**Innovative solutions to fashion’s biggest problems – the impact of artificial intelligence on solutions for Sustainable Development Goals 9 and 12. A case study from London College of Fashion**

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**Abstract**

Purpose – This study aims to explore the use of artificial intelligence in higher education, specifically looking at teaching and learning within seminars. We present a case study which explores the application of Generative AI tools within the fashion futures unit, an innovative unit that is part of BSc Fashion Management at London College of Fashion.

Design/methodology/approach – The research is a case study on fashion futures; the unit has four new Gen-AI integrations that have been developed to support the students’ understanding of Sustainable Development Goals

9 and 12 and the process of creating an innovative concept related to solving sustainability problems in fashion. Using ethnographic research, the study combined observation with focus groups and short reflective surveys.

Findings – The results show that by providing taught content and AI tool seminar activities, students feel more confident in using AI tools for brainstorming and literature searches. However, there were remaining concerns as to understanding the ethical implications of their AI use and acceptable use in different units of study.

Originality/value – The study uses extant theories on AI in education and learnings from this action research to demonstrate the effectiveness of AI tools in understanding, innovation development and critical analysis. The research expands the limited publications on management education and fulfils requests for increased rigour within emerging AI in education research.

Keywords Generative AI, Sustainable development goals, Strategic management, Higher education, Fashion, Sustainability

**Introduction**

On a global scale universities are exploring ways in which they can better use artificial intelligence (AI) technology within their teaching and learning experiences. Many scholars have written about the threat that the traditional model of higher education (HE) is under, with “significant pressure due to an ever-evolving society, culture and technology” (Escotet, 2023, p. 2). AI is a tool with the potential to revolutionise education through enhancement of learning and assessment (Saiful Azzam et al., 2024). However, to fully understand the impact that AI can have on HE examples of implementation must be investigated to see the true potential benefits and issues. Across the global HE landscape, conversation around AI has raised concerns, challenges and controversies; forcing university staff to rethink their ways of working, teaching and assessing (Heredia-Carroza and Raluca, 2023).

Current research has focused on theoretical opportunities for implementation (Tarisayi, 2023), personalisation of learning experiences (Tang et al., 2023; Taneri, 2020) and automation of essential teaching elements (Zhong, 2022; Slimi, 2023) as well as emerging research around language potential and impacts for international students (Wang et al., 2023). At present most of this AI exploration in HE is based on theories and there are limited action research or case studies within front-line teaching (Tang et al., 2023; Malik et al., 2023; Zhong, 2022; George and Wooden, 2023).

Although much of the focus as to the need for AI integration into HE curriculum comes from the combination of policy drivers and technology development, the central component here is developing strategies for human-machine coexistence within teaching and learning (Dejian and Jing, 2018). To truly increase learning opportunities that may arise from the potential of AI there must be a focus on the training and development of the students with their use of these tools as they are the “robots’ owner” (Sampedro, 2023). This paper aims to address this research gap by exploring the use of AI tools within HE seminars to support students with their research, analysis and design of innovative solutions around the Sustainable Development Goals (SDGs).

HE provides an excellent opportunity as a test bed for this exploration due in part to more extensive and industry specific interdisciplinary projects (Tang et al., 2023). This research will focus specifically on AI integration into teaching and learning within a classroom setting through developing a case study of a unit called Fashion Futures, with AI integrations investigated based on testing out different tools in seminars. This paper presents a case study of the Fashion Futures unit which is part of the year 2 curriculum on Bachelor of Science (BSc) in Fashion Management at London College of Fashion (LCF) as intended as an example to explore how to better apply AI technology. LCF is part of University of the Arts London (UAL) and in early 2024 UAL published a position statement on AI and a student guide to generative AI (UAL, 2024).

**Artificial intelligence in higher education**

AI has already created fundamental changes in the approach to HE from teaching and learning methods through to education theory and management (Zhang, 2023). Much of the current research looks at the technical aspects of AI tools such as how accurate they are rather than exploring their use within an existing academic context on elements such as cognition and skill (Chaka, 2023; Zhong, 2022). Zawacki-Richter *et al*. (2019) developed an “AI Education” (known as AIEd) typology grouping AI uses within education into four distinct categories and similarly, Crompton and Burke’s (2023) more recent categorisation provides 5 slightly different categories. Yet literature is lacking examples of teaching that has been both informed and reformed by AI to help students understand and apply their learning (Zhang, 2023).

There is an emerging area of research within some areas of fashion business education such as entrepreneurship, marketing, culture, and teaching processes. The scope of the extant research explores AI integration for dynamic learning environment to promote engagement in different learning environments (Lam, 2025) as well as enhanced learning experiences and personalised approaches to education (Dubay and Richards, 2024).

This research looks at the use of AI tools by students to support the management of their learning and personalisation of seminar activities through use of AI. There is untapped potential for case studies that explore the true potential of AI use in a HE classroom setting to discover the potential benefits, challenges and controversies of real-life application. The impact of this study is wide-reaching and could compel staff to rethink their approach to working and teaching.

The current level of student use of AI tools in an academic context is relatively unexplored and the teaching of AI tools is limited in business and management courses in HE at present. Fuchs (2023) explores the risks related to overdependence on AI which might impact the students critical thinking skills and Chan and Hu (2023) investigate how this overreliance might lead to plagiarism and issues of academic integrity. Yet, without introducing AI tools, investigating methods of using them and having opening conversations about the potentially grey area of academic integrity with AI what chance are students having to really learn about the opportunities these tools may provide.

As the field of both research and practice in AI and HE is growing and changing quickly there is a need to demonstrate examples of academic understanding and implementation (Crompton and Burke, 2023). Additionally, conducting research in areas outside of the current focus on computer science, languages and engineering is beneficial to take the focus into social science. At present only 14% of current research into AI in HE has been conducted within management education and this research aims to expand this (Crompton and Burke, 2023).

**Artificial intelligence and the sustainable development goals**

In addition to the wider AI discussion in HE there is an emerging body of research that explores how AI can contribute to developing sustainable business models (Di Vaio et al., 2020). This research emphasised the need for further AI integration focusing on academia to achieve sustainable business models. Similarly, Patyal et al. (2022) explored the literature on the relationship between Industry 4.0 technologies – of which AI is a central component – and the circular economy within the context of the SDGs. The authors looked at circular economy practices related to SDGs 9 and 12, proposing a conceptual framework to support organisations in realigning key management practices to achieve those SDGs. Yet, this paper was not industry specific which leaves some key applications of SDGs 9 and 12 solving practices untapped for the fashion industry.

Filho et al. (2024) explored the potential that AI has on the implementation of SDGs within HE institutions demonstrating that AI can significantly contribute by offering innovative solutions. However, the authors noted key gaps in extant case studies around developing informed and responsible ways of implementing AI into the curriculum. Similarly, Regona *et al. (2024)* demonstrated a notable deficiency in research into specific applications, impacts and challenges of AI in supporting achievement of the SDGs, yet this research was limited to the construction industry. Mahajan et al. (2024) indicated that business and management practices are crucial to achieving the SDGs and the research explored how AI can help to develop these practices. This case study is based on the experiences of fashion management students and aims to demonstrate the opportunities and potential of AI skills and tools for students. This research seeks to provide an actionable case study with education management strategies for humanmachine coexistence within teaching and learning in HE seminars.

**AI and SDGs in fashion and fashion education**

AI has become a central component of HE and just as much of an important part of the future of the fashion industry. From developments within forecasting and predictive technologies (Babu et al., 2022), transformation of fashion supply chains (Colucci et al., 2025) and new ways of working in the design process (Ngai et al., 2025), AI has already had a profound impact on the industry.

The fashion supply chain is in much need of innovation to achieve the SDGs due to significant environmental and social issues on a global scale (Rehman et al., 2024). Developing these innovative solutions is at the core of Fashion Futures with the students set the task of pushing the boundaries in creating new strategies and solution and aligned with both industry and academic innovation (Barletta et al., 2024; Debnath et al., 2024). In order to lead in innovative fashion education it is integral that we are able to provide students with opportunities to research SDGs and explore future thinking opportunities while trialling out AI

technologies. LCF is a signatory to the United Nations Principles for Responsible Management Education (PRME). The Fashion Futures unit references UN SDGs 9 (Industry, Innovation and Infrastructure) and 12 (Responsible Consumption and Production) and Table 1 demonstrates the relevance of selecting goals 9 and 12 for the focal point of this unit in tackling fashion industry issues. Regarding the integration of SDGs into the Fashion Futures unit the students are required to demonstrate and understanding of how these SDGs work in practice within the fashion industry and their innovation must be an industry of infrastructure related innovation that looks to solve issues around overconsumption and overproduction. The Fashion Futures unit challenges students to develop their own innovative solutions and utilise elements from different AI tools to further develop or enhance those solutions.

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| **SDG** | **SDG targets relevant to fashion** | **Fashion industry issues** |
| Goal 9: Ensure sustainable consumption and production patterns | 9.2: Promote inclusive and sustainable industrialisation  9.4: Upgrade infrastructure and retrofit industries to make them sustainable | 9.2: Garment workers often face exploitation  9.4:Over-reliance on polluting manufacturing using water and energy intensive processes  (Rehman et al., 2024; Debnath et al., 2024; Barletta et al., 2024) |
| Goal 12: Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation | 12.2: Achieve sustainable management and efficient use of natural resources  12.5: Reduce waste generation  12.6: Encourage companies to adopt sustainable practices and publish sustainability reports | 12.2: Cotton farming and synthetic fibre production consumes vast amounts of water  12.5: Industry generates immense textile waste  12.6: Brands often lack genuine sustainability metrics  (Rehman et al., 2024; Debnath et al., 2024; Barletta et al., 2024) |

Table 1: An overview of SDGs 9 and 12 and their relation to key fashion industry issues. Source (s): Author’s own.

**Redesigning and developing the Fashion Futures unit**

Fashion Futures is one of the first units that students study in year 2 of LCF’s BSc Fashion Management Course. As per the Assessment Brief the students must produce an individual 10min video and supporting document; the video comprises of a 5-min advert to showcase and market a fashion innovation and a 5-min business rationale to pitch the innovation to investors. The unit aims to support students in their investigation of current fashion issues and predict trends that may disrupt the industry to help their understanding of how the industry responds to change. Students must develop their own innovation concept which is linked to SDGs 9 (industry, innovation and infrastructure) and 12 (responsible consumption and production).-

Fashion Futures is taught over 8 weeks with a lecture and seminar each week in week 1–7 and a deadline for submitting the video in week 8. As a unit based on innovation and technology integration, there was an opportunity to test AI tools for teaching and learning at different points in the unit. During the unit planning key stages were highlighted and the unit lead and seminar tutors explored potential AI integration for those stages and what impact it might have on the students at that point. There were two seminar leaders for the Fashion Futures unit both of whom had extensive experience using AI tools in their work across industry and academia (Rockett, 2025).

The study provides insights on areas relating to the following research questions (RQs):

**RQ1**: How might AI tools be integrated into the fashion management curriculum?

**RQ2**: How can AI tools be used to advance students innovative ideas to solve SDG-related problems in the fashion industry?

**RQ3**: What are the most prominent ways that AI tools can be used by students in HE seminars?

**Methods**

*Approach*

This research project was focused on ethnographic research based on similar methods from pedagogical studies that combine observation with interviews and/or focus groups (Hammersley, 2006; Roponen, 2023). The observation period ran from September to November 2024 with observations taking place during the seminar activities on four consecutive weeks followed by the survey. During the unit launch session where the students are introduced to the content and assignment, they were told about the AI integrations that are being taught at different points in the unit.

In initial planning meeting numerous opportunities for testing AI tools in different seminar activities were discussed from brainstorming games through to evaluation and image creation. However, for the purpose of simplifying the approach for such a short unit, the AI implementation stages for Fashion Futures were kept to four key stages: (1) brainstorming, (2) critical review, (3) academic justification and (4) video development (as shown in Table 2). The final element of the AI integration is video development which is a central skill component for the Fashion Futures assessment. Instead of the more typical “essay-style” assessment at business schools this unit requires students to create a 10-min-long video. The students are further supported with developing this skill set through additional technology sessions focused solely on video making skills in addition to the seminars discussed in this paper.

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| **Stage of unit** | **Type of AI integration** | **Suggested AI tools** | **Intended impact** |
| 1. Brainstorming | Use of AI tools to support initial brainstorming and idea generation related to solving issues linked to SDGs 9 and 12 | * Miro * Creative Spark * ChatGPT * IdeaSparkGPT * EDCGPT * The Magic Word | To support the students with understanding solutions for SDGs 9 and 12 and initial ideation |
| 1. Critical review | Use of AI tools to help students critically think about their shortlisted innovation ideas | * Reviewer 2 * Ideascore * Venturus AI * CheckMyIdea * Business Idea Sanity Checker | To provide additional feedback alongside teaching team feedback to help students critically reflect on process |
| 1. Academic justification | Use of AI literature searches and guided searches to explore new ways of researching and reading | * Research Rabbit * Elicit * Connected Papers * LitMaps * MinervaAI * PaperPal | To provide enhanced literature searches and new ways of visualising data and information from articles |
| 1. Video development | Use of AI video development tools for creating elements or sections of final video | * Hourone * Synthesia * Simplified * Heygen * Reelerai * Invideo.io * Uizard.io | To provide enhanced visuals and additional options for video content capture |

Table 2: An outline of the AI integration and tools proposed at each stage of the unit. Source(s): Authors own.

The term “AI tools” is used throughout this research to refer to a software application that uses AI algorithms to solve a specific problem or perform a specific task (De Z.u~niga, Goyanes and Durotoye, 2024). The suggested AI tools outlined at each stage of the unit were recommended by the seminar leaders who have experience with a range of AI tools and selected those most suited to each stage.

*Research sample and data collection process*

Usually, an important factor within ethnographic research is the observation of the participants or organisation for a prolonged period of time (Creswell and Creswell, 2022). This research was undertaken within the parameters of an existing unit at LCF and was redesigned to support further integration of AI tools but it was not restructured in any way; meaning that the research was conducted within the 8-week timeframe of the unit with the students being taught for

7 weeks and submitting their assessments on the 8th week.

There were 63 students enrolled in the Fashion Futures unit yet the number of students available for observation was slightly different each week due to attendance (as shown in Table 3). The students had a range of experience with AI tools but most of this experience was limited to using simple tools such as ChatGPT. All students attending the seminar and included in the observation numbers were involved in the seminar activities and tried the AI tools. All students were in year 2 of the BSc Fashion Management at LCF. The data collection consisted of focus groups, observations and short surveys. All students were sent the survey to complete following the seminar but not all of them completed it hence the lower numbers for survey completion compared to observation numbers.

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| **Teaching week** | **Focus of seminar** | **Data collection method** | **Details** | **Duration** | **Number of students** |
| 1 | Introduction to fashion futures and AI | Focus group | An open and exploratory discussion into initial understanding and use of AI tools in academic work | 1 h 30 minutes | Focus group: 8 |
| 2 | Brainstorming | Observation and survey | Observation on use of AI tools for brainstorming. Reflection on AI tools for brainstorming | 45 minutes | Observation: 53. Survey: 27 |
| 3 | Critical review | Observation and survey | Observation on use of AI tools for critical review. Reflection on AI tools for critical review. | 45 minutes | Observation: 46. Survey: 32 |
| 4 | Academic justification | Observation and survey | Observation on use of AI tools for academic justification. Reflection on AI tools for academic justification. | 45 minutes | Observation: 42. Survey: 35 |
| 5 | Video development | Observation and survey | Observation on use of AI tools for video development. Reflection on AI tools for video development | 45 minutes | Observation: 51. Survey: 34 |
| 6 | N/A | No data collection | N/A | N/A | N/A |
| 7 | N/A | No data collection | N/A | N/A | N/A |
| 8 | Assignment submission | Focus group | An open and exploratory discussion into current use and experience of AI tools and future uses and integration | 1 h 30 min | Focus group: 8 |

Table 3: The different datasets collected throughout the unit. Source (s): Author’s own.

*Ethical considerations*

Ethical approval was obtained from University of the Arts, London in July 2024 prior to the finalisation of the planning for the unit. Signed consent was received from all focus group participants prior to data collection and all survey participants were presented with the ethical approval form prior to beginning each survey. An integral consideration for this research was ensuring the students understanding of the separation of the research and the assignment as the focus groups and surveys were not a unit requirement, meaning it was at their discretion to take part. The students were given participant information and consent forms to help them decide whether they would like to participate in the study. They were free to take part in none, some or all the 6 data collection points, and it was explained to them that whether they took part in this had no impact on their grade for the unit.

In a recent review Bond et al. (2024) called for increased rigour regarding ethical, methodological and contextual consideration within emerging research. In order to develop these study contexts a research approach to explore student perceptions of both the fairness and effectiveness of AI was discussed (Zawacki-Richtet et al., 2019; del Gobbo et al., 2023; OtooArthur and van Zyl, 2020). From an ethical perspective the use of AI in HE poses significant concern, and it is an area of research and practice that remains largely unexplored (Escotet, 2023; Holmes and Porayska, 2023).

One of the key initial considerations for this research project was managing the privacy and personal information of students. Safeguarding this information when using AI technology and ensuring that the testing and application of different tools is in line with social and ethical values was at the forefront of the new development of the unit. Taking an exploratory approach meant that students had scope to use different tools and options throughout the unit but in order to set clear standards and effectively manage data privacy this was a key area of discussion in the first instance of introducing the approach to the unit. Openly discussing some of the ethical and data protection related issues supports better utilisation of tools and consideration of which tools to use both during the unit and in their own study time.

On a practical level students would need to create a log-in to a variety of different tools over the course of the unit if they chose to use them. A simple, self-reflective approach resource was developed to help students understand what AI tools and websites they might want to use and why. By reading through and considering these reflective questions students were able to think about whether or not they wanted to create a log-in for a particular tool which helped them to consider their own data management (shown in Table 4). This approach was developed based on the self-reflective pedagogies developed at UAL and discussed in Peters and Rockett (2024).

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| **Step** | **What do I need to think about?** | **How might I do this?** | **Resources to help** |
| 1 | How might I use this tool? | Read through the key information on the AI tool website and see if you can find any case studies or examples of why the tool might be used. | Using the website for each tool you are considering using |
| 2 | What data does the tool want from me? | Have a look at how to create an account with the AI tool and what information they require from you. | Using the website for each tool you are considering using |
| 3 | How might the tool use my data? | On the AI tool website see if you can find a ‘Data Processing Agreement’ or similar and read about how the tool might process your personal data. | EU guide to data processing agreement available at gdpr.eu |
| 4 | Is the tool compliant? | On the AI tool website see if you can find any information about compliance e.g. GDPR compliant. | ICO’s guide to GDPR available at ico.org.uk |
| 5 | How does the tool look and feel? | Having looked at lots of different AI tools consider what do you think about this tool before you start to log-in. | See if you can find any user reviews of the tool to read through others' opinions. |

Table 4: Five stages for students to consider their data management and privacy. Source (s): Authors’ own.

*Financial considerations.* As per the UAL Materials Costs policy the work presented for assessment was evaluated against unit learning outcomes using the UAL Assessment Criteria. The students were informed that use of AI tools was not a requirement of the unit, and it was completely by choice. We encouraged students to try a range of tools and only used free tools in classroom seminar sessions. The students were not required to use paid tools or tools that required them to enter any financial information or personal information beyond an email address. An increased expenditure on materials or tools to realise students’ assignments did not equate to increased grades in their assessment.

*Data analysis.* The focus groups were recorded and transcribed. These were coded using the Saldana coding method (Saldana, 2021). Real data from the transcript was sorted into codes which were grouped into categories and linked together to form key themes. The themes are presented below in combination with the findings from the surveys. The data collected in the qualitative surveys was written text so was thematically analysed in the same way. In order to effectively manage the data, it was sorted into the four key stages of the unit: brainstorming, critical review, academic justification and video development as the survey data related to these was distinct, so it was an important differentiating factor.

**Findings and discussion**

*Initial consideration of AI integration*

In the first focus group students were asked to consider their prior and current uses of AI within an academic setting; the majority of participants had some understanding but limited experience of using AI tools in their academic work. The discussion went on to highlight that there was a definite lack of confidence around the use of AI tools even among the students who had some experience with use of the tools. There was no existing use of AI tools amongst the students when it came to links to SDGs. There was an initial hesitance regarding sharing their use of AI tools as many were unsure of the ethical implications of AI use and what use of AI might be considered academic misconduct. The students were open and interested in learning about different AI tools and they believed that this would help them to understand more about how they could use AI in a positive way. Many mentioned the word “risk” in their discussion and talked through how they thought that use of AI in HE was still unclear and uncertain, and this risk meant that they were not confident with their use cases.

There were two students who were against the use of AI from the onset and were happy to share their opinions in the first focus group. They shared their concerns around academic integrity and how they thought that AI might negatively impact their experience and the worries that they had around career trajectory after graduation. Both students highlighted a lack of clarity with the university Position Statement on AI and the student AI guidance documents which meant that they were not clear on what constituted plagiarism. This struggle with understanding leads to their hesitation with wanting to try any AI tools in their academic work. However, they could see the potential that AI had in supporting with innovative solutions to problems related to SDGs in the fashion industry, especially related to supply chain innovation.

*RQ1: How might AI tools be integrated into the fashion management curriculum?*

There were four stages of AI integration into Fashion Futures and each one of these was set at a fundamental stage of the assignment development to walk the students through the process and help to keep them on track. Each stage was introduced with a key seminar activity (as shown in Table 4). These activities formed part of a 3-h long seminar which was broken down into three activities, the planned time allocation for each activity is outlined in Table 4. On introduction to each activity the unit lead or seminar tutor would demonstrate one or two of the tools that the students were suggested to use, they were welcome to use any of these tools or tools that they discovered themselves. We strongly encouraged them away from overreliance on ChatGPT as this was the only AI tool that students were familiar with at the beginning of the unit.

*RQ2: How can AI tools be used to advance students innovative ideas to solve SDG-related problems in the fashion industry?*

*Brainstorming. In the first stage of AI integration within Fashion Futures the students were asked to look at how they might use AI tools to support their brainstorming within a seminar activity (see* Table 5). They were first asked to complete the activity without using any technology and come up with some initial ideas before they used any other tools. The students took their time searching for different tools and what they might use them for before they started to create logins. Through observation we saw that some groups of students chose one tool to work with and discussed it together whereas others could be seen trying different tools individually and then comparing their findings afterwards. During the focus groups the students mostly talked about ChatGPT and in the sessions they were observed often starting with ChatGPT as their initial tool of choice as some of the students in each group had used it before. On reflection – from the qualitative survey data – the students enjoyed starting the activity without any inspiration from online as it challenged them to work as a group prior to trialling the AI tools.

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| **Stage** | **Summary of seminar activity** | **Type of activity** | **Time allocated** | **Suggested tools** |
| 1.Brainstorming | Each group is given 4 cards – problem, innovation, business model and persona. The aim is to come up with an innovation that solves the problem, using that specific innovation and business model for the persona. | Group activity | 45 minutes\*  (\*15 minutes with no technology then 30 minutes with AI tools) | * Miro * CreativeSpark * ChatGPT * IdeaSpark * EDCGPT * The Magic Word |
| 2.Critical review | Discuss feedback for each other's ideas using the rose, thorn, bud technique then choose an AI tool that can give you feedback and discuss what you think of the feedback. | Group activity | 45 minutes | * Reviewer 2 * Ideascore * Venturus AI * CheckMyIdea * Business Idea Sanity Checker |
| 3.Academic justification | Individually choose 2 key words that encompass your innovation concept at this stage and use different literature search tools to find academic journal articles on these key words. | Individual activity | 45 minutes | * Research Rabbit * Elicit * Connected Papers * LitMaps * MinervaAI * PaperPal |
| 4.Video development | Choose one element of your innovation idea that you want to mock up or visualise, use one AI tool to try and mockup this idea. | Individual activity | 45 minutes | * Hourone * Synthesia * Simplified * Heygen * Reelerai * Invideo.io * Uizard.io |

Table 5: An outline of the seminar activities delivered at each stage of the unit with reference to the AI tools utilised. Source (s): Author’s own.

*Critical review.* In the first few weeks of the unit, it is important for the students to be critical of their ideas during the brainstorming and initial development process to allow them to get their ideas in the best shape possible. The seminar activity during week 3 was designed to help them critique each other’s ideas and evaluate how effectively AI tools were also able to critique their ideas. Using the rose, thorn and bud technique the students worked in groups to offer each other constructive criticism, rose for a positive aspect, bud for an opportunity to improve or a key insight and thorn for an area that needs improvement.

On completion of this “human only” element of group feedback they then chose an AI tool to critique their work. The seminar tutors observed the students’ reactions to the AI tools often harsh critique and it was interesting to see how quickly students were reframing their prompts to ensure that the tools were being told to be kind and constructive! In the surveys the students provided similar experiences explaining that their ideas were often torn apart by the AI tools. The activity provided us with great discussion opportunities around humans vs machines, tone of voice and approach to feedback which was observed by the seminar tutors. In this week’s survey the students reflected on the fact that they were not convinced by the usefulness of the AI tools for critique and preferred the feedback that they received from their peers.

*Academic justification.* For their assignment students are required to provide an annotated bibliography of 5 academic journal articles that help to justify the need for their specific innovation. In their first year at LCF students are taught how to use the university library search tool and Google Scholar. The aim of the academic justification seminar activity was to introduce them to some new search tools that utilised AI. This AI integration sits at the midpoint of the unit meaning that the students have relatively well-developed ideas at this stage. This short seminar activity required them to choose 2 key words related to their innovation concept and find two academic journal articles that were closely related.

Students were asked to reflect on how the AI literature search tools helped them find academic journal articles that helped to justify the need for their innovation idea, 80% of those who completed the survey found that the tools were somewhat useful for literature searches. A small percentage of students believed that the AI literature search tools significantly supported their research and analysis. Visualisation was the key reason why students enjoyed using the AI literature search tools as the tools presented the findings to them in an easier way than traditional search tools.

*Video development.* The assignment for Fashion Futures is to develop a 10-min video, the first half of this is an advertisement of the student’s innovation concept, and the second half is a business rationale aimed at investors. The students have three stand-alone workshops to learn Premier Pro and work on their video development, where they were observed by the seminar tutors. Prior to starting the Premier Pro workshops the students were asked to choose one element of your innovation idea that you want to mockup or visualise, use one AI tool to try and mockup this idea. The idea behind this AI integration was to see how they could create AI mockups to support parts of their video rather than creating mockups manually as in a short 8-week unit this can be a serious challenge.

Out of the four AI seminar activities this was the most challenging to teach as the students were all at very different stages of their video development. Some were unsure about what to mockup as their idea was still very broad; they provided us with this feedback during the surveys which highlighted their uncertainty. However, in the seminars they were observed engaging with the tools and trying them out effectively. The students were observed looking at different tools and most felt that tools like uizard.io were most helpful for visualising their website and creating wireframes.

*RQ3: What are the most prominent ways that AI tools can be used by students in HE seminars?*

The students were asked to rank their confidence level after each AI seminar activity across the 4 weeks and there was a steady increase each week, by week 5 over 90% of the students who completed the survey felt “confident” or “very confident” about using AI tools to support the development of their work for Fashion Futures.

In the final survey and focus group session the students were asked to reflect on which tools they found most helpful and that they might consider using again to support their academic work. Research tools for academic justification and supporting literature searches were the most popular tools that the students found helpful and would continue to use. In the surveys they commented on the fact that they found these the two most useful integrations for focusing on the SDGs as not only did the tools help the understand the aims of the goals and their targets better but helping them to think about different ways of applying this knowledge to their projects, closely followed by visualisation tools for creating an image or mockup of an idea and brainstorming tools for idea development. Focus group discussion covered the usefulness of the categorisation of tools and separation into different elements of the unit as this helped them to understand their use of different tools at different times.

In terms of limitations that AI has the main considerations were related to accuracy and ethics. A large proportion of the students were concerned about the fact that AI can provide incorrect information and how they might manage this in practice especially within their research. Further, the issues around academic misconduct and risk of over-reliance on AI tools that were discussed in the opening focus group remain. This demonstrates that irrespective of the new teaching around AI tools, the regular discussions on use of AI and conversations around the university AI position statement and student guidance document did not do much to clarify use in practice. This demonstrates that there is work to do on supporting this understanding of acceptable use of AI to allow students to feel more confident with their use of AI.

Much of the final wrap up discussion focused on the impact that students think AI will have on their future studies with many believing that AI will significantly transform education. It was interesting to hear that although they believe AI will have a transformative impact that they do not think that it will replace traditional methods.

**Conclusions, recommendations and implications**

The scope of the research aimed to fill the gaps in current research within AI and fashion education (Dubay and Richards, 2024; Kushwaha, 2024) tied in with exploration of AI integration to look to solve SDG related issues (Di Vaio et al., 2020; Patyal et al., 2022). This research has shown that the biggest takeaway from these integrations for BSc Fashion Management students at LCF is visualisation from literature searches and they are most likely to continue to use these tools from the range that they tried. It was discovered through the survey data and observations that the students were able to discover more about the relevance of the SDGs to their specific fashion problem focus through visualising academic literature in a new way using these AI tools.

This study introduced a case study for integrating AI into HE teaching and learning through interactive seminar activities. From an education management perspective, it demonstrated that AI tools can be helpful in different ways to help students understand and develop ideas when looking to tackle problems related to the SDGs within the context of global fashion industry issues. Through the strategic development of the four key stages of integration this research explored the scope for use of AI tools within each of these distinct areas which provides HE educators with a clear approach to integrate AI in their curriculum irrespective of industry or topic focus. Brainstorming, critical review and academic justification are key components of many HE assessments which evidences that the findings can be applied to the wider HE space. This effectively builds on the work that Zhang (2023), Zawacki-Richter et al. (2019) and Crompton and Burke (2023) have developed in AI within education to develop teaching and learning methods and categorisation of the use of AI tools within HE.

Even though the learning experience over the 8 weeks helped most of the students to feel much more confident about how they use AI in their academic work there was still lots of remaining confusion around ethical use of AI in academia. One of the key limitations of this study was the short time span of the unit which meant that the scope for AI integration was limited and presented quickly. Further limitations include, a different number of students taking part in the seminar activities each week which impacted the number available for observation and the project focusing solely on fashion industry problems which may not fully represent other industry contexts. Future research should build on these findings by exploring the impact of embedding AI tools into the HE curriculum with different industry focuses outside of the fashion industry. This research could explore how the impact of integration of AI tools might impact outcomes in assessment as outcomes were not something measured in this qualitative research. The scope for future research outlined here is aligned with a wider academic all for increase ethics, collaboration and rigour in HE assessments due to the AI impact (Xia et al., 2024; Bond et al., 2024; Marengo et al., 2023).

Given the limited studies on the intersection of AI, HE and SDGs, this research adds to the existing body of literature by contributing valuable insights into a strategic approach to embedding AI tools into the HE curriculum through taught seminar sessions.

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