Accentuate the Positive: Exploratory case study of ChatGPT as a complementary learning tool

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Abstract

In this chapter, we explore the role of artificial intelligence (AI) and ChatGPT (Generative Pre-Trained Transformer), within the scholarship of Teaching and Learning (T&L). As educators, we are grappling with ChatGPT and trying to understand its role in both teaching and learning but also in assessment. Given educators understandable trepidation, we decided to embrace, to accentuate the positive and to 'lean-in' to ChatGPT. In this study, we explore an assessment case study and share how an assessment adaptation within an entrepreneurship module offers educators and students alike an opportunity to embrace ChatGPT and to learn from the potential that ChatGPT can bring to the classroom. Such an approach offers a constructive strategy by considering students as collaborators in the AI educational experience. We present the challenges for educators followed by a discussion on the strategies educators can use to embrace AI. Finally, whilst acknowledging the ever-evolving educational landscape, we acknowledge the educator's role in emphasising the role of authentic assessment, thus helping to develop students' digital literacy, critical thinking, and problem-solving skills, regardless of programme of study.

Keywords:

Artificial intelligence; ChatGPT; assessment; educator challenges; educator opportunities

1. Introduction

Machines using Artificial Intelligence (AI) "are potentially capable of imitating or even exceeding human cognitive capacities, including sensing, language interaction, reasoning and analysis, problem solving, and even creativity" (UNESCO, 2023: p. 7). Generative AI (GenAI) is a form of AI popularised

by ChatGPT (Generative Pre-Trained Transformer), defined as "a technology that (i) leverages deep learning models to (ii) generate human-like content (e.g., images, words) in response to (iii) complex and varied prompts (e.g., languages, instructions, questions) (Lim et al., 2023: p. 7). ChatGPT is a large language model (LLM), launched in November 2022, by the company OpenAI LLM is a deep learning algorithm that works by consuming vast quantities of content and generating human-like text through prediction word by word (ChatGPT) or realistic imagery (Dall-E). In the first 5 days' post launch, the ChatGPT platform reached over 1 million users (Financial Times, 2023), within 2 months, ChatGPT had 30 million users and 5 million daily users (Ciampa et al., 2023). In contrast, TikTok reached 100 million monthly users after 9 months, and Instagram took 2.5 years (Gordon, 2023), which makes ChatGPT the fastest-growing web application in history.

In this chapter, we explore the role of ChatGPT in the scholarship of Teaching and Learning (T&L). As educators, we are grappling with ChatGPT and trying to understand its role in the classroom in both teaching and learning but also in assessment. Thus, the research question we ask is: *how do we embrace ChatGPT and adapt the assessment to augment student learning?*

There are two schools of thought dominating the current T&L scholarship: the doomsday merchants who profess Large Language Models (LLM) performing as AI chatbots are tempting students to the 'Dark Side' of academic practice, namely student cheating, fraud, and misconduct. The optimists in the T&L community hope for a brighter future where AI chatbots are considered to have promise as an educational tool. Studies have explored possible approaches and problems to watch out for (Ciampa et al., 2023; Jameela & Deepthi, 2023). Given educators understandable trepidation, we decided to embrace and 'lean-in' to ChatGPT. Such an approach offers a constructive strategy by considering students as collaborators in the AI educational experience (Jameela & Deepthi, 2023) and aligns with the contemporary pedagogical shift towards student-centric learning, which not only enhances engagement but also mitigates risks (Grubaugh et al., 2023).

The chapter is presented using the following structure: First, a review of the literature is outlined, with a focus on how ChatGPT can advance education. Second, an outline of the assessment case study is presented, pre- and post-ChatGPT. The chapter then proceeds to discuss the findings using a 3P framework: prompts, positivity, and potential. Educator challenges in this new disruptive era of ChatGPT are then revealed. Concluding with a discussion on how educators should 'lean-in' and explore the potential of ChatGPT ('Why teachers should explore ChatGPT's potential', 2023), which can potentially advance students' learning (if guidance is given and policies are implemented to support it) (Mollick & Mollick, 2023).

2. Advancing Education through ChatGPT Integration

Drawing upon foundational educational theories such as Vygotsky's Zone of Proximal Development (Vygotsky, 1978) and the concept of differentiated instruction (Tomlinson, 2001), the incorporation of ChatGPT in educational settings paves the way for personalised, adaptive, and collaborative learning experiences. These experiences are instrumental in bolstering essential student competencies, including digital literacy, critical thinking, and problem-solving skills. Such skills are increasingly vital for students to effectively navigate the complexities of today's business environment. In this context, Kirk (2023) highlights that ChatGPT plays a significant role in facilitating personalised learning. This not only augments the efficiency of educators but also fosters an environment conducive to student growth, development, and life-long learning.

2.1 Multifaceted Educational Approach

Adopting AI in education necessitates a comprehensive approach that includes continuous adaptation of teaching strategies, ethical considerations, and critical engagement with technology. According to Lionenko and Huzar (2023), digital technologies, such as AI tools like ChatGPT, are instrumental in fostering critical thinking, a crucial competency in the contemporary business environment. This approach requires integrating AI in project-based assessments, promoting information literacy, and encouraging reflective practices, as well as utilising AI for formative assessments.

2.2 Preparing Students for a Technologically Advanced Future

The evolving digital landscape demands that educational approaches adapt to equip students with the necessary skills to thrive in a dynamic environment. Zulfiani Zulfiani et al*.,* (2023) created a digital assessment tool that expedites math assessment, empowering educators to provide prompt feedback and expedite future learning analysis, thus highlighting the importance of higher-order thinking skills. Furthermore, Supriyadi and Kuncoro's (2023) insights on the future of mathematics teaching with ChatGPT suggest that AI integration will provide personalised learning experiences, emphasising problem-solving, critical thinking, and data literacy.

Leaning in and incorporating AI tools like ChatGPT in education sets a precedent for innovative teaching methods, highlighting the need for continuous evolution to keep pace with technological advancements. This transformation enriches the learning process and ensures the relevance and effectiveness of education in preparing students for future challenges and opportunities.

2.3 Constructivist Learning Enhanced by ChatGPT

Constructivist learning theory, which emphasises active, experiential learning, finds a powerful ally in ChatGPT. Wu (2023) highlights how ChatGPT can act as a facilitator for constructivist learning. It can

provide dynamic, interactive scenarios for students to explore and engage with, thereby deepening their understanding and retention of knowledge. This approach aligns with Kolb's experiential learning model, which emphasises learning through experience and reflection (Kolb, 1984). With ChatGPT facilitating immersive learning experiences, students are encouraged to engage in reflective practices that solidify their comprehension. Furthermore, ChatGPT aligns with Vygotsky's (1978) social constructivism, who highlights the significance of social interaction in learning. ChatGPT, by enabling interactive dialogues between educators and learners, can create spaces for collaborative knowledge construction and peer-driven exploration.

2.4 Scaffolding Learning Strategies with ChatGPT

ChatGPT effectively enhances scaffolding, a pedagogical concept that Bruner (1957) pioneered. Saadati et al., (2021) explore how advanced technologies, including AI, can support self-regulated learning and scaffolding in an online educational context. ChatGPT, as an AI tool, can offer similar support by providing hints, explanations, or resources at appropriate levels of complexity, thereby adjusting the support as the learner progresses within the Zone of Proximal Development (Wells, 1999). This approach ensures that learners receive personalised guidance that aligns with their unique learning journeys. This personalized approach further aligns with the principles of scaffolding and Bandura's theory of self-efficacy. Bandura (1977) emphasised the pivotal role of self-belief in learning. By tailoring support to individual needs and progress, ChatGPT fosters a sense of self-efficacy in learners, empowering them to navigate increasingly complex educational terrain with confidence.

2.5 Developing Digital Literacy and Critical Thinking with ChatGPT

The role of ChatGPT in fostering digital literacy and critical thinking is crucial. Perkins (2023) emphasises the importance of critically engaging with AI-generated content. As students interact with ChatGPT, they need to be encouraged to critically evaluate the information, practicing skills aligned with Bloom's Taxonomy (1956), such as analysis, evaluation, and creation. This process equips and prepares students for the complexities of the digital world. This emphasis on critical thinking also aligns with Paul and Elder's (2019) model of critical thinking, which champions the development of intellectual discipline and rigour in thought processes. Through guided interactions with ChatGPT, students need to be encouraged to approach information critically, fostering an environment that champions intellectual rigour.

The integration of ChatGPT in education represents a comprehensive approach that embraces contemporary research and established educational models. The combination highlights an era of engaging, effective, and relevant learning experiences. By utilising ChatGPT in accordance with

constructivist learning principles, implementing scaffolding techniques, and prioritising the development of digital literary and critical thinking, educators can enhance students' educational experiences, providing them with essential skills for success in the digital era.

3. Case Study: Assessment

This single case study is based on one of three continuous assessment elements from a final year business module. This module introduces students (approximately 130 students from University College Cork, Ireland) to the practice of entrepreneurship through experiential techniques, supporting students to think and act more entrepreneurially. Two of the key student learning outcomes are: first, to appraise the lean canvas business model template (Maurya, 2012), and second, to demonstrate their understanding of business models and how business model innovation can be leveraged in various contexts. This module is solely assessed via continuous assessment methods: individual [25% of marks], group innovative project [50% of marks], and group 'pitch' [25% of marks].

3.1 Pre-ChatGPT

Pre-ChatGPT, the individual assessment [1,500 words, 25%] that was provided to all students was as follows:

> "Select an entrepreneurial organisation of your choice and, using secondary research, track the evolution of this organisation's business model. Elements included: introduction (organisation, foundation, and context); industry; and market. Using Ash Maurya's (2012) Lean Canvas, describe each of the nine elements of the business model used by your selected organisation. Finally, critically analyse how this business model has evolved over time (from foundation to today)."

In December 2022, following the introduction of ChatGPT 3.5, the module coordinator 'asked' ChatGPT via numerous prompts to answer the assessment, outlined above, using several well-known global organisations. These are organisations that students typically use in class as exemplars to demonstrate understanding of innovative business models, the majority of which are technology-driven organisations, e.g., Uber, AirBnB, Netflix, Spotify, and GymShark.

The initial response was one of terror and concern, as it became apparent that the current assessment (outlined above) was not 'fit for purpose'—how could we assess student learning as ChatGPT was taking a student from zero marks to a pass mark in less than 5 seconds? Output issues with ChatGPT are well documented (Rudolph et al., 2023). These issues include 'hallucinations' producing false content—text, numbers, and references; bias in the data; lack of consistency and precision; generalisability (Gill & Kaur, 2023).

However, the module coordinator continued to 'play' with ChatGPT, and the initial terror subsided into a feeling of intrigue given ChatGPT's obvious power. 3 options (Goff, 2023) we explored include:

1. Avoid (ban/prevent)
2. Outrun (detect and punish)
3. Adapt (change assessments)

Option 1—"avoid"—was not considered a viable option. AI and LLM are the future, and we need to embrace these technologies. Option 2—"outrun"—was also not considered feasible given the time constraints and resource implications to detect and the policy implications to punish. Therefore, we proceeded with option 3 and adapted our assessment, which we now outline.

3.2 Post-ChatGPT

Following significant time spent discovering the capabilities of ChatGPT, the individual assessment was adapted as follows:

> "Select a small and medium-sized organisation (SME) 'local' to you. Conduct primary and secondary research. Primary research: interview a manager of the SME organisation and record via MS Teams. Secondary research to assess: 1. the industry and market in which the SME operates; 2. the competitive environment. Explore the primary business model the SME uses and delve deeper into their customer(s), problem(s), unique value proposition, and revenue using the Lean Canvas (Maurya, 2012). Look to the future and suggest a complementary business model for the SME and how this might be leveraged to achieve organisational growth opportunities; provide a rationale."

Amendments to this assessment included the following: 1) a restricted choice of organisation, students now had to choose a small and medium sized organisation (SME) which was 'local' to them, introducing a potential personal element (student as potentially a customer, part-time employee, family business member); 2) research data collection was extended to both primary and secondary; students had to have a conversation with an SME manager and assess the current business model(s) in operation but also recommend innovative existing business model(s) for future sustainability; 3) context was included, which requires students to 'delve' into the industry and market analysis of their chosen SME, helping students to further develop their analysis skills. A summary of the assessment amendments and rationale is provided in Table 1.

Table 1. Summary of assessment amendments and rationale

Original Assessment	Amended Assessment	Rationale
'Open' choice of any organisation, regardless of size, geography, industry, market, etc.	'Restricted' choice of organisation ▪ Small and medium-sized organisation (SME) ▪ 'Local' to the student's hometown.	Less 'publicly' available information. Personal experience of the organisation maybe as a consumer, part-time employee, family business, etc.
Secondary Research	Primary and secondary research	Primary research to leverage potential existing relationships and to understand the 'what' and 'how' of the organisation in terms of the business and business models at play.
Context not explicitly stated	Macro environmental analysis included	Context is important. It helps the student understand and assess the industry/market in which the SME operates, which will aid their strategic assessment of future business models.

Following completion of the assignment, students were then required to use ChatGPT (ChatGPT v.3.5 at the time of assessment design) and to prompt ChatGPT on the current and future business models of their chosen SME. A critical analysis of the ChatGPT output was required.

> "Share the output (via a screenshot) from ChatGPT of your chosen SME's business model. Critically analyse this ChatGPT output."

Zero marks were available (but a compulsory element) for this section, given the ChatGPT access issues at the time of assessment (February–March 2023).

4. Findings

The findings section is presented using a 3P framework. 1) Prompts: how the students engaged (or not) with ChatGPT via prompts. 2) Positivity: the positivity bias that tends to exist for many students. 3) Potential: the potential and opportunities that exist for student learning with ChatGPT. Given that this assessment took place relatively early in the 'life' of ChatGPT (Semester 2, 2022-2023), overall, students fared well in understanding how to use and analyse the output of ChatGPT.

4.1 Prompts

Given the SME context in which the students were studying, ChatGPT did not recognise 90+% of the SMEs that entered. For some students, they merely accepted the output and did not engage further with the output generated, and an example of 'analysis' provided was: "*Unfortunately, Chat GPT had no information on [SME X], so I could not analyse it.*" For other students, they understood the

importance of 'prompts' when using ChatGPT, i.e., the call to action for ChatGPT to generate text (Mollick & Mollick, 2023; Poola, 2023). The ability to prompt and refine the prompts thereafter was instrumental in their engagement with the learning. For example, if ChatGPT provided no information about the chosen SME, students 'fed' ChatGPT with some relevant information about the SME via prompts and continued to prompt until ChatGPT was able to share some pertinent business model information. These same students also fully analysed the output, leveraging an exemplary level of knowledge and understanding of business model theory and frameworks. Examples include the ability of students to recognise the 'generalities' of the ChatGPT business model output and the failure of ChatGPT to provide specific insights on the chosen SME. This speaks to the important issue of truth versus unreliability in using ChatGPT. Some students maintained this healthy dose of 'scepticism' and requested that ChatGPT provide sources for the data shared:

> Student: "*Can you provide a link to the [xyz] report?"*
>
> ChatGPT: "*As a large language model, I am unable to browse the internet and provide a link."*
>
> Student: "*The report does not exist."*
>
> ChatGPT: "*I am sorry for the confusion. It appears that the report does not exist. [Organisation X] has published other reports with similar titles.".*

As students continue to use such AI tools, they will develop an understanding and an "intuition" for the strengths but also, more importantly, the limitations, helping to recognise the now infamous "confabulations" or "hallucinations" (Extance, 2023; Mollick, n.d.; Gill et al., 2024).

4.2 Positivity

Several students had an overwhelming naivety, acceptance, and positive bias towards the ChatGPT output and commented on the strengths of ChatGPT as demonstrated in the following quote: *"ChatGPT did a good job in terms of the business model proposition for [SME X} and I can only conclude that it did probably a better job than me."* Unlike the previous example in which a student challenged the output, these students did not question nor contest; they merely accepted the output, even in cases where the output was factually incorrect. As educators, we have an important role in educating our students through the use of ChatGPT and helping them to develop their critical thinking skills and stimulate creative thinking. However, we also have a role in helping students identify ChatGPT limitations and weaknesses. As one student outlined, "*It is quite clear from the ChatGPT output that it is still in its infancy,*" as the output lacked truth and specificities on the chosen SMEs business model.

Nevertheless, we must, as educators, acknowledge the potential that LLMs can bring to the classroom (Extance, 2023).

4.3 Potential

Generative AI, including ChatGPT, offers tremendous potential for student learning, including creative writing, role-playing, coding assistance, reviewing, and revising text, language and translation tools, and personalised learning assistance, amongst others (Mollick & Mollick, 2023; UNESCO, 2023; Gill et al., 2024). One student alluded to the early stage of GenAI tools, including ChatGPT, and the importance of closely monitoring their development: "*We need to keep track of how ChatGPT develops to understand its capabilities as they are in the future.*" Another student commented on how useful the tool is at an early stage of inquiry: "*ChatGPT is a good starting point for someone lacking understanding on a topic, in this case, unsure about business models.*" This point speaks to the 'paradox' of ChatGPT (Lim et al., 2023). Earlier, we mentioned the importance of an in-depth understanding of theory before engaging with ChatGPT to facilitate much-needed student 'scepticism', whereas in this example, students are praising the tool for providing valuable information. Also, many students held a strong view on the ethical implications of using ChatGPT. Table 2 provides a summary of the findings and the T&L implications.

Table 2. Summary of Findings and Implications for T&L

	Summary of findings	**Implications for T&L**
Prompts	Students had some understanding of the use of prompts when engaging with ChatGPT and, more importantly, *how to use* prompts. Some students did not understand how to engage/prompt ChatGPT and accepted the limited responses provided.	Introduce students to the LLM tools and help them to experiment and explore the benefits, while also highlighting the downsides. This will help facilitate the responsible use of AI in the classroom.
Positivity	Many students held an overwhelming positive bias towards ChatGPT, even if this positivity was not justified.	Educate students on the importance of prior knowledge of a topic prior to using ChatGPT and to encourage a healthy level of 'scepticism' when analysing the output.
Potential	There was an acknowledgement of the ChatGPT's 'power' but also a recognition of its early stage of development.	AI will be a part of student's lives—present and future. But challenges and opportunities for AI exist. As educators, we have a responsibility to understand AI and its implications for our classroom. But also, to introduce AI to our students, help them experiment, and realise the opportunities that AI can bring to their learning.

5. Challenges for Educators

Our study revealed several challenges for educators as we embrace this new era of LLM and the higher education landscape. We have categorised these challenges into three: 1) Detect, 2) Develop, and 3) Design, which we explain in further detail below and provide suggestions for how these challenges can be overcome.

5.1 Detect

As educators, we have a choice to make on how we react to the exogenous shock of ChatGPT entering our classrooms at such a ferocious velocity. As our case study revealed, we tinkered with ChatGPT and were shocked by the abilities of the technology to produce a passable answer to the assignment in mere seconds. This is a common response from first-time users of the software (Wu, 2023). Thorp (2023) argued that detection will become more problematic as the tool and the student become more sophisticated. Furthermore, his study revealed peer reviewers can only identify 63% of abstracts written using ChatGPT. As we endeavour to uphold academic integrity standards and deliver on our role as higher education educators, it is critical that we as educators can detect when our students blindly accept any answer or indeed unethically pass off work as their own. It is fair to say we are entering an age of naivety if we ban the tool and expect our students not to be using it. As recognised by Fuchs (2023), the time has passed where we can expect our students not to use ChatGPT and its contemporaries. Indeed, there are efforts by established plagiarism detection software such as Grammarly to update their capabilities to detect such tools. However, given how fast the LLM models are advancing, we cannot rely solely on these plagiarism tools to exclusively detect the work of ChatGPT if the student has not referenced it in their submission (Anil, 2023). Our case study revealed that one way to combat the challenge of detection is to build in the explicit use of ChatGPT into the assignment. By doing this, we are encouraging transparency in LLM use and discouraging academic plagiarism.

5.2 Develop

A further challenge for educators revealed by our case study is the need to develop the skill set of our students to recognise and maximize both the opportunities and challenges of the ChatGPT tool for their education output. As illustrated, one of the students in the case study immediately questioned the veracity of the answers provided by ChatGPT and then demanded references to back up the tool's analysis. As educators, we need to build on this student instinct to encourage higher-order thinking among our students and continue to nourish such critical thinking in the era of LLM. As articulated by Mhlanga (2023) perhaps the biggest fear of educators thus far in this new era is the danger that our

students will become overly reliant on the tool and fail to think for themselves or discern truth from fake data sources.

However, before we can develop the necessary skills in our students, we need to upskill ourselves as educators. As we all become more aware of the hallucinations and of the tool confabulations (Extance, 2023; Mollick, n.d.; Gill et al., 2024), we are obliged to share such knowledge with our students as a word of warning, but to do so in a non-alarmist way. If we merely profess the dangers of the tool, we are in jeopardy of sensationalising a tool and 'throwing the baby out with the baby water' by denying our students an opportunity to use the tool to complement their learning in a positive way. To ensure that our students use the tool effectively, we must carefully craft the message about how we want them to use it as a learning aid. This is a complicated and multi-dimensional issue that necessitates an approach that is nuanced and interdisciplinary, as Mhlanga (2023) revealed in their study of the responsible and ethical use of ChatGPT in educational settings. Educators need to reflect on such complexity and upskill accordingly to devise teaching and learning policies that reflect both the challenges and opportunities of ChatGPT and compliment the learning experiences of the students.

5.3 Design

Once educators recognise that they can no longer detect ChatGPT work without the necessary upskilling to recognise the challenges and opportunities of the tool and without student reference, our final consideration for the educators is to engage in the redesign of their assignments to incorporate ChatGPT. As our case study revealed, we redesigned the assignment to leverage ChatGPT with tremendous success. Our case study supports the work of Lim et al*.,* (2003), who argue that "Generative AI can serve as an impetus to reform the design of assessments and elevate them to a higher level in terms of critical analysis and rigour, whereas sticking to traditional ways of assessing may very well be a recipe for disaster" (Lim et al., 2023: p. 10). In this vein, we offer practical guidance for educators in their efforts to redesign their assignments as follows:

1. Register with ChatGPT
2. 'Put' your exam questions/continuous assignments 'through' ChatGPT; play with it using various prompts.
3. Reflect on the output—do I need to make changes to my assessment? If so, what and how?
4. Scaffold your assignment.
5. Encourage heavy citations.
6. Be explicit about its use, policy, and use. It is important to keep up with technological advances.
7. Request versioning for group projects; show the trail of work as part of the submission.

6. Discussions on how educators should 'lean-in' and explore the potential of ChatGPT

This section explores the potential of ChatGPT in academic settings, focusing on strategies under the themes of DETECT, DEVELOP, and DESIGN for effective AI utilisation (see Table 3 for a summary and implications for educators).

Table 3. Summary of Findings and Implications for Educators

	Summary of findings	Implications for Educators
Detect	It is increasingly difficult for educators to detect the use of ChatGPT in assignments.	If you do not incorporate the use of ChatGPT into the assignment, you could potentially encourage academic plagiarism.
Develop	Do not be afraid of the tool and sensationalise the 'dark side' of the tool, as you may lose an opportunity to use the benefits of the tool.	Develop the skills needed to maximise both the opportunities and challenges.
Design	Consider the redesign of your assignment to build in the use of ChatGPT in some form.	Increase the transparency and equity of your assignment.

6.1 Embracing AI: DETECT Strategies

Our case study reveals diverse student interactions with ChatGPT. Some students accepted AI-generated content without scrutiny, while others recognised the need for a 'healthy dose of scepticism' and vigilant monitoring of AI tool development. One student found ChatGPT beneficial for preliminary research inquiries. These observations highlight the need for strategies that identify AI involvement, encourage a critical stance towards AI-generated content, and embed it within the educational framework.

6.1.1 Strategies for Detection

Integration of AI-Generated Content with Personal Analysis: A strategic approach is blending AI-generated content with personal analysis. For instance, as this case study outlines, students might use ChatGPT to craft a business model, critically assess its viability, and incorporate the students' own insights. This method ensures active student engagement with AI tools, enhancing their understanding and analytical capabilities, as discussed in the work of Dalalah and Dalalah (2023).

Emphasis on Process over Product: Focusing on the learning 'prompt' journey highlighted here rather than the final product is crucial. Assignments that require students to document and reflect on their

research process, including AI interactions, help identify AI-generated content and promote deeper engagement, as touted by Sullivan, et al., (2023) in their examination of ChatGPT's impact on higher education.

Utilisation of AI Detection Tools: The development of AI detection tools offers an additional layer of defence against unrecognised AI-generated content. While not perfect, these tools help teachers spot potential AI involvement in student work, as Goff (2023) and Perkins (2023) explored in the context of academic integrity considerations.

Cultivating Academic Integrity: Many students hold a strong view on the ethical implications of using ChatGPT. So, teaching students about the ethical use of AI in academia involves discussing responsible AI usage, the importance of original thought, and the value of personal intellectual development. However, Susnjak (2022) raises concerns about ChatGPT's potential use for academic misconduct in online exams, emphasising the need for strategies to maintain exam integrity.

The evolving complexity of AI in education calls for rethinking traditional academic honesty approaches. Educators should adopt clear, ethical strategies acknowledging AI's potential while addressing its impact on academic integrity. By implementing such strategies, educators can ensure AI tools like ChatGPT enhance rather than detract from the educational experience.

6.2 Embracing AI: Develop strategies

Our case study revealed the integration of ChatGPT as a complementary tool that impacts student learning, especially in terms of understanding depth and critical thinking skill development. Strategies for developing skill sets are set out below.

6.2.1 Strategies for Development

Validation of AI-Generated Information with Independent Research: To counter potential over-reliance on ChatGPT, educators can require students to validate AI-generated information through independent research. For example, some students in this case study merely accepted the output and did not engage further. Inquiry-based learning models are to be encouraged for students to critically evaluate AI-provided information. In this case study, students were directed to leverage ChatGPT post-research. However, in another example, students may be directed to gather information initially via ChatGPT but are then encouraged to delve deeper into academic journals and books for comprehensive understanding and analysis. Ghani et al. (2021) discuss the importance of such problem-based learning (PBL) in developing critical thinking, which can be applied in this context.

Promoting Information Literacy Skills: Developing students' information literacy skills is crucial. By integrating ChatGPT into teaching methodologies, educators, like in this case study, can guide students to effectively search for, 'prompt', evaluate, and utilise information across diverse formats. Siddiq et al., (2017) have emphasised the importance of ICT literacy in the 21st century. Implications may mean developing workshops or specialised modules focusing on information literacy within the curriculum. This significantly enhances the proficient use of ChatGPT, where the educator works with and not against the tool.

Encouraging Reflective Practice: Engaging students in reflective practice can increase their awareness of their learning strategies and the role of ChatGPT in their academic work. This reflection can include their experiences and challenges with using AI tools for learning. This case study highlighted how some students queried the output, bringing Saripudin's (2023) strategic work for fostering deeper learning and critical thinking to the forefront. Emphasising the students' self-reflection on their initial prompts and subsequent refinement of said prompts is an important step in accurately using ChatGPT as a complementary tool in the students' learning journey.

Designing Problem-Based Learning Activities: The incorporation of problem-based learning tasks, which necessitate the use of AI-generated insights to tackle real-world challenges, can greatly improve students' critical thinking abilities. This method ensures active student interaction with AI-derived data, utilising it in relevant and tangible scenarios. Dehbozorgi and Parizi (2023) explore the enhancement of competency-based education through AI-supported frameworks suitable for such tasks. As demonstrated in this case study, context is crucial; ChatGPT aids students in comprehending and evaluating the specific industry or market of an SME, thereby enhancing their strategic analysis.

By employing these DEVELOP strategies, educators can foster a more critical and engaged approach to AI in academic settings, ensuring that students develop the necessary skills to maximise the benefits and navigate the challenges presented by AI tools in their learning journey.

6.3 Embracing AI: DESIGN strategies

As we now know, the integration of AI technologies like ChatGPT into the realm of educational assessment design represents a transformative shift, addressing both the challenges and opportunities presented by the digital learning environment, as demonstrated in this case study. As McInneset al., (2023) illustrate, the advent of AI has opened new avenues for creating more dynamic, interactive, and responsive assessment tools. These AI-driven assessments can potentially offer more personalised and adaptive learning experiences, moving beyond traditional methods.

The work of Fatayer and Wehr (2023) further emphasises the role of open educational practices in assessment design. By leveraging technology, educators can develop authentic assessments that are not only more engaging but also more reflective of real-world scenarios. This approach aligns with the need to harness AI capabilities to create assessments that are not just about measuring learning outcomes but also about enhancing the learning process itself. Furthermore, the insights from Shaik-Abdullah et al., (2023) highlight the importance of incorporating action research into assessment design. This involves a continuous process of reflection, evaluation, and adaptation, ensuring that assessments remain relevant and effective in an ever-evolving educational landscape.

Finally, the perspective on literacy as a technology by Woo et al., (2023) sheds light on the potential of AI in transforming how writing and literacy skills are assessed. AI tools can provide new ways to evaluate these skills, offering more nuanced insights into student learning and progress. The design of educational assessments in the digital age must embrace the potential of AI technologies. Assessment practices need to be more adaptive, personalised, and reflective of real-world skills and challenges.

6.3.1 Strategies for Design

Incorporating AI into Project-Based Assessments: Using ChatGPT in project-based assessments can give accurate and useful feedback on students' skills and knowledge, in line with authentic assessment models (Gulikers et al., 2004). As demonstrated by McInnes et al., (2023), students might utilise AI for initial brainstorming and research in developing solutions, followed by comprehensive planning and execution. This approach blends AI-generated insights with student analysis and creativity, enhancing the transparency and equity of the assessment process.

Developing Hybrid Assessment Models: Hybrid models that combine traditional and AI-driven components, as outlined in this case study, and explored in the Adaptable Resources for Teaching with Technology (ARTT) project by Fatayer and Wehr (2023), can create a balanced educational approach. These models enable students to use AI tools for specific tasks while engaging in manual research and analysis, fostering both digital literacy and traditional academic skills.

Fostering Critical Reflection in Assessments: Moon (2004) recommended including critical reflection components in assessments as a crucial step in considering the function and effects of AI on learning. Shaik-Abdullah et al., (2023) discuss how this reflection deepens understanding and increases awareness of AI's implications in academic and professional contexts.

Utilising AI for Formative Assessments: AI tools like ChatGPT can significantly contribute to formative assessments by providing immediate feedback and personalised learning opportunities, supporting a dynamic and responsive learning process, and aligning with the insights of Black and Wiliam (1998).

Applying Universal Design for Learning (UDL) Principles: Integrating UDL principles (Meyer, Rose, and Gordon, 2014) in AI-integrated assessments enhances effectiveness, inclusivity, and equity.

Multiple Means of Engagement: Using AI tools in assessments, as suggested by Woo et al., (2023), can cater to diverse learner interests and motivations, simulating scenarios and offering varied engagement opportunities. This approach resonates with Shulman's concept of "teaching as community property" (Shulman, 1993), emphasising the educator-learner relationship.

Multiple Means of Representation: AI can present information in diverse formats, aiding comprehension for all learning styles. Leveraging resources like text, graphs, or interactive scenarios enhances engagement across different learning modes.

Multiple Means of Action and Expression: AI-integrated assessments allow learners to demonstrate knowledge and skills in various ways, accommodating different learning styles. ChatGPT can assist in developing flexibility in expression by offering multiple avenues for student expression, thereby creating active learners. For example, assessment re-design as set out in this case study has honed learners' analytical, critical thinking, and creativity skills while encouraging authentic viewpoints.

By integrating these strategies, educators can design assessments that leverage the potential of AI while upholding principles of transparency and equity, ensuring equal opportunities for success in a rapidly evolving digital educational environment.

7. Conclusions

Our findings highlight the importance for educators to embrace ChatGPT and other AI tools to assess student learning (Extance, 2023). AI tools are the future. Yes, we as educators have concerns about its present and future use, and there are many challenges. However, our work leans towards accentuating the positive and exploring how AI chatbots can be harnessed within a T&L strategy to encourage educators to experiment with assessment, thus aiding students learning in evaluating their own work relative to the chatbot’s attempt (Mollick & Mollick, 2023). Using AI in education is not merely to supply answers; rather, it cultivates an environment of curiosity, discovery, and ethical use of technology (Grubaugh et al., 2023). As educators, it is our responsibility to oversee this integration, emphasising the positive aspects of AI while being aware of and addressing its potential downsides. By fostering collaboration, critical thinking, and ethical AI interactions, we unlock AI's full potential, guaranteeing a comprehensive and accountable educational experience (Ciampa et al., 2023; Grubaugh et al., 2023; Jameela & Deepthi, 2023; Vaccino-Salvadore, 2023).

The role of the assessment was threefold. First, to understand the importance of 'asking the right question' to improve their learning (Abdelghani et al., 2022). Second, to help the student evaluate and critically analyse the ChatGPT output (Mollick & Mollick, 2022). Finally, to encourage 'responsible use' of ChatGPT (Cacciamani et al., 2023). Engaging students with ChatGPT in a collaborative, cooperative manner imparts a sense of autonomy and relevance, essential in today's ever-evolving educational landscape (Ciampa et al., 2023). The approach also serves as a preventive measure against potential misuse of AI. Encouraging students to critically analyse, question, and assess AI-generated content fosters a sense of discernment and promotes ethical AI interactions (Vaccino-Salvadore, 2023). The ethical inclusion of ChatGPT in evaluation processes aligns with the growing emphasis on authentic assessment. Such evaluations better equip students to tackle real-world scenarios, making their educational experience more pertinent and actionable (Grubaugh et al., 2023).

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