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**The Impact of ChatGPT in Pedagogical Contexts: Reflections and
Recommendations**

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Introduction

The digital revolution has brought about a significant change in social behavior through the emergence of several digital tools. Social networks, recommendation algorithms, chatbots, and digital platforms are integrated into our daily lives and act as intermediaries in most of our social relations. The use of digital tools in teaching activities is not new, but it has become increasingly relevant mainly during the pandemic years. However, unlike regular digital tools, those based on Artificial Intelligence (AI) require some extra knowledge and skills to be effectively used, tested, and corrected. In December 2022, OpenAI launched its own trained model, ChatGPT, which can interact with users in a conversational way and answer questions on a broad range of subjects. The public curiosity regarding the capabilities of ChatGPT and its applicability in very different contexts made it reach 100 million users in just two months, fostering further discussion related to the positive and negative effects of its extensive use in several areas.

The impact of AI-based tools, specifically ChatGPT, in the teaching and learning process has also been a topic of much discussion. Given the uncertain and fastly changing nature of its development, it is challenging to clearly state the advantages and disadvantages of using this tool in a classroom environment. However, it is clear that digital and AI-based tools are here to stay, and educators will need to learn how to take advantage of and (probably) integrate AI into their teaching activities. To do so, it is essential to have a straightforward conversation with students, teach them how to use it as a learning-aid tool and make them aware of its capacities and limitations.

This essay aims to briefly consolidate some current reflections on the impact of ChatGPT in pedagogical contexts, explore Lund University's institutional approach to this topic, and place this subject on my own teaching experiences. I intend to achieve these objectives based on a brief literature review, my own reflections and experiences on using ChatGPT, and a quick talk with the AI expert Björn Svensson, director of studies at the Department of Informatics at Lund University. This essay will start with a brief contextualization of the use of AI-based tools in higher education, focusing on the specific use of ChatGPT as a learning-aid and productive tool. Then I'll discuss some aspects of ChatGPT in learning assessment and evaluation, followed by some recommendations on how to integrate ChatGPT in a learning environment in order to avoid misuse by students and support learning outcomes. This essay finishes with final remarks based on my own experiences in teaching the course IBUA10 - Introduction to International Business and how I intend to approach this subject with the students in the next term.

AI-based tools in higher education: ChatGPT as a learning-aid and productive tool

In recent years, there has been a significant increase in academic research discussing the use of AI in higher education (HE), almost tripling the number of publications compared to the previous period of 2016-2020 (Crompton & Burke, 2023). Even more recently, there has been a remarkable transformation in various industries and aspects of our lives due to AI applications, specifically chatbots that simulate human conversation through text. Among the popular chatbots, ChatGPT can assume several valuable roles for students in Higher Education (HE) contexts, such as 1) a possibility engine: it can generate different responses for the same question, helping students to express ideas in alternative ways and even improve academic

writing; 2) a debate opponent: ChatGPT could engage in discussions, raising and developing arguments regarding a specific topic, forcing students to develop critical thinking; 3) a studying coach: it can partially support students to find information and complete simple tasks; 4) a personal tutor: it can provide personalized feedback on students learning achievements and suggest new directions for further development and; 5) a motivator: ChatGPT can create games or challenges (quizzes, exercises) for students to extend learning and enhance engagement. Also, for teachers it can work as 1) an academic guide: it can generate content for classes, organize teaching material and provide advice on teaching techniques and; 2) a co-designer: ChatGPT can support the design of classes, courses and tests/exams by offering suggestions according to expected learning outcomes.

However, it is imperative to be aware of the limitations of using ChatGPT for learning purposes. This includes the increased risk of plagiarism and cheating by students while using ChatGPT, since the regular plagiarism-detecting tools may not be very effective in identifying AI- and human-generated text. The lack of regulation regarding the use of AI systems creates room for ethical and privacy issues related to its use. ChatGPT can potentially display false, misleading, or inaccurate information, and, different from a Google search, for example, it is not possible to check the sources of the information. It can also provide and reinforce discriminative patterns and ideas based on its training data (UNESCO, 2023). This cognitive bias could be a big source of concern when people intend to learn from ChatGPT without having any prior knowledge (Ambrose et al., 2010) about the topic in discussion due to the inability to write appropriate questions (prompts) and to identify biased or even wrong information.

In a Constructive Alignments context (Biggs, 1996), ChatGPT can serve as a learning tool to help students achieve specific learning outcomes. When the learning outcomes involve relational knowledge, reflection, and critical thinking, ChatGPT could support teaching activities by promoting a dynamic and more interesting way to learn and assess knowledge, such as being a debate colleague or generating personalized exams or quizzes for students. By actively engaging with ChatGPT and initiating conversations on specific topics, students can apply their prior knowledge and competencies to create good questions, understand the responses and identify misinformation provided by the tool, increasing their argumentative capacity. Additionally, ChatGPT can be used to aid in academic writing by providing resources to support research and writing processes. On the other hand, in cases where students are expected to identify basic concepts and fundamental knowledge about a subject, ChatGPT may not be the optimal tool, due to its potential to generate inaccurate information, reliance on unverifiable sources, and the limited prior knowledge that students may have on the topic in order to identify inaccurate responses. In this case, a Google search could be more effective, due to the possibility of verifying the sources of information.

Assessment and Examination in a ChatGPT Era

One of the most significant impacts of AI tools in education is in the domain of assessment and evaluation. A structured approach to addressing academic integrity in an AI context is possible using the SOLO taxonomy (Biggs & Tang, 2011), which classifies learning outcomes based on their structure and complexity. According to the Constructive Alignments framework, assessment methods should be linked to the intended learning outcomes in order to ensure

measurement validity, which means, certifying that the chosen evaluation methods are really measuring the right feature related to the learning outcomes. For example, when assessing structural knowledge (uni- and multi-) and concept identification, the support of ChatGPT or any external tools should be avoided - students should understand and express their knowledge about threshold concepts on their own. However, for more complex outcomes, such as relational and extended abstract thinking, ChatGPT could be a useful tool for organizing and functionalizing learned knowledge, either through case studies, trial applications or being a debate partner¹. It is essential for students to possess a fundamental understanding of the topic, along with critical thinking skills, in order to verify the information provided by ChatGPT. Students should view the outputs generated by ChatGPT as a tool for fostering their own knowledge and enhancing their learning process, rather than as a source of definitive answers.

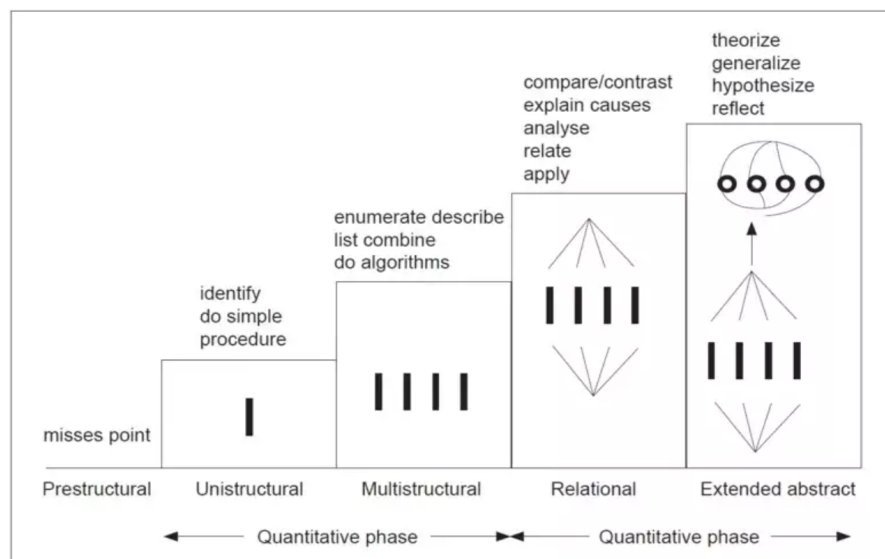


Figure 1 - SOLO taxonomy (Biggs & Tang, 2011)

Given that ChatGPT is particularly effective in generating essays based on a set of parameters or prompts, it is more likely that students may cheat on exams that primarily require information retention. Thus, written assessments can be deeply impacted by the use of ChatGPT, such as essays, short-answer questions, completion questions, and dissertations. According to the project "Misleading in examinations" at Lund University, academic misconduct has increased by 200% during the pandemic years. The study found that 80% of students actively try to avoid misconduct, but 20% are unaware of academic integrity principles and are more likely to commit misconduct without realizing it². With the growing use of ChatGPT, Elin Bommenel, senior lecturer at the Department of Service Studies and leader of the project, suggests that teachers have responsibilities in this context: 1) educate the students about what is plagiarism and why it is wrong, and teaching them the benefits of using AI tools to complement their own learning process towards the learning outcomes, without just relying on these tools; 2) clearly communicating guidelines for using (or not) ChatGPT and other

¹ See more at <https://staff.ki.se/chatgpt-and-assessment>

² See more at <https://www.education.lu.se/en/article/ai-forces-teachers-change-way-courses-are-examined>

sources in a learning environment, including when and how to use and the proper citation of AI-generated text in their written material. Other strategies to prevent academic misconduct are 3) requiring the student to submit drafts of their work before the final submission, so teachers can access detect signs of misuse of AI tools and provide feedback on it; 4) using plagiarism detection tools, which can help teachers to identify when students submit texts or parts of the text that matches other existing sources without citation; 5) monitoring students development, which includes constant feedback, class presentations and other forms of assessments that consider (or limit) the use of AI tools (Cotton et al., 2023). In addition, teachers should consider alternative assessment strategies, such as oral exams and critical thinking assessments, that could be used to minimize the risk of academic misconduct in evaluation and assessments. A structural discussion on how teachers can address these emerging challenges, in an institutional level, becomes essential in order to navigate these new demands effectively.

How to approach ChatGPT in a teaching and learning environment?

When it comes to the use of ChatGPT in higher education, there are three possible main approaches to consider³. The first one is to ban its use completely, arguing that it may lead to academic misconduct and undermine the integrity of the assessment process. The second approach is to assume that students will use ChatGPT and include tasks that involve its use as part of the learning activities. This approach recognizes that ChatGPT is a powerful tool that can assist students in their learning, and encourages them to use it in a responsible and ethical manner. Finally, the third approach is to fully integrate ChatGPT into the learning activities, which implies that its use is not only allowed but also expected. This approach acknowledges that ChatGPT is a valuable resource that can enhance the teaching and learning process, and encourages students to use it to achieve specific learning outcomes. Ultimately, the choice of approach will depend on a number of factors, including the institution's policies on academic integrity, the type of assessment being used, and the pedagogical goals of the learning activity. At Lund University, the Unit for Educational Services has been working on providing information for teachers regarding the use and impact of AI tools in learning (<https://www.education.lu.se/en/teaching-tips/ai-education>), approaching topics such as technical aspects, challenges and opportunities of AI and how it affects evaluation and assessment methods. Björn Svensson, director of studies at the Department of Informatics, is also investigating AI tools in teaching and learning and argues that the decision on if and how to use AI tools is a course-level decision, taking in consideration the course's learning outcomes. According to his perspective, it is important for students to develop skills in writing effective prompts that bring out meaningful responses and critically evaluating the answers generated by AI tools. This process requires not only a comprehensive understanding of the topic at hand but also an awareness of the limitations inherent in the AI tool being used. Moreover, he suggests that assessment and evaluation methods should be carefully reviewed to ensure they measure the intended learning outcomes of the course. As an example, he proposes complementing traditional written home exams with oral examinations to better gauge the depth of student understanding. To provide guidance to teaching staff in this context,

³ See more at <https://www.education.lu.se/en/article/potential-impact-ai-tools-assessment>

he has prepared a document titled "Department of Informatics Policy on Use of Artificial Intelligence-based Tools in Education." This document outlines specific guidelines and recommendations to ensure proper examination practices in the context that students have easy access to AI tools. In general words, the policy: 1) encourages teachers to familiarize themselves with AI tools, by testing prompts based on the course material, exam questions, and assignments; 2) states that AI tools should be strictly subordinated to the course's learning outcomes, supporting their achievement; 3) recommends a contribution statement, mainly for group assignments, where the students could reference AI and their own contributions to the task; 4) states that the students are totally responsible for all documents they submit and course directors should make it clear to them; 5) suggests that written submissions should be complemented by other means of examination since AI tools can affect the measurement validity of the learning outcomes.

Concluding Remarks

Over the past year, I have had the responsibility of teaching the bachelor course IBUA10 - Introduction to International Business, and I will continue to teach it this autumn. As a researcher, my primary research focus lies in understanding the role of artificial intelligence (AI) in academic research. Consequently, I have been thinking since the beginning of this year about how best to approach this topic with my students and how to effectively integrate ChatGPT as a learning tool. IBUA10 course is composed of weekly classes with an initial lecture about a specific subject and a group presentation and discussion regarding a case proposed in the previous class. The final grade is based on the group case presentations and the final written exam, composed of 20 multiple-choice questions regarding fundamental concepts of international business and its contextualization to actual situations. Through some reflection, reading, and based on the content of the pedagogical course "Teaching and Learning in Higher Education," Table 1 presents how ChatGPT could be incorporated at IBUA10 to align with specific learning outcomes, teaching activities, and assessment methods.

Table 1 - Implementation of ChatGPT at IBUA10 course based on Constructive Alignments framework

Learning Outcome	Teaching Activity	Assessment Method	How to incorporate ChatGPT?
Knowledge and understanding - Demonstrate knowledge and understanding regarding the history and global context of international business as well as its strategic and organizational conditions	- Lectures	- Final written exam	This learning outcome is based on understanding basic structural concepts of International Business, so the use of ChatGPT is not recommended. Also, the final written exam does not permit access to any external resources.
Competence and skills - Demonstrate competence and skills in analyzing the significance of relevant global conditions for international business - Demonstrate competence and skills in analyzing the economic, strategic and organizational conditions for	- Lectures - Seminars	- Final written exam - Case study presentations	ChatGPT can be used in this context to dynamize student learning by providing different cases and situations to reflect on, assessing learning by proposing questions and quizzes and engaging in discussions to develop students' arguments. The final written exam does not permit the use of ChatGPT but it

international businesses.			can partially support case discussions and presentations
Judgment and approach - Are able to value the significance of history and global context of international business - Are able to value the significance of the economic, strategic and organizational conditions for international businesses.	- Seminars	- Case study presentation	This learning outcome implies that the students will apply some of the learned concepts and theories in a global and current context. In this case, ChatGPT can support students by working as a tutor in the case discussions, fostering arguments, and supporting to structure of presentations.

Since it is an introductory and one of the first courses for bachelor students in International Business, it is important to have an open conversation with students about the use of ChatGPT and to provide them with clear guidelines on how to use it in a responsible and ethical manner, focusing on the learning outcomes. By doing so, we can ensure that students are able to take advantage of the tool and reach the intended learning outcomes without compromising the integrity of the assessment process. One practical way to do that is by introducing a clear guidance on how and when to use ChatGPT, and how it supposed to address some specific learning outcomes related to the seminars and case presentations. One proposal to integrate ChatGPT is submitting its answers to the cases by students' assessment. In this case, the students would be responsible for comparing their answers to ChatGPT's answer, eventually pointing out missed arguments and identifying possible inaccurate information. This will require that the students have a basic knowledge of the topic and can foster student motivation and communication.

In summary, while ChatGPT can be a valuable tool for students to enhance their learning and for teachers to increase productivity, it is crucial for users to be aware of its limitations to mitigate the risks of misinformation and potential ethical or legal issues.

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