Haute Ecole
« ICHEC – ECAM – ISFSC »

Enseignement supérieur de type long de niveau universitaire

How does artificial intelligence impact business management master's students?

Mémoire présenté par :
Louise MISSOTTEN

Pour l'obtention du diplôme de :
Master en gestion de l'entreprise
Année académique 2023-2024

Promoteur :
Sed SAAD

Boulevard Brand Whitlock 6 - 1150 Bruxelles

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Declaration of honor concerning compliance with referencing rules and the use of generative AI as part of the dissertation or other work

I, the undersigned, MISSOTTEN, Louise, academic year 2023-2024 , hereby declare that the attached work complies with the rules for referencing sources set out in the study regulations signed when I enrolled at ICHEC (compliance with the APA standard concerning referencing in the text, bibliography, etc.); that this work is the result of an entirely personal process; that it does not contain any content produced by an artificial intelligence without explicit reference to it. By my signature, I certify in my honor that I have read the above documents and that the work submitted is original and free from any borrowing from a third party not correctly cited.

21 May 2024

Type d'assistance		**Case à cocher**
Aucune assistance	J'ai rédigé l'intégralité de mon travail sans avoir eu recours à un outil d'IA générative.	
Assistance avant la rédaction	J'ai utilisé l'IA comme un outil (ou moteur) de recherche afin d'explorer une thématique et de repérer des sources et contenus pertinents.	
Assistance à l'élaboration d'un texte	J'ai créé un contenu que j'ai ensuite soumis à une IA, qui m'a aidé à formuler et à développer mon texte en me fournissant des suggestions.	X
	J'ai généré du contenu à l'aide d'une IA, que j'ai ensuite retravaillé et intégré à mon travail.	X
	Certaines parties ou passages de mon travail/mémoire ont été entièrement été générés par une IA, sans contribution originale de ma part.	X
Assistance pour la révision du texte	J'ai utilisé un outil d'IA générative pour corriger l'orthographe, la grammaire et la syntaxe de mon texte.	X
	J'ai utilisé l'IA pour reformuler ou réécrire des parties de mon texte.	X
Assistance à la traduction	J'ai utilisé l'IA à des fins de traduction pour un texte que je n'ai pas inclus dans mon travail.	X
	J'ai également sollicité l'IA pour traduire un texte que j'ai intégré dans mon mémoire.	X
Assistance à la réalisation de visuels	J'ai utilisé une IA afin d'élaborer des visuels, graphiques ou images.	
Autres usages		

List of Acronyms

AACSB	Association to Advance Collegiate Schools of Business
AI	Artificial Intelligence
AIED	Artificial Intelligence in Education
AR	Augmented Reality
BMC	Business Model Canva
BOT	Robot
CAI	Computer-Aided Instruction
ChatGPT	Chat Generative Pre-Trained Transformer
DL	Deep Learning
DNA	Deoxyribonucleic acid
ESCP	École Supérieure de Commerce de Paris
ESSEC	École Supérieure des Sciences Économiques et Commerciales
GenAI	Generative Artificial Intelligence
GPT	Generative Pre-trained Transformer
HEI	Higher Education Institutions
IAIED	International Artificial Intelligence in Education Society
ICHEC	Institut catholique des Hautes Études Commerciales
INSEAD	Institut Européen d'Administration des Affaires
ITS	Intelligent Tutoring Systems
LLM	Large Language Model
LMS	Learning Management Systems
MEF	Modern Eğitim Fen
MIT	Massachusetts Institute of Technology
ML	Machine Learning
NACE	National Association of Colleges and Employers
OECD	The Organization for Economic Cooperation and Development
PLATO	Programmed Logic for Autonomous Teaching Operations
Q&A	Questions and Answers
QR code	Quick Response Code
SAKI	Self-Adaptive Keyboard Instructor
SWOT	Strengths Weaknesses Opportunities Threats
UNESCO	United Nations Educational, Scientific and Cultural Organization
US	United Sates
USD	United States Dollar
VR	Virtual Reality
XR	Extended Reality

List of Figures

List of Tables

INTRODUCTION

Artificial intelligence (AI) has been a hot topic for a few years now. [a]Indeed, Artificial intelligence has been the top concern for policymakers since 2013, when Frey and Osborne made the claim that nearly half of US professions were at serious risk of becoming automated (cited by Braiki et al., 2020). Since then, it Artificial intelligence continues to advance at unprecedented pace, and it will undoubtedly remain at the centre of attention in the coming years.

Artificial intelligence is now ubiquitous in our daily lives, to the extent that its usage has become so common that we no longer discern its presence. Paradoxically, the more integrated AI becomes, the less we recognize it as such. (Williamson & Eynon, 2020). According to Nick Bostrom "*A lot of cutting-edge AI has filtered into general applications, often without being called AI because once something becomes useful enough and common enough it's not labeled AI anymore*" (Manyika, 2022).

This technology has the potential to improve people's lives, but it also raises a number of important policy, ethical and social issues, including job creation and job obsolescence (Shiohira, 2021). A 2017 study by McKinsey Global Institute estimates that as many as 375 million workers globally may need to transition to new occupational categories (cited by Ra et al., 2019).
According to Charlotte de Montpellier, here in Belgium, AI is probably going to have an impact on the work of 3.3 million individuals, 1.7 million of whom could be replaced by machines in the near future (Biermé, 2024).

AI's impact extends across all industries, including finance, healthcare, or automotive and education is no exception. Popenici & Kerr (2019) assert that the rapid advancement of artificial intelligence is already having a significant impact on the profound nature of services provided by higher education. Braiki et al. (2020), add that it won't just alter how students learn but also reshape the structure and environment of education, especially within universities.

The exponential growth of AI across industries has been exacerbated by the introduction of ChatGPT in November 2022. A few months later, in March 2023, the app had more than 100 million daily users, a number never reached before by any other technology (Alexandre, 2023).
According to a recent study of American university students, almost one in three had utilized artificial intelligence, such ChatGPT, to finish their coursework, with 60% utilizing the application for more than half of their assignments (Chan, 2023).
In the UK, the percentage of university students who use ChatGPT occasionally rises to 33%. Those who utilize it a few times a week equates to 32% and finally 13% say they use ChatGPT every day (Lallemand, 2023).
A French survey that was released in November 2023 claims that 55% of students utilize generative artificial intelligence tools on a regular basis (Faye, 2023).

As a master's student in business management, dealing with artificial intelligence, automation and this ever-changing world raises questions about how it is going to affect our academic experience as well as our future career as managers. This research thesis aims to explore the impact of artificial intelligence on masters' students in business management. It will answer the following research question as completely as possible: "How are business management master's students impacted by artificial intelligence?"

The first part of this thesis will consist of the literature review, in which the key concepts, definitions and the current situation of artificial intelligence will be presented. Then, the applications of AI and three different case scenarios related to teaching will be reviewed, followed by the implications for students. Finally, the impacts of AI will be addressed.

The second part addresses the methodology. In this part, the development of the research question, the information-gathering process, and the analytical approach used will be detailed. The results of the quantitative and quasi-quantitative studies will also be outlined in this section.

The third part, the discussion, will compare the literature review with the data obtained from the field. This will enable me to attempt to validate or invalidate the hypotheses and to answer the research question.

Finally, the last part will be dedicated to the conclusion of this thesis and to recommendations based on the findings. It will also identify the limits and challenges of this research work and suggest directions for future research.

CHAPTER 1: LITERATURE REVIEW

Artificial Intelligence

Brief history

It was in 1950 that Alan Turing introduced the concept of artificial intelligence. While there were several early works that may be classified as artificial intelligence, Alan Turing's vision was arguably the most impactful. In his seminal article "Computing Machinery and Intelligence" Turing speculated about the possibility of creating machines that could think. He also brought up machine learning, genetic algorithms, reinforcement learning and the Turing Test (Russell & Norvig, 2010). The purpose of the Turing Test was to give an acceptable operational definition of intelligence. The test determines whether a human listener can distinguish between a discussion with a machine and one with a human; if this difference cannot be made, we can acknowledge the existence of an intelligent system (Popenici & Kerr, 2017).

The term artificial intelligence was officially founded by John McCarthy in 1956. In fact, McCarthy set up a two-month workshop with ten other researchers and their proposal stated:

"We propose that a 2-month, 10 man study of artificial intelligence be carried out during the summer of 1956 at Dartmouth College in Hanover, New Hampshire. The study is to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it. An attempt will be made to find how to make machines use language, form abstractions and concepts, solve kinds of problems now reserved for humans, and improve themselves" (Russell & Norvig, 2010).

The area of artificial intelligence has witnessed many ups and downs, thrills and disappointments, breakthroughs, and deadlocks since it was originally defined in the 1950s (Dia, n.d.). Artificial intelligence has come a long way over the past several decades. In 2012, artificial intelligence came back in the game thanks to deep learning. Doctor Alexandre (2023) states: "It is with deep learning that artificial intelligence is really born (…) It was from this turning point in 2012-2013 that we really entered the world of AI." Deep learning enables machines to replicate some capabilities of the human brain (Alexandre, 2023).

More recently, there has been substantial progress in artificial intelligence due to advancements in machine learning, deep neural networks, natural language processing, computer vision and big data, which means machines are now able to take over some of our tasks (Dia, n.d.). Artificial intelligence has been back in the spotlight since the end of 2022, following the launch of ChatGPT by OpenAI. Generative AI arrived much earlier than expected. Such technological progress was not expected before 2030. ChatGPT is clearly revolutionizing our society and several industries (Alexandre, 2023).

Definitions

Artificial Intelligence

One of the earliest and most significant definitions was provided by John McCarthy in 1956: "The study [of artificial intelligence] is to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it." (Russell & Norvig, 2010).

However, it is well known that there is not a general agreement on the definition of Artificial Intelligence nor on its components (Shiohira, 2021).

"AI does not describe a single technology. It is an umbrella term to describe a range of technologies and methods, such as machine learning, natural language processing, data mining, neural networks, or an algorithm" (Zawacki-Richter et al, 2019).

According to Russell and Norvig: "Broadly defined, AI comprises any technique that enables computers to mimic human behavior and reproduce or excel over human decision-making to solve complex tasks independently or with minimal human intervention" (cited by Janiesch et al., 2021).

"Artificial intelligence (AI) is defined as the ability and development of an information technology-based computer systems or other machines to complete the tasks that usually require human intelligence and logical deduction" (Siau & Ma, 2018).

Heudin wrote: "Artificial intelligence is essentially based on algorithms that enable machines to imitate a form of human intelligence. It is seen as an innovative technology that can reduce errors and improve the user experience in a variety of fields, including education" (cited by Djelti & Kouninef, 2022, p.188; translated verbatim from the original French work).

Artificial intelligence can be separated into two categories: weak and strong AI.

1. Weak AI or artificial narrow intelligence is meant to focus on one specific task. For instance: recognizing text, language, or pictures. Other examples are self-driving cars, Chatbots, medical imaging, and smart speakers (Stine et al., 2019).
   Weak artificial intelligence is restricted to performing tasks that it has been trained to perform in a certain domain. Although strong, it is still subject to human control (Alexandre, 2023, p53).
2. Strong AI, also called artificial general intelligence, is capable of performing the majority of mental tasks that humans are capable of, if not all of them, and is able to apply intelligence to multiple specific problems. (Kurzweil & Voss, cited in Suvrat & Roshita, 2019).
   Strong AI would be considered a super-intelligent system with consciousness and common sense. It could take on a life of its own and elude its designers (Alexandre, 2023, p53).

Machine-Learning

According to Popenici and Kerr, "machine learning is a subfield of artificial intelligence that includes software able to recognize patterns, make predictions, and apply the newly discovered patterns to situations that were not included or covered by their initial design (Popenici & Kerr, 2017).

Machine-learning is the field of study that "allows computers to automatically learn and improve from experience without being explicitly programmed" (Sharifani & Amini, 2023). Put differently, machine learning makes it possible for a computer to develop the rules necessary to solve an issue instead of requiring a human to do so. Machine learning performs well when you have a significant amount of data and simple decisions to make (Stine & al., 2019). Indeed, a machine learning algorithm may learn to fix issues or make predictions when given enough data. Examples of these tasks include winning certain games or recognizing things in photographs (Baker et al., 2019).

Deep Learning

Deep learning is a subset of machine learning that utilizes neural networks to solve complex problems (Sharifani & Amini, 2023), and recognize relationships among data (Stine et al., 2019). Deep learning models are inspired by the structure and function of the human brain, and they are capable of learning from unstructured and unlabeled data (Sharifani & Amini, 2023). "Simply put, AI is a field focused on automating intellectual tasks normally performed by humans, and ML and DL are specific methods of achieving this goal. And deep learning is made of artificial neural networks" (Choi et al., 2020).

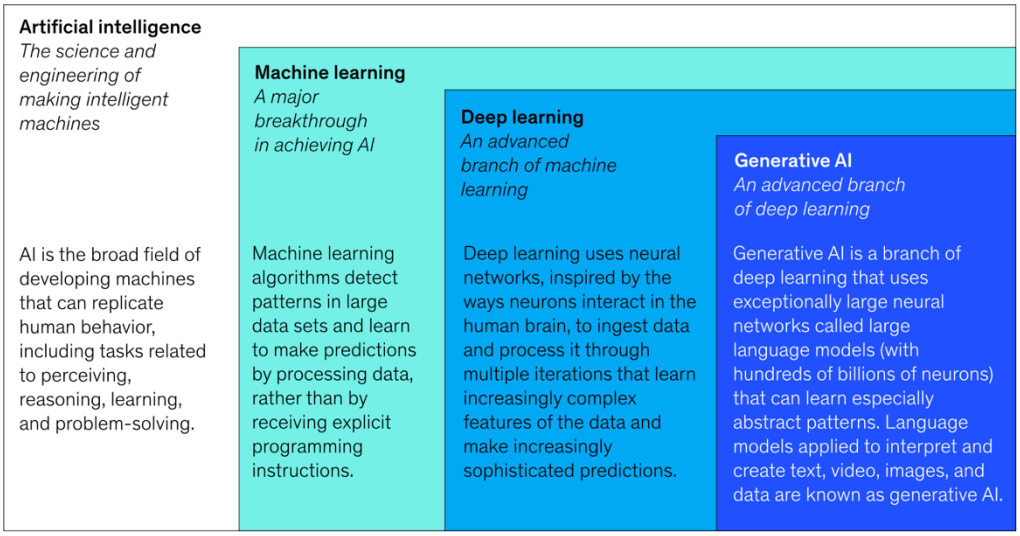

Figure 1 : The evolution of artificial intelligence

Source: McKinsey & Company. (2024, 03 April). What is AI (artificial intelligence)? https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-ai

Artificial Intelligence in Education (AIEd)

Brief History

AI in education has first been introduced by two psychologists: Sidney Pressey and Burrhus Frederic Skinner. In 1925, Pressey created the teaching machine, looking like a typewriter. The machine worked like a multiple-question test. The student had to press onto the right answer otherwise he could not go on to the next question (Petrina, 2004). Pressey's goal was to consolidate and assess students' learning. According to him, in order for assessments to facilitate learning, prompt feedback was crucial (Holmes et al., 2019). Pressy stated: "Devices which at once inform a student about the correctness of his answer to a question, and then lead him to the right answer, clearly do more than test him; they also teach him" (Holmes et al., 2019, p.23).

Additionally, Pressey was among the first to argue that a teaching machine could not only support learning but also make a teacher's life easier by freeing them up from grading tests, allowing them to spend more time interacting with their students (Holmes et al., 2019, p.24).

Skinner based himself on Pressey's approach and created his own teaching machine in 1958. Skinner's machine did not offer multiple answers but allowed students to write down their own answers. He found this more constructive than just having to recognize the correct answer. Once the question had been validated, the correct answer was displayed, giving the student the result automatically and instantly. Skinner claims that his teaching device anticipated AIED's intelligent tutoring systems by functioning essentially as a personal instructor. However, the Skinner machine cannot be said to be adaptive, since the questions are pre-recorded in a specific order and therefore do not adapt to the results or needs of each individual (Holmes et al., 2019, p.25-26).

Adaptive Learning also appeared in the 1950s thanks to Norman Crowder. His method adjusted the course of the instructional materials according to each learner's comprehension level. The difference with Skinner's device is, if the answer is incorrect, the machine will provide feedback with explanations so that the student understands his mistake(s) (Holmes et al., 2019, p.26).

In the early 1950s, Gordon Pask most likely created the first teaching device that was really customizable, SAKI referred to as the self-adaptive keyboard instructor. SAKI set itself apart from other early teaching computers by customizing the job to each learner based on their unique performance. Over the following years, improvements in adaptive learning gave rise to computer-aided instruction (CAI) systems. PLATO (programmed logic for autonomous teaching operations) is the most well-known example. In PLATO, up to a thousand students worked simultaneously using remote terminals to obtain common educational materials, on a central computer. PLATO was the first system to present tools such as multiplayer games, forums, email, instant messaging, and screen-sharing, which are still currently used (Holmes et al., 2019, p.27).

The personal computer was introduced in the year 80, which has led to major changes. The use of CAI programs extended to households, universities, and schools. However, these systems presented all a need for adaptivity. Each student received the same predetermined information, topics were covered in the same order, and the system responded to their activities in the same

way regardless of their unique learning styles, misconceptions, and areas of interest (Holmes et al., 2019, p.28).

Jaime Carbonell is typically given credit for being the first to apply artificial intelligence techniques in computer-aided training when he launched the SCHOLAR system in 1970. It was able to use a semantic network to produce unique answers to student statements. Moreover, SCHOLAR is acknowledged as being the original Intelligent Tutoring System.

> *"In [a] conventional CAI, the database consists of many "frames" of specific pieces of text, questions, and anticipated answers entered in advance by the teacher. By contrast, [SCHOLAR] is based on the utilization of an information network of facts, concepts, and procedures; it can generate text, questions, and corresponding answers. Because [it] can also utilize its information network to answer questions formulated by the student, a mixed-initiative dialogue between student and computer is possible with questions and answers from both sides."* (Holmes et al., 2019, p.29).

Afterwards, The International Journal of Artificial Intelligence in Education was first published in 1989 and the International AI in Education Society (IAIED) was founded in 1993. AIEd as a field of academic research has therefore existed since the 1980s. The field of artificial intelligence in education has grown along two overlapping axes: creating AI-based educational technologies and applying AI to comprehend, assess, and enhance learning (Williamson & Eynon, 2020).

AI in education existed several years ago, nevertheless instructors are only now beginning to investigate the pedagogical possibilities that AI applications may provide for assisting students at different stages of their lives (Zawacki-Richter et al., 2019, p.2).

Definition

According to Louis and ElAzab, "artificial intelligence is not equal to artificial intelligence education" (2023, p.19). As mentioned previously, Artificial intelligence's primary technology is the ability to mimic human thought processes and behavior patterns based on data collection volume, algorithmic features, and processing power. However, artificial intelligence education is by no means a straightforward method of gathering and evaluating large amounts of data. It involves understanding students' learning ability, styles, specializations, and other connected factors. Then, based on this understanding, it suggests ways to teach them better or takes action to help them learn more effectively (Louis & ElAzab, 2023, p.19).

A simpler definition is proposed by Zawacki-Richter et al.: "AIEd refers to the use of technology and algorithms to strengthen the learning process and improve student learning outcomes" (2019).

Generative AI

Generative AI is a type of AI, which can be defined as a "technology that leverages deep learning models to generate human-like content (e.g., images, words) in response to complex and varied prompts (e.g., languages, instructions, questions)" (Michel-Villarreal et al. 2023). Its particular trait lies in its capacity not only to analyze and interpret existing data but also to generate novel content (Chan, 2023).
In November 2022, OpenAI released Chat Generative Pre-Trained Transformer, better known as ChatGPT. Generative Pre-trained Transformer is based on a Large Language Model (LLM) and intends to imitate the capacities of human language processing (Rasul et al., 2023, p.42). In order to generate human-like responses, it uses deep learning and strong algorithms to carry out several language-related tasks, such as text generation, question answering, conversation generation, and translation (Michel-Villarreal et al. 2023). In a simpler way, "it can understand inputs provided by humans and produce a response text that is highly similar to the language used by humans, making it almost impossible to distinguish between a human and an AI-generated text" (Rasul et al., 2023, p.42).
We can mention other LLMs such as Bing Chat or Google Bard/Gemini. However, it was following the release of ChatGPT that global attention turned towards generative AI. Indeed, ChatGPT attracted both, businesses', and individual's attention thanks to its exceptional ability to produce text in a variety of styles and purposes (Rane et al., 2024, p.41). Among the individuals, there are students who were hugely captivated by this new application. The speed at which they have integrated this technology into their daily lives is quite impressive. Consequently, this has generated some interest from Higher Education Institutions (HEI) globally, seeing ChatGPT as a disruptive tool for learning, teaching, and supporting students. How are they going to deal with this?

Generative artificial intelligence and in this case ChatGPT is in the process of reforming several fields, including but not limited to education. Other industries, such as medicine, business, art, and many others will also be disrupted by the advent of ChatGPT. Not to mention our society, our way of living, working, and communicating will also undergo a transformation (Jiang et al., 2023).

ChatGPT's Limitations

ChatGPT can be biased because it is based solely on huge amounts of training data provided to it. Although OpenAI has tried to make ChatGPT as neutral as possible, we cannot be 100% sure that the answers it generates are not biased.
ChatGPT cannot be completely impartial because OpenAI hires people to sort the content. It is people from Kenya who judge whether content is toxic, abusive, violent, or racist. It is important to add that these people are paid USD 2 per hour, which means that OpenAI is exploiting its employees.
ChatGpt is not capable of thinking, understanding or even using common sense and critical analysis. So, it doesn't take cultural differences into account, which again makes it biased. It is only thanks to the database and machine-learning algorithms that it is able to deliver results.
ChatGPT lacks emotion and empathy, so it cannot understand other people or the context of a situation, which can sometimes lead to miscommunication.
ChatGPT lacks precision, confidence, and authenticity. The answers it suggests come from the internet, which is full of incorrect, biased information, opinions, and fictional data. Since ChatGPT can't think for itself, it can't tell the difference between facts and opinions.

Finally, transparency is also a limitation, as users are unable to understand how the tool works (Chowdury & Fosso-Wamba, 2023).

ChatGPT's Risks

ChatGPT presents several risks. Firstly, it can provide incorrect information. The tool can construct perfectly correct sentences but with an incorrect end result (Chen, 2024).
When ChatGPT doesn't have the answer, it makes it up. False information can therefore quickly circulate.
The answers provided by GPT are not learning friendly. GPT's aim is to generate an answer as quickly as possible. This goes against what would be pedagogically correct. Also, as mentioned earlier, ChatGPT does not take into account cultural differences, which amplifies inequalities and does not foster a safe environment.
ChatGPT can lead to a crisis of motivation among students. They will wonder what they should be concentrating on and will no longer see the value of their sometimes hard-won skills (Chen, 2024).
Another risk is that students become too dependent on ChatGPT. This technology will be able to perform more and more tasks, which means that students will use it more and more. So, they will be doing less and less on their own. 'What's the point of doing it myself, ChatGPT will do it in two minutes and better than me? What happens if the student doesn't have access to the technology, will they be able to do it themselves?
Finally, intensifying the use and discussion with ChatGPT can reduce human interaction (Calitz & Cullen, 2023).

AI Applications for Education

Three distinct viewpoints are used by Baker and Smith when discussing educational AI tools: learner-facing, teacher-facing, and system-facing AIEd. The AIEd market is heavily weighted in favor of learner-facing tools, whereas teacher-facing and system-facing technologies are getting less attention. With the fewest available tools, system-facing is the AIEd category that is least common (2019).
Zawacki-Richter et al, identified four areas of application, profiling and prediction, intelligent tutoring system, assessment and evaluation and adaptive systems and personalization. Together, they have seventeen subcategories.

Learner-facing

Students utilize software that adapts to their own needs in order to learn and comprehend new subject matters. Learner-facing AI tools are programs, such as Intelligent Tutoring Systems (ITS) or adaptive learning platforms that can be used to:

- Create and organize learning resources according to the requirements of each learner.
- Determine a student's knowledge gaps, strengths, and flaws.
- Give out automatic comments.
- Encourage students to work together.

Rather than having students follow a predetermined, human-created process, machine learning algorithms attempt to identify students' strengths, weaknesses, and knowledge gaps in order to structure and frame learning in the right way to provide significantly higher customization (Baker et al., 2019, p.11).

Learner-facing AI Tools

1. **Virtual Assistant**

Virtual assistant, also known as virtual mentor, is a tool that enables interactive communication and facilitates collaboration between the teacher and the learners. Students can ask questions about the course, exams, evaluation process etc. (Fitria, 2023, p.168). The virtual mentor will be capable of providing answers to commonly requested inquiries without human assistance (Siau et Ma, 2018). Also, a virtual assistant can detect if a student has misunderstood the lesson, determine the reasons why and suggest appropriate solutions (Fitria, 2023, p.168).

2. **Voice Assistant**

Voice Assistant is one of the most used tools, not only in education. The most famous voice assistants are Siri, Google Assistant and Cortana. Voice assistants enable students to foster communication and voice-based dialogues and they facilitate information retrieval. To use a voice assistant, students simply need to quote a few key words or ask the machine a question. The voice assistant will immediately answer the question orally, in the form of text or images. The learner can use it to find references, articles, books and so on. The voice assistant can also transmit information by speaking. So students don't need to read to study. It also allows them

to study independently, and they can do further research in class if necessary (Fitria, 2023, p.169).

3. Smart Content

This artificial intelligence technology classifies and arranges digital items, including books, to make it easier to find. It is extensively used in public libraries and universities' digital libraries. In addition, the technology makes appropriate recommendations based on user preferences and needs. Some applications organize digital textbooks into chapters, which enables students to access pertinent knowledge more quickly. This further streamlines information retrieval (Fitria, 2023, p.169).

4. Presentation Translator

Presentation translator technology is able to first translate, for example an article, from one language to another and then, to present it in the desired language, relying on voice input. Rather than reading, learners are now able to listen to speeches, papers, and digital publications. This technology allows users to understand content in their native language, facilitating comprehension and communication between users (Fitria, 2023, p.170).

5. Global Courses

A huge number of open and free courses, available on online platforms, are proposed to users, worldwide. AI-enhanced platforms are for example Udemy, Google AI, and Duolingo. These are only a few examples of online platforms. They integrate technology to personalize learning experiences. This provides functions like alerts on grades, assignments, exams, study resources, and personalized course suggestions based on user interests (Fitria, 2023, p.170). Another online course that has become quite famous these past few years is the Massive Open Online Course (MOOC), which enables students to learn what they want, when they want, where they want and at the pace they want (Djelti & Kouninef, 2022, p.195).

6. Intelligent Tutoring System

Intelligent Tutoring System or Intelligent Tutor System is also called intelligent agent. ITS is working like a personal assistant.

Various models that tend to be incorporated into ITS include the following: the domain model, which represents teachers' and students' knowledge ; the diagnosis model, which evaluates mistakes and flaws based on domain model; the student model, which provides information about the student's knowledge level, cognitive ability, learning motivation, and learning styles; the teacher model, which evaluates the current state of students and chooses teaching strategies and techniques, offers assistance and advice.

The intelligent tutor system, a form of adaptive learning, has revolutionized traditional teaching methods by offering personalized learning experiences. This system tailors learning plans based on individual student understanding level, preferences and background, utilizing diverse resources to speed up knowledge acquisition and achieve specific learning objectives (Louis & ElAzab, 2023, p.17). A personalized e-learning aid system creates unique student profiles based on behavior observations made by students during the course. With this data, the system

provides individualized suggestions for exercise sessions, reading material, and action plans to improve the learning process (Zawacki-Richter et al., 2019). It even analyzes students' expressions, allowing professors to know if students understood the learning material. Teachers will be able to adjust their teaching strategies accordingly (Louis & ElAzab, 2023, p.17). Another function of ITS is identifying the student strengths and weaknesses. While teaching, the ITS is able to assist students by identifying their problems or mistakes when doing exercises or working on the content. Accordingly, the ITS offers customized feedback and tips to queries pertaining to the subject matter. Pedró thinks intelligent tutoring systems are able to identify appropriate content and perceive when a student has grasped a concept sufficiently to move to the next chapter. These systems offer real-time feedback, guidance, and explanations to students when they commit errors. In this way, the students' learning is more focused on the most appropriate lessons (Pedró, 2020).

Crown et al. offer another, more student-centered learning process. It involves teaching via a chatbot. Maintaining a conversation with a chatbot would enable everyone to learn through dialogue. It would encourage students to think more, to reflect more and to be more active. One last capacity of ITS is that it can improve collaboration between students thanks to online discussions (Zawacki-Richter et al., 2019).

While currently more prevalent in self-study and Q&A settings, its application in classroom teaching is still limited due to technical constraints (Louis & ElAzab, 2023, p.17).

7. Extended Reality

Extended reality has been integrated in higher education institutions because it allows students to experience real-world situations. Indeed, with its ability to offer a unique hands-on experience that other educational technologies might not be able to match, extended reality has enormous potential to improve the teaching and learning process. It can raise engagement, retention, and motivation among students in a variety of academic areas (Sharma, 2021).

Extended Reality (XR) is an umbrella term which encompasses three technologies: Virtual Reality (VR), Augmented Reality (AR) and Mixed Reality (MR), which all combine the real and virtual environments to some extent (Alnagrat et al., 2022).

Virtual reality is a "computer-generated simulation of a virtual, interactive, immersive, three-dimensional (3D) environment that can be interacted with by using specific equipment" (Reiners et al., 2021). With virtual reality, students are completely immersed in an artificial world, while having the impression of being in the real world as they can interact with other students or with avatars. It is therefore possible to simulate different scenarios. It has been demonstrated that simulations are useful teaching aids that help students learn or strengthen soft skills (Alnagrat et al., 2022).
Augmented reality combines virtual objects with the real world. "AR is a technology allowing to create a composite view by superimposing digital content (text, images, and sounds) onto a view of the real world" (Reiners et al., 2021). Augmented Reality shows enormous potential to improve learning experience in educational environments (Alnagrat, et al., 2022).
Mixed reality is a combination of both, augmented reality, and virtual reality (Reiners et al., 2021).

As AR and VR enable students to interact and engage with the real and virtual world, they both can be used in education in order to handle situations that require problem-solving, teamwork, and decision-making (Alnagrat et al., 2022).
Louis and ElAzab mention educational simulation games and define it as a main form of artificial intelligence application. Students who participate in educational simulation games are more likely to have a better understanding of the topic, as it turns theoretical concepts into concrete scenarios. Simulation games will improve their critical thinking and analytical skills. What is more, simulation games force students to take on different roles leading to an increase in interest and commitment (2023, p.18).

Students and professionals in the workforce may improve or hone their academic and career-focused skills by using XR as a heuristic tool. To be more precise, we see that 21st-century employers require a combination of hard and soft abilities, which can be improved through the use of XR technologies backed by solid pedagogy (Guilbaud et al., 2021).

8. Generative AI (ChatGpt)

As a learner-facing tool, GenAI can act like a teacher/tutor; student/tutee; learning peer/ partner; domain expert; and learning tool (Moorhouse et al., 2023).

Learning Companion

Instead of evaluating the work of one of their classmates, students will be able to analyze ChatGPT's work. At least there will be no fear of offending another student. Additionally, students can maintain conversations with the tool, allowing them to participate actively and better understand the topic (Tajik & Tajik, 2023, p.4).

Learning Tool

ChatGPT can help students understand how to apply the theory in different situations. It can be easy to understand the theoretical concepts but sometimes students do not understand how to apply them. ChatGPT can provide various real-life examples, which will enable students to have a deeper understanding of the concept (Tajik & Tajik, 2023). Moreover, ChatGPT is able to generate instant, tailored feedback for every student. It pinpoints the weaknesses of a student and suggests how he could enhance his work. This will enable them to deepen their comprehension about a subject matter (Tajik & Tajik, 2023, p.5).

Areas of Application

1. Assessment and Evaluation

Feedback

A variety of student-facing tools were covered in articles on feedback, such as intelligent agents that offer advice or prompts to students when they are stuck or confused about their work or that generate automatic feedback and help improve student writing. Barker reports that an automated feedback system based on adaptive testing not only suggests further resources and challenges, but also identifies the best tailored responses based on one's cognitive abilities (cited by Zawacki-Richter et al., 2019, p.18). Moreover, students that receive real-time advice and guidance are predicted to perform more efficiently (Pedró, 2020).

2. Adaptive systems and personalization

Recommending/providing personalized content

This section discusses adaptive systems, which provide exercises, materials, and content tailored to the behavior profiles of students studying computer science and business and administration. In adaptive learning, the system assesses when an introduction to a new topic needs to be done or when an older one needs to be reviewed based on the student's knowledge and difficulties (Pedró, 2020).
In terms of personalizing content on online platforms. Some say this can be beneficial in helping learners choose the courses that are best suited to them. Others point out that it is useful to suggest new users, new products, or new actions (Zawacki-Richter et al., 2019, p.19).

Teacher-facing

Teacher-facing systems support professors by automating some repetitive tasks, such as administration, assessment, feedback, and plagiarism detection procedures to lessen their workload. This could enable teachers to focus on other facets of education (Baker et al., 2019). AIEd solutions also give teachers visibility into their students' learning progress, enabling them to proactively provide support and guidance when needed (Zawacki-Richter et al., 2019). In addition, it can also enable teachers to be innovative in their course material (Baker et al., 2019).

Despite the common perception that AIEd aims to replace instructors, Baker's research indicates that this is neither preferred nor feasible (at least not in the near future). Rather, instructors will be the ones to decide when and how to make use of AIEd tools (2019).

Teacher-facing AI Tools

1. **Virtual Assistant**

The virtual assistant acts as an intermediary between the teacher and the student. It centralizes information, allowing for better collaboration. The teacher can publish course material, notes, exercises, exams, questions, etc. Moreover, teachers can offer comments on students' actions and progress with the help of virtual mentors. Thanks to the questions and comments that the students are able to send, the teacher can determine whether the students have understood the material or not and he/she can adapt according to the students' needs (Fitria, 2023, p.168).

2. **Automatic Assessments**

AI is extensively employed for online assessment and automatic question correction, eliminating the need for manual grading by teachers. AI's potential in assessment extends to personalized engagement, allowing for tailored review sessions that enhance student retention by focusing on areas of weakness. This functionality streamlines quiz and exam preparation for educators, who no longer have to create evaluations manually. AI systems operate independently following programmed instructions and can adjust to user preferences (Fitria, 2023, p.169).

3. **Intelligent Tutoring System**

The teachers' perspective

This part concerns the teacher-facing AIEd. Some studies focus on assisting teachers with supervising collaborative learning and detecting conflictive cases. Teachers receive reports of each student's progress, information on different participation styles, and alerts for potential conflicts from the intelligent assistant. It also logs interactions (between the IST and the student) to offer insights into each student's learning style. Meanwhile, ITS automates tasks, such as providing immediate feedback, allowing lecturers to focus on giving new clues and correct exercises during tutoring sessions.

4. Educational Robot

Educational robots play a significant role in assisting teachers, by integrating multidisciplinary knowledge and technology. They add interest to classrooms, stimulate students' innovation, and utilize information technology to enhance knowledge acquisition. As intelligent teaching tools, educational robots complement teachers' efforts in conducting teaching activities, fostering self-learning capabilities among students through human-computer interaction. Moreover, these robots can detect changes in students' emotions, facilitating a deeper understanding of students' learning effects and enabling tailored teaching approaches. Through interaction with intelligent robots, students experience the allure of knowledge, fostering a deeper engagement with learning (Louis & ElAzab, 2023).

5. ChatGPT

ChatGPt can take on the role of a teaching assistant, which will reduce the teacher's workload. First, ChatGPT can aid in determining the teacher's objectives according to student needs and interests as well as his lesson plan.
ChatGPT can customize the learning material according to each student's learning style, abilities, potential and interests, which can motivate and engage students.
Furthermore, GPT can support teachers by creating assignment questions and help grading them (Tajik & Tajik, 2023). It can also adapt to the teacher's evaluation methods. ChatGPT can present an exam or test in advance to check that the structure, scope, and capabilities required are appropriate to assess students' knowledge, even with the use of AI. This will push teachers to create evaluations that are effective even with generative AI involved (Michel-Villarreal et al., 2023, p.2).
ChatGPT can assist educators with the interactions with students, parents, and administration. Students might be more comfortable discussing with ChatGPT, which will create a relationship inside and outside of the classroom. AI-generated text has the potential to enhance parent-teacher communication by delivering personalized messages, ensuring parents remain informed about their child's academic progress and activities.
Lastly, ChatGPT can analyze student strengths, weaknesses, and results. Summarize them in a report and send it to administrators, who will be able to take action if necessary.
All these tasks that ChatGPT is able to take on will give some time for the teacher to focus on more high-skilled tasks as well as pay more attention to the students who really need it (Tajik & Tajik, 2023).

Areas of Application

1. Assessment and Evaluation

Research generally indicates that artificial intelligence programs are highly accurate and efficient at completing evaluation and assessment jobs (Pedró, 2020). Research has utilized artificial intelligence to evaluate student learning and recognize prior learning (PLAR). On the one hand, some systems are used to notify students about their personalized learning paths. On the other hand, systems are implemented to convert student diplomas from various institutions, which may also contain information about course descriptions and themes, to make credit awards easier (Zawacki-Richter et al., 2019).

Automated grading

In the conventional educational framework, teachers typically divide their workload between classroom instruction and grading students' assignments, with the latter often demanding considerable time and effort. Nonetheless, advancements in big data, text recognition, and semantic analysis technologies have enabled the automation of homework grading. This intelligent assessment method greatly streamlines the grading process, marking a significant departure from traditional evaluation methods. It offers swifter, more efficient, and highly precise grading, thereby relieving teachers of the task of manual grading. As a result, teachers can redirect their focus towards classroom teaching, ultimately enhancing teaching efficiency (Louis & ElAzab, 2023). As well as saving time, Zawacki-Richter et al. notes that it is a means of cutting personnel expenses for large-scale assessments (2019, p.17).

Pedró adds that automated assessments are used with significant success to grade short and long essays even if it is still in its early stages. In addition, automated grading is mainly applied to multiple-choice questions (2020).

Evaluation of student understanding, engagement and academic integrity

Articles talk about techniques that students can use to assess their content-related understanding and receive individualized help. Hussain et al. examined exam outcomes, internet activity, and final results in order to evaluate student involvement using machine learning algorithms (cited by Zawacki-Richter et al., 2019, p.18). The results of this type of analysis could alert the teacher of a possible risk, enabling him or her to take appropriate action. Meanwhile, Amigud et al. (2017) used machine learning to look for signs of academic dishonesty in student work by comparing it to past submitted papers. By using this comparative technique, there may be less need for invasive access to student accounts or supervisors, thereby addressing privacy concerns (cited by Zawacki-Richter et al., 2019, p.18).

2. Adaptive systems and personalization

Adaptive systems are used to teach a wide range of subjects, such as biology, computer science, animation, language acquisition, and environmental education. However, Walsh, Tamjidul, and Williams (2017) describe an adaptive system that relies on the hybridization of human and machine learning from a descriptive standpoint, without mentioning any particular subject (cited by Zawacki-Richter et al., 2019, p.19). The use of a hybrid system could also support teachers defining their teaching methods in accordance with the context of a particular class.

Adaptive systems retrieve academic information from students in order to carry out full analyses. These analyzes are followed by artificial intelligence providing exercises, resources, and content that are tailored to each student's unique profile, which assist the teacher with the conception of his lecture (Pedró, 2020).
Thorough analyzes will also help tutors provide more proactive customized coaching, aid at assessing student performances and provide individualized support and feedback (Zawacki-Richter et al., 2019).
Li's descriptive study makes the case that intelligent agents help online educators save time by delegating the most monotonous activities to the systems, freeing them up to concentrate more on creative work (cited by Zawacki-Richter et al., 2019, p.19).

System-facing

Tools known as system-facing AIEd give managers and administrators institutional-level information. For instance, they can be used to track attrition trends throughout schools or faculties (Zawacki-Richter et al., 2019).
Compared to teacher or learner facing tools, system-facing tools are employed for a greater variety of functions, from scheduling to inspecting prediction. (Baker et al., 2019)

System-facing AI Tools

ChatGPT

ChatGPT can play the role of an administrator (Moorhouse, 2023). It can at least reduce an administrator's workload. ChatGPT can answer emails, can assist the admissions committee making better informed decisions about applicants. GPT is able to assist with screening, examining written materials, such as writing samples, letters of recommendation, and statements of purpose, checking if they meet the minimal standards and selecting potential candidates. Finally, ChatGPT can be used to schedule the interviews (Tajik & Tajik, 2023).

Areas of Application

1. **Profiling and prediction**

By combining student profile data with large school databases, AI is able to gather a huge amount of information, analyze it and find trends.
Several AI tools rely on creating student profiles in order to make predictions. This could involve predicting the likelihood of a student dropping out of a course or student attrition. The goal of these predictions is to develop an alert system to identify students at risk and react accordingly.
AI can predict a student's academic success and their chances of being admitted to a university. Predictive analyses are not only useful for admissions, they can also predict which courses, studies or jobs are best suited to a student. Ultimately, thanks to all those predictions, AI will be able to support and advise students as well as come up with feedback when the students need it and throughout their academic career (Pedró, 2020).

AI can play a crucial role in the admissions process by scrutinizing the documents submitted by applicants, such as applications, letters of recommendation, requests for information etc. or if there is a discussion via a BOT, it can analyze it too. For AI to be able to say whether or not a candidate is a good match for the university, there needs to be clear criteria defined beforehand. To do this, it is important to understand the school's DNA and all its processes (Stine et al., 2019).

It is imperative to highlight that although educational institutions acknowledge the potential of artificial intelligence to facilitate admissions procedures, the automated technologies will never completely replace human judgment. This AI assists the administration to make more informed decisions, but the human and contextual dimension remains essential, as AI cannot take these aspects into account, which could influence the final decision (Stine et al., 2019).

The analytical capacities of AI tools can also be useful for marketing. All schools use digital marketing. They promote courses and/or content on their social networks such as Facebook, LinkedIn, and Instagram. These networks are useful for finding out what type of person is interested in the university, but the networks do not know who the best candidates are to join their university.

Business schools can also use artificial intelligence, such as BOTs to discuss and answer questions from prospects. AI analyzes the exchanges and figures out what potential applicants are interested in and what they want. This enables the administration to respond and present the school according to applicants' needs (Stine et al., 2019).

AI can be beneficial to universities for tasks other than drawing up profiles and making predictions. It can lighten the workload of administrators by performing more basic tasks, such as certain administrative tasks, drawing up course timetables and managing student absences (Stine et al., 2019).

These are all advantages for the 'system', but if everything is done properly, it can also be beneficial for the student. As Stine & al. said, marketing, recruitment and admissions are the first steps in a business student's academic experience (2019).

Table 1: Summary of AI tools for each user

	Learner	Teacher	System
Virtual Assistant	X	X	X
Voice Assistant	X	X	X
Smart Content	X	X	X
Automatic Assessment	X	X	
Presentation Translator	X	X	X
Global Courses	X	X	
ITS	X	X	
Educational Robot	X	X	
ChatGPT	X	X	X
Extended Reality	X	X	

The teacher: different case scenarios

According to Molenaar, AI in education is divided into 6 levels of automation. Her model shows the division of control and monitoring between teacher, learner and AI (2022).

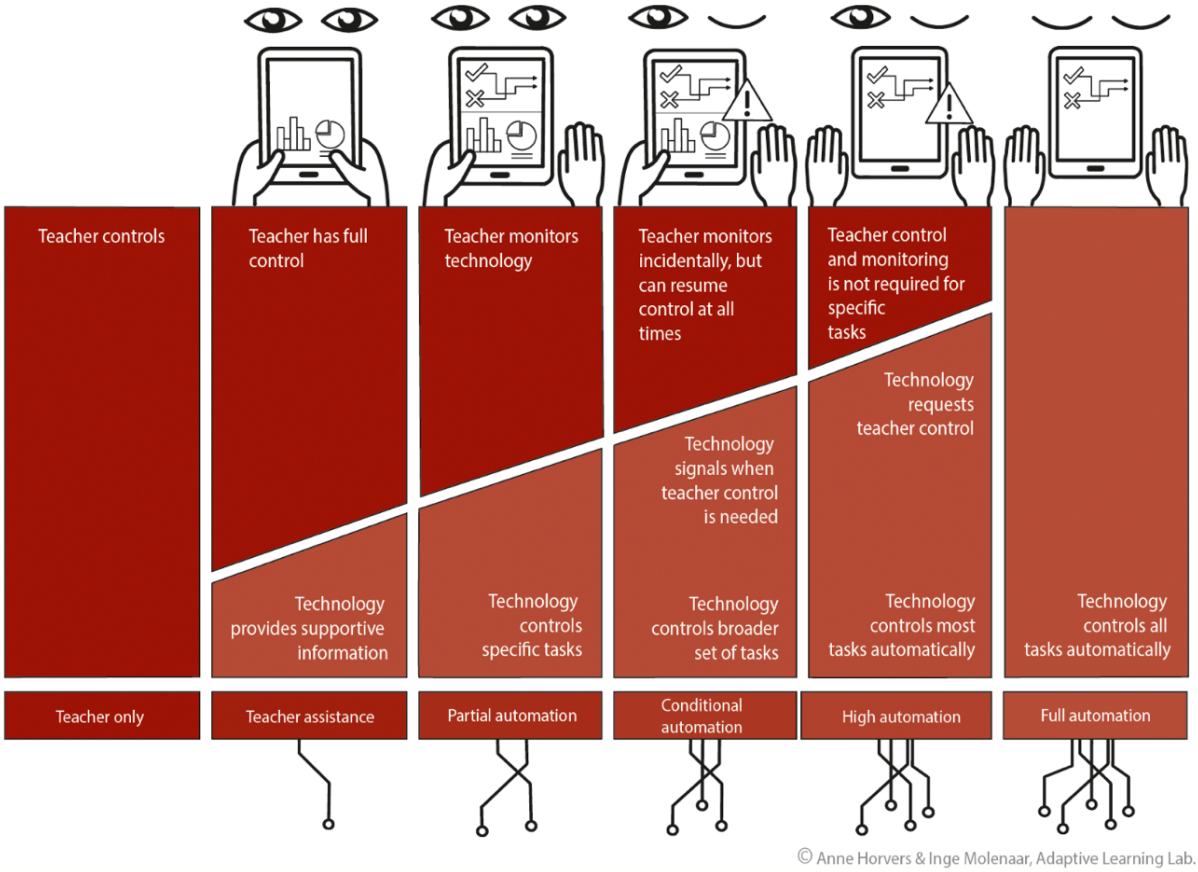

Figure 2: Six levels of automation model of personalized learning.

Source: Horvers & Molenaar. (2022). Towards hybrid human-AI learning technologies. *European Journal of Education, 57(4), 632-645.*

The model's higher section displays the expected degree of monitoring and control for each automation level, with instructor and student monitoring (hands) and control (eyes) represented.

Traditional Method Without Artificial Intelligence

In figure 2, the traditional method corresponds to the first level, “Teacher only” (Molenaar, 2022, p.637). Learning behaviorism is the foundation of the traditional technique. Behaviourist learning theories focus on how learners' associations of stimulus-response lead to changes in behavior. According to Ormord, learning is defined as a behavioral shift brought about by experience (cited by Lessani et al., 2017). Also, the traditional methods are largely theoretical and do not engage the students personally or professionally in learning by doing (Raja & Khan, 2018).

For instance, in a traditional mathematics class, the teacher goes over past content and assignments before modeling basic problem solving and having the students replicate the process in their seats (Stonewater, 2005). Behaviourist theory is reflected in this pedagogical approach, which prioritizes the teacher as a knowledge transmitter (teaching by telling). Teaching mathematics in a traditional classroom is teacher-centered, with lectures predominating (Lessani et al., 2017).

Teacher Assisted by Artificial Intelligence

In most of the levels, the teacher is assisted by artificial intelligence, with a varying degree of automation.
In level two, “teacher assistance”, artificial intelligence is introduced. In this scenario, the instructor oversees and manages the learning environment while obtaining helpful data from artificial intelligence. The system gathers data, analyzes it, and draws conclusions about learner behavior, progress, and existing skills. It then relays these conclusions to teachers as needed. The extra knowledge can be used by instructors to take appropriate action and guide pedagogical decisions that align with the curriculum. Although artificial intelligence cannot perform tasks at this level, it has an impact on teachers' behavior.

In the third stage, which is “partial automation”, the teacher keeps an eye on the educational setup, but AI has some degree of control. AI currently carries out particular activities to assist educators. AI recognizes, diagnoses, and takes action in the arrangement, but it can only perform some duties. At this stage, the teacher still completes the majority of the work. The teacher can spend more time instructing or providing extra feedback to learners.

At level four, or “conditional automation”, educators can delegate some monitoring of pedagogical cases to AI. AI increasingly assumes monitoring responsibilities alongside control over specific tasks. AI should notify professors if students require more assistance. Additionally, AI detects, diagnoses, and performs a wider range of tasks. For instance, monitoring responsibilities, including additional communication with teachers to ensure they are always informed and able to take charge, are shifted to AI (Molenaar, 2022, p.637).

Teacher Replaced by Artificial Intelligence

At level five, or “high automation”, teacher’s control diminishes progressively. AI manages most tasks automatically. AI has the ability to ask instructors to intervene and assume control in complex situations. As a result, the teacher's job of keeping an eye on particular components of the learning arrangement is reduced to watching the signals from AI so they may take over when necessary. According to Molenaar, there are no instances of this kind of system.

Here are a few opinions expressed by specialists, and they all assume roughly the same thing: that a human teacher can never be totally replaced by AI.

"Some have strong opinions that robots will not be able to fully replace humans in the classroom of the future". One is "Brian David Johnson of Intel and author of "21st Century Robot" strongly believes robots will "never, ever" replace teachers" (Edwards & Cheok, 2018).

"AI is not (yet) ready to replace teachers but is presenting the real possibility to augment them." (Popenici & Kerr, 2017).

[Traduction libre] *It has been confirmed that AI can effectively help teachers, but not replace them* (Djelti & Kouninef, 2022).

"Will artificial intelligence replace teachers? Even if there is very significant progress, the answer is no" (Djelti & Kouninef, 2022).

However, Edwards and Cheok conducted a study, which says that thanks to the current and future development of AI, combined with machine learning and especially deep learning, AI will be able to perform the duties of a human teacher in the classroom, including managing the classroom and fostering affective relationships with students, in addition to acting as peer mentors or classroom assistants. They will have superior topic understanding, as evidenced by their significantly greater performance on cognitive tasks than human teachers. Therefore, the possibility of having a fully functional or autonomous robot instructor may be considerably closer than previously thought. The benefits of better quality, more affordable services will accelerate the process of turning ideas into reality (Edwards & Cheok, 2018).

Teacher Integrated in AI Based Platform

Learning Management System (LMS) is the technical term for online training platforms (Ammari, 2018). An LMS acts like a platform for managing and sharing educational content.

LMSs can also be beneficial for the three actors aforementioned, i.e. learner-facing, teacher-facing and system-facing. First, an LMS can be used by online instructors to express their requirements to students as well as create progressive classes with flexible pedagogical goals. It also allows online professors to offer an educational environment that encourages participation, achievement, and progress, enabling students to sign up for classes, check updates and course announcements and keep an eye on their grades.
Moreover, an LMS allows learners to monitor their educational progress, assess their current levels of accomplishment and attainment, get online assistance from teachers, have access to huge amounts of information and materials, participate in online discussions, group-chats and take assessments.
Finally, the LMS offers various administrative capabilities, such as the ability to enable profile specifications, curriculum compliance guidelines, assignment management guidelines, discussion boards, writing resources, and teacher updates (Bradley, 2021).
Online training, online teaching or e-learning are more commonly used terms. E-learning is a technology-mediated learning strategy with huge educational potential. Its goal is to give students access to a customized, accessible, engaging, and dynamic learning environment that both supports and improves their learning (Shurygin et al., 2021).
In their paper Shurygin et al. (2021) offer four general definitions of e-learning:

(1) “technology-driven learning relying on the use of technology to deliver education and training programs”
(2) “the delivery of education, training, or educational programs by electronic means”
(3) “learning focused on communication and facilitated by the use of digital tools and content that involves some interaction between the student and the teacher or peers”
(4) “learning focused on the educational paradigm, that is information and communication technologies used to encourage students improve their learning experience”

These platforms use artificial intelligence technologies, such as chatbot, natural language processing algorithms, automated grading, and predictive analytics, to improve student outcomes, offer prompt assistance, and ultimately increase the efficacy of university-level online learning. Moreover, users can access superior education whenever they want and from any place they want, thanks to AI-driven e-learning platforms. Also, it facilitates online communication for learners. Some examples are Coursera, Moodle, Blackboard, and Edmodo (Saqr et al., 2023).
Online instruction can be categorized into three primary forms: asynchronous learning, synchronous learning, and blended learning. Among them, synchronous online instruction necessitates the use of live streaming platforms like Zoom (Chen et al., 2021). Students have access to presentations, word documents, live chat, online forums, and see their teacher through video (Bradley, 2021). In asynchronous online learning, teachers provide materials ahead of time, enabling students to progress at their own pace. Websites such as MOOCs are examples of asynchronous online learning. Blended learning is defined as “the effective integration, or fusion, of face-to-face and online learning in accordance with the educational needs and goals of students” (Shurygin et al., 2021). Students enrolled in blended online learning must first go through their course independently. Then, during class, teachers go over the key ideas of the course and respond to any questions from the students (Chen et al., 2021).
New organizations like Section, Udemy, and open-source learning platforms would now have greater incentive to form partnerships, increase the scope of their educational offerings, generate creative delivery strategies, and provide relevant certifications. Upstarts are going to disrupt the current system in business education, whether they work in harmony or against established universities (Barsky, 2023).

Implications for Students and Teachers

Students enroll at university because they want to be prepared for the world they will enter after graduation, a world where artificial intelligence tools are increasingly influential, and technology is ubiquitous (Calitz & Cullen, 2023).
Approximately 74% of employers believe that business school graduates should have skills in artificial intelligence and machine learning. This is the new demand of the job market, and it is therefore necessary for business schools to adapt and evolve in line with market demands, as they have always done (Harland, 2024). It is therefore the duty of schools, and by extension educators, to help students perform and hone the skills they will need in tomorrow's world of work.

The first fundamental thing that teachers need to do is to teach students how to use technology wisely. To do this, they first need to understand the basics of artificial intelligence. What are the key concepts? How does AI work? What are its limitations? Next, they need to be able to say how AI is going to be integrated into a business? What is its usefulness? Is it a tool? However, Harland states that although AI is a key element in business education today, business students should not be experts in AI. Firstly, because it's not their role and secondly because technological advances are happening too fast. After all, it's about management, not expertise (2024).

Once students have understood the basics of artificial intelligence, teachers need to train them to implement and use artificial intelligence ethically, responsibly and with care. There is a point of attention when it comes to generative AI, since it was the arrival of ChatGPT that led to an enormous amount of questioning in universities. Questions arose mainly concerning the integrity of students, there was a fear that students would use it to cheat, to do assignments or homework for them.

By ethical and responsible use, we mean that students need to think critically in order to analyze the answers provided by generative AI, because as we all know, AI presents certain limitations and risks, such as the inability to think or the generation of false information. It is therefore crucial to teach business students communication and thinking skills and to place greater emphasis on using these abilities in critical thinking and problem-solving situations. In this way, business school graduates will be able to critically analyze ChatGPT responses and use these responses carefully and responsibly to make decisions (Chowdury & Fosso-Wamba, 2023).

To make good use of ChatGPT, teachers will need to teach prompt engineering. This involves teaching students to ask the right questions in order to obtain the most useful answers possible.
The first step in exploiting ChatGPT's potential is to understand LLMs (Large Language Models).
Then you need to learn how to communicate in the right way. In order to give clear instructions to the tool, students will need to learn how to contextualize, define the task and specify the desired result.
Defining the context is an important step because, remember, AI is not capable of thinking or understanding. It is therefore necessary for students to help the tool to understand the context by providing relevant background information. The final skill to develop is the ability to play a role. You need to be able to tell ChatGPT exactly what role it should play. ChatGPT will then be able to generate responses that are aligned with the character and its ideas (Hié & Thouary,

2023). In a way, it can be said that ChatGPT teaches students to formulate better questions but also to defend those questions (Calitz & Cullen, 2023). In some cases, students have to defend or justify their questions in order to get satisfactory answers from ChatGPT. This process encourages students to explain the reasons for their requests, to consider different perspectives and to assess the validity of their own questions.
They therefore develop their critical thinking and decision-making skills (Calitz & Cullen, 2023).

AI relieves the teacher of repetitive tasks, allowing the teacher to concentrate on more complex tasks, such as encouraging students to develop the skills required to be relevant in the job market: critical thinking, problem solving and creativity.

Teachers must also prepare students to work with artificial intelligence. While generative AI is promising on its own, it becomes extremely effective when combined with human expertise (Calitz & Cullen, 2023). They need to encourage them not to see AI as an enemy but as a team member. Since AI will take over some of the human tasks but will also assist humans with others, students need to learn how to use generative AI in such a way that they complement each other. For this collaboration to be successful, students must develop an understanding of the context, acquire the ability to coordinate activities, use their intuition and experience, and unleash their imagination and creativity (Chowdhury & Fosso-Wamba, 2023).

In order to compensate for the shortcomings of artificial intelligence, it is essential that students demonstrate reflection, understanding and empathy. They must use their emotional and social intelligence to communicate in a human way, respecting each other's cultures and values (Chowdhury & Fosso-Wamba, 2023).
If students are to acquire all this knowledge, if they are to cultivate the knowledge, skills and competences that will enable their expertise to remain relevant in an ever-changing labor market, it is essential that they have access to artificial intelligence, that they have the opportunity to use it and to test it (Chowdury & Fosso-Wamba, 2023). According to Chowdhury & Fosso-Wamb: “The only way to overcome the problems posed by generative AI tools in any sector is to use these tools so that students can understand the capabilities and limitations of the technology, which will help them recognize the true value of human skills” (cited by Calitz & Cullen, 2023, p.3)

Impacts of AI

Higher education institutions are being significantly impacted by AI. The rise of AI is making a lot of employment obsolete, necessitating the need for whole new skill sets. Colleges and universities must prepare their students to meet the challenges of the rise of artificial intelligence and thrive in the AI era by providing them with the necessary training and development (Suvrat & Roshita, 2019). Ma and Siau add that higher education will have to adapt and that there will be a need for continuous renewal (2018).

Audrey Azoulay, UNESCO's managing director, announces: "AI will completely reshape education. Teaching tools, learning approaches, access to education and staff training will all be revolutionized" (cited by Djelti & Kouninef, 2022, p.202).
Managers will have to expand their skills to cope with the introduction of artificial intelligence. According to Giraud et al. while certain managerial skills may be replaced or unaffected by AI, the majority are expected to be enhanced by it. The aim would be a human-machine collaboration, so that artificial intelligence is complementary to managers (Djelti & Kouninef, 2022).

The emergence of generative artificial intelligence (AI) has the potential to significantly influence the way we teach, learn, assess and access education. Universities want to make sure that AI tools can be harnessed for the benefit of students and staff. This means improving teaching methods and student learning experiences, ensuring that students gain skills for the future within an ethical environment, and allowing educators to take advantage of efficiencies to develop innovative teaching methods (Russell Group, 2023).

AI enables everyone to be more efficient and productive. AI can analyze data, summarize, and extract information, create images and presentations, brainstorm and also write non-personal texts or emails. This saves users a considerable amount of time (Loonam, 2024, para.25).

Students

Many student tasks could be improved or automated by integrating AI into education. However, in order to guarantee that AI enhances learning without impairing it, pedagogically sound decisions must be made.
AI can offer more sophisticated capabilities for information creation and processing in addition to student monitoring. For instance, the evolution of the automatic corrector demonstrates how data analysis has become increasingly effective over time and is currently providing a more pedagogically fulfilling tool.
AI may be able to assess the content of larger writings based on predetermined standards, going beyond simple sentence correction. AI has the ability to greatly enhance linguistic feedback instruments in this way (Djelti & Kouninef, 2022, p.197).

AI will improve the overall academic experience of students (Loonam, 2024, para.1).

Integrating AI into courses will arouse students' curiosity, which will encourage them to attend the course and ask more questions. This will make the course more interactive and more interesting. Thus, a more entertaining side appears (Chowdhury & Fosso-Wamba, 2023).

AI will enable students to benefit from a personalized academic experience. Course content and recommendations will be tailored to each student personally. AI will analyze each student's profile, preferences, and learning methods so that it can create material that meets their needs (Russo, 2024, para.2). AI systems are able to create personalized learning interfaces and highly customized textbooks from conventional course outlines. According to the skills of the students, AI can modify the lesson plan, degree of difficulty, and teaching techniques. Therefore, students' learning can be accelerated and made more effective with the use of adaptive learning (Stine et al., 2019).

The AI is also capable of detecting a student's strengths and weaknesses, so that it can then prepare additional exercises, for example on the subject in which they are having difficulties. The tool can also re-explain the basics of the course if necessary. It can also warn the teacher so that he or she pays more attention to students in difficulty (Russo, 2024).

Artificial intelligence can take on the role of counselor.
On the one hand, it can analyze students' career ambitions and propose courses, workshops, exercises and so on to train and improve the skills they need (Mullins-Wiles, 2024).
It can also guide students in their educational and career choices or even optimize course associations. For example, if students have poorer results when two courses are held in the same term, compared to students who have one course in the first term and the second in the other half of the year. AI can quickly pinpoint the problem and suggest enrolling in those subjects during different terms (Fitria, 2023).
On the other hand, AI will make it possible to identify risk and success indicators. Some universities have set up software to analyze students' results and behavior, so that their progress can be tracked. This will make it possible to quickly identify students who are having difficulty comprehending concepts or passing specific courses. Once these students have been identified, a counselor will be able to help them, or some technology can identify new approaches or techniques to support students' learning (Fitria, 2023). However, artificial intelligence should be used to help individuals, not replace them as it does not take into account the context of a situation, which may lead to wrong predictions.
While some failure scenarios cannot be prevented because of personal circumstances or a mismatch between the learner's goals and the suggested training, many scenarios can be prevented thanks to early failure detection, which allows for more customized, attentive, and sharp focus and supervision (Djelti & Kouninef, 2022, p.196).

Fitria adds that AI technology revolutionizes education by providing students with individual assistant-like services. Artificial intelligence will create a specific profile with each student's preferences, which topic he likes and how he learns best. Accordingly, AI will be able to customize learning programs, send schedule notifications, provide content, give immediate feedback and individualized recommendations. Additionally, it can assist them with understanding the topic and providing answers to inquiries, which will lead to an optimization of their learning and academic performance (2023, p.171).

One of the main advantages of AI is that it is available at any time and from anywhere in the world, which means students can learn with greater convenience. It also means that if a student has a question, they can get an immediate answer, just as they can get real-time feedback (Mullins-Wiles, 2024, para.6).
The availability of AI also means that students can feel more confident and above all not afraid to ask a question. It's easier to talk to a machine because, of course, it won't express any judgment. This improves communication, critical thinking and problem solving, because

having a discussion means active participation, which promotes the student's attention, commitment, and learning (Chen, 2024, para.13).

Thanks to AI's ability to analyze huge databases at lightning speed, it will greatly influence decision-making. AI will be able to examine the market and competitors and obtain information on trends and business models, which used to take a single person several hours to do. It might even be impossible, especially at such speed. The student will therefore be able to take into account the information provided by artificial intelligence and will be able to make more reasonable decisions, which will lead to better performances at university but also for the future company in which the student is going to work (Barsky, 2023).

Thanks to virtual reality, students are immersed in an imaginary world. They find themselves in a real-world situation where they will have to demonstrate collaboration, imagination, and adaptation. To understand this better, let's take the example of INSEAD Business School in France, which offers students twenty virtual reality experiences. An accident occurs during a mission to Mars and the students have to save not only the team aboard the rocket but also the equipment. To do this, the students will have to work together and find innovative solutions to save everyone. They will be practicing working under pressure and developing their strategic skills. Other experiments are available that require students to develop other skills. In all cases, they train on realistic cases, which allows them to gain experience, act as consultants, and improve their ability to adapt and work as part of a team. It's important to prepare them for the challenges they will face in a constantly changing world (Mullins-Wiles, 2024, para.8-10).

Let's take another example, which has been set up at ESSEC, France. This time, it was a teacher who decided to integrate AI in the form of an avatar. He created his own avatar. Students can therefore ask the avatar all their questions and benefit from the professor's expertise without actually talking to him. Former students can also benefit from the avatar if they need to review certain concepts or knowledge. At any time and from anywhere. This means that the teacher, through his avatar, will be able to reach more students than he could ever have done on his own (Mullins-Wiles, 2024, para.4).

Studies and edutech platforms confirm AI's positive impact on learning quality and efficacy. With growing class sizes reducing one-on-one teacher-student interaction, integrating customized AI-based learning activities can significantly improve information retention and academic success rates, benefiting students of all abilities (Fitria, 2023).
Moreover, in the case of MOOCs, users are offered a large number of courses or training programs, which can confuse them. Learners are completely lost when it comes to what they need to learn and in what order. In most cases, this leads to a drop in motivation, followed by quitting. This is where artificial intelligence comes in. Thanks to the information it gathers, the system can suggest an appropriate lesson plan or exercises for the student. What's more, in the event of demotivation linked to a lack of interest, artificial intelligence can warn the teacher so that he or she can react accordingly (Djelti & Kouninef, 2022, p.195).

One advantage of ChatGPT is that students can expand their knowledge of a subject or ask for clarification if they need it. In fact, it is the dialogue with ChatGPT that enables better understanding. It transforms passive listening into an active attitude. The more you discuss, the more learning improves (Chen, 2024, para.8).

Teachers

AI can also enhance the teacher experience by acting as a personal assistant. Some of the duties currently performed by instructors may eventually be automated. Administrative duties may be taken over by artificial intelligence, enabling professors to focus more on their pedagogy (Djelti & Kouninef, 2022, p.196).

AI can also help the teacher to prepare his or her lesson, whether in terms of plan, content, syllabus, or quizzes. Thanks to the ability of artificial intelligence to rapidly analyze school data and student habits, it will be able to compose learning programs tailored to each learner's needs. This allows each student to learn using the method that best suits them. Previously, achieving this kind of outcome took an enormous amount of time, given the observation, data gathering, and statistical calculations required (Djelti & Kouninef, 2022, p.196).
AI can identify individual strengths and weaknesses, so it can also classify students according to the speed at which they learn. This will enable teachers to adapt the speed and content of their lessons, focusing on more complex subjects. By identifying fast learners, the latters will be able to help students who are having more difficulty (Chen, 2024).
Moreover, algorithms are able to determine which learning partners are the most compatible once the general profile of the learners has been generated. The technology that connects the two students can keep an eye on their collaboration, particularly their exchanges, and take appropriate action to make sure they continue to be pedagogically sound. In the event of difficulties, alerts can be sent to teachers for appropriate follow-up (Djelti & Kouninef, 2022, p.196).

AI can be used to play the role of the student, the test student. The lecturer can practice teaching his lesson and the AI can intervene by asking questions and putting itself in the place of a student.
The AI can make recommendations and give feedback, either on the spot or after a lesson.
Once a lesson has finished, the AI can draw up a report on the dynamics of the lesson, i.e. determine the speaking time of each student or identify which question attracted the most attention.
What's more, the way in which students are assessed is going to change drastically. Teachers need to innovate in order to test their students' knowledge, making sure that they are testing their own knowledge and not that of ChatGPT. AI can propose new assessments and could even help teachers to assess the new skills that artificial intelligence itself imposes, skills such as analytical thinking or the ability to use intelligent interfaces.
Finally, artificial intelligence can help teachers keep up to date with new technological advances (Chen, 2024).

Systems

AI will enable administrations to reduce their workload. Firstly, by automating certain tasks, reducing paperwork, and providing support for other tasks. AI can be a great help in managing admissions, course registrations and planning.
In terms of communication, the AI can respond to student requests, course queries and handle alumni relations. Another task where AI outperforms humans is data collection, analysis, and processing. AI will analyze results, grades, course attendance, online activity, and the behavior of each student. Thanks to these, it will be able to predict trends and performance, but also identify students who are at risk and react accordingly, depending on their needs. Once a student has been detected, AI can also warn educational staff. This early flagging can also be beneficial for students, as they will be warned directly and supported, so they can't fall too far behind the other students.
All of this will allow administrative staff to devote themselves to more complex tasks and responsibilities. It will also improve efficiency between departments, but above all it will improve the academic experience (Russo, 2024).

Skills

Soft Skills

Because of automation and artificial intelligence, employment requiring hard skills will become less common in this century, while jobs requiring soft skills will become even more prevalent. Therefore, in addition to acquiring knowledge and technology, people also need to learn soft skills. According to Trisnawati et al., (2023) the soft skills that will be the most valuable are critical thinking, collaboration, communication, creativity, culture, and connectivity, also known as the 6C.

> *Critical thinking refers to the way a person filters, analyzes, and questions any information they may come across. Collaboration refers to a person's way of using different personalities, talents, and knowledge to work together and produce something new. Communication refers to the ability to convey ideas and information in a clear and meaningful way. Creativity refers to a person's ability to utilize their knowledge and/or talent to create something new, or to produce something in a new way. Culture is a person's ability to relate with everything that surrounds them, to know and appreciate where they originate from, and the values and beliefs held by people in their society, and their history. Connectivity is the ability of individuals to always be connected with the world* (Trisnawati et al., 2023).

Artificial intelligence has an impact on durable skills, which Herget and El-Azar describe "as a set of skills that can be transferred across domains and contexts, and that endure, regardless of technological and sectoral evolution" (n.d).
Durable skills can also be referred to as "soft skills", "human skills", "21st century skills" or "transferable skills" (Herget & El-Azar, n.d.). These skills include communication, collaboration, critical thinking, creativity, empathy and problem-solving. Even if artificial intelligence can improve technical skills, increase the speed of learning, and give easier access to education, there is some concern about the development of soft skills, as experts believe that artificial intelligence may diminish their development. Chan believes that the development of soft skills, including, problem-solving, leadership, empathy, teamwork, and creativity skills

might be slowed down if artificial intelligence is integrated in education. Chan adds that the writing and critical thinking skills might decrease with the use of generative artificial intelligence. Students use AI tools increasingly to finish their assignments, leading to an over-reliance on technology. (2023, p.2-18).

Hutson & Ceballos add that these durable skills cannot be learned from books and technology alone. They must be acquired through human interaction, by which they mean traditional interactions such as student-to-student and student-to-teacher (2023). The results of the study by Chen et al. (2023) showed that "students who engaged in traditional classroom settings with human interaction were more likely to develop their social skills than students who relied solely on AI-driven education." (cited by Hutson & Ceballos, 2023).
According to Cropley, AI or books are not enough to develop human skills such as communication, creativity and problem-solving. He argues that the growth of social, emotional, and cognitive skills is strongly linked to interpersonal relationships (cited by Hutson & Ceballos, 2023).

With the growing adoption of technology and online courses, human interactions will become much less frequent, slowing down the development of soft skills. It is therefore crucial to adapt current processes to ensure that students still acquire these transferable skills. This means including these skills into distance and online classes as well as maintaining a balance between technology and face-to-face lessons (Hutson & Ceballos, 2023).

Moreover, durable skills are increasingly in demand by employers. That is why it is important to change the education system, by integrating the teaching of these durable skills so that students develop them and can cope with a world that is automated and constantly changing (Hutson & Ceballos, 2023). This has been supported by Trisnawati et al., they note the development of 6C skills in school is essential, particularly at the university level, as they are highly valuable for achieving success, professionally and personally (2023).

Emsi has identified various transferable skills that go beyond technical skills and will be in high demand in the future, such as: communication, critical thinking, leadership, creativity, collaboration, growth, mindset, mindfulness, character, fortitude, and metacognition. Many of the same qualities can be found in the eight Career Readiness Competencies listed by National Association of Colleges and Employers (NACE). These skills include technology, teamwork, equity and inclusion, professionalism, communication, leadership, critical thinking, and self-development (Hutson et al., 2022). Complex problem-solving, critical thinking, analytical thinking, innovation, and self-management abilities including adaptability and stress tolerance are skills that Li (2022) underscores as being the skills on the rise.
However, Acemoglu and Restrepo, state that when it comes to equipping students with skills that will be more valuable in future labor markets, AI-powered teaching techniques might perform better (2019).

Hard Skills

It is now absolutely necessary for instructors, students, and trainers to receive artificial intelligence training, in order to have a basic understanding of artificial intelligence and be able to apply it appropriately (Djelti & Kouninef, 2022). Instructors worry on how to handle this new trend, support students in using AI wisely, and gather usage data from students. Therefore, implementing training would help teachers feel more competent and confident handling the challenges of AI.
Universities may enable staff and students to make educated judgments on the use of AI technology in teaching and learning by offering materials and training on the subject. This will help them both academically and professionally (Chan, 2023).
The importance of ethical education, understanding AI tool affordances, utilizing AI effectively, critiquing and assessing outputs, and the application of AI in academic and professional contexts are all underlined by educators (Chan, 2023).

According to Stine & al., AI in business demands technical proficiency which means students with a stronger technical background may be necessary. Thus, business schools should offer technical courses in order for students to focus more on technical skills and be able to have a solid comprehension of AI elements, such as sensor networks, mobile computing, 5G mobile networks (Stine et al., 2019). Currently, a few universities provide courses in artificial intelligence and machine learning to students. Yet, it seems suitable to offer business students these courses, since company managers and officials must understand the potential, limitations, and implications of AI in the business sector (Suvrat and Roshita, 2019).

Indeed, it is crucial for managers to possess a fundamental comprehension of AI, as well as to be capable of engaging in discussions with AI experts. Human-crafted data and algorithms carry the risk of mistakes and biases. Managers must acknowledge that AI is not inherently unbiased merely because it operates as a machine. Conversely, AI is prone to acquiring biases from human-supplied data. Consequently, it is imperative to comprehend, validate, and keep an eye on AI to prevent potential misuse (Giraud et al., 2022). In addition, managers tend to be the best people to determine where, when, and how AI may benefit their work. They need to understand how AI can add value to their activity (Giraud et al., 2022).
An example of universities which will provide training about AI are the universities from Russell Group. According to them, “It is important that all students and staff understand the opportunities, limitations and ethical issues associated with the use of these tools and can apply what they have learned as the capabilities of generative AI develop.” To assist students and staff in understanding AI tools, their limitations, and the contexts in which they might enhance and customize learning, their universities will offer assistance and training. Also, it will enable instructors to adapt their teaching methods as well as give students precise instructions on how to use generative AI to aid in their research, assignments, and learning. By raising AI knowledge, Russell Group will provide students the skills they need to utilize AI tools wisely in their academic careers and future employment (Russell Group, 2023).

Managerial Skills with AI

Managerial skills likely to be augmented by AI

Decision-making

Artificial intelligence can help managers make hard decisions because it has the capability to rapidly analyze collected data, draw predictions based on past performance, recognize specific issues, and suggest solutions and courses of action (Giraud et al., 2022).

Innovation

AI can improve ideation in a few particular domains and propose ideas humans may not have considered (Giraud et al., 2022).

Knowledge of the market

Given that AI is capable of collecting and analyzing a huge amount of data in a very short space of time, it enables managers to find information relating specifically to their position. In fact, they can find more relevant information more quickly, for example about their competitors and trends. This gives them a better understanding of the market and enables them to keep up to date with it (Giraud et al., 2022).

Recruiting

AI can be really useful for human resources managers when it comes to recruiting new employees. Indeed, AI can help searching for potential candidates, finding the applicant who will be a perfect match for the profile you are looking for, scheduling interviews, or communicating during the recruitment process (Giraud et al., 2022).

Time management

AI can help managers with their scheduling by effectively prioritizing tasks according to corporate or business goals. Furthermore, time management can be enhanced through software that tracks project and task durations, guiding users towards actions they should prioritize. This facilitates improved time management, as individuals focus more on high-priority items (Giraud et al., 2022).

Coping with pressure

Taking risks can be really stressful. If AI can tell you where there's a risk and what the level of that risk is, that can already reduce the pressure you're under. Moreover, AI can also suggest ideas to you when you're up against pressure, because it is true that when you're under pressure, it is sometimes hard to see things clearly or think sensibly (Giraud et al., 2022).

Communication and Relationships

AI can mainly augment written communication skills. On the one hand, it can produce some texts, mails, speeches etc. On the other hand, it can help with spelling, and grammar. In

addition, AI can give you context and information about a person, making it easier for you to strike up a conversation with someone new. Accordingly, improving your communication skills will also improve your relationships (Giraud et al., 2022).

Translation

AI is probably going to help managers communicate with their international team members, as AI is getting better at translating languages. This ties in with the previous point: translation improves communication, which enhances relations. However, some still doubt the usefulness of AI in spoken translation, but they think there is room for great improvement in written translation (Giraud et al., 2022).

Managerial Skills Likely To Be Replaced by AI

Collecting information

AI serves as a valuable tool for processing massive amounts of data that would be overwhelming for an individual to handle. It efficiently gathers information, searches for patterns, conducts thorough analysis and information retrieval. AI can significantly reduce managers' workload (Giraud et al., 2022).

Simple decision-making

Simple decision-making processes may be delegated to AI, which can execute these tasks with greater efficiency. It could concern administrative tasks, for example, scheduling meetings, organizing timetables and arranging these with room availability. Indeed, tasks that are repetitive, time-consuming, and automatable will be handled by AI, thereby freeing up human resources for more complex decision-making. In addition, people will be encouraged to acquire better skills (Giraud et al., 2022).

Managerial Skills Unaffected by AI

As AI is augmenting humans and automating tasks, students are advised to develop stronger skills that are specific to humans, like leadership, emotional intelligence, and change management (Giraud et al., 2022).

Imagination

According to various specialists, artificial intelligence only repeats or runs algorithms based on the data it is given, rather than creating new things on its own (Giraud et al., 2022).

Leadership

Given the inherently human nature of leadership and the necessity for human guidance and control, AI should not be capable of assuming a leading or influencing role in relation to people, thereby mitigating any direct impact on leadership (Giraud et al., 2022).

Human managers will probably continue to be responsible for these two skills, thus human training in these areas should continue to be important in the near future.

McHann and Frost (2010) explain that the true and core purpose of business school education is to prepare graduates for the profession of leading and managing real world organizations (Raja & Najmonnisa, 2018).

Soft Skills to Wisely Use AI

Judgement and Ethics

As mentioned before, AI can be biased because of the training data that has been used. Accordingly, we cannot rely completely on the tool. Therefore, supervision is necessary to ensure that the training data does not include any hidden biases, and anything can be adjusted if needed. Decisions made by individuals guarantee that artificial intelligence is applied appropriately and that the ethical concerns and sensitivities related to its application are sufficiently taken into account (Giraud et al., 2022).

Risk Taking

The hazards linked to AI must be acknowledged by managers. This technology takes time to learn and adapt; it does not provide fast and precise results. In other words, there is still much research going on about artificial intelligence and much uncertainty, it is normal to not have all the answers (Giraud et al., 2022).

Open-minded

Managers should be open-minded to the adoption of AI and be able to adapt to it otherwise you will not be able to use it effectively (Giraud et al., 2022).

Organizational Change Management

In order to successfully adopt AI, it is important to handle the fundamentals of organizational change management. People are opposed to change in general and artificial intelligence in particular. If you want people to accept change and the implementation of AI, the best option is to offer training, in addition to intensive conversation and debate (Giraud et al., 2022).

Stine et al, also identified change management as a skill required in the future workplace. However, it is more seen as a trait of being human, a skill that is not likely to be influenced by artificial intelligence. The world is ever-changing and nowadays it is changing at a very high speed. Students have to be ready to face unpredictable events. Therefore, students should learn how to manage change and transformation (2019).

Collaboration

Managers will have to work with people who absolutely do not do the same job as them, who do not have the same skills. For example, engineers and data scientists. It's important that the people who know the business and the people who know AI can work together to achieve optimum results (Giraud et al., 2022).

According to Giraud et al, artificial intelligence will probably enhance most managerial skills; they recommend that organizations equip their managers to work more closely with AI,

particularly through potential hybridization. In order to have an effective AI-human collaboration, precise job descriptions and work division may be necessary (2022).

AI direct impacts on managerial skills

%N	Likely to be augmented by AI	Likelihood $\bar{X}$
76	Communication	4.3
66	Recruitment	4.3
86	Complex decision-making	4.2
75	Innovation	4.1
67	Time management	4.1
74	Knowledge of job and business	4.1
54	Coping with pressure	3.9

%N	Likely to be replaced by AI	Likelihood $\bar{X}$
70	Getting information	4.6
57	Simple decision-making (e.g., administrative)	4.5

%N	Likely to remain unaffected by AI	Likelihood $\bar{X}$
55	Imagination	4.2
52	Leadership	3.9

Managerial skills to optimize the use of AI

%N	Technical skills	Priority $\bar{X}$
80	Basic AI knowledge	4.5
78	Ability to define needs and business case	4.2

%N	Non-technical skills	Priority $\bar{X}$
96	Judgment and ethics	4.1
80	Multidisciplinary collaboration	4.1
100	Organizational change management	3.9
70	Risk taking and open-mindedness	3.9

Figure 3: AI impacts on Managerial skills

Source: Gireaud et al., (2022). The impacts of Artificial Intelligence on Managerial Skills. *Journal of Decision Systems*, *32*, 1–34. https://doi.org/10.1080/12460125.2022.2069537

Disadvantages of AI

Addiction to Technology

As technology increasingly assumes roles once filled by humans, there's a subtle but significant shift in the dynamic of learning. Learners may find themselves leaning heavily on technology, gradually diminishing their reliance on personal initiative. Consequently, their imagination might diminish, as they become accustomed to seeking technological solutions for even the smallest of challenges. Put differently, it is possible for humans to become overly reliant on artificial intelligence, leading to a decline in students' writing and critical thinking skills. Some academics argue that this could have a negative impact on the quality of education and ultimately harm the students' learning outcomes (Chan, 2023, p.2). According to Calitz and Cullen, because artificial intelligence depends on technology, students might be unable to have access to educational resources if there should be a problem with the technology (2023).

High Cost

The requirement to buy pricey technology and software to start an AI-powered classroom can be unaffordable in an already overworked and underfunded educational system, or it can take a large amount of time for teachers and administrators to make sure the program is functioning properly. Many students from families with limited resources won't be able to afford the high costs associated with the adoption of an Al-based system (Fitria, 2023).
Given the current stage of AI in higher education, significant effort and financial commitments are required. Hence, in order to ensure that the adoption of AI will mark an important change in their approach to teaching and learning and that it will ultimately benefit teachers, students, and the institutions as a whole, institutes aiming to use AI must take into account a wide range of criteria (Suvrat & Roshita, 2019). Also, plenty of people may no longer be able to finance higher education due to the wealth divide and the probable loss of millions, if not billions, of jobs (Siau & Ma, 2018).

Unemployment

As mentioned right above, according to Siau & Ma, it is likely that millions if not billions of people will lose their job (2018). The issue of unemployment is real, and adopting Al systems for lecturers will make it worse. Trisnawati et al. add that it might also remove the human resources for administrative tasks (2023).

Education Quality

Education and the absence of face-to-face connection between instructors and students may be impacted by teachers' disengagement from their profession and their replacement by machines. Also, as most tasks will be done by machines, it is very likely that instructors as well as learners become lazier (Trisnawati et al., 2023).

Data protection

AI has a huge database and there is a risk of people hacking the system, leading to a leaking of data (Trisnawati et al., 2023).

It can be broken

Every human-made object, including machinery and technology, will eventually break. Similarly, AI systems are susceptible to disruption or damage that could result in the loss of critical data and information (Trisnawati et al., 2023).

Human resourced

AI will function according to the program configurations a human being has made. AI cannot operate to perform activities other than those that are programmed, for instance: finding learning resources. Instead, it can only function in accordance with data and instructions that have been entered for specific tasks (Trisnawati et al., 2023). Calitz and Cullen mention that there is a lack of accuracy. If students are looking for information on a specific subject and that the program has not been trained on that particular topic, they might get wrong information (2023, p7).

CHAPTER 2: METHODOLOGY

Research Question

You have been able to learn more about the history and applications of artificial intelligence in education, what it implies for students and the different impacts. Now that we have set out the theoretical framework, we can move on to the second part, the methodology. This section details the steps I followed in order to answer my research question, which was: "How does artificial intelligence impact business management master students?"

Artificial intelligence has been part of our lives for some years now, and its presence is only set to increase. It is impacting every possible area, our lifestyles and our (future) work. What's more, as we all know, AI is likely to eliminate certain jobs, or at least transform them significantly. As a future worker, it adds a certain amount of anxiety, and I am asking myself many questions: "Did I choose the right studies?" or "Is AI going to replace me?" After some research, I realized employers do not have the same requests anymore and that soft skills are becoming more important than hard skills. So other questions are running through my head: "What are employers asking? Is my diploma still as valuable as it was before? Do I have the necessary skills? How can I develop these skills? Did I learn them at school? Were they emphasized enough during my studies?"

In an article I read: "More than 54% of the current jobs in Europe are at a very high risk of being taken over by AI, not in the coming 100 years, but within the next 20 years. Facing such a severe threat from AI, robotics, and automation, what should people do to stay competitive in the job market has become the new million-dollar question? Further, how should higher education react to help their students compete in the AI age?" (Ma et Siau, 2018).

Since I am still a student, I found the subject of "artificial intelligence in education" really interesting, but in order to feel 100% involved, I decided, with Dr. Saad's advice, to turn my attention to the impact of artificial intelligence in Master of Business Management. All these concerns led to my research question: "How does artificial intelligence impact business management master students?"

Hypotheses

Once the theoretical framework and the research question have been defined, one or more hypotheses must be formulated in order to attempt to answer the problematic. A hypothesis is an anticipatory attempt to answer the research question (Paquet et al., 2020). In this research thesis, the hypotheses come from the theory. In other words, they are based on the analysis of the literature review. The two hypotheses are as follows:

1. Artificial intelligence has a positive impact on the learning of business management master students.

2. Artificial intelligence positively impacts the soft skills of business management master students.

In order to validate or invalidate these hypotheses, the literature review must be compared to data gathered from the field. This is why, in the following section, we present the data collection methods used.

Data Gathering Methods

Some of the answers can be found in the literature review, but it is important to check whether the theory matches the practice. I decided to carry out a qualitative and quantitative study.

The qualitative study is based on a case study concerning the international management course. The purpose is to know if artificial intelligence is able to help both the professor and the students. This case study describes the international management course. It will then be analyzed in order to identify any problems that may arise. Finally, we will propose solutions based on artificial intelligence to solve these problems.

In order to obtain precise information that would complement our own opinion, we decided to use interviews as a data-gathering tool. Three students were interviewed, individually, in order to gather different points of view about the international management class. The main goal was to learn a bit more about problems students could have encountered during the semester. The interviews are conducted face-to-face at ICHEC during the global leadership conference. Some are ICHEC students, others are Erasmus students. Some are current students; others are students from previous years.

The interview is undirected, which means [traduction libre] *the interviewer is free to address any aspect of the subject of the discussion and in any order* (Giroux et Tremblay (2002) cited by Paquet et al., (2020)). This method has been chose to allow the interviewee to develop his or her thoughts in greater detail. This enables me to gain an in-depth understanding of each student's opinion. The open-ended questions also ensure that respondents are not influenced by answers suggested. Students can really express the bottom of their thoughts. As well as getting rich, comprehensive answers, this enables me to analyze the problems in a precise way.

The interviewees were chosen because they had reported a problem to the teacher. They therefore seemed ideal candidates for gathering more precise information about the issues that arose during the course.

The quantitative analysis is based on a survey. The aim is to reach as many students as possible from the international management course as well as gather different points of view, experiences, and opinions.

I decided to create a questionnaire addressed to ICHEC students who attended the international management course. The questionnaire was distributed personally to students at the global leadership conference. However, it was self-administered as the students completed it on their own. At the end of the conference, students returned their questionnaire to me. The survey contains around twenty questions, which are mostly closed and semi-open questions. A few of them are open questions.

A pre-test was carried out with several people to ensure that all the questions were relevant and clear, and that there was no doubt as to whether the questions had been understood. This also allows me to know whether the proposed answers are appropriate and to react if necessary.

Results

Some of our results are detailed below, please find the full results in the appendix.

All the students have used an AI tool or technology at least once. More than 80% use it at least several times a week.

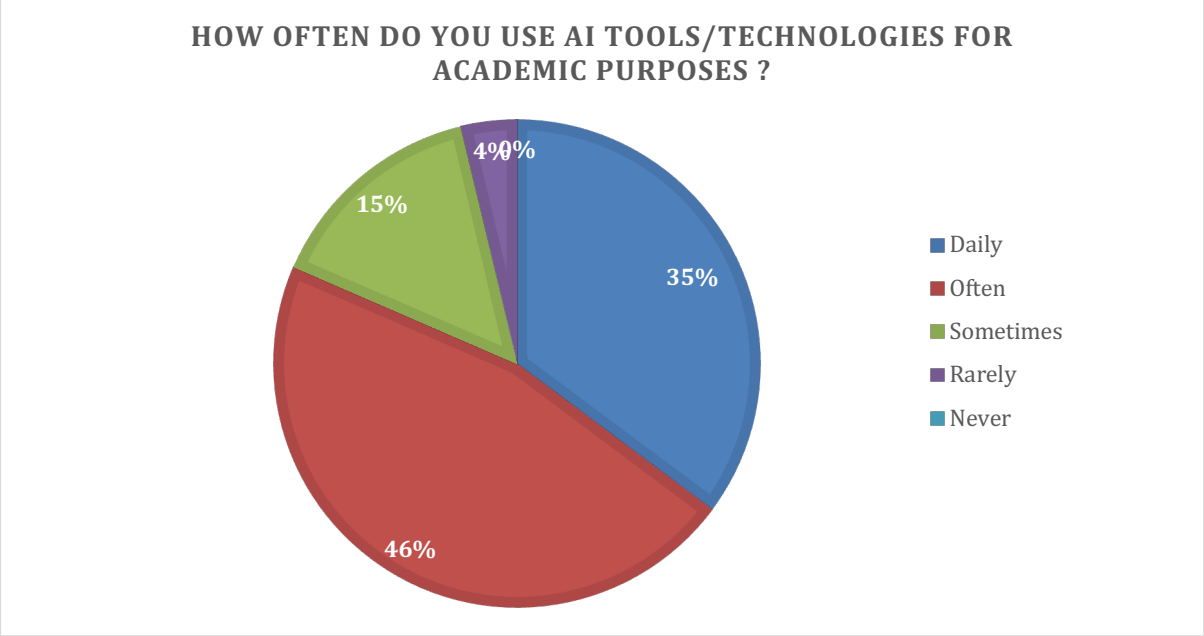

Figure 4: How often do you use AI tools/technology for academic purposes?

Around 65% of the students use it for research, ideas, and brainstorming. 30% utilize AI to acquire a better understanding of a topic. Around one in five students use it either for summarizing, editing, or writing. The completion of other tasks such as translating and making presentations/images accounts for 11% of students.

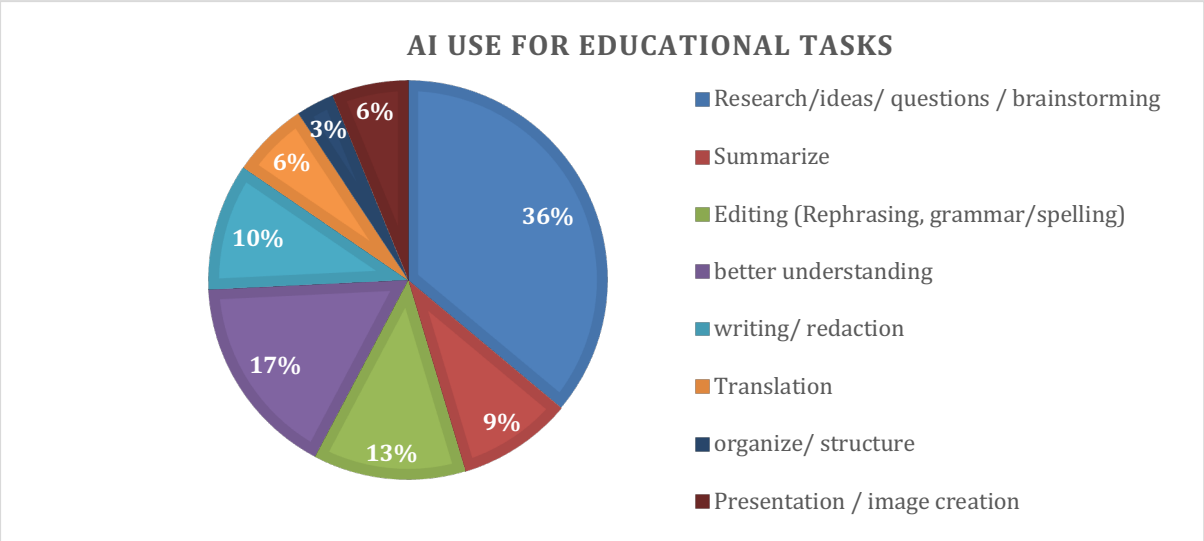

Figure 5AI Use for Educational Tasks

Around one third of the students noticed that job or internship ads request more skills linked to artificial intelligence.

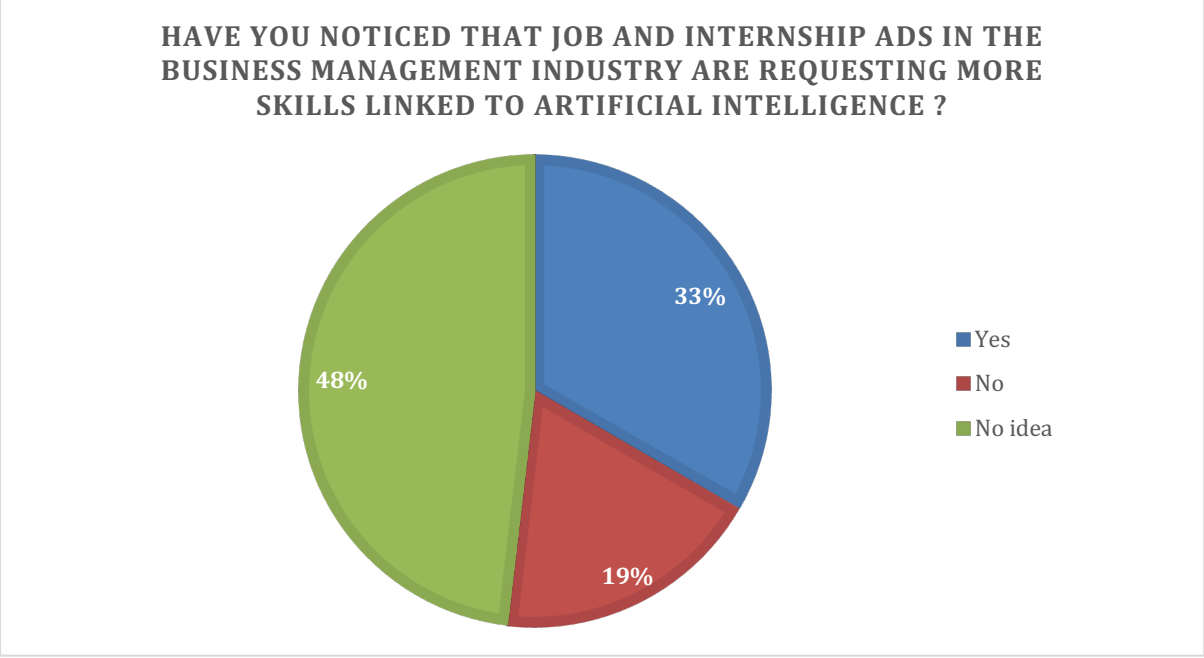

Figure 6: Have you noticed that job and internship ads in the business management industry are requesting more skills linked to artificial intelligence?

Around 70% of the respondents believe having artificial intelligence knowledge will increase their chances of getting a job, while 63% think having artificial intelligence based skills will foster their recruitment.

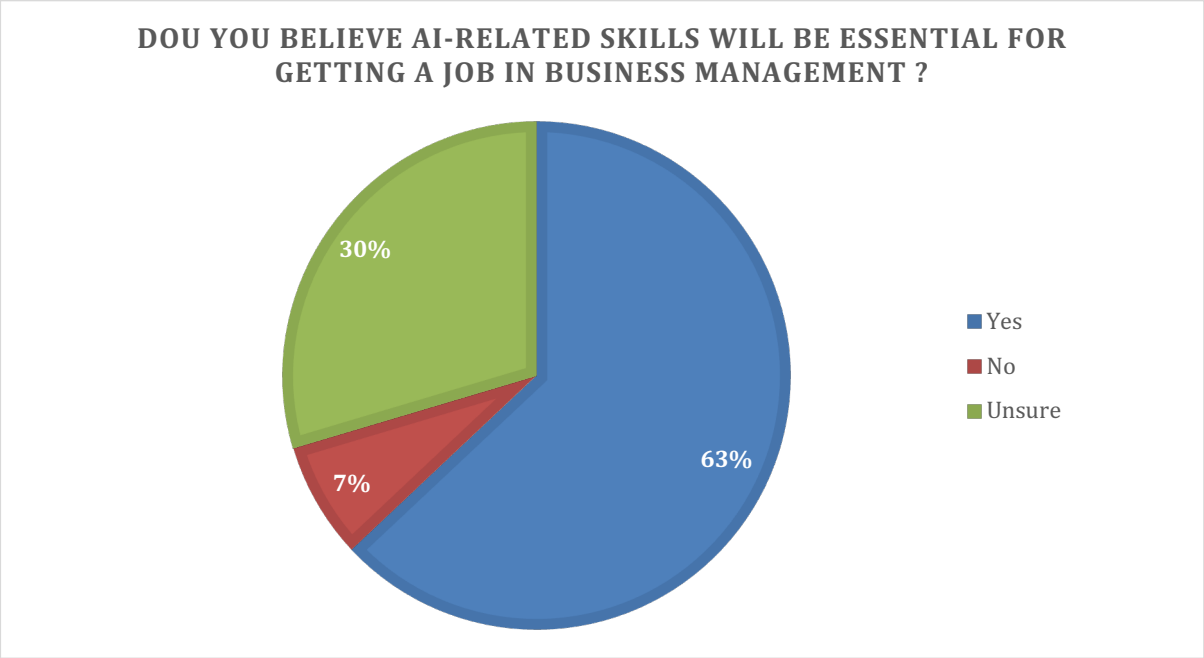

Figure 7: Do you believe AI-related skills will be essential for getting a job in business management?

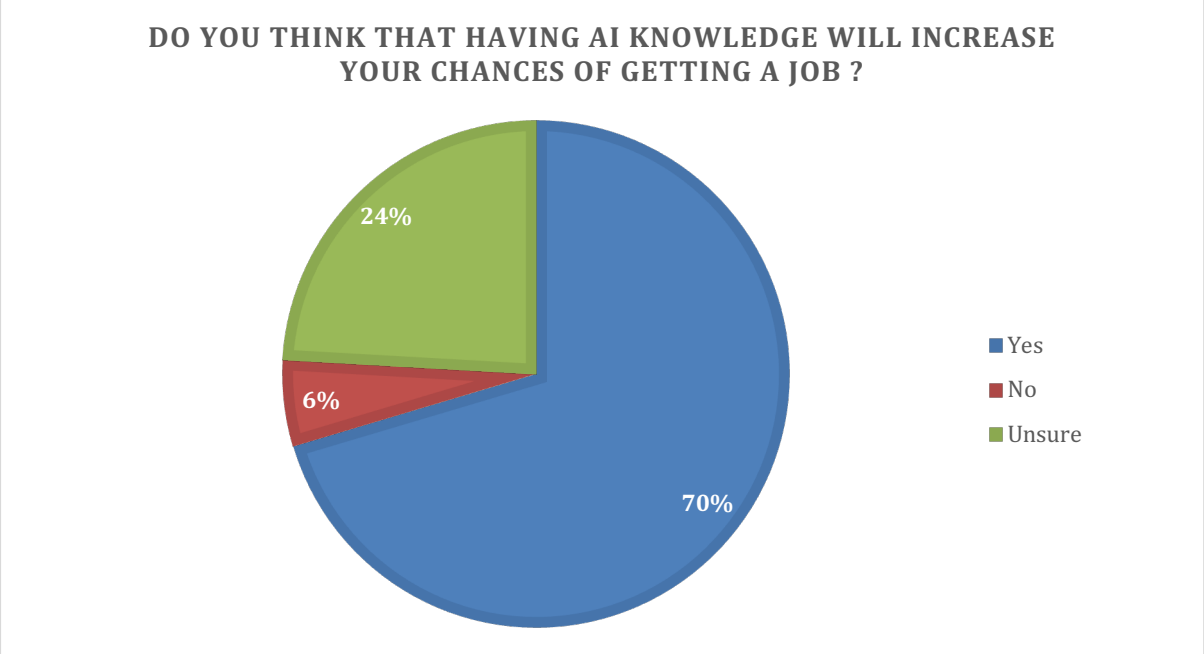

Figure 8: Do you think that having AI knowledge will increase your chances of getting a job?

To the question “What skills do you think your university should focus on?”, the majority of students (44%) replied: the effective and ethical use of AI.

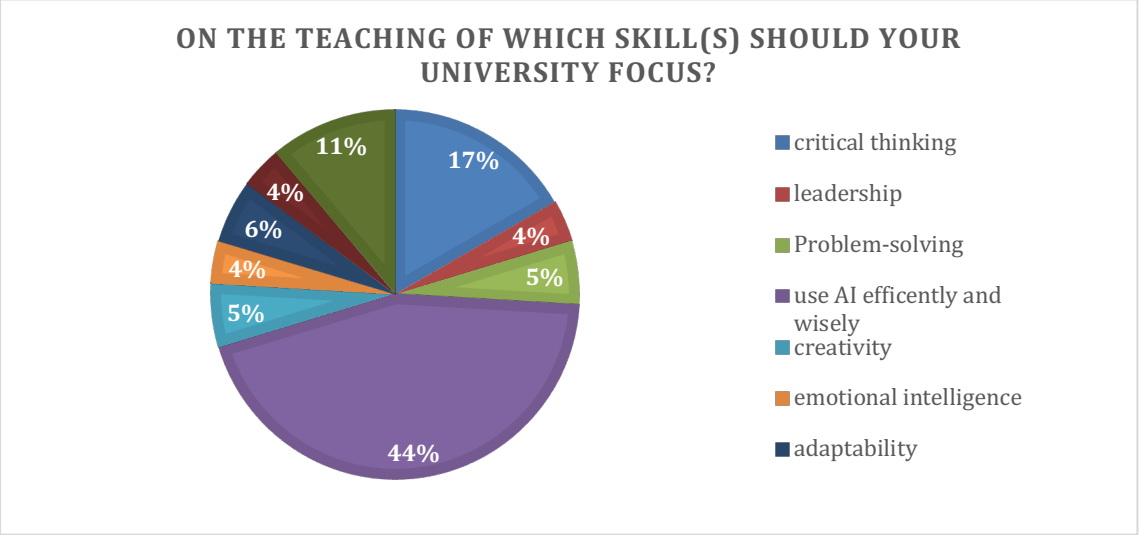

Figure 9: On the teaching of which skill(s) should your university focus?

Approximately 90% of the students believe AI enhances their learning experience.

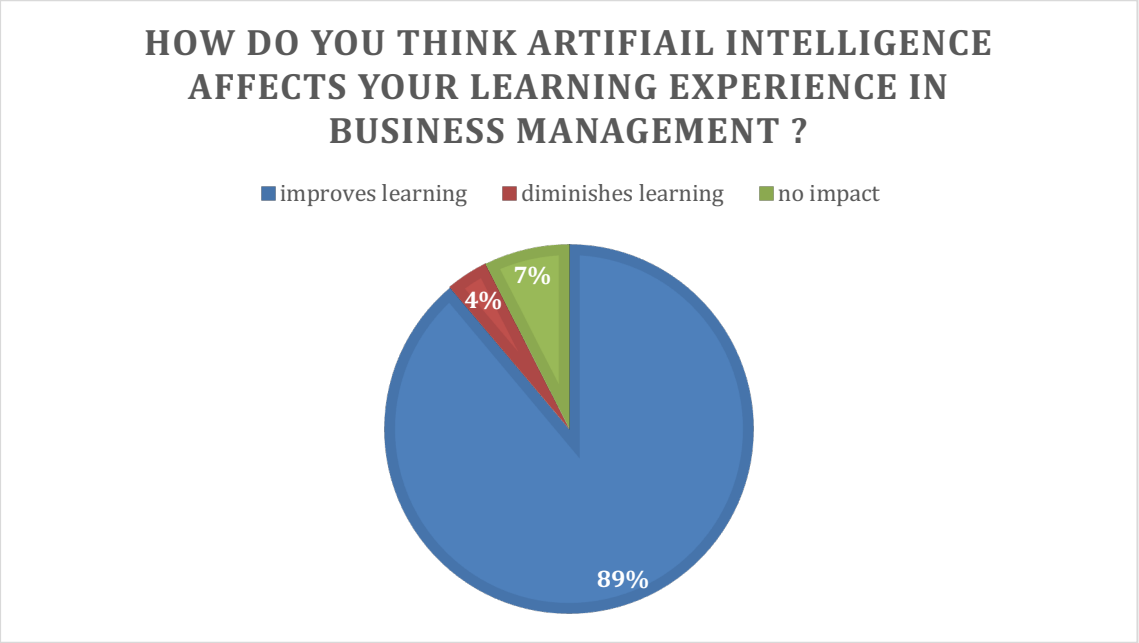

Figure 10: How do you think artificial intelligence affects your learning experience in business management?

According to the students' responses, about half said they received training, and the other half did not receive any AI education.

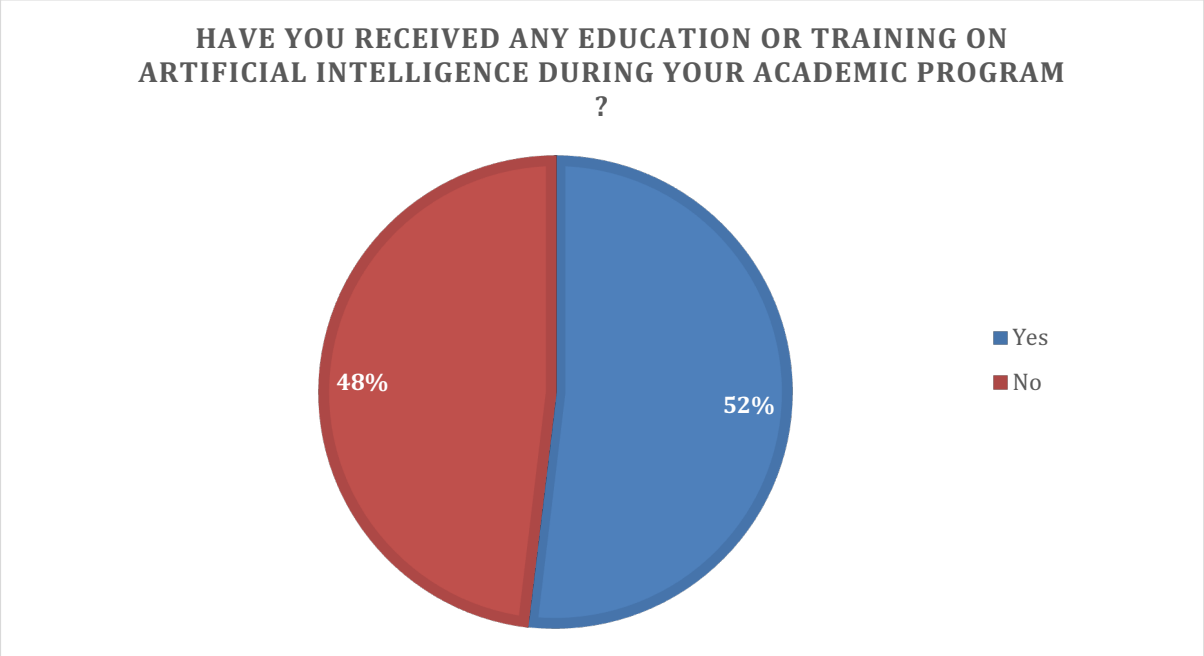

Figure 11: Have you received any education or training on artificial intelligence during your academic program?

About 30% feel they are adequately supported in acquiring AI-related skills and knowledge through their business management master's program and consider AI-related topics to be considerably integrated into their coursework.
44% feel more or less supported and think that AI-related subjects are somewhat discussed at school. ¼ of students do not feel supported, which is consistent with the students who answered that AI subjects are tackled a little or not at all at school.

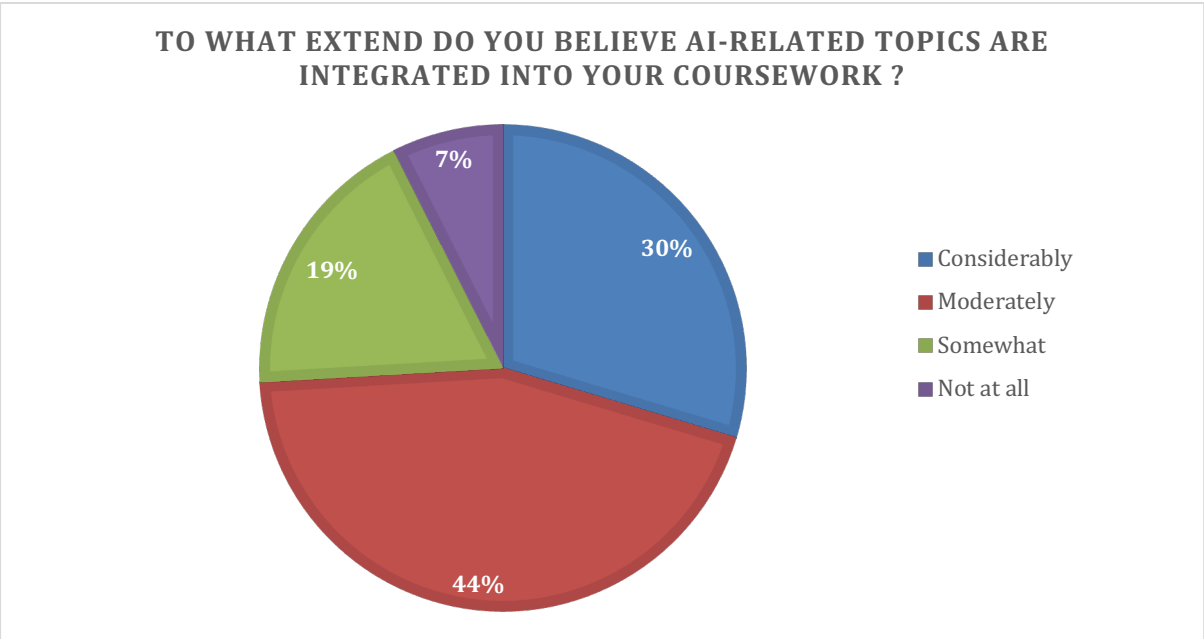

Figure 12: To what extent do you believe AI-related topics are integrated into ICHEC's coursework?

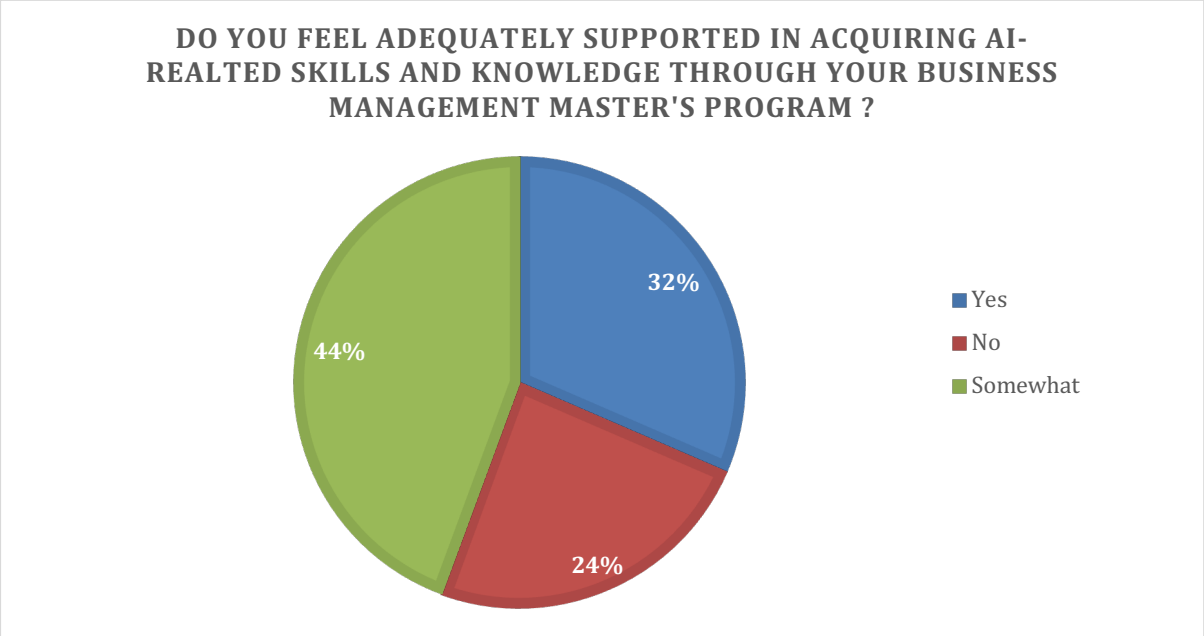

Figure 13: Do you feel adequately supported in acquiring AI-related skills and knowledge through your business management master's program?

About 75% of students said to be interested in additional workshops or training sessions focused on AI.

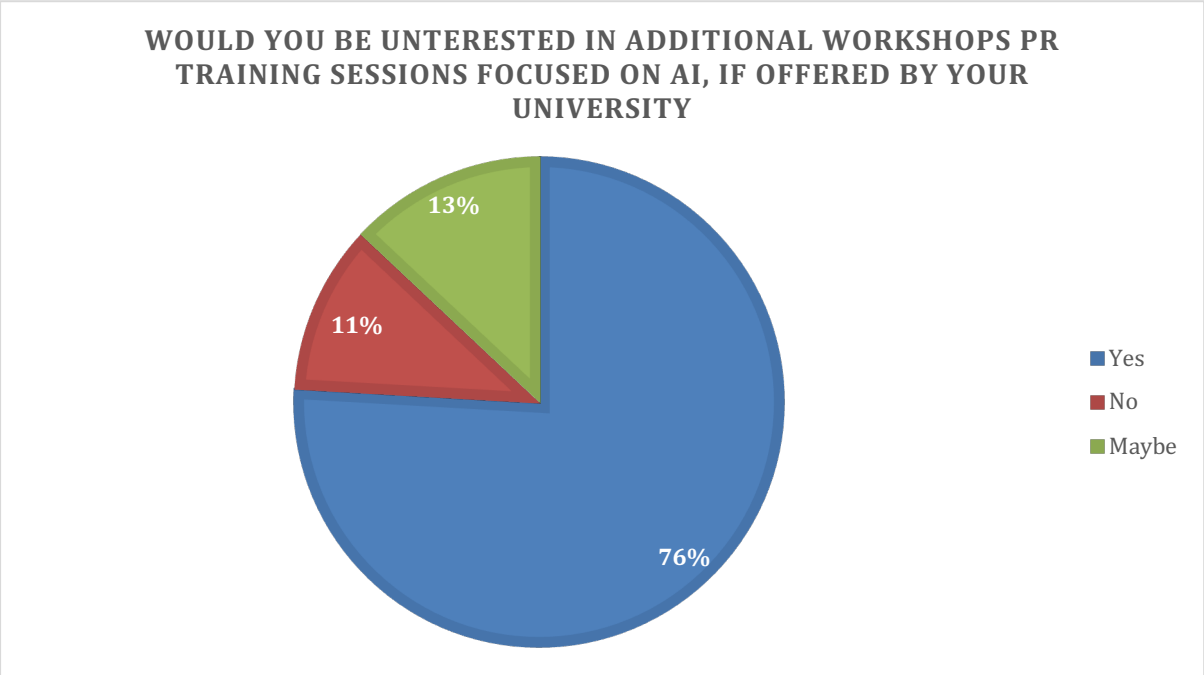

Figure 14: Would you be interested in additional workshops or training sessions focused on AI, if offered by your university?

CHAPTER 3: DISCUSSION

In this section, we will compare the literature review with the information gathered during our qualitative and quantitative analysis.

Artificial intelligence is a long-standing companion in our personal and professional lives, often being an almost imperceptible part of our daily lives. We may even come across it on a regular basis, with its use becoming so familiar that it blends into our environment without us even taking notice.

Since November 2022, artificial intelligence has been back in the spotlight thanks to the launch of ChatGPT. Since its release, we can say that chatGPT turned everything upside down. This technology is capable of reproducing human language, it is entirely possible to hold a conversation with this AI. This completely new technology has immediately won over millions of people (ChatGPT, 2024).

Speed is one of the essential characteristics of AI. In fact, this technology allows us to save precious time by completing repetitive tasks in a very short space of time, compared with the hours they would require to be completed by ourselves.
Another major quality of AI, which benefits us all, lies in its ability to rapidly collect and analyze data, establishing relevant links from a huge mass of information. These processes, which are extremely time-consuming if not completely impossible for an individual to carry out, are nevertheless fundamental, as they underpin the creation and exploitation of databases, which are essential to any significant achievement (ChatGPT, 2024).

As a result, every individual using AI can delegate some of their responsibilities to this technology, directly influencing the day-to-day activities of managers, students, teachers, or administrators.

The first individuals who welcomed ChatGPT with open arms were students. They have adopted this new technology at an impressive rate.

Based on the results of the survey, it is clear that artificial intelligence tools are widely incorporated into students' academic lives as 4 in 5 students use AI at least several times a week. Around 65% of the students use it for research, ideas, and brainstorming. One in three students utilize AI to acquire a better understanding of a topic. Around 20% students use it either for summarizing, editing, or writing. The completion of other tasks such as translating and making presentations/images accounts for 11% of students. These results highlight the diversity of artificial intelligence and its crucial role in improving various aspects of the student learning experience.

According to the results, around 90% of students believe that AI enhances their learning experience, suggesting a widespread positive perception of AI among students. This high take-up rate reflects most students' perception of AI as a valuable tool that makes a positive contribution to their educational journey. This means that AI technologies, such as intelligent tutoring systems, tailored learning platforms or AI-powered educational resources, are seen as effective tools for improving learning performance, enhancing understanding, and facilitating the learning. This considerable support highlights the potential of artificial intelligence to transform the field of education by delivering customized learning experiences that meet the specific needs of students. It also highlights students' access to innovative technologies in

education and their appreciation of the benefits that artificial intelligence can bring to their studies (ChatGPT, 2024).

The enthusiasm generated by ChatGPT and its widespread adoption on a global scale quickly raised concerns among teachers and academic institutions. The latter expressed reservations, particularly with regard to the academic integrity of students, fearing cases of cheating in particular. Indeed, the widespread use of ChatGPT means that some academic work is no longer necessarily done by students but can be generated by artificial intelligence.

At first, ChatGPT has impacted students' working methods, which has substantially altered the nature of the tasks they perform. In response to the reactions and various uses of this tool, institutions are finding themselves obliged to adapt, whether by reinforcing monitoring and control measures to prevent cheating, or by revising their assessment methods to adapt to this new technological reality. Universities need to develop guidelines to ensure that AI is used appropriately. It is imperative to use this technology responsibly, thoughtfully and in accordance with rigorous ethical standards.

It would be ridiculous to ban AI, given that ChatGPT is now an inescapable reality and is not going to go away. On the contrary, its acceptance and integration would seem to be a more pragmatic path. Indeed, it has become clear that ChatGPT has also been embraced by businesses, for obvious reasons: improved operational efficiency, increased productivity and, as a result, revenue growth.
However, the increasing integration of artificial intelligence into the workplace is leading to a series of changes within companies, particularly in terms of the skills required by employees. This means that employees need to acquire a new range of skills.

Research is converging towards a consensus: knowledge and skills related to artificial intelligence is becoming essential. It is therefore imperative that new employees possess these skills and knowledge, and that actual workers will have to be trained to acquire these AI skills and knowledge. This underlines the importance for job seekers to train and familiarize themselves with the ins and outs of AI in order to remain competitive in the ever-changing job market. The same is effective for students as they are future job seekers or current internship seekers.

When analyzing the survey results, we can notice significant insights concerning students' perceptions of the importance of artificial intelligence skills linked with the job market and their educational priorities.

Approximately one third of the students noticed that AI-related skills are required in job or internship advertisements. This trend indicates that the demand for AI technology skills continues to grow across all sectors. Therefore, it shows that employers are increasingly giving credence to these new skills.

Secondly, more than two-thirds of respondents believe that having AI knowledge will enable them to broaden their job prospects and 63% believe that having AI skills will give them a better chance of being recruited. This reflects the importance students attach to AI in the world of work.

What's more, 44% of the students surveyed thought that it was efficiency and ethics that their university should emphasize first and foremost. This shows that students want to use AI wisely,

understanding how the technology works on the one hand, while using it responsibly on the other hand. According to one student, it is essential that AI is used correctly, i.e. as a support and not as a substitute: "using generative AI, how to use them [the tools] correctly so that they are tools that can help you and not replace you".

AI must be integrated in business master programs in order for students to be taught how to use AI effectively and ethically and to understand how AI works, its ramifications and limits. It will enable students to be fully equipped and ready to enter the workforce.

According to the students' answers, we can deduct that the school still has some progress to make, on the one hand, in terms of the support it gives to students in terms of acquiring AI skills and knowledge and, on the other hand, in terms of the integration of AI topics.

Things have to change, education has to adapt, because the integration of AI is a fact, it can only grow. Students as well as professors must develop AI skills to be able to work with AI as a tool, in a complementary way.

The increasing integration of artificial intelligence into the professional landscape will inevitably lead to major transformations within companies. This evolution will have a direct impact on employers' demands in terms of skills, thus modifying the requirements of the job market. Some in-demand skills emerged from our literary review, namely communication, critical thinking, leadership, creativity, collaboration, problem-solving, culture, and connectivity. As a result, it is becoming imperative for students to develop these skills in order to remain competitive in the job market.

Learning these skills is essential, and school is the best place to acquire new knowledge and skills. Indeed, universities have traditionally played a central role in preparing students for the professional world. In this constantly changing context, it is crucial that universities adapt to meet the changing needs of the market.

As mentioned above, 3 out of 4 students would like to take part in additional workshops. This means that students are keen to improve their AI-related knowledge and skills. We can deduct from this that students recognize the importance of acquiring these AI capabilities now, at school and for future work. Universities have an opportunity to respond to students' demands, which would allow them to support students even more in their preparation for the workplace.

Universities therefore have a key responsibility in preparing students to meet the challenges of the workplace. They need to be able to adapt constantly, because they are evolving in an environment that is continuously and rapidly changing.

During the case study, we identified the skills that students develop during the management course. Some are developed throughout the semester, such as critical thinking, creative thinking and being able to apply theory effectively. Other skills are specific to certain blocks of the course, such as consultancy skills, multicultural skills, leadership, networking, and many others. We note that the skills that will be in high demand on the job market correspond to the skills developed during the international management course. These same skills are also acquired during the other Master's courses in business management.

Compared to the literature review, which promotes the development of soft skills, durable skills, only few students suggested universities should focus on critical-thinking, problem-solving, creativity, adaptability, negotiation, leadership, and design/presentation.

The impact of artificial intelligence on the education system is being felt in a number of ways. On the one hand, there is the question of the ethical and honest use of generative AI by students, and on the other hand, there is the pressure exerted by the needs of the market. This pressure is not simply an aspiration, but a pressing necessity that is forcing universities to evolve.

To meet this growing demand, universities need to take action on two levels. Firstly, they need to adapt their curricula to incorporate AI in a relevant and effective way. Secondly, they must ensure that the teaching staff responsible for imparting this knowledge also evolves to keep pace with the latest technological advances and market requirements.

Furthermore, to ensure that students use AI responsibly and assess their skills fairly, it is essential to teach them how to use the technology wisely. Similarly, assessment methods need to be adapted to reflect this new reality. Ultimately, this means that teachers themselves need to adapt and train to meet these new pedagogical and technological challenges.

The above information makes it possible to conceptualize the interactions between the three players involved in the educational process, by representing them in the form of a triangle, similar to the educational triangle proposed by Jean Houssaye. In this structure, education as a whole, forms the triangle, while each corner represents a specific actor. Compared with Jean Houssaye's proposal, the ‘knowledge’ dimension is replaced by the ‘system’, and the arrows symbolize the influence that each player has on the others.

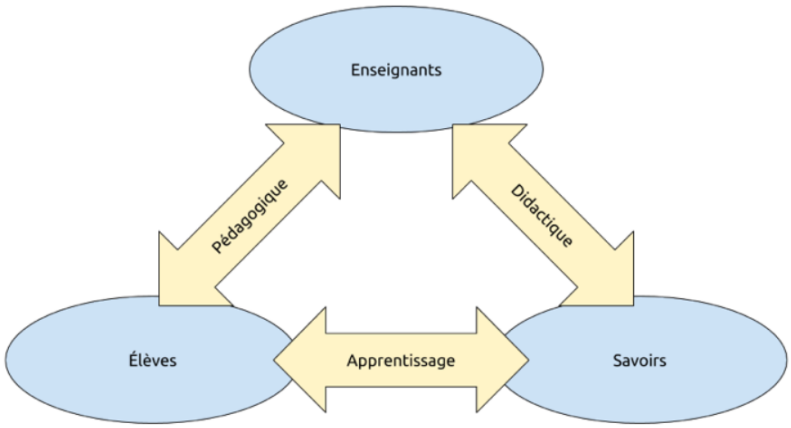

Figure 15: pedagogical triangle proposed by Jean Houssaye (1988)

Source: Djelti & Kouninef. (2022). L’impact de l’intelligence artificielle sur le système éducatif. https://ouvrages.crasc.dz/pdfs/intelligence-artificielle-appliquee-impact-lintelligence-artificielle-systeme-educatif.pdf

It is also possible to add a fourth stakeholder, namely companies or employers since their requirements will have a significant impact on students and educational institutions. By institutions, I mean in particular the course curricula that universities will have to adapt to the

needs of the labor market. In this way, this triangular model provides a visual representation of the complex interactions between the players in the educational process, highlighting the dynamics and mutual influences that shape contemporary education.

Initially, our intention was to focus solely on students. However, following in-depth theoretical research and the reading of scientific articles, it became clear that students, teachers, and the education system are closely linked. In fact, none of these actors can act alone; they interact and mutually influence their environment.

That is why we decided to take a closer look at the impact of AI integration in education on teachers and universities. This decision stems from the recognition that the transformations brought about by AI are not limited to students alone but are also changing the roles and practices of teachers, as well as the policies and programs of educational institutions.

AI Solutions

Our case study focused on the international management course. The case study began by describing the international management course. We described the academic context, the pedagogical context and then explained the different parts of the course. After analyzing the lesson and conducting some interviews we realized that the students were facing some problems, and we identified some other potential issues:

- The language barrier
- The lack of understanding of the subjects covered
- The objectivity of the teacher
- The teamwork, including the formation of teams.
- We also raised a number of constraints for the teacher, namely the time spent correcting written work and the time it takes to reply to emails and questions.

We realized that these problems could arise in other courses in the master's in business management. We therefore tried to find an artificial intelligence-based solution for each problem. Solutions that could be applied to the majority of master's in business management courses.

Here are the solutions based on artificial intelligence that we propose:

Language barrier

Artificial intelligence could help Erasmus students or those with English language difficulties to understand what the teacher is saying. There are artificial intelligence tools that transcribe what a person says orally and translate it instantly into the language of your choice. The best-known voice translation services are Google Translate, DeepL, and Microsoft Translator. Voice translators are also available in the form of a small device. It looks like a small remote control, which immediately repeats what it has heard or what has been scanned in the desired language. With the same functionality, there are language translator earbuds.

Another solution is to insert a QR code at the beginning of a presentation or slides. This QR code redirects students to another page where they can choose the language in which they want to listen to the presentation. They can then easily connect their headphones to their smartphones. This service, among others, is offered by the company KUDO and is mainly aimed at businesses, but it could also be adapted to course slides.

Implementing one of these solutions would give students a better understanding. There would be less risk of confusion and misunderstandings. Particularly for papers, the teacher's instructions and expectations would be clearer.

Lack of knowledge / understanding

Some students may feel they need to know more about the subjects covered in class or need explanations of certain keywords or concepts. Therefore, we suggest authorizing the use of artificial intelligence in the classroom. Students will immediately be able to find out about vocabulary or a concept they have not understood. Students therefore benefit from self-learning, faster learning, and deeper understanding.

For the lecturers, it means a gain of time, which they will be able to dedicate to other tasks. The teacher does not have to spend extra time explaining concepts that should have been assimilated beforehand.
Implementing an intelligent tutoring system would be an even better solution as it provides personalized, one-to-one tutoring. However, we have not found any evidence or reliable sources regarding the implementation of an ITS in a business school. Business schools are setting up adaptive learning platforms, which are very similar to an ITS. Both have the same goal: personalize the learning experience. Adaptive learning systems provide tailored content, activities, and feedback based on the needs and preferences of each student. These platforms are able to detect the strengths and weaknesses of each individual and adapt the material, difficulty level and speed accordingly.

Adaptive learning platforms have for example been implemented at the MEF University since 2018. “Students at MEF report increased interaction and motivation through the use of Adaptive Learning Platforms, citing improvements in the effectiveness, efficiency, and enjoyment of their learning experiences, which in turn primes them for more active participation in classroom settings” (MEF University, n.d.).
ESCP Business School decided to offer an adaptive learning approach in 2019. In order to do so they teamed up with Domoscio, an EdTech start-up. The dean mentioned: “As every teacher knows, no student is alike. Each of them has his/her own characteristics, peculiarities, abilities and weaknesses, and broad-based learning approaches could be ineffective to embrace this complexity over the long term. Adaptive learning is an educational system based on technology and data analysis, allowing teachers to track each students' performance and adjust methods/programs to their needs” (ESCP, 2020).

Some examples of adaptive learning platforms are: Impelsys, SC Training, Pearson Interactive Labs, Adaptemy etc. (Small, 2023).

Neutrality / Objectivity

AI will be able to help professors evaluate and grade students' written assignments. It is important to think of AI as an assistance tool and not as a replacement to which we delegate the entire marking process. Given that machines cannot fully comprehend texts and their social settings, such systems should be utilized with extreme caution to ensure algorithmic fairness and ethical use. That is why there should always be human intervention when using automatic evaluation (Kruse et al., 2023, p.325-326).
There are many artificial intelligence tools capable of assisting the teacher with several aspects of a written assignment. The use of AI considerably facilitates the teacher's work, ensuring efficiency and consistency while providing quality feedback to students (Kruse & al., 2023, p. 333). “Automated analysis and assessment provide consistency, objectivity and speed in a way that humans are not capable of providing” (Kruse et al., 2023, p.318). To achieve this, AI relies on machine learning and natural language processing, which develop automated writing analysis techniques (Kruse et al., 2023, p. 348).
AI bases its analysis on certain characteristics of writing. These may concern statistical features: essay length, word co-occurrences, style-based features: sentence structure, grammar, and content-based features such as cohesion, semantics, relevance (Kruse & al., 2023, p.335). Thanks to the analyses, the AI will be able to provide an overall score and an explanation of this score, which makes it possible to determine the quality of a piece of written work (Kruse et al., 2023, p.324).

Artificial intelligence is capable of automatically identifying and correcting grammatical errors, spelling mistakes and punctuation problems. This initial step eliminates basic errors, allowing the teacher to concentrate on the more fundamental aspects of the documents.

For more advanced text analysis, artificial intelligence can provide detailed analyses of the readability, cohesion, and syntactic complexity of the text.
AI can analyze the readability of a paper on the basis of the length of sentences and words and also on the basis of the complexity of the vocabulary used. In terms of vocabulary, the AI can also determine the frequency with which a word appears in the text. If a word has been used many times, this may mean that the vocabulary is weak. AI can also note certain keywords and how often they appear in the text. This would enable the teacher to know whether the work submitted is relevant and does not deviate from the subject. This technology could also be used for sorting. The AI could analyze the theoretical keywords, which would indicate whether the theory had been properly included in the paper. For example, for paper 1, students are obliged to use academic methodology. If the AI does not find the keywords linked to this methodology, the work cannot be accepted, and Professor Saad knows that he will not have to mark it because the work does not comply with the instructions.
By examining the syntax, i.e. the construction of sentences, AI helps the teacher to assess the complexity of the work and to determine whether the student is able to express his ideas in an understandable way. This will determine whether the work is equivalent to that of a Master 1 student (ChatGPT, 2024).

AI is capable of analyzing the coherence of a text. The AI will focus on connectors or linking words to ensure that sentences, paragraphs, and parts are coherent and follow a common thread.

AI can compare students' work with a vast database of web pages and academic articles, guaranteeing the originality of the work by detecting potential cases of plagiarism.
With this information, AI helps lecturers to accurately assess the overall quality and originality of work, which can be difficult to do by hand.
Learning Management Systems offer integrated tools to manage document uploads, grade them and provide feedback. These platforms allow work to be viewed and graded efficiently within the system, with functions for annotating, commenting, and grading using rubrics. This simplifies the feedback process and ensures that grading is consistent and aligned with predefined criteria (ChatGPT, 2024).

Nowadays, assignments are handed in electronically, allowing the teacher to mark them online as well. Professors are able to leave voice comments on student papers, which can be quicker than typing and more expressive, helping to provide detailed and personalized feedback.

Automatic assessments are a huge time-saver for teachers but can also be beneficial for students. Access to this type of AI tool is very simple, and students can use it to correct their work by themselves. They can review all the editing, which will improve the quality of their work and they will get better grades. This encourages commitment and self-assessment. Dr Saad could, for example, ask students to use this kind of tool and until an overall score of x% has been achieved, they cannot submit their papers.

An example of such a tool would be ‘Criterion’, which enables teachers to assess students' writing ability and progress. On the one hand, it is able to provide an overall score based on linguistic characteristics and, on the other, it is able to generate feedback. Criterion is based on five aspects: grammar, style, mechanics, organization, usage, and development (Cotos, 2023,

p.352). These criteria vary depending on the tool. Grammarly is another example, and focuses on accuracy, clarity, engagement, and delivery.

By integrating AI into the grading workflow, professors can manage the large volume of written assignments more efficiently, ensuring that each student receives timely, consistent, and detailed feedback. This approach not only alleviates the workload but also leverages technology to enhance the educational experience, fostering a more productive and engaging learning environment.

When students have to choose a subject for their paper or select a company to work on, the subjects often have to be validated by the teacher. This is a task that can be taken over by AI, which will allow students to be sure that the choice is in line with the criteria established beforehand and that it is not influenced by the teacher's preferences or opinion.

Problems related to question answering

To solve the problems associated with questions and answers, we propose to set up a virtual assistant. It is capable of answering all sorts of questions based on pre-recorded data or databases. These could be questions related to the course, papers, exams, or practical questions. For example, if a student has not fully understood what a SWOT analysis is or what it is used for, the virtual assistant can provide an answer.

It is a tool that students can use from anywhere at any time. This means they can get an immediate answer and continue their learning without having to wait for an answer from the teacher or the Q&A session. It's a more accessible tool and can help students feel more at ease. Students can ask a number of questions without fear of asking a ‘silly’ question, asking for a re-explanation or disturbing the teacher. No judgment is expressed, so there is no restraint on the part of the students. This improves their learning, as well as the speed at which they learn. It also saves time for the teacher, who will no longer have to answer the same question several times. He/she will have more time to devote to other tasks that require higher skills or to focus on students who are having more difficulties.

Team Creation

One solution could be for artificial intelligence to create the teams. By analyzing the different profiles of students, AI can easily form diversified teams. To form the teams, Al would rely on criteria such as course attendance, academic results, skills, interests and so on.
Artificial intelligence could also create teams based on the complementary nature of each member to prevent conflicts. The characteristics would be, for example, character and skills, but this does not comply with reality, since the aim is to prepare students for a world that is constantly changing, so they need to work with a team that is also changing.

In order to improve multicultural relations, students could download an app, called Deakin Genie, which acts like a hyper-personal assistant. This app is able to plan a meeting with your team and book a room according to the needs of the team (Stine et al., 2019).
If AI designs the teams, we can also avoid the problem of a student being absent on the day the teams are formed.

Thanks to the solutions proposed, we can observe that artificial intelligence can be beneficial to students and, at the same time, to teachers. This is in line with our theory, since we have

seen that artificial intelligence can improve the academic experience, particularly student learning and the professional experience of lecturers.

Students enrolled in the international management course agree with this, with 89% of students believing that AI improves their learning experience.

CHAPTER 4: RESULTS & FINDINGS

Now that we have discussed the results and compared them with the theory, we can validate or invalidate the hypotheses. As a reminder, the hypotheses were as follows:

1. Artificial intelligence has a positive impact on the learning of business management master students.

2. Artificial intelligence positively impacts the soft skills of business management master students.

Hypothesis 1

"Artificial intelligence has a positive impact on the learning of business management master students."

Artificial intelligence provides access to borderless information thanks to the standardization of the data used by the software. A large amount of data is available and easily accessible online, enabling students to find out more with just a few clicks. The development of online courses combined with artificial intelligence means that there is a growing number of educational resources available, such as articles and videos. This educational material can be accessed by anyone wishing to acquire or hone their skills. All they need is a computer and an internet connection. The most popular online resources at the moment are MOOCs and adaptive learning platforms. The advantages of this kind of platform are that it can bring together a large number of people while allowing them to be located anywhere in the world at any time. So, it is very easy to attend a course and learn more about a subject. This allows students to develop self-learning skills. This is an essential skill for future managers, as they will need to be able to continually renew themselves in order to remain relevant in the ever-changing world of technology.

Adaptive learning platforms, as their name suggests, are capable of customizing content for each student. This is a major feature of artificial intelligence. It is capable of creating content that is tailor-made for a student, based on their interests and preferences, thanks to its analytical capabilities and large databases. The system can detect the strengths and weaknesses of each individual and then suggest content to enable the student to work on the subject in which he or she is having difficulty. To encourage learning, the system can also regulate the difficulty of the material and the pace. The rapid suggestion of material can encourage students to fill in the gaps without delay. This will ensure that they are up to date and able to follow the next course carefully. This reduces the risk of exam failure.

Artificial intelligence can also provide instant personalized feedback to each student. Receiving feedback is important for students, as it enables them to see what has been done correctly or, conversely, what could be improved. Students can try to understand their mistakes, take time to reflect on them and discuss them with others, which encourages self-learning. When we understand our mistakes and find a solution ourselves, we are more likely to retain what we have learned. Feedback helps students to improve. If they receive frequent and detailed feedback, they will progress further.

The emergence of generative AI is making life easier for students. They can now use AI as a tool to research, find new ideas, write, proofread, summarize, translate, paraphrase, transcribe and much more. These tasks are repetitive, sometimes boring, and time-consuming. All years combined, the amount of time spent on these activities is huge, and the assistance of artificial intelligence represents a considerable time saving. Precious time that can be allocated to other tasks that require more intellectual skills and reflection, or that help to develop lasting skills.

New technologies are forcing teachers and universities to adapt and change their assessment methods. AI can assist teachers in developing case studies. Students will therefore have to focus on real, concrete management situations: which promotes learning and information retention.

However, some concerns have been raised about the integrity, fairness, and ethics of using AI. If artificial intelligence is misused, it can have serious consequences, such as data leakage, harassment, increase of biases and inequalities and so on. It is therefore crucial to raise awareness among students, to give everyone access to AI tools and to introduce regulations on AI in order to structure and guide its use.

We can only validate this hypothesis under certain conditions. Artificial intelligence has a positive impact on business management master's students, provided that students and teaching staff are trained in the ethical and judicious use of artificial intelligence.

Hypothesis 2

"Artificial intelligence positively impacts the soft skills of business management master students"

At first glance, AI is considered to be detrimental to students. AI breeds bad writing, encourages students to cheat, pushes them to stop thinking because AI generates a coherent and complete answer so quickly and of a quality that would require much more effort from a student. This ease of obtaining answers can lead students to become lazy and dependent on technology. If they rely on AI all the time to generate an answer, this will have a deteriorating effect on skills development which, moreover, will be exacerbated with the growth of online courses.

However, this fear has been addressed in the theory and this downturn in skills development can be avoided if a balance between face-to-face and online courses is maintained.

In order for students to be encouraged to acquire the skills required on the job market, i.e. skills and knowledge in terms of AI, collaboration, communication, leadership, critical thinking, connectivity, creativity, etc., it is imperative that universities adapt to the demands of the job market and integrate the acquisition of these skills into university curricula.

This means that teachers must include the development of these skills in their courses. On the one hand, he/she can adapt his/her assessment methods so that passing the assessments requires the new skills demanded by the job market. This option is applied in the international management course through the completion of papers, with each piece of work focusing on specific skills.
On the other hand, the teacher can make use of certain AI applications to promote skills development. Extended reality is an ideal tool, allowing students to be transported into a situation that is unreal but nevertheless seems realistic. A variety of scenarios can be imagined,

offering students a range of opportunities to develop their skills. These range from communication, teamwork and multicultural relations to decision-making, critical and creative thinking and leadership. Extended reality allows students to be immersed in real-life situations that require them to apply skills linked to business management, and it is by practicing and having practical experience that we promote the acquisition of durable skills.

Other applications of artificial intelligence, such as virtual assistants, save students a considerable amount of time, which could be reinvested in developing crucial skills such as critical thinking and creative thinking. These skills can be acquired during the Masters in Business Management, particularly during the International Management course. This means that if artificial intelligence had not been increasingly included in the world of work, we would still be memorizing information and performing monotonous, repetitive tasks. Thanks to its emergence, we can now devote ourselves to activities that require a higher level of skill, which is all the more engaging and stimulating.

The integration of AI into their university programs enables students to prepare for the world of work at an early stage. Students will be able to familiarize themselves with the various tools available, such as software capable of assisting them in making strategic decisions or AI systems that help with recruitment. In addition, students will be able to acquire the skills needed to work effectively, hand in hand with machines.

Students will be training without even knowing it. Students regularly use generative AI software. As a result, they often interact with technology. Even if the exchanges are not verbal, this enables the students to improve their written communication. They will learn to formulate clear requests, to refine their question(s), to determine which part of the context is essential for understanding. In other words, the students will perfect the formulation of their request in order to optimize the answer to their question. The more students interact, the more they improve.

This second hypothesis, ‘Artificial intelligence positively impacts the soft skills of business management master students’ can only be confirmed if artificial intelligence tools are integrated into the university curriculum in a balanced way.

CHAPTER 5: CONCLUSION, LIMITS, AND RECOMMENDATIONS

Conclusion

The launch of ChatGPT at the end of 2022 has had a huge impact on everyone, from the general public to businesses. AI is revolutionizing the education industry in particular. Seeing the speed, precision and quality that this new form of AI is capable of delivering, we, the students and workers of tomorrow, are wondering how we are going to be able to compete with this half-human machine. We therefore decided on the following research question: 'How does artificial intelligence impact business management master's students?

In order to answer this question, we put forward two hypotheses, which were as follows:

1. Artificial intelligence has a positive impact on the learning of business management master students.

2. Artificial intelligence positively impacts the soft skills of business management master students.

Thanks to the literature review and the quantitative and qualitative studies carried out, we were able to validate these two hypotheses under certain conditions. Artificial intelligence will enable students to improve their learning and soft skills. This will enable them to be ready to enter the world of work with the necessary resources to adapt to the continual changes brought about by technology.

Artificial intelligence applications, such as extended reality, immerse students in a parallel world and put them in a real-life simulation, which enables students to gain hands-on experience. Students are thus involved in real, practical cases, which promotes the retention of information and the development of soft skills, as it is in the field that students learn best.

The improvement in learning is mainly linked to the ability of artificial intelligence to personalize content and recommendations according to the needs of each student. The identification of gaps and continuous individualized feedback means that students know exactly where they need to focus their attention and can make constant progress through self-learning. An essential skill in a constantly changing world.
AI enables students to learn more effectively and enriches their academic experience.

Although some fear that the development of transferable skills will slow down, a number of AI tools make it possible to work on them. Teachers are also responsible for developing the soft skills of their students. To ensure that progress is being made on skills, the teacher can implement assessment procedures that force students to develop their transferable skills. Furthermore, artificial intelligence pushes students to develop more challenging skills, such as critical thinking and creative thinking, which would not have been the case if AI had not been deployed so quickly in companies.

However, it is essential to integrate the use of artificial intelligence with care.
Artificial intelligence only has a positive influence on learning and skills development if the technology is used wisely and in a way that is ethical, equal and has integrity. To achieve this, universities need to make students aware of the use of AI. To emphasize this, universities will

need to introduce policies on the use of artificial intelligence so that it is properly framed. Artificial intelligence also needs to be adopted in a balanced way. By balanced we mean that it is appropriate to combine online courses with traditional face-to-face courses.

Limits, Challenges & Further Research

During my research, I obviously came up against a number of obstacles and constraints. In this chapter, I present the various limitations and challenges that may have affected the results of my research.

The first challenge I personally had to face was the choice of subject. I think I changed the subject three or four times. Between the start of my research in Master 1, the Erasmus and the internship, there were plenty of questions, doubts, and changes of mind. Once the theme of artificial intelligence had been chosen, it still had to be clarified, because it's such a vast subject that can be applied to a wide range of fields. It was after some discussion and with some guidance from Dr. Saad that I decided to focus on artificial intelligence in education.

One of the main challenges is the constant evolution of technology. Technological advances are so rapid that it can be difficult to keep up. With the advent of ChatGPT, there has been a proliferation of similar applications, each competing to offer a better experience than the next. As a result, new applications are appearing regularly, accompanied by advances and innovative algorithms. As a result, an application that is in the spotlight today can quickly become outdated in a few years, or even a few months. This phenomenon also extends to ongoing studies and research, which can become obsolete overnight.

Artificial Intelligence can be applied in many different ways. As we saw earlier, AI can function as a virtual assistant, a voice assistant, or an intelligent tutoring system. Each application impacts students differently. These impacts will evolve as new uses of artificial intelligence are created. The same goes for student skills, which will have to evolve at the same pace as artificial intelligence does. Especially when you consider that AI is going to be increasingly present in the workplace and that we know we are going to have to work with machines. In order to have added value on the job market, students will have to constantly adapt the skills they need to work with AI.

To enable students to keep up with these technological advances, universities also need to keep abreast of them. However, the speed of technological changes can sometimes surpass the capacity of institutions to adapt, thereby compromising the relevance and up-to-dateness of AI study programs.

Finally, the evolving nature of technological advances can pose challenges for long-term research.

The second major challenge lies in the field of ethics, an unavoidable aspect that I was unfortunately unable to address during this work. Simply because ethics is such a vast and subjective field that it would require a thesis entirely of its own.

The use of artificial intelligence involves the collection and analysis of vast quantities of data, raising concerns about the confidentiality and security of this data. With this in mind, universities must ensure that access to this data is restricted to authorized persons only, and that it is collected and used in an ethical and responsible manner.

Furthermore, databases can be subject to bias, which can influence the results of analyses carried out by artificial intelligence algorithms. This raises ethical concerns, particularly when it comes to making administrative decisions that could be unfair or discriminatory. Take, for

example, the identification by AI of those individuals most likely to drop out of school in the first year. The reliability of this prediction depends entirely on the algorithm used and the criteria taken into account. These may differ from one person to another, or even from one institution to another. So, just because the AI has said that this person is not going to succeed, does that necessarily mean it is true?

Finally, the integration of artificial intelligence can amplify the inequalities that exist in education. The implementation of artificial intelligence represents a certain cost, which could, for example, lead to an increase in the minerval. As a result, some students from more disadvantaged backgrounds will no longer be able to access certain studies/universities. Students from wealthier backgrounds, on the other hand, will find it easier to gain access to universities offering courses incorporating AI. Lower-income students may not have a computer, internet connection or the necessary applications to work on their own, impacting on their skills and learning in general. Students from privileged backgrounds will therefore be better prepared to enter the world of work, giving them an advantage over less fortunate students.

The search for relevant articles was also a limitation. Although artificial intelligence in education has been around for a long time, its rise was particularly marked by the release of ChatGPT by OpenAI (Firat, 2023). This technological breakthrough has led to a proliferation of articles dealing with AI, not least because of its significant impact on a number of industries. Education being no exception, many questions and uncertainties are emerging about the influence of AI on education. It is worth noting that ChatGPT was only launched in November 2022, making it a relatively new topic in terms of research. Ratten & Jones (2023) mention "The main limitation is the newness of ChatGPT as a technology and educational resource." Consequently, the number of articles dealing specifically with this subject remains limited compared with other fields. Existing studies on AI are often global, addressing its impact in various contexts such as the future of work, medicine, and education in general. However, it is important to note that there is still little specific research on AI and its impact on business studies, particularly in Belgium. Indeed, the integration of AI into university programs is still in its infancy, particularly in Europe and Belgium, where we are not always at the cutting edge of technology.

Another limitation of my work concerns the sample. This work focused only on international management students and not on all business management masters' students. Even though we received a response from the majority of international management students, not all of them replied. We think the results are revealing, but it would have been interesting to survey a wider sample.

What's more, every student is different, and every student has a different academic background. The data collected is therefore specific to each individual and may be influenced by factors such as age, study program, university institution or level of study. The participants in my survey may come from ICHEC or a foreign institution, take part in the Erasmus program, study for a bachelor's degree, study marketing, and so on. This makes it difficult to generalize the information gathered, especially when it comes to conducting more in-depth research.

The sample represents a minority of the total number of students at ICHEC. Broadening the sample is a possibility for future research. We could analyze the impact of artificial intelligence on all ICHEC students, or even on all students studying business management in Brussels. The study could also be applied to other students, not just those studying business management.

We could carry out a study of the impact of AI on Master's students in business management over several years. This would give us a better understanding of the extent of the impact and how it evolves over the long term.

In this work, we have focused on students, but it would be interesting to see in more detail how AI impacts teachers and education systems. It would then be possible to compare them, to determine whether they are affected in the same way and, finally, further research could be carried out into the link between the various stakeholders in education and analyze how each stakeholder influences the others.

Recommendations

Develop a governance

What most, if not all, of the articles have suggested is that artificial intelligence should be structured. There are many concerns about ethics, integrity, data security and so on. This is why it is advisable for stakeholders, i.e., faculties, students, professors, staff and experts to work together to create policies regarding ethics, transparency, data security and privacy (Stine et al., 2019, p.68). Djelti & Kouninef even propose collaboration that goes further than that of faculties. National or even international governance should be developed for the various sectors (2022, p.198). Best practices for making effective use of artificial intelligence should also be addressed (Firat, 2023, p.61). Finally, rules must be drawn up to ensure that the use of intelligence is fair and inclusive (Chan, 2023). This leads us to the next point.

Ensure the inclusion and equity of AI in education

It is important for everyone to be able to access artificial intelligence, so policymakers need to consider a number of points:

- Give institutions and students access to the digital infrastructure.
- Establish rules for transparency and ethics. It is important for teachers and students to be able to discuss artificial intelligence openly. It is also necessary to find solutions to the biases present in the algorithms in order to eliminate possible discrimination.
- Protecting data. By this Djelti & Kouninef mean encrypting and anonymizing data so that it cannot be misused (2022, p.200).
- Encourage students, teachers and staff to develop their knowledge and skills in terms of artificial intelligence. We've already covered this point, and it's going to be inevitable. It is therefore logical that this should be one of the main recommendations.

Provide training for students and teachers

It is essential to teach students the basics of artificial intelligence, to know what it encompasses, how it works, for what purposes it can be used and, above all, to understand how to use it wisely. By wisely, we mean, on the one hand, effectively. The aim is to obtain the most useful results possible, so that you can be more productive and spend more time on other things. On the other hand, it means following the rules. We need to teach ethics, transparency, integrity, and security so that new technologies are implemented fairly and optimally.

Understanding the role of AI, knowing how to integrate it into your work and being able to assess the accuracy, reliability and relevance of the answers obtained by AI are also skills that students will need to learn. Opportunities to work with, evaluate and understand AI-enabled tools will ensure that students are already accustomed to the tools included in the world of work that awaits them (Chan, 2023, p.17).

In order to teach all this in the best possible way, teachers also need to receive this kind of training so that they can pass on their knowledge to students.

Develop holistic skills

As well as digital literacy and ethics, critical thinking skills also need to be developed. Chan adds that there are other, even more important aspects of education, such as character development, rhetoric and analytical skills, public speaking, creativity, and memorization. Teachers need to ensure that despite the use of AI tools, students continue to acquire global skills, with an emphasis on essential transferable skills (2023, p.17).

Be open to new methods

It is recommended to integrate learning environments that include artificial intelligence. Firat recommends using artificial intelligence for personalized, adaptive, and responsive learning to meet the needs of each student while promoting self-directed learning. It is also recommended that analytical methods be used to offer more tailored material (2023, p.61). Being open to new collaborations is also suggested. Business schools should also bring experts into the classroom to share their experiences from the field and partner with engineering schools to improve student learning for success in this new era of artificial intelligence (Stine et al., 2019, p.67). In order for business schools to identify the new skills, knowledge and abilities that students will require to enter the workplace, they need to team up with companies that are integrating AI. This will enable them to understand how jobs are being reshaped and how companies are adjusting to this (Chowdhury & Fosso-Wamba, 2023).

Push for a balanced use of AI

It is important to understand the benefits and limitations of artificial intelligence. We need to be able to use AI to be efficient and productive without setting aside ethics and critical thinking. The desire to be productive must not outweigh the rest. This productivity is closely linked to dependency. We must not become addicted to these technologies, which is why we need to encourage students to see AI only as an aid, as a complementary tool, and not to depend on AI to succeed in their studies. It is therefore essential to find the right balance (Chan, 2023, p.16).

Adapt assessment methods

It is advisable to modify assessment and examination methods, especially with recent advances in generative AI. In order to guarantee the authenticity of the work submitted by students, it is imperative to develop solutions that clearly distinguish the student's work from any AI output. These solutions must be designed to genuinely assess student knowledge and skills, focusing on elements such as critical analysis and reflective thinking, to prevent AI-generated content from affecting the assessment process. We need to create exams that will allow students to use AI to improve their learning outcomes, not just produce results (Chan, 2023, p.16).

Conduct more research

It is essential to test and evaluate the use of artificial intelligence in education (Chan, 2023, p.8). The emergence of generative AI is fairly recent, and few universities have integrated it into their operations. It would therefore be interesting to see how universities have implemented it into their policies, how teachers use ChatGPT and compare its advantages and disadvantages with other tools. Future research with a long-term focus should be undertaken, for example to analyze changing views on the use of ChatGPT (Ratten & Jones, 2023, p.6). Firat adds that to better understand the long-term effects of AI integration in education and its

influence on stakeholders, further research is needed, including experimental and longitudinal studies (2023, p.61).

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APPENDIX