Enhancing Entrepreneurial Education through AI-Driven Academagogy: A Case Study at UWTSD

Abstract:

This paper presents an innovative educational initiative undertaken at the University of Wales Trinity Saint David (UWTSD), where conversational Artificial Intelligence (AI) is seamlessly integrated into the PGCert Enterprise Skills course. The initiative aims to transcend traditional teaching paradigms, adopting a heutagogical approach to foster critical thinking, innovation, and self-determined learning among students. Drawing upon a diverse array of educational theories, including behavioural, cognitive, and humanistic theories, as well as pedagogy, andragogy, and heutagogy, this paper uses academagogy as a holistic approach that encapsulates these pedagogical perspectives. A detailed case study is provided, illustrating the practical application of the academagogy approach through AI-enhanced learning at UWTSD. The implementation of the Feynman Technique in both formative and summative assessments is highlighted, demonstrating its efficacy in promoting critical reflection and autonomous learning. The paper also discusses the transformative potential of integrating AI in education, addressing the associated challenges and underscoring the need for a paradigm shift in learner engagement with AI. The findings of this study contribute to the broader discourse on innovative teaching practices in higher education, offering valuable insights into the role of AI in fostering entrepreneurial learning experiences and self-determined learning.

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Body

1. Introduction

The PGCert Enterprise Skills by University of Wales Trinity Saint David (UWTSD) has made an educational innovation within the entrepreneurial education. This paper explores the initiative at where a conversational Artificial Intelligence (AI) is intricately woven into the course with an aim to transform the conventional teaching paradigm. The heutagogy approach adopted ensures a comprehensive and that nurtures critical thinking, and innovation amongst the students.

Rationale:

Inspired by the work of Jones et al. (2014), this initiative aims to develop the heutagogy practices of the educators delivering the course and underscoring the significance of self-determined learning in fostering an entrepreneurial mindset.

Objective:

The primary objective is to boost student engagement and to nurture an enterprising skill amongst learners. To ensure the effectiveness of this initiative, specific measurable outcomes have been established:

2. Introduction to the 'Ogies'

Using the terminology of acdemagogy (Jones et al. 2019) argue that understanding the diverse spectrum of the “gogies” is crucial for educators, particularly those in enterprise education. They argue that armed with this knowledge educators should create a learning environment that is delivered (or facilitated) in an appropriate time and way that is suitable for the learners.

Using this approach, they feel develops learners’ autonomy and self-determination.

Development

An important landmark in teaching and learning practices in vocational education and training, and in higher education was developed by Knowles (1970). The paper makes the distinction between the way adults and children learn and brings together three aspects of learning theory, Behavioural Theory, Cognitive Theory and Humanist Theory and

Behavioural Theory

Behavioural theory focuses on observable behaviours and the responses to stimuli in the environment. It is rooted in the works of Pavlov (1928), Watson (1930) and Skinner (1963), who emphasised the importance of reinforcement and punishment in shaping behaviour. In the context of education, behavioural theory implies that learning is a result of associations formed between stimuli and responses. Educators apply this theory by using rewards and punishments to encourage or discourage certain behaviours, and by breaking down complex tasks into smaller, more manageable parts that can be learned step by step.

Cognitive Theory

Cognitive theory revolves around the mental processes involved in learning. It was influenced by the works of Piaget(1971), Vygotsky (1962, 1978), and Bruner(1960), among others. This theory emphasises the role of mental activities like thinking, memory, and problem-solving in the learning process. Learners are seen as active participants who construct their own understanding and knowledge of the world. In educational settings, cognitive theory suggests that learning is influenced by how information is processed and stored in the mind. Educators facilitate learning by helping

students organise information, providing opportunities for active exploration, and encouraging the use of problem-solving skills.

Humanistic Theory

Humanistic theory focuses on the whole person and the development of their potential. It is associated with theorists like Maslow(1954) and Rogers(1961), who emphasised the importance of self-actualisation, personal growth, and intrinsic motivation. In this theory, learning is viewed as a personal act to fulfil one's potential. The role of the educator is to create a supportive environment that encourages students to embrace learning and to strive for self-actualisation. Humanistic theory in education promotes student-centred learning, where students are encouraged to take responsibility for their own learning and to pursue topics that are of interest to them.

Knowles (1970) saw these theories as different facets on of the human learning experience, importantly relating them to practical learning applications. For example, should the learning be considered simple, and learners' motivation low, then a behaviourist approach is appropriate for example learning by route. If the learning task is complicated, then cognitive theory is more appropriate such as didactic teaching.

However, if the task is complex, such as learning the Entrecomp entrepreneurial competencies, then the humanistic theory of self-directed learning is appropriate.

He went on to describe Pedagogy and Andragogy using this reasoning:

Pedagogy

Pedagogy, traditionally associated with the education of children, is centred around the role of the teacher as the primary source of knowledge and authority in the learning process. In this model, learners are often passive recipients of information, with the educator directing the learning process and determining the content and pace of instruction. The pedagogical approach is structured and teacher-centred, with a focus on the transmission of knowledge from teacher to student. However, it is crucial to recognise that contemporary perspectives on pedagogy advocate for more learner-centred approaches, acknowledging the importance of engaging learners actively in their own learning process (Dewey, 1916; Freire, 1970).

Andragogy

Andragogy, in contrast, could be considered the academics delivery of adult education to the learner. This approach is rooted in the belief that adults learn differently from children, bringing a wealth of experience and a readiness to learn to their education. Andragogy emphasises the importance of the learner's autonomy, encouraging self-directed learning and critical reflection. The educator in an andragogical model acts more as a facilitator than a director, supporting learners in setting their own learning goals and taking responsibility for their own learning journey (Knowles, 1980).

Heutagogy

Heutagogy takes the principles of andragogy further. Here the idea is to develop the self-determined learning that is so important in fostering an entrepreneurial mindset (Jones et al., 2014). With heutagogy the responsibility of learning is in the hands of the learner. While educators encouraging learners to start a journey, it is the learner themselves that set their own goals, and path they consider necessary to achieve them (Kenyon & Hase, 2000).

This represents a shift from the traditional teacher-centred models of education to a learner-centred approach for lifelong learning. An essence of heutagogy lies in the learner's ability to determine their

own learning path and goals, emphasising the development of learner competencies over the acquisition of mere skills and knowledge.

Heutagogy acknowledges that learning occurs when the learner is ready, not necessarily when the educator deems it appropriate. This readiness can be sparked by meaningful transformative experiences that connect with the learner's existing knowledge and interests (Kenyon & Hase, 2010).

With heutagogy educators act as mentors or coaches rather than traditional teachers. They provide the resources to encouraging learners to explore and reflect arriving at their own conclusions to reality. Heutagogy places a strong emphasis metacognition, encouraging learners to "think about their thinking", processing their strengths and weaknesses, and develop strategies for effective learning (Kenyon & Hase, 2010).

Academagogy

The process of moving a student dependant of educator to one that is independent and enterprising is clearly a challenge.

Academagogy proposes rather than consider the "gogies" as discreet, that a form of scholarly leading is necessary to balance the integration of all three practices irrespective of the students age or experience. In this approach, learning needs are assumed to differ, so in cooperation with the students themselves, educators guide students with their scholarly skills to ensure a tailored and effective learning experience (McAuliffe et al., 2009; Garnett & O'Beirne, 2013; Jones et al., 2014).

3. A Case Study Implementing an Academagogical Approach through AI-Enhanced Learning at UWTSD

Incorporating Academagogy

The PGCert Enterprise Skills developed at UWTSD attempts to weave an academagogic approach into the fabric of its learning environment that allows students to learn using pedagogy, andragogy and importantly heutagogy approaches.

A core direction was given by (Jones et al, 2014) with the description of the Mezirowian approach to transformative learning. (Jones et al, 2014) explain that to transform a students should experience a paradigm shift in their understanding and perception of the world. This process involves experiencing a disorienting dilemma, alienation from prescribed roles, a re-framing of their conception of reality, and re-integration into society with new perspectives (Jones et al., 2014; Mezirow, 1997; Cagney, 2014).

The PGCert set about developing a transformative experience as follows, stage one sets the scene and stage two shifts perceptions.

Incorporating Andragogy and Pedagogy

The course was crafted, with its content thoughtfully designed to cater primarily to asynchronous learning modalities, all seamlessly facilitated through the robust Learning Management System (LMS), Moodle. The content, rich and diverse in its format, spans across written materials, videos, interactive sessions, and graphical elements, aligning closely with a more traditional andragogic approach. This approach, while didactic and instinctive in nature, is something educators and learners would find familiar and comfortable. However, it is worth noting that the course's structure, with all learning materials readily available from the outset, allowing learners the flexibility to navigate through the content at their own pace, fostering a sense of autonomy in their learning journey.

To contrast this, one-to-one and group sessions were woven into the course design, aiming to cater to those learners who thrive in a more pedagogically inclined learning environment. These sessions serve as a platform for interactive learning and personalised support, ensuring that the diverse learning needs of all participants are adequately met.

Incorporating Entrecomp with the Feynman Technique

The introduction of heutagogical practices within the curriculum was significantly enhanced through the implementation of formative assessments, utilizing the Feynman Technique. This technique, named after Richard Feynman, a Nobel laureate in Physics in 1965, is grounded in the philosophy that teaching serves as a powerful mechanism for deepening one's understanding of a subject. Feynman, often referred to as “the Great Explainer,” was renowned for his ability to distill complex concepts into accessible, straightforward explanations (Goodstein et al., 1996).

The essence of the Feynman Technique lies in its capacity to illuminate areas of misunderstanding or incomplete knowledge through the process of teaching. In essence, articulating a topic in elementary terms, as though instructing a novice or a child, reveals any deficiencies in one’s comprehension or articulation of the subject matter.

The technique encompasses four fundamental steps:

1. Documenting all known aspects of the selected topic or concept, drawing from existing knowledge or new information received.
2. Striving to elucidate the topic in the simplest possible terms, akin to teaching a young learner.
3. Engaging in a reflective process to pinpoint and address any gaps or weaknesses in one’s understanding or explanation.
4. Refining the explanation further, possibly through the use of simpler language or the creation of analogies, to enhance comprehension.

It is crucial to note that steps two through four are intended to be cyclical, fostering a continuous loop of teaching, reflection, and refinement.

Within the course framework, the Feynman Technique was strategically integrated into both formative and summative assessments, facilitating a comprehensive application of this pedagogical strategy.

1. A Practical introduction of the Feynman Technique using AI

There are variety of AI (computer) applications that facilitate the development of a private knowledge base in the form of a PDF document. Such knowledge bases serve as a reservoir of wisdom for the AI, guiding its responses during subsequent subject-specific dialogues.

With this technology it is possible to set assignments where heutagogy is acquired through teaching using the Feynman Technique.

In accordance with the principles of the Feynman Technique, the students enrolled in the PGCert Enterprise Skills program engage in sophisticated collaborative group work. Their assignment involves formative tasks that require them to impart knowledge to QuickChat, a readily available conversational AI chatbot. The focus of their instruction revolves around the nuanced intricacies of the EntreComp Competencies. The goal of this endeavour is twofold: to transform QuickChat into a reflective tool for the cohort’s own introspective journey, and to serve as an invaluable resource for students in Further Education establishments throughout the region.

This is achieved by the students collaboratively crafting a comprehensive “knowledge base” about each of the Entrecomp competencies.

This heutagogy exercise, seamlessly conducted across both asynchronous and synchronous settings, commences with the students compiling a robust list of frequently asked questions (FAQs). These FAQs are identified by the students themselves as pivotal for grasping the core competencies of the course.

Following this, the amassed questions are meticulously redistributed amongst the cohort, prompting a collective effort to refine and articulate answers that are deemed fit for training the AI. This collaborative endeavour ensures that the responses are not only accurate but also resonate with the students’ understanding of the subject matter.

The zenith of this process is marked by the seamless integration of the student-generated content into a readily available conversational chatbot. This conversational AI appears within the PG Cert course and has been made available to support students at FE colleges across Wales.

2. Teaching an AI-Driven Entrepreneurial Ventures:

The integration of Claude.AI, an AI-driven chatbot, into the PGCert Enterprise Skills program exemplifies another practical application of heutagogy principles. Through a two-part formative assessment, students apply entrepreneurial concepts in a real-world context while training Claude.AI to represent their venture.

In Part 1, students create a comprehensive portfolio detailing their entrepreneurial journey, serving as both a reflective tool and a training module for Claude.AI. This process encourages self-determined learning and critical reflection, aligning with heutagogical principles.

In Part 2, students critically evaluate the AI chatbot’s responses from the perspective of potential investors, fostering learner autonomy and self-reflection. The use of Flipgrid for video demonstrations adds an interactive and reflective dimension to the assessment, further aligning with heutagogical practices.

Reflections on AI driven Feynman Technique

1. Student R’s Academic Transformation from Salesperson to Academic Value Creator

R, an academic with a substantial background in traditional teaching methodologies, started the PGCert Enterprise Skills with the objective of integrating enterprising elements into his curriculum. His initial perception of value creation was narrowly confined to the domain of business establishment, prompting his participation in the course to broaden his understanding and application of enterprise in an academic setting.

At the onset of the course, R’s approach to articulating his ideas bore a resemblance to commercial rhetoric, indicative of a common misconception associating enterprise solely with salesmanship. This perspective, however, was subject to critical examination and subsequent alteration as he progressed through the program.

The integration of a conversational AI into the course played a pivotal role in R’s transformative journey. Through interactive FAQ sessions, R was directed towards the works of Daniel Pink, specifically "To Sell is Human," facilitating a paradigm shift from a sales-oriented approach to a more nuanced, academic articulation of enterprise. This transition was instrumental in R’s understanding of persuasion as an essential component of academic discourse, extending beyond the confines of commercial transactions.

The process of instructing the AI necessitated a clear and precise expression of ideas, fostering a reciprocal learning environment wherein R was both the teacher and the learner. This interaction served as a catalyst for R's deepened appreciation of the creative process, particularly the SCAMPER technique, which he subsequently integrated into his pedagogical practice.

The act of teaching the AI transformed into an exercise of cognitive reinforcement for R, ensuring the internalisation of the SCAMPER approach and its practical application in various academic scenarios. This experience underscored the significance of creative thinking in academia, challenging the traditional boundaries of teaching and learning.

In conclusion, R's participation in the PGCert Enterprise Skills course culminated in a comprehensive transformation of his academic approach. The course, through its innovative integration of conversational AI, facilitated a shift from a sales-oriented perception of enterprise to a nuanced, academic understanding, simultaneously enriching R's pedagogical toolkit with creative problem-solving techniques. This narrative underscores the potential of AI-enhanced learning environments in fostering academic transformation and enhancing the enterprising capacities of educators.

2. Student P transformation from Boutique Hotel to Home from Home

P, an entrepreneur managing an Airbnb property, started the PGCert Enterprise Skills course with a clear commercial objective: to transform her property into a boutique hotel. Her initial approach was grounded in a commercial mindset, focusing on the aesthetic aspects of her business, particularly interior design, which she believed would serve as the primary differentiator in a competitive market.

As P engaged with the course, she was introduced to the conversational AI, a tool designed to enhance the learning experience through interactive dialogue and reflection. In her interactions with the AI, P began to articulate her business idea, building a corpus of information that would serve as the foundation for her learning journey.

However, as she delved deeper into the process, P experienced a moment of self-awareness. She realised that her focus on decor, while an important aspect of her business, was not the sole avenue for creativity and innovation. Her affinity for interior design, she recognised, had inadvertently narrowed her perspective, limiting her ability to see beyond the aesthetic dimensions of her business.

This realisation was catalysed by a unique exercise: imagining the AI as a contestant on Dragon's Den, pitching her business idea. In this role-reversal scenario, P found herself in the position of a critical investor, evaluating the business proposition presented by the AI. It was during this exercise that she experienced an epiphany.

P recognised that the AI, in reflecting her ideas back to her, was acting as a mirror, revealing the limitations of her initial approach. This moment of clarity was transformative, prompting P to reassess her strategy and approach to entrepreneurship.

From that point forward, P's interaction with the AI evolved from a one-way dialogue to a collaborative partnership. The AI became a co-developer of her ideas, a sounding board for her entrepreneurial aspirations. This shift in perspective marked a significant departure from her initial commercial mindset, paving the way for a more holistic and creative approach to entrepreneurship.

In conclusion, P's journey through the PGCert Enterprise Skills course exemplifies the transformative potential of integrating conversational AI into entrepreneurial education. By challenging her initial assumptions and facilitating a moment of critical self-awareness, the AI played a crucial role in broadening P's entrepreneurial perspective, transforming her from a property manager with a focus on aesthetics to an innovative entrepreneur with a comprehensive and creative approach to her business.

4. Reflection and Future Directions of AI

Transformative Learning

This paper therefore posits that conversational AI has the potential to play a significant role in facilitating learning experiences within the heutagogy dimension and may indeed be part of the shift towards to better meet the needs of learners in the 21st century described in (Kenyon & Hase, 2000) original text.

With its emphasis on self-determined learning and critical reflection, the case study aligns well with the principles of transformative learning, fostering an environment where students are encouraged to challenge their existing beliefs and see the world in new ways (Jones et al., 2014. p. 21; Mezirow, 1997; Barnett, 2004).

The experience of using conversational AI tools like ChatGPT shows that they have the power to provide such shifting perceptions of the world to students in real time chat. In doing so they can be used to expose perspectives to the student without educator intervention that can guide reflective practices, promoting self-directed learning.

By integrating digital and technology expertise into the entrepreneurship curriculum like this prepares students for future opportunities The development of practical skills is becoming increasingly important, and educators need to adapt their teaching methods to ensure students leave with the necessary technological skills to be competitive (Bell & Bell, 2023, p. 13).

Challenges

While AI offers numerous benefits for enhancing enterprise education, it also presents challenges that educators need to navigate.

As educators we need to ensure that the focus on technology and AI does not become a parlour trick that overshadows the development of the entrepreneurial skills being taught.

There are of course concerns regarding the integration of conversational AI in educational settings. The inconsistency of some AI's across various topics, along with its ability to generate false or inaccurate material, poses a significant threat to the credibility of academic work. Educators are urged to adapt their standards and procedures and to update their personal learning and evaluation methods to accommodate AI technologies (Sukhpal Singh Gill et al., 2023. p. 5).

By considering these insights from the additional document, educators can enhance their strategies for integrating AI into enterprise education, ensuring a more comprehensive and informed approach.

Risks

A potential risk that has emerged through this research pertains to the manner in which students acclimate to the integration of conversational AI within the educational milieu. Initially, students tend to perceive the conversational AI as an advanced search engine, essentially utilizing the technology as a means to an end, rather than leveraging it as the heutagogical tool described above to facilitate experiential learning.

This observation underscores the imperative to recalibrate the manner in which learners engage with AI, fostering a paradigm shift from a transactional interaction to a transformative learning experience. To achieve this, it is crucial to cultivate a new form of digital literacy, equipping students with the requisite skills to pose pertinent questions and extract meaningful, constructive feedback from the AI.

Learners instinctively attempt to learn *about* things rather than attempting to explore *for* and *through* the experience (Jones et al, 2019; Cranton 2016).

This shift necessitates a comprehensive understanding and familiarity with AI technologies, highlighting the paramount importance of embedding AI education within the curriculum. Such integration would not only enhance the students' ability to interact effectively with AI but also contribute to the optimization of the learning experience, ensuring that the technology serves as a catalyst for educational transformation (Latifi et al., 2021).

Conclusion

This paper underscores the transformative potential of integrating an Academagogical approach to teaching enterprise.

There was an appreciation of fostering a heutagogical approach and nurturing an entrepreneurial mindset using AI presented the transformational experiences.

The findings suggest that this approach has significant implications for future teaching practices, highlighting the need for educators to adopt flexible and adaptive teaching methods that cater to diverse learning needs.

The use of AI as seen in these examples encourage students to adopt a proactive approach to learning, where they are not just passive recipients of information but active participants in their education. This aligns with the principles of self-directed learning, where learners take responsibility for their learning, setting goals, monitoring progress, and evaluating outcomes.

However, it is crucial for students to understand how to interact effectively with AI, asking the right questions to elicit meaningful and supportive feedback. This requires a level of digital literacy and familiarity with AI technologies, highlighting the importance of integrating AI education into the curriculum (Latifi et al., 2021).

Although not providing explicit examples of AI facilitating dialogue and collaboration, (Bell & Bell, 2023; Kenyon & Hase 2000, Jones et al, 2014) also chime with the importance of such transformative learning and the development of reflective practices. The emphasis on these aspects implies a need for tools and platforms that support such interactive learning environments, and conversational AI fits this role perfectly.

The future of AI in enterprise education is clearly poised for transformative changes, with the potential to significantly impact teaching and learning practices.

The ubiquity of AI in everyday life necessitates a proactive approach to develop the use of AI in education. Educators must leverage this technology thoughtfully, developing experiences that not only teach students about AI but also equip them with the critical skills to use it effectively. This includes addressing the challenges posed by AI, such as potential inaccuracies in content and the risk of plagiarism and ensuring that students are educated about these issues and the responsible use of AI tools (Sukhpal Singh Gill et al., 2023).

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