tools are being used to automate risk assessments, prioritizing vulnerabilities based on their severity and likelihood of exploitation.

Agentic Processes: Beyond detection, AI agent systems are taking autonomous actions—such as blocking malicious IP addresses, isolating malware, or shutting down compromised systems—reducing response times significantly. Cybersecurity teams are also leveraging AI to simulate social engineering attacks, detect phishing attempts with greater precision, and analyze incident data rapidly, enhancing overall resilience.

AI Development: Cyber Security Specialists are also becoming more and more involved in AI development and testing to ensure that these growing and powerful technologies are fully secure and tailored to address the evolving threat landscape effectively. This also involves customizations and needs analysis with employing AI security tools in different environments and situations.

NEEDED AI SKILLS/SUBSKILLS:
- **Understanding of AI and Machine Learning Models:**
  - A solid grasp of how different AI models function, along with the ability to audit and secure them against threats like adversarial attacks or data manipulation
- **Proficiency in Data Science and Machine Learning:**
  - Expertise in designing and implementing custom AI solutions, such as predictive threat modeling or anomaly detection systems, tailored to cybersecurity needs
- **Knowledge of AI Ethics and Data Management:**
  - Competence in ensuring the ethical use of AI, including adherence to data privacy regulations and secure data handling practices
- **Familiarity with AI-powered Threat Intelligence Tools:**
  - Skills in using AI to enhance real-time threat detection and response, such as monitoring networks or triaging incidents automatically
  - Ability to manage AI Agents to work cooperatively to ensure security
- **Ability to Work with AI in Automating Incident Response:**
  - Capability to harness AI for streamlining processes like malware quarantine or system isolation, minimizing the time between detection and mitigation

- **Critical Thinking and Teamwork Capabilities**
  - Able to analyze problems, evaluate AI solutions, and work with other security experts to ensure all aspects are addressed and protected

8. Business/Economy/Accounting (Assidi et al., 2025; Bell, 2025; DD, 2025; Debbadi & Boateng, 2025; Dokka, 2024; Imjai et al., 2025; McKinsey & Company, 2025)

Automation and Analysis: AI is revolutionizing business operations by automating repetitive tasks and empowering many different types of organizations with data-driven insights. Companies are deploying AI to handle routine activities such as data entry, invoice processing, aspects of accounting, and customer support, significantly reducing both operational costs and human error. Beyond automation, AI tools are analyzing massive datasets to uncover market trends, customer preferences, and operational inefficiencies, enabling businesses to respond swiftly to changing conditions. Additionally, AI enhances risk management by detecting anomalies and potential threats in real-time, allowing firms to proactively address issues before they escalate. This combination of automation and analytics is improving efficiency and agility, giving businesses a competitive edge.

Predictive Forecasting: New industries, such as AI-powered financial services and automated logistics, are emerging, and fueling economic innovation. Additionally, AI is supporting economic resilience by offering tools for real-time monitoring, predictive forecasting/modeling, and regulatory compliance. These AI enhancements are helping economies navigate challenges like sustainability and market volatility with greater adaptability.

Streamlining: AI is also increasing efficiencies by streamlining traditional accounting processes in different ways. Tasks such as data reconciliation, financial forecasting, and invoice management are now largely automated by AI-powered software, minimizing errors and freeing up time. AI's ability to analyze historical financial data enables precise predictions of future trends, empowering accountants to offer strategic insights rather than focusing solely on routine work. Compliance and audit processes are also improved, with AI tools flagging discrepancies and ensuring adherence to regulations efficiently. As a result, accountants are shifting toward high-value activities like advisory services and strategic planning, leveraging AI to enhance accuracy and client outcomes.

NEEDED AI SKILLS/SUBSKILLS:
- **Understanding and Application of Business and Accounting AI Tools:**
  - Proficiency with AI software used for automating tasks like bookkeeping, auditing, and financial reporting
  - Ability to properly use and manage AI agents
- **Data Gathering, Analysis and Interpretation:**
  - Prompt engineering skills to create effective prompts
  - Ability to process and interpret large datasets to extract actionable insights for decision-making

- **Critical Thinking and Problem-solving:**
  - Capacity to evaluate AI outputs critically, ask needed questions, and address complex challenges that require human judgment
  - Persistence to refine AI outputs continually enhancing needed responses
- **Effective Communication:**
  - Skills to convey AI-generated insights and recommendations clearly to colleagues, clients, and stakeholders
  - Teamwork skills to work with teams from different sections as well a with different AI systems and AI agents
- **Familiarity with Digital Skills and AI Technologies:**
  - Competence in using different digital platforms, cloud-based tools, and AI systems relevant to these fields along with overall AI literacy
- **Ability to leverage AI for strategic decision-making:**
  - Expertise in applying AI insights to shape business strategies, financial plans, and risk mitigation efforts
  - Ability to use the AI in multiple ways to research, brainstorm, and develop different possible courses of actions
- **Continuous Learning and Adaptability:**
  - A proactive approach to staying current with evolving AI tools and adapting to new workflows and technologies
  - A resilient growth mindset with leadership to help others develop AI skills as well

9. Lawyer/Legal Practitioner *(Chien & Kim, 2025; Kelley & McAndrew, 2025; Macsweeney, 2025; Migliorini & Moreira, 2025; Penn, 2024; TR, 2025; Trellis, 2025; Warren et al., 2024; Weichbroth, 2025)*

Legal Research: Advanced tools like Westlaw Precision with CoCounsel integrate generative AI to deliver fast, accurate, and relevant answers to complex legal questions. Unlike traditional methods that required hours of manual searching through case law and statutes, AI-powered platforms analyze vast legal databases in a few seconds. These new efficiencies allow lawyers to spend less time on research and more on strategic planning and client interaction.

Document Review and Contract Analysis: Document review, a historically labor-intensive task, has been revolutionized by AI. Programs such as Kira and Luminance are now key tools in legal practice, automating analysis of contracts and other documents. These AI systems identify key clauses, detect potential risks, and propose edits, which make them invaluable for due diligence and contract management. By reducing the time/effort required, AI is increasing efficiencies while also minimizing human error and ensuring critical details are not missed.

Risk Assessment and Predictive Analytics: By analyzing historical case data, AI tools are estimating the likelihood of success in litigation, calculating potential damages, and evaluating

the risks of various legal strategies. AI-driven analytics are now used for litigation support, helping lawyers craft data-informed strategies. This allows for more precise/actionable advice.

Automation of Routine Tasks: Generative AI is automating repetitive tasks such as drafting legal briefs, contracts, and responses to requests for proposals. AI is now saving legal professionals many hours of work per week by handling routine activities. While human oversight remains essential to ensure accuracy and ethical compliance, this automation frees lawyers to focus on higher-value work like client counseling and case development.

	Law firm	Corp legal	Tax firm	Corp tax	Corp risk	Gov't/courts
1	Legal research	Contract drafting	Accounting/ bookkeeping	Accounting/ bookkeeping	Risk assessment & reporting	Legal research
2	Document review	Document review	Tax research	Tax research	Document review	Document review
3	Brief or memo drafting	Legal research	Tax return preparation	Compliance	Document summarization	Document summarization
4	Document summarization	Document summarization	Tax advisory	Tax return preparation	Knowledge management	Brief or memo drafting
5	Correspondence drafting	Extracting contract data	Document review	Document review	Finance	Contract drafting

Source: Thomson Reuters 2024

…these use cases centered around repeatable tasks such as research and work product generation, many respondents saw a wide utility for GenAI tools. Nine different GenAI use cases were identified as possibilities by at least half of tax firm respondents …while seven GenAI use cases were identified by at least half of law firm respondents. (Warren et al., 2024, p. 16)

Ethical and Regulatory Compliance: Navigating ethical and regulatory implications are critical. New AI laws/regulations are emphasizing transparency, risk management, and human oversight, especially in sensitive areas like employment law or consumer rights. Lawyers are using AI to monitor compliance and advise clients on the legal risks of AI adoption, making regulatory awareness a key part of modern practice.

NEEDED AI SKILLS/SUBSKILLS:
- **Technical Proficiency:**
    - Understanding of AI algorithms and machine learning models used in legal tools
    - Familiarity with legal AI platforms like Westlaw, Kira, and Trellis for research, document analysis, and analytics
    - Basic AI knowledge to comprehend how it processes legal datasets
- **Critical Thinking and Analytical Skills:**
    - Ability to evaluate AI outputs for accuracy, relevance, and potential biases
    - Skill in interpreting predictive analytics & risk assessments to guide legal decisions
    - Competence in spotting errors or limitations in AI systems
- **Ethical and Regulatory Awareness:**
    - Knowledge of AI regulations, (AI Act & U.S. state laws, etc.) to ensure compliance

- Understanding of ethical issues, including transparency, accountability, and the need for human oversight (human-in-the-loop)
- Ability to counsel clients on AI-related legal risks and responsibilities
- **Adaptability and Continuous Learning:**
  - Willingness to adopt new AI tools and their evolving capabilities
  - Commitment to ongoing education in AI and technology law as the field advances
  - AI Literacy and openness to experimenting with AI to enhance legal workflows
- **Collaboration and Communication:**
  - Ability to collaborate with AI systems, technologists, and data scientists
  - Skill in explaining AI concepts and their implications to clients and colleagues
  - Competence in promoting innovation and AI use within legal teams and firms

10. Politics/Government *(Downie, & O'Brien, 2024; E-AI, 2025; Esposito, 2024; GGF, 2024; Intel, 2025; Kudrin et al., 2025; McCallion, 2025; OECD, 2024)*

Governance and Administration: AI is being leveraged to enhance governance efficiency, transparency, and citizen engagement. Governments around the world are employing AI tools for a variety of purposes, including election training (via AI-driven simulations and resources), civic engagement (communicating with citizens using AI-powered platforms), legal arbitration (resolving disputes and interpreting legal frameworks with AI analysis), and procurement (optimizing and automating procurement processes and improving decision-making). This allows for automating of routine tasks and provides data-driven insights for administrators.

Political Decision-Making: AI systems are assisting with political decision-making by analyzing vast amounts of data to identify patterns and trends relevant to policy issues. AI is providing evidence-based insights for crafting legislation and strategies. It is also enhancing the speed and accuracy of decision-making in complex political environments. While AI offers significant opportunities, challenges such as bias, accountability, and the need for human oversight remain critical, considering its deployment which can directly affect people's lives.

The Political Workforce: AI is currently mainly augmenting rather than replacing human capabilities in political contexts. Political professionals are increasingly required to collaborate with many different types of AI tools and systems to enhance productivity and decision-making. At the same time, human skills and connectedness are needed to properly address ongoing changes to society as AI affects the workforce and day to day life in different ways.

NEEDED AI SKILLS/SUBSKILLS:
- **AI Literacy:**
  - Understanding basic AI concepts/terminology for its applications in politics
  - Recognizing AI's capabilities and limitations within political contexts
  - Evaluating the ethical implications of AI use in governance and decision-making
- **Data Analysis and Interpretation:**

- Collecting and analyzing large datasets relevant to political issues, such as voter trends or public sentiment
- Interpreting AI-generated insights and recommendations for policy development
- Identifying biases & limitations in AI-driven data analysis to ensure fair outcomes
- **AI-Assisted Decision-Making:**
  - Using AI tools to support evidence-based policymaking and strategic planning
  - Collaborating with AI systems to generate and evaluate policy options
  - Critically assess/align AI-generated recommendations with political goals & values
- **AI in Communication and Engagement:**
  - Leveraging AI for effective citizen engagement and outreach, such as through personalized messaging and proper foreign language selection when needed
  - Using AI-powered chatbots and virtual assistants to provide constituent services
  - Analyzing social media/public sentiment using AI tools to inform political strategies
- **Ethical and Legal Considerations**
  - Understanding privacy & security concerns related to AI in political processes
  - Navigating regulatory frameworks/compliance issues surrounding AI deployment
  - Addressing potential biases and ensuring fairness in AI-driven political decisions
- **Human-AI Collaboration**
  - Developing interpersonal skills to work effectively with AI systems in team settings
  - Fostering creativity/emotional intelligence in AI-augmented political environments
  - Leading/managing teams that integrate both human expertise and AI capabilities
- **Technical Proficiency**
  - Basic programming skills for customizing AI tools to meet specific political needs
  - Familiarity with AI platforms and interfaces used in political applications
  - Ability to troubleshoot/optimize AI for voter analysis, campaign management
- **Critical Thinking and Problem-Solving:**
  - Evaluating validity and reliability of AI-generated information in political contexts
  - Identifying potential misuse/manipulation of AI: propaganda for voter influence
  - Developing innovative solutions that combine human expertise with AI capabilities to address political challenges for future affects of AI on society

Call to Action

As professors, lecturers, teachers, and instructors, you have the direct power and responsibility to shape students' success in our now AI-enhanced world by incorporating these essential AI skills and subskills into your teaching and learning activities. We must come together and take action now by integrating these AI competencies into our lessons, challenging students to engage ethically with AI, and provide practical experiences with different generative tools. Your actions will help to equip students to not just navigate but thrive in our current landscape where AI is everywhere, transforming them into effective, ethical, confident, adaptable leaders ready to excel across all industries and organizations.

Additional Resources

VIDEOS:

The Sovorel Center for Teaching & Learning YouTube educational channel (www.youtube.com/@sovorel-EDU) offers over 200 videos dealing with many different aspects of teaching and learning with a focus on AI in education. The comments section of these videos also serves as a great community of inquiry, where we can learn from the thoughts and experiences of one another.

Additionally, this playlist (https://youtube.com/playlist?list=PLfJYvFspwDW0HRG85ZwwjAn6mX-WpP3Xo&si=7gPZp-4MWJtcTnVK) focuses on foundational AI Literacy and how to develop it within one's self and students. Five different videos provide an overview of foundational AI Literacy as well as specific videos covering each component of AI Literacy: Awareness, Capability, Knowledge, and Critical Thinking.
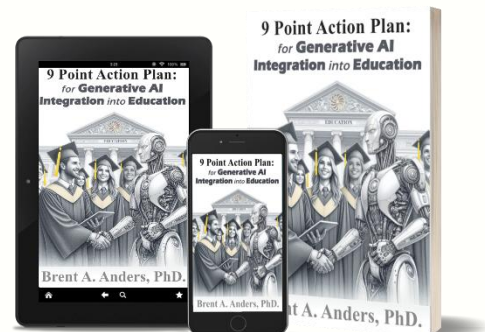
BOOKS:

Two books by the Sovorel Center for Teaching & Learning (written by Brent A. Anders, PhD) are highly recommended to assist with foundational AI Literacy development and AI integration into education:

The AI Literacy Imperative: Empowering Instructors & Students, https://www.amazon.com/AI-Literacy-Imperative-Empowering-Instructors/dp/B0C51RLPCG)
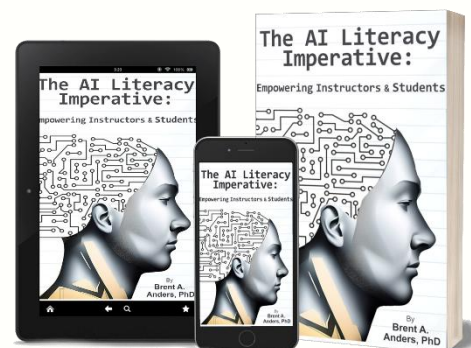
9 Point Action Plan: for Generative AI Integration into Education, (https://www.amazon.com/Point-Action-Plan-Generative-Integration-ebook/dp/B0D183M85K)

Both books are available in print and as ebooks through Amazon.com.

About the Sovorel Center for Teaching & Learning

The Sovorel Center for Teaching & Learning exists to help all of academia with different aspects of teaching and learning in general and the integration of AI into education specifically. This document was created as an outreach to help all of academia develop a better understanding of the importance of AI within our world and the need for AI literacy development. Additional outreach resources are provided by the Sovorel Center for Teaching & Learning through its educational YouTube channel (https://www.youtube.com/@sovorel-EDU), its website with articles and infographics (https://sovorelpublishing.com), and through multiple books on different aspects of teaching and learning and AI in education (https://www.amazon.com/stores/Brent-Anders/author/B06XG2TLKL).

The director of the Sovorel Center for Teaching & Learning is Brent A. Anders, PhD. He is a university lecturer, learning science researcher, author of multiple educational books, international presenter, and host of the Sovorel Center for Teaching & Learning educational YouTube channel. Anders is available for webinars, presentations, and workshops dealing with AI and education. Contact him via LinkedIn (https://www.linkedin.com/in/brentaanders) or at: https://sovorelpublishing.com/index.php/speaking

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If you appreciate the work of the Sovorel Center for Teaching & Learning and wish to fund its work to help all of academia develop AI Literacy and enhance the educational experience for everyone, please consider supporting through different ways such as purchasing books (https://www.amazon.com/stores/Brent-Anders/author/B06XG2TLKL), hiring Brent A. Anders, PhD. to give a presentation/workshop on AI in education, subscribing, liking, and sharing videos at the Sovorel educational YouTube channel (https://www.youtube.com/@sovorel-EDU), or by simply purchasing a digital "cup of coffee" (https://buymeacoffee.com/sovorel). Thank you for your consideration and support.

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