REIMAGINING ENTREPRENEURSHIP EDUCATION FOR AI-ENHANCED PROFESSIONAL PRACTICE: THE TRANSDISCIPLINARY ACTION LAB

1. Abstract

The rapid advancement of artificial intelligence (AI) technologies is reshaping the landscape of professional practice across various industries, including education. This paper explores the development of the Transdisciplinary Action Lab (TAL), a pioneering subject designed to integrate AI into entrepreneurship education. By leveraging GenAI tools, TAL aims to equip students with the skills and mindset necessary to thrive in an AI-driven world. The paper discusses the redesign of Student Learning Outcomes (SLOs) to incorporate GenAI, the innovative assessment methods employed, and the experiential learning activities that form the core of the course. The anticipated outcomes include enhanced critical thinking, creativity, and the ability to apply AI in entrepreneurial contexts. The paper also addresses the broader societal implications of GenAI in education, such as ethical considerations and educational equity.

2. Introduction

The integration of artificial intelligence (AI) into entrepreneurship education represents a significant shift in how future entrepreneurs are prepared for the complexities of the modern business environment. As Generative AI (GenAI) tools and agents continue to evolve, there is a pressing need for educational institutions to adapt their curricula to ensure that students are equipped with the necessary skills and knowledge to leverage these tools effectively. The Transdisciplinary Action Lab (TAL) at the Transdisciplinary School, part of the University of Technology Sydney (UTS), is a pioneering initiative designed to address this need by integrating AI into the educational process for students from all faculties working in transdisciplinary teams.

TAL aims to bridge the gap between the rapid adoption of GenAI in the professional world and its integration into academic curricula. By providing students with hands-on experience in using GenAI tools to tackle real-world challenges, the course fosters critical thinking, creativity, and an entrepreneurial mindset. The pilot's innovative approach includes the use of GenAI-driven assessments and experiential learning activities that immerse students in AI-enhanced problem-solving scenarios. These elements are designed to prepare students for the uncertainties and complexities of the modern business landscape, ensuring they can adapt and thrive in an AI-driven world. The redesigned Student Learning Outcome (SLO), new assessments and class activities reflect this integration, emphasising the importance of ethical considerations and the responsible use of AI.

In conclusion, the Transdisciplinary Action Lab represents a pioneering approach to integrating AI into entrepreneurship education. By fostering critical thinking, creativity, and ethical awareness, the program prepares students to navigate the complexities of the modern work environment.

3. Literature Review on AI in (Entrepreneurship) Education

The rapid advancement of artificial intelligence (AI) technologies is reshaping the landscape of professional practice across various industries, including education. As universities strive to adapt their teaching and learning models to keep pace with these technological changes, there is a pressing need to reimagine entrepreneurship education.

3.1 Current Opportunities and New Challenges of AI in Education

Traditional approaches to entrepreneurship education often fall short in addressing the complexities and uncertainties of the modern work environment. Employers and entrepreneurs are increasingly leveraging AI to achieve unprecedented levels of productivity and growth. The expected growth of GenAI and its ability to transform the business world in various spheres requires educators and educational institutions to equip students with the necessary know-how to incorporate GenAI, fundamentally altering the way we work, communicate, consume, and educate (Eitner, 2023). Entrepreneurial education should prepare students with advanced skills in adaptability, decision-making, and interpersonal communication, as well as an understanding of GenAI's implications and potential for data-driven insights, automation, and enhanced human connection in their professional practice. However, there is a gap between the rapid adoption of AI in the professional world and its integration into academic curricula. The Transdisciplinary Action Lab seeks to bridge this gap by providing students with hands-on experience in using AI tools to tackle real-world challenges.

GenAI has been increasingly recognised for its strategic value in education. Loeckx (2021) suggested that GenAI could be an effective learning tool that lessens the burdens of both teachers and students, offering more effective learning experiences. In our age of continuous disruption, the role of education is evolving faster than ever. The creation of new graduates requires an innovative mindset and the agility to evolve and adapt, focusing on disruptive innovation through digital transformation. The technology-based classroom of the future, with immersive interaction with GenAI and other modern solutions, along with necessary modifications in teaching, learning, and skills development, may become fundamental to success and business leadership in the digital world (Tarabass et al., 2018).

Coupled with current education reforms such as the digitalisation of educational resources, gamification, and personalised learning experiences, there are many opportunities for the development of AI applications in education (shai et al., 2021). For example, the modeling potential of AI techniques can be systematically exploited to develop reactive and adaptive outcomes for individualised learning environments. This approach immerses students in real-world challenges posed by industry partners, allowing them to take on the role of decision-makers, grapple with uncertainty, and devise practical solutions to pressing issues. By leveraging AI to ideate solutions, field-test them in real-world settings, assess their impact, and propose actions that promote desired outcomes, this experiential learning approach fosters critical thinking, transdisciplinary collaboration, and an entrepreneurial mindset.

Additionally, recursive feedback from GenAI tools can foster learners' abilities to reason in specific ways, as human-computer interaction engenders a sense of responsibility towards improving the construction of knowledge repositories (shai et al., 2021). Drawing from sociocultural theories of learning, Vattam et al. (2021) reported that engaged learners could better understand multiple levels

of organisation in complex systems, emphasising the importance of student engagement in designing AI agents that support reasoning. Furthermore, intelligent reasoning systems can help learners optimise their understanding of relationships between subcomponents of a topic and provide argumentative interactions that enhance collaborative learning atmospheres. These systems, combined with visualised mapping tools and collaboration scripts, have been shown to help learners analyse and evaluate opposing positions on contentious topics, thereby developing critical thinking and writing skills (Jain et al., 2021).

However, Lasarus et al. (2022) highlighted concerns that while GenAI promises customised learning experiences, it also has the potential to perpetuate biases, disadvantaging specific demographic cohorts. Bosdag (2023) argues for a proactive approach that intertwines technological advancements with a robust understanding of the sociocultural contexts in which these technologies are deployed.

The integration of Generative AI into tertiary education raises significant concerns regarding ethical practices and academic integrity. GenAI tools, such as ChatGPT or GPT-4, can generate essays, reports, and even research content that may not represent the student's authentic work, thereby complicating the detection of plagiarism and the evaluation of individual learning (McKnight et al., 2023). Additionally, biases inherent in the training data of GenAI models can inadvertently perpetuate stereotypes or produce inaccurate outputs, potentially misleading students and educators alike (Bender et al., 2021). Privacy concerns further exacerbate these issues, as some GenAI platforms require personal data input, raising questions about data security and compliance with regulations such as GDPR (Floridi & Cowls, 2019). These challenges necessitate the development of robust policies and tools to ensure ethical AI use while upholding academic standards.

The proliferation of GenAI in tertiary education also poses substantial challenges for assessment and evaluation processes. Traditional methods of assessment, such as essays and problem-solving tasks, may struggle to differentiate between student-generated work and AI-assisted outputs, raising concerns about the validity of such assessments (Johnson et al., 2023). Furthermore, over-reliance on GenAI tools can significantly hinder the development of critical thinking and evaluative judgement skills among students. By providing instant, seemingly well-reasoned solutions, GenAI may discourage students from engaging in the deeper intellectual processes required to critically analyse information, synthesise ideas, or evaluate the quality and credibility of sources (Selwyn, 2023). The absence of these essential skills not only undermines students' ability to critically assess AI-generated outputs but also affects their preparedness for real-world problem-solving, where nuanced judgement is crucial (Luckin et al., 2021). This phenomenon aligns with the "automation complacency" effect observed in other fields, where reliance on automated systems diminishes human oversight and decision-making abilities (Endsley, 2017). These risks highlight the urgent need for educators to design assessments that challenge students to actively engage with material, critically reflect on their learning processes, and apply evaluative skills independently, even in the presence of GenAI assistance.

Based on the above discussion, it seems that GenAI tools provide enormous opportunities for students and instructors in higher education. The immense potential of GenAI tools has opened up massive opportunities for research in this area to fully understand the potential of this technology as a method of enhancing the efficiency of teaching and learning while shaping the future of current and upcoming generations. If we want our students to learn how to solve real-world challenges, we should integrate GenAI tools into the classroom ecosystem, not as something to fear, but as a medium for transforming practical education. This approach can greatly help students acquire lifelong learning skills and use them in their future careers to solve actual problems at their workplaces (Dwivedi et al., 2023).

3. 2 Current Opportunities and New Challenges of AI in Entrepreneurship Education

The integration of GenAI tool into entrepreneurship education presents numerous opportunities. AI has the potential to transform the way students learn and engage with entrepreneurial concepts. By leveraging AI tools, educators can create more personalised and adaptive learning experiences that cater to the individual needs and preferences of students. Digitalisation creates significant possibilities for using automatic digital tools in education solutions, especially scalable AI applications. This shift can increase entrepreneurial aspirations through innovative teaching and learning techniques in entrepreneurship, making students more willing to engage in entrepreneurship activities at universities. Therefore, GenAI tools can play a key role in boosting entrepreneurial activities at the university level.

One of the key opportunities presented by AI is the ability to provide real-time feedback and support to students. AI can also facilitate the development of critical thinking and problem-solving skills. By engaging with GenAI tools, students can learn to analyse data, identify patterns, and make data-driven decisions. These skills are essential for success in the modern environment, where data and technology play a central role in decision-making processes (Kraus et al., 2020). For example, AI's application in entrepreneurship education can be seen in its use in market analysis. AI tools can process vast amounts of data to identify emerging market trends and consumer behaviors. An AI-powered platform can analyse social media posts, online reviews, and sales data to provide insights into consumer preferences and market demand (Dwivedi et al., 2023). This information can help students develop more effective marketing strategies and make data-driven decisions about product development and positioning.

Furthermore, AI can support the development of innovative and entrepreneurial mindsets. By providing students with hands-on experience in using AI tools to tackle real-world challenges, the Transdisciplinary Action Lab aims to cultivate resilience, adaptability, and a proactive approach to problem-solving. These traits are crucial for navigating the complexities and uncertainties of the modern business landscape (Giuggioli & Pellegrini, 2022). For instance, AI can play a crucial role in product development. By leveraging AI tools, students can simulate different product designs and test their feasibility before committing to production. AI-driven design software can generate multiple iterations of a product based on specific parameters, allowing students to explore various design options and select the most promising one. This approach not only accelerates the product development process but also reduces the risk of costly design errors.

AI's role in entrepreneurship education extends beyond the classroom. AI-powered platforms can assist in the creation and refinement of business models by enabling entrepreneurs to analyse market trends, customer preferences, and competitive landscapes, thereby making more informed decisions. AI tools such as predictive analytics and machine learning algorithms help entrepreneurs identify opportunities and mitigate risks, enhancing their chances of success (Giuggioli & Pellegrini, 2022). For instance, AI-powered financial models can analyse historical data and predict future financial performance with greater accuracy than traditional methods. Students can use these models to forecast revenue, expenses, and cash flow, enabling them to make more informed financial decisions. An AI-driven financial forecasting tool can help students assess the financial viability of a new business venture and identify potential funding needs.

Furthermore, AI can enhance decision support systems by providing real-time insights and recommendations. AI-powered decision support tools can analyse data from various sources to identify potential risks and opportunities, allowing students to make more informed decisions about business strategy, resource allocation, and risk management. By leveraging AI-driven decision support systems, students can develop a deeper understanding of the complexities of business decision-making and improve their strategic thinking skills.

The integration of GenAI into enrepreneursihp education is not without its challenges. Contemporary AI is not focused on creating computational 'superintelligences' ('strong AI') but ideally on developing machines that can learn from their own experience, adapt to their contexts and uses, improve their own functioning, craft their own rules, construct new algorithms, make predictions, and carry out automated tasks without requiring control or oversight by human operatives (Alpaydin, 2016; Mackensie, 2017). Although GenAI tools offer immense benefits in supporting learning and skill development, their misuse or overreliance can present significant risks. Dependence on GenAI for generating content or analysis can lead students to rely on potentially inaccurate or biased information, as AI models may misinterpret complex academic contexts or produce misleading conclusions. Such risks are especially concerning in entrepreneurship, where critical thinking, independent analysis, and accuracy are essential. If students fail to verify AI-generated results or approach GenAI tools uncritically, they risk developing a passive relationship with information, diminishing their own problem-solving and evaluative abilities. Therefore, entrepreneurial education must not only teach students to utilise GenAI tools responsibly but also to critically assess its outputs, fostering an awareness of AI's limitations and encouraging a mindset of scrutiny and adaptability. This is essential in empowering students to leverage Gen AI tools effectively without compromising academic rigour or intellectual growth.

Moreover, the rapid pace of AI development poses a significant challenge for educators and institutions, as keeping up with the latest advancements and integrating them into curricula requires substantial resources and expertise (shai et al., 2021). Many educators may lack the necessary training to effectively incorporate AI tools into their teaching, leading to a gap between the potential of AI and its actual implementation in classrooms (Dwivedi et al., 2023).

Conclusion

The findings from this literature review underscore the importance of incorporating AI tools in educational settings to prepare students for the challenges and opportunities of the modern business environment. Future research should focus on refining AI applications in education, exploring the intersection of adaptive learning and industrial applications, and understanding how hybrid, multidisciplinary teams of humans and AI can work together effectively. By doing so, we can ensure that AI becomes a force for educational inclusivity and equity, enhancing rather than replacing human judgment and creativity in the entrepreneurial process.

The integration of GenAI into entrepreneurship education presents both significant challenges and exciting opportunities. The Transdisciplinary Action Lab (TAL) serves as a pioneering model for integrating AI into entrepreneurship education, providing students with the skills and mindset necessary to thrive in an AI-driven world. By addressing the current issues and challenges associated with AI in education, and by leveraging the opportunities and development trends in AI technology,

the TAL aims to prepare students for the complexities and uncertainties of the modern business environment.

4. Case study: Transdisciplinary Action Lab subject at the University of Technology Sydney

4.1 Case study methodology

The case study focuses on the Transdisciplinary Action Lab (TAL) subject to be delivered by the Transdisciplinary School at the University of Technology Sydney (UTS) in Autumn 2025. The subject is part of the Transdisciplinary Electives program. This program offers undergraduate students the opportunity to engage in transdisciplinary learning by collaborating on real-world challenges presented by industry partners. This initiative is designed to enhance students' problem-solving skills and professional capabilities by working alongside experts on complex issues. As part of UTS's commitment to integrating transdisciplinary education, the university has progressively integrated the program into each undergraduate degree at UTS since 2022. Students can choose from eight TD elective subjects. It encompasses subjects such as "Reframing, Remixing, Reimagining Society," where students collaborate with the Australian Red Cross to develop novel responses to societal challenges, and "Envisioning Futures Worth Wanting," which involves working with the City of Sydney to explore sustainable and ethical futures. This strategic inclusion aims to equip all UTS graduates with the ability to think across and beyond their disciplines, fostering adaptability and innovation in their future careers (UTS, 2024).

The Transdisciplinary Action Lab is designed to prepare students for AI-enhanced professional entrepreneurial practice. It focuses on equipping students with the skills and mindset necessary to thrive in an AI-driven world by integrating AI agents into the educational process. Students will tackle a real-world challenge posed by its industry partner, Miro, using the entrepreneurial framework of effectuation (Sarasvathy, 2001). Miro is a digital collaboration platform that enables distributed teams to brainstorm, design, and manage projects through an online visual workspace. Students take on the role of decision-makers, grappling with uncertainty and devising practical solutions to pressing issues. Working in multidisciplinary teams, they ideate solutions, field-test them in real-world settings, assess their impact, and propose actions that promote desired outcomes. This experiential learning approach fosters critical thinking, transdisciplinary collaboration, and an entrepreneurial mindset. .

The structure of the TAL activities is grounded in an iterative cycle of ideation, prototyping, and testing following the effectuation framework (Saraswathy 2001): Means, Affordable Losses, Leverage Contingencies, Co-Creation Partnership and World View. Early in the program, students undertake discovery activities to unpack the problem space, synthesise stakeholder needs, and define the scope of their project. Guided workshops and facilitated discussions provide opportunities for teams to experiment with various tools and methodologies, enhancing their ability to think critically and creatively. Through iterative prototyping, students translate their ideas into tangible solutions, refining their outputs in response to feedback from peers, facilitators, and stakeholders. This hands-on, interactive process underscores the subject's emphasis on learning by doing, enabling students to bridge theory and practice.

The assessment strategy for TAL is purposefully aligned with the subject's focus on process-driven learning and real-world impact. Formative assessments are embedded throughout the program, ensuring that students receive ongoing, constructive feedback to inform their learning journey. These include reflective journals, where students critically analyse their experiences, challenges, and growth, as well as peer feedback mechanisms that foster accountability and collaborative skills. Presentations at key milestones provide an opportunity for students to articulate their progress, test their ideas, and integrate insights from a variety of perspectives. This formative approach scaffolds students' learning, supporting them as they move towards more complex tasks.

Summative assessments in TAL are designed to holistically evaluate both the outcomes of the project and the learning process itself. A final presentation allows students to demonstrate the evolution of their ideas, showcase their solutions, and articulate the impact of their work on the problem at hand. Complementing this, a reflective portfolio serves as a comprehensive record of their learning journey, capturing critical self-assessment, team dynamics, stakeholder engagement, and the iterative development of their project. By valuing reflection and collaboration alongside outcomes, the assessment framework prioritises the development of an entrepreneurial mindset and transferable skills over a singular focus on product delivery.

Employers and entrepreneurs are increasingly leveraging AI to achieve unprecedented levels of productivity and growth. However, there is a gap between the rapid adoption of AI in the professional world and the integration of these technologies into academic curricula. The following sub-sections explore how Transdisciplinary Action Lab seeks to bridge this gap by providing students with hands-on experience in using AI tools to tackle real-world challenges. The aim of the case study is to identify expected benefits and how to measure them once the subject is delivered as a pilot in Autumn 2025 to 400 undergraduate students. The aim of this case study is also to share examples of activities and assessments incorporating AI.

4.1.1 AI enabling Student Learning Outcome

One of the first challenges in incorporating AI-enhanced class activities and assessments is to design a subject learning outcome (SLO) that specifically targets the outcome of providing students with capabilities for AI-enhanced professional practice. Table 1 shows the initial SLOs planned for the Transdisciplinary Action Lab subject and their related course aims and Transdisciplinary School graduate attributes. By aligning the SLOs with the graduate attributes, the Transdisciplinary Action Lab ensures that students develop a well-rounded skill set that prepares them for the complexities of the modern business environment.

Table 1: Original Subject Learning Outcomes and their related Course Aims and Graduate Attributes.

ID	Subject Learning Outcome	Related Course Aim / Graduate Attribute
SLO 1	Integrate different perspectives to analyse complex real-world challenges.	**GA1 Holistic analysis** 1.1 Identify and evaluate complex challenges by analysing system dynamics, constraints, and potential leverage points, using disciplinary perspectives, evidence, and diverse viewpoints.
SLO 2	Identify significant issues and emerging opportunities to create positive change in real-world contexts.	**GA2 Transformative creativity** 2.1 Identify, create, and employ a range of appropriate creative intelligence methods and boundary-crossing methodologies to construct and solve problems and generate transformative possibilities.
SLO 3	Apply transdisciplinary collaboration and action-based decision-making methods in teams to generate responses to complex challenges.	**GA3 Action orientation and TD experimentation** 3.1 Practice mutual, responsible value creation, including the implementation of sustainable and entrepreneurial innovation.
SLO 4	Develop reflexive connection with their own evolving perspectives and contributions as a productive member of a multidisciplinary cohort and team	**GA4 Contextual and self-awareness** 4.1 Develop reflexive connection with an evolving self, demonstrating ethical and intellectual positions that reflect well-considered values that enable greater purpose and inclusivity.
SLO 5	Communicate project outcomes creatively, confidently, and convincingly to internal and external project stakeholders, using a range of modes and media	**GA3 Action orientation and TD experimentation** 3.2 Communicate transdisciplinary ideas and solutions succinctly and persuasively using appropriate modalities.

However, it became evident that the original SLOs did not fully encompass the scope of AI-enhanced activities and assessments. In many cases, students could achieve nearly all the stated outcomes with significant reliance on Generative AI tools, which risked undermining the development of their critical thinking and hands-on problem-solving skills. This presented two options: either update all existing SLOs to explicitly include and address AI capabilities, or design a new SLO to complement the existing ones and integrate AI-enhanced professional practices in a more deliberate and focused manner. In this case option 2 was the option of choice as most of the other SLOs were critical, apart for SLO2 that could already be covered by SLO1. This approach ensures that the AI component is adequately addressed without overcomplicating the SLO structure. Changing a single SLO to encompass the AI component is more efficient and effective than altering all SLOs. This approach

maintains the integrity of the original learning objectives while ensuring that the critical aspect of AI integration is highlighted. It allows for a focused assessment of AI-related skills and knowledge, making it easier to evaluate student performance in this area. The 'AI' related SLO should then be able to cover a large ground, the full 'chain of thought' of students and GenAI:

- demonstrating an ethical use of AI
- selecting the relevant AI agent
- crafting the most efficient prompts
- evaluating the outcomes generated by AI agents
- reflecting on the use of AI

As a result the new 'AI" related subject learning outcome was designed as follow and replaced the previous SLO2:

Demonstrate evaluative judgement grounded in ethical considerations and a reflexive approach in leveraging AI-driven tools.

4.2 Integrating the Five UTS GenAI principles for the effective ethical use of generative AI

UTS introduced five principles to assist academics in transitioning their assessments in response to the new opportunities that GenAI opens up, as well as academic integrity challenges (LX Team 2024). Integrating the five UTS student-centred principles (as seen in figure 1) into the Transdisciplinary Action Lab subject is essential for fostering effective and ethical engagement with Generative AI (GenAI).

This integration begins with Principle 1, which emphasises understanding the significance of GenAI. To address this, the initial module will include comprehensive materials elucidating GenAI's impact on society, various career paths, and academic pursuits. An interactive discussion during the first tutorial will encourage students to explore and debate GenAI's contemporary implications. Key concepts related to GenAI will be reiterated midway through the course to reinforce understanding and maintain engagement. Reflective components in Assessment 3 will prompt students to critically assess GenAI's role in their learning journey and prospective careers.

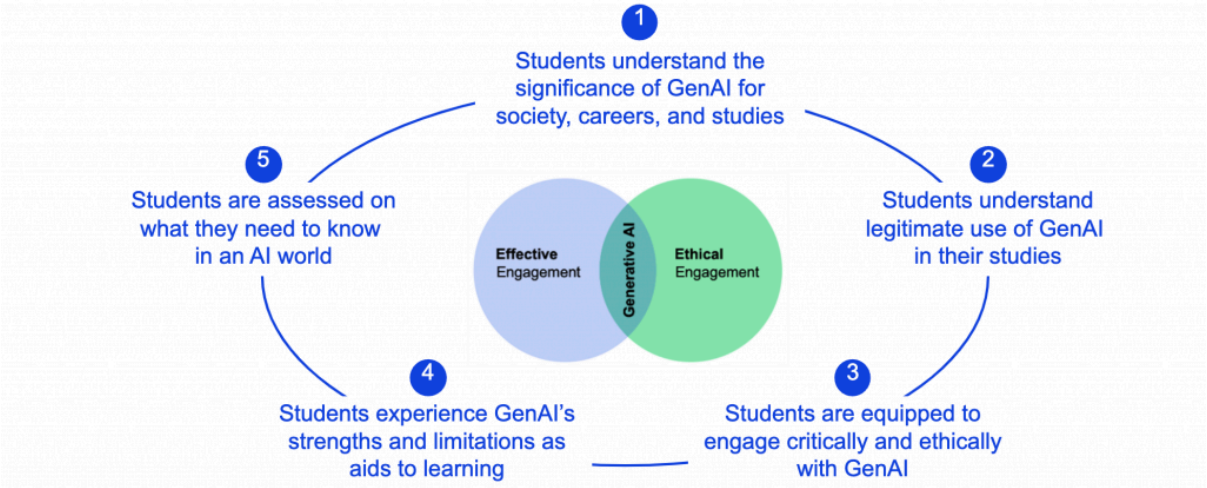

Figure 1: The Five UTS Student-Centred Principles for the effective ethical use of GenAI

Addressing Principle 2 involves providing clear guidelines on the appropriate and ethical use of GenAI tools within academic work, ensuring students comprehend acceptable practices. Explicit instructions in each assessment brief will outline the permissible use of GenAI, accompanied by a declaration on the assessment cover page affirming adherence to these guidelines.

Principle 3 focuses on critical and ethical engagement with GenAI. To this end, tasks will be designed where students utilise GenAI to complete Learning Tasks 1-5, followed by presentations to their peers detailing their process, the GenAI outputs, and their critical evaluations. Students will be encouraged to verify GenAI-generated references and scrutinise content accuracy, fostering analytical skills and ethical considerations. Group discussions will promote the comparison of individual findings, facilitating consensus-building and deeper insights into GenAI's capabilities and limitations.

In line with Principle 4, an experiential learning approach will be adopted, allowing students to independently explore GenAI tools and gain firsthand experience of their functionalities and constraints. Reflective practice will be encouraged, with students documenting their experiences and reflections in Assessment 3, fostering self-awareness and critical thinking regarding GenAI's role in their education.

Regarding Principle 5, future planning will involve monitoring the outcomes of initial assessments to evaluate the impact of GenAI integration. Based on these insights, strategies will be developed to align future assessments with the competencies required in an AI-augmented professional landscape.

By systematically embedding these principles, the Transdisciplinary Action Lab is cultivating a learning environment that not only embraces technological advancements but also upholds ethical standards and critical engagement, preparing students for the evolving demands of their future careers.

4.3 Overview of AI integration in the Transdisciplinary Action Lab subject

4.3.1 AI Integration in Problem and Means Mapping

Students are presented with a real-world challenge from an industry partner, which serves as the focal point for their learning experience. This challenge is designed to be complex and multifaceted, requiring students to utilise AI tools to map out problems and identify potential solutions. AI technologies such as Natural Language Processing (NLP) and machine learning algorithms are employed to analyse data, diagnose issues, and generate recommendations. This integration helps students understand how AI can optimise problem-solving and decision-making in professional contexts.

4.3.2 AI Integration in Idea Generation

At various stages of the entrepreneurial process, students leverage GenAI tools to enhance their idea generation capabilities. For instance, they use ChatGPT and other generative AI models to brainstorm and develop innovative concepts. These GenAI tools assist in generating relevant text, simulating different scenarios, and refining business ideas. By incorporating AI into the ideation phase, students can explore a wider range of possibilities and develop more creative and viable solutions.

4.3.3 AI Integration in Interview Preparation and Analysis

Students work in multidisciplinary teams, bringing together diverse perspectives and expertise. During the interview preparation and analysis phase, AI tools are used to enhance the quality and

depth of the interviews. NLP tools help in preparing interview questions and analysing the responses, while machine learning models assist in recognising patterns and trends across diverse perspectives. This collaborative use of AI enhances students' analytical skills and improves their ability to extract meaningful insights from interviews.

4.3.4 Impact Assessment

Students evaluate the outcomes of their solutions using both quantitative and qualitative metrics. AI tools such as machine learning and deep learning models are employed to assess the impact of the proposed solutions. These tools include data visualisation, statistical analytics, and predictive modeling techniques, which help students understand the broader implications of their work. By using AI for impact assessment, students can gain a deeper understanding of the effectiveness of their solutions and the potential for real-world application.

4.3.4 Action Proposals

Based on their findings, students formulate action proposals to drive desired outcomes. These proposals are refined with AI-driven insights and are presented to industry partners for feedback and potential implementation. The use of AI in developing and presenting action proposals ensures that the recommendations are data-driven, well-supported, and aligned with industry needs. This phase also provides students with valuable experience in communicating their ideas and collaborating with industry stakeholders.

4.3.5 AI Integration in Assessments

Throughout the entrepreneurial process, students are expected to leverage AI tools and critically analyse their use. This includes evaluating the effectiveness of AI in enhancing their decision-making and the overall impact on their project outcomes. By integrating AI into assessments, students develop a critical understanding of the strengths and limitations of AI technologies and learn to use them responsibly and effectively in professional practice.

This methodology ensures that students in the Transdisciplinary Action Lab gain practical experience in using AI tools to address real-world challenges. By integrating AI into various stages of the entrepreneurial process, the TAL aims to equip students with the skills and mindset necessary to thrive in an AI-driven world.

4.3 Assessments in an AI-Enabled World

4.3.1 Lean Sprint 2: Demonstrating evaludative judgement of GenAI output on th challenge space

A visual of the subject structure is proposed in figure 2. In between fortnightly tutorials students are required to work on their 'Lean Sprints' or a set of specific activities leading them along the effectuation process. In figure 2 the lean sprints are identified by green post-its. Assessment 1 (Problem Space) is based on lean sprint 1-4, Assessment 2 (Proposal of a concrete action plan to address the challenge) is based on lean 5 and 6 while Assessment 3 is a reflection on all past activities and the relevance of effectuation and a transdisciplinary approach in their future careers.

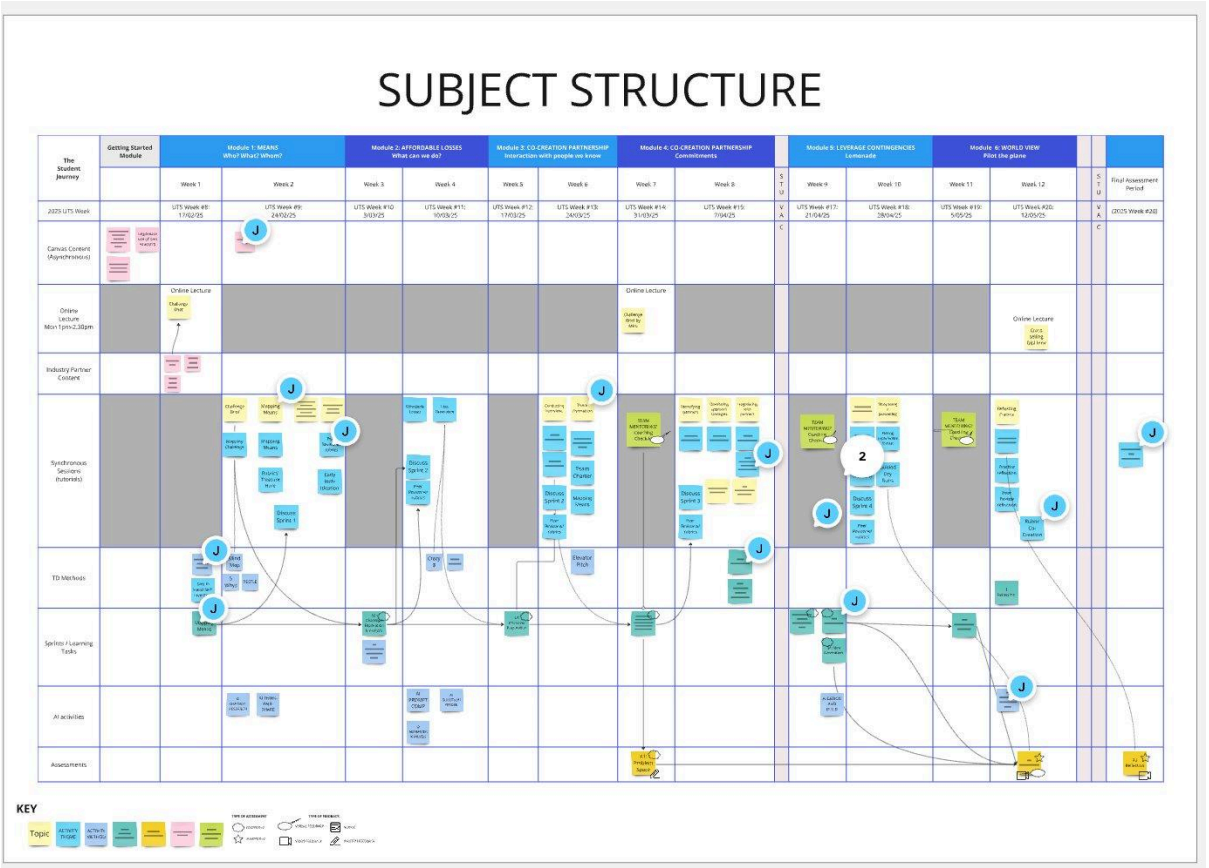

Figure 2: Subject Structure

If the first Lean Sprint is a traditional Bird-in-Hand self inventory (or means mapping activity), the second Lean Sprint (challenge exploration and analysis) relies heavily on the use of GenAi, see appendix A for the activity brief of Lean Sprint 2. Students are invited to investigate the current debates around the challenge they have been given with GenAi tools such as ChatGPT or Bard or other AI agents of their choice. Examples of prompts are also provided to help students not familiar with prompt design. They then have to identify key research leads or areas needing further exploration based on the insights gathered. This activity is leveraging one of assessment ideas for an AI enabled world packaged by Lydia Arnold (2022): AI generated research leads (figure 3).

Students are then required to demonstrate evaluative judgment on the output generated by GenAi by critically assessing their credibility, relevance, and accuracy. They begin by cross-referencing AI-generated leads with peer-reviewed academic literature and reputable industry reports. For example, when the AI suggests trends such as "Gen Z prefers hybrid work for better work-life balance," students investigate whether empirical studies support these claims or if the insights are overly simplistic. Additionally, they compare AI-driven assertions with industry reports from trusted sources like McKinsey and Deloitte, ensuring alignment with data-driven analysis and determining whether the trends highlighted by the AI are widespread or niche. This rigorous cross-referencing process allows students to verify the reliability of AI outputs and refine their insights based on established research and practical examples.

Beyond evaluating credibility, students also identify biases and limitations in GenAI outputs. They analyse potential biases in AI-generated information, such as a disproportionate focus on the positive

aspects of remote work while neglecting challenges like burnout or cultural disconnection. By comparing these outputs with class mapping exercises that outline diverse workplace dynamics, students identify gaps in the AI's perspective, such as its tendency to generalise trends without considering specific contexts like community organisations or grassroots initiatives. Furthermore, they document factual inaccuracies and omissions, such as the AI's overgeneralisation about companies moving to fully remote models, contrasting these claims with current trends favouring hybrid models. This evaluative process enhances their critical thinking and deepens their understanding of the complexities surrounding workplace innovations, enabling them to effectively address the limitations of AI-generated insights.

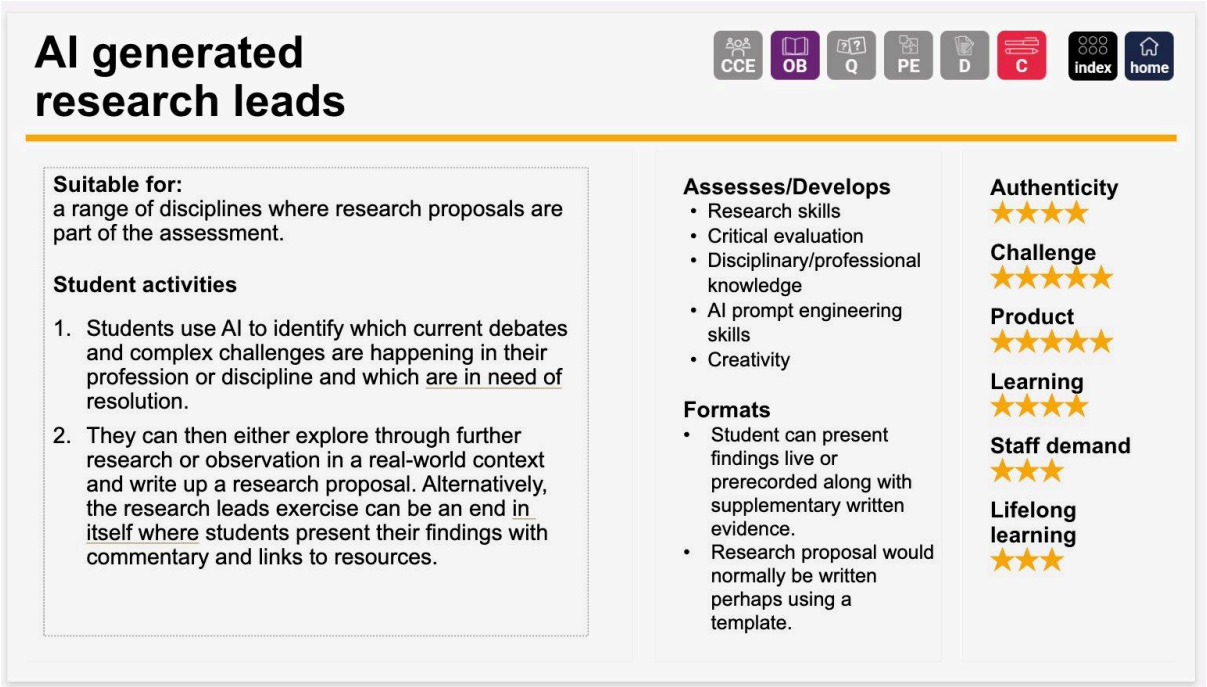

Figure 3: Lydia Arnold's AI generated research leads activity

4.3.2 Lean Sprint 4: Conducting and analysing interviews using gen AI tools

Once again, if the third lean sprint is about preparing for stakeholder interviews in a traditional manner, the forth one is enhanced considerably with GenAI tools (see appendix B). Students are required to demonstrate an innovative use of GenAI tools by conducting and analysing interviews with synthetic users, while simultaneously exercising evaluative judgement. The activity begins with the recruitment of AI-generated personas that reflect the characteristics of the "new generation of workers," focusing on their potential to influence ways of working to foster innovation. Students conduct interviews with these synthetic users using AI platforms, documenting the generated insights. This process enables students to engage with AI tools in a hands-on manner, exploring their capacity to produce actionable insights. By structuring interview questions carefully, students test how the format and prompts influence the quality of responses, gaining insights into the potential and constraints of AI-generated data.

The innovative aspect of this activity lies in the comparative analysis of AI-generated and real-world interview data (which they would have conducted in a field trip as part fo their tutorial), which fosters critical thinking and evaluative judgement. Using AI analysis tools, students assess the relevance, depth, and accuracy of the insights from synthetic users against responses from human participants. This comparison helps students identify biases, generalisations, and missing elements in AI outputs, such as the lack of nuanced perspectives on workplace dynamics or the tendency for overly optimistic feedback. They also evaluate the strengths and limitations of the AI tools used, considering whether synthetic data can complement or substitute real-world research. This reflective exercise sharpens their analytical skills, enhances their understanding of GenAI's role in user research, and prepares them to make informed decisions about its applications in professional practice.

5. Expected Outcomes

The Transdisciplinary Action Lab (TAL) aims to achieve several significant outcomes that align with its overarching goal of preparing students for AI-enhanced professional entrepreneurial practice. Key expected outcomes include:

1. **Enhanced Critical Thinking and Evaluative Judgement**: Students should develop the ability to critically assess AI-generated outputs, identify biases, and refine insights through rigorous cross-referencing with empirical data and reputable sources.
2. **Improved Collaborative and Transdisciplinary Skills**: Through team-based activities, students should foster effective collaboration across disciplines, enhancing their ability to co-create solutions in diverse professional settings.
3. **Ethical and Reflexive Engagement with GenAI**: Students should demonstrate the ethical use of GenAI tools, encompassing prompt design, selection of appropriate tools, and reflective practices that consider societal impacts.
4. **Action-Oriented Problem Solving**: By working on real-world challenges presented by industry partners, students should cultivate an entrepreneurial mindset and the ability to translate complex ideas into actionable strategies.
5. **Enhanced Industry Readiness**: Students should gain practical experience with AI tools, preparing them to adapt to and thrive in an AI-driven professional environment.

Feedback will be integral to assessing the effectiveness of TAL in achieving these outcomes. Input will be collected from the following stakeholders with these intended methods:

1. **Students**:
    - **Reflective Journals**: Students will document their learning experiences, challenges faced, and perceived skill development throughout the course in the lean sprints and their final assessment.
    - **Mid- and End-of-Semester Surveys**: These will measure students' self-reported growth in areas such as critical thinking, ethical engagement, and AI tool proficiency.
    - **Focus Groups**: Conducted at the end of the subject, these sessions will provide qualitative insights into students' experiences, allowing for more nuanced feedback.

2. **Industry Partners**:
    - **Post-Project Reviews**: Our Industry partners, Miro, will evaluate the feasibility and impact of students' top 10 proposed solutions, offering insights into their readiness for real-world application.
    - **Feedback Forms**: Industry partners will assess students' professional skills, including their ability to leverage AI tools effectively, collaborate in transdisciplinary teams, and present actionable solutions.

6. Conclusion

In conclusion, the Transdisciplinary Action Lab (TAL) represents a transformative approach to entrepreneurship education, integrating generative AI tools and principles to address the complexities of modern professional practice. By embedding AI-enhanced activities and assessments, TAL should equis students with critical thinking, collaborative, and ethical skills that are essential for thriving in an AI-driven world. The iterative design of the course, aligned with real-world challenges and supported by industry partnerships, ensures that students gain practical, actionable insights that prepare them for future careers.

Through innovative pedagogy and a commitment to ethical AI use, TAL not only bridges the gap between academic learning and professional application but also fosters a mindset of adaptability and lifelong learning. The subject's focus on reflective practice, evaluative judgment, and actionable problem-solving positions it as a model for reimagining how higher education can leverage AI to meet the evolving demands of industry and society. By prioritising both technological competence and ethical awareness, the TAL ensures its graduates are not only proficient users of AI but also thoughtful innovators capable of shaping the future of entrepreneurship in an equitable and responsible manner.

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Appendix A:

LEAN SPRINT 2: Challenge Exploration & Analysis using AI Tools

Use the **AI Generated Research Leads** activity on Miro's challenge:

"How might a new generation of workers change the ways of working of collaborators, communities, or organisations to foster innovation?"

Objective:

- Engage with the challenge of how younger generations (Gen Z and Millennials) are reshaping workplace practices, collaboration, and community dynamics to drive innovation.
- This activity will help you explore current debates and emerging trends using Generative AI tools to develop actionable research leads.

Instructions:

1. **Explore Current Workplace Debates Using AI**:

- Use AI tools like ChatGPT or Bard to investigate how younger workers are influencing workplace norms. Begin by crafting prompts to uncover ongoing discussions, trends, and challenges such as:
    - The shift towards hybrid and remote work preferences.
    - Changing expectations around leadership styles and workplace transparency.
    - The growing emphasis on purpose-driven work and mental well-being.

      Example Prompts You Can Use:

        - "What are the latest trends in workplace culture driven by Gen Z?"
        - "How does the preference for flexible work models impact innovation in organisations?"
    - By using these prompts, you'll get a broad view of how current generational shifts are impacting the world of work and what challenges remain unresolved.

1. 2. **Explore the need for communities or organisation to foster innovation using AI**

- Begin by using AI tools to investigate why fostering innovation has become a critical priority for modern organisations and communities,.

Consider prompts that explore the following:

- The evolving landscape of work due to technological advancements and shifting generational values.
- The role of innovation in maintaining a competitive advantage, surviving and addressing emerging global challenges.
- The impact of a collaborative and inclusive culture on driving new ideas and business models.

Example AI Prompts You Can Use:

- "Why is fostering innovation crucial for modern organisations?"
- "How can communities leverage the collaborative mindset of younger generations to drive social innovation?"

This exploration will help you understand the broader context of why organisations need to innovate. You might uncover trends such as:

- **Adaptability to Market Changes**: The rapid pace of technological change requires companies to be agile and open to new ideas to remain competitive.
- **Talent Attraction and Retention**: Younger workers often seek purpose-driven and innovative work environments, making it essential for organisations to adapt their practices.
- **Collaborative Advantage**: Communities and organisations that prioritise innovation through collaboration often develop more sustainable and impactful solutions.

3 . Identify Research Leads:

- Based on the insights you gather, identify key research leads or areas needing further exploration. For example, you might find topics like the impact of asynchronous work on collaboration, or how the demand for ethical company practices is reshaping innovation strategies.

4. Evaluate Research Leads:

Critically assess these leads by verifying their relevance and credibility through cross-referencing academic articles, industry reports, and real-world examples.

To demonstrate evaluative judgment and critical thinking, you will go beyond simply identifying AI-generated research leads. This stage involves scrutinising the quality, relevance, and accuracy of the information. Here's how you can approach it:

4.1. **Evaluate Credibility and Relevance**:

- **Cross-Referencing with Academic Sources**:
  - Take each lead generated by the AI and find related academic articles. For instance, if the AI suggests "Gen Z prefers hybrid work for better work-life balance," you should look for peer-reviewed studies that investigate this claim. Does existing research support this assertion, or is it an oversimplified view? This step helps confirm whether the AI-generated insight aligns with established literature or if it's based on a trend that may not have empirical backing.
- **Industry Reports and Case Studies**:
  - Compare AI insights with recent industry reports from credible sources like McKinsey, Deloitte, or PwC. These reports often provide data-driven analysis on workplace trends, offering a more grounded view. For example, if the AI claims "Younger workers are driving the adoption of flat organisational structures," look up case studies or industry analyses that discuss real-world implementations and their outcomes. This step will help you assess whether this trend is widespread or more niche than the AI output suggests.

4.2. **Identify Biases in AI-Generated Information**:

- **Spotting AI Bias**:
    - Understand that Generative AI tools may reflect biases present in their training data. For example, if AI outputs predominantly highlight positive aspects of remote work without discussing potential drawbacks (like burnout or reduced team cohesion), this may indicate a bias towards portraying remote work as universally beneficial.
    - Compare these AI insights with a mapping exercise you've previously conducted in class, where you identified the challenges and opportunities related to ways of working. Check if AI has overlooked issues you already recognised, such as challenges in managing hybrid teams or maintaining company culture in remote settings.
- **Contextual Limitations**:
    - AI might offer generalised information that lacks the specific context needed for your discipline or focus area. If you're examining innovation in community organisations, for instance, the AI might emphasise corporate trends rather than grassroots, community-driven approaches. Notice these gaps and consider why they might exist. AI might have a bias toward discussing corporate environments because a lot of publicly available data it was trained on comes from business publications.

4.3. **Analyse Mistakes and Missing Elements**:

- **Identifying Inaccuracies**:
    - Look for factual inaccuracies in AI-generated leads. For instance, if the AI incorrectly states that "All major companies are moving to fully remote models," verify this by reviewing current reports and articles. You may find that many organisations are actually adopting a hybrid model instead. This evaluation will sharpen your ability to identify and correct misinformation, a critical research skill.
- **Comparing with Class Mapping**:
    - Reflect on the mapping activity you did in class, where you identified various factors influencing how a new generation of workers changes ways of working. Compare these factors with what the AI produced. Did the AI miss significant elements, such as the influence of social media on workplace culture or the rise of gig economy preferences among younger workers?
    - Document these discrepancies to highlight gaps in the AI's output. This will not only help you identify missing perspectives but also reinforce your understanding of the complexity of the challenge.

4. Synthesising Findings for Deeper Insight:

- **Integration of Multiple Sources**:
    - Synthesise the validated insights from academic papers, industry reports, and your own critical evaluation against the AI-generated leads. This process will help you form a nuanced understanding of the topic. For example, you might conclude that while the AI focused heavily on remote work preferences as a key factor for innovation, the literature and your class discussions emphasised the role of interdisciplinary collaboration and upskilling initiatives as equally important.
- **Presenting a Balanced Perspective**:

- Use this synthesis to present a balanced view in your research proposal or presentation. Highlight areas where the AI provided valuable insights, but also discuss where it fell short and how your additional research filled these gaps.

Outcome:

By following this process, you will not only develop a stronger understanding of your research topic but also demonstrate key academic skills like **evaluative judgment** (assessing the value and reliability of different information sources) and **critical thinking** (identifying biases, errors, and gaps). This comprehensive approach will enhance the depth and credibility of your findings, equipping you with the analytical tools needed for future research endeavours

Appendix B:

LEAN SPRINT 4: Conduct and Analyse Interviews using AI Tools

Objective:

- This activity aims to provide you with hands-on experience using AI tools for conducting user research.
- You will critically evaluate the outputs from synthetic user interviews and compare them with real-world interviews conducted in class.
- The goal is to explore the effectiveness of AI-generated insights and analyse their applicability to the challenge of how a new generation of workers might change ways of working to foster innovation.

ADD: ASSUMPTIONS / INSIGHTS - > the format of the questions drives [interview preparation]

Instructions:

Part 1: Recruiting Synthetic Users

1. **Register for a Free Trial**:
    - Access a tool such as SyntheticUsers.com or any other platform offering AI-generated user interviews.
    - Sign up for a free trial period to explore the platform without incurring costs.
2. **Recruit 2 Synthetic Users**:
    - Set up criteria for your synthetic user personas. Consider demographic factors like age, occupation, industry, and level of tech-savviness.
    - Recruit two AI-generated users representing the "new generation of workers" (e.g., Millennials, Gen Z), focusing on those who have experience with modern workplace.
3. **Conduct Interviews**:
    - Use the AI tool to conduct interviews with your synthetic users, focusing on the following research question:
        - *"How might a new generation of workers change the ways of working of collaborators, communities, or organisations to foster innovation?"*
4. **Document the Responses**:
    - Record and transcribe the key insights provided by the AI-generated users. Focus on identifying themes, commonalities, and unique points raised by the synthetic personas.

Part 2: Comparative Analysis

1. **Analyse AI-Generated vs. Real-World Responses with an AI Tool**:
    - Compare and contrast the insights gathered from synthetic users with those from real-world interviews by using an interview analysis tools such as https://www.insightwise.ai/
    - Address the following points in your analysis:

        - **Relevance**: How relevant were the insights from synthetic users compared to real participants? Were there significant differences in the themes or details?
        - **Depth of Response**: Did the synthetic users provide nuanced, detailed answers similar to real-world participants, or were their responses more generalised?
        - **Bias and Accuracy**: Identify any biases present in the AI-generated responses. For example, did the synthetic users tend to provide overly positive or generic feedback that did not match the complexity of real-world answers?
        - **Missing Elements**: Highlight any key aspects or issues that were absent from the synthetic user responses but mentioned in real-world interviews, such as specific challenges or nuanced viewpoints on workplace dynamics.
2. **Evaluate the Pros and Cons of AI Tools**:
    - **Evaluate Pros & Cons of** SyntheticUsers.com or any other platform offering AI-generated user interviews.
    - **Evaluate Pros & Cons of** https://www.insightwise.ai/ or any other platform offering AI-generated interview analysis.
    - Reflect on whether the synthetic user data could effectively inform decisions about changing ways of woking to foster innovation or if real-world insights are necessary to capture the full complexity of the issue.
3. **Synthesise Key Findings**:
    - Summarise the most significant insights from your comparative analysis. Highlight any

Outcome:

This assessment provides a practical and reflective exercise. By the end of the activity you should have enhanced your skills in **user research**, **critical evaluation**, **AI prompt engineering**, and **analytical thinking**. It will help you understand the potential applications and limitations of AI tools in conducting user research, preparing you for similar challenges in your professional practice.