Embedding sustainable development goals (SDGs) into the curricula using an interdisciplinary design thinking approach.

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ABSTRACT

Embedding sustainability into curricula has been a challenge many universities have been facing for a while. The nature of the topic could be classified as 'dry' when taught through a legislative lens, but a creative impactful method is required to enhance student engagement. One approach developed at a Scottish University is via the use of Design Thinking pedagogy in the context of a Collaborative Online International Learning (COIL) hybrid workshop, where fashion management students and fashion and textile design students from the Scottish University partnered virtually with Cape Peninsula University of Technology (CPUT) fashion students. This case study will demonstrate the power of bringing students from other cultures and slightly different disciplines, with one being management and the other being practice-based, together to successfully demonstrate the use of an innovative method of delivery to enhance students' Sustainable Development Goals (SDGs) knowledge with impact.

Keywords: sustainability, fashion, pedagogy, case study, interdisciplinarity

Introduction

Universities in the UK are required to embed current socio-environmental political thinking into the curriculum (Advance HE, 2024). To do so, they have relied on adding key statements into course materials, changing assessments or adding named modules to best reflect current thinking in related topics relevant to the sector (O'Neill & Gui, 2024). However, learners do not spend much time reading course documents (Bremner, et al., 2024) and learners must be facilitated through their learning journey to ensure key developments in employability are not missed, while gaining the relevant experience for the ever-changing workplace. Examples have included E-commerce, M-commerce, Equality Diversity and Inclusion and, latterly, Education for Sustainable Development.

Although all educational disciplines need to embed sustainability practices into their programmes one such area which has issues is the paradox between fashion education and sustainability due to the damage fashion production can cause to the environment. The fashion sector is the third largest polluting industry (Garg & Bhardwaj, 2023) and is responsible for damaging the planet as it consumes anywhere from 20 to 200 trillion litres of water every year (Anon a, 2022). In light of environmental developments, the embedding of Sustainable Development in Education (ESD) has been encouraged by international government policy holders and is being prioritised as countries agree to meet the specified climate change targets. However, backtracking on targets is evident as some governments are finding it hard to meet them (Keane, 2024). As educationalists, a need exists to ensure graduates have an understanding of the SDGs, how certain industries are impacted more than others, and how the SDGs 'fit' into the workplace, and in turn, this should contribute to a successful outcome in educating people. Another issue is the disparity of

sustainability initiatives across the globe where those students in less developed countries may have differing perceptions on this issue as those students from developed countries. It could be claimed that the over consumption practices of developed nations are impacting on the environment of the underdeveloped nations. A number of institutions fail to acknowledge that global legislation also drives the need for embedding 'sustainability' into degree programmes. Whilst acts including the Climate Change Act (2008) together with the international principles as laid out in the The Paris Agreement (The Paris Agreement, 2024) as well as the Kyoto Principle (Kyoto, 2024), provide guidance to anyone, creative and innovative educational pedagogies to teach the subject are required to fully engage learners and to sustain their independent interest. One such approach is the Design Thinking approach (Bremner & Air, 2023), which has been termed as a "a holistic concept to design cognition and design learning that enables students to work successfully in multi-disciplinary teams and enact positive, design-led change in the world" (Rauth et al., 2010 p. 2). It allows for creativity, entrepreneurship and skills development to occur (Noh et al., 2021). Furthermore, adding in a cultural perspective is also important as sustainability issues are different for each nation. Advancing cultural perspectives can be enhanced via a Collaborative Online International Learning (COIL) agreement. These partnerships provide a platform which "increases the intercultural competence in terms of cultural intelligence" (Hackett et al., 2023, p 1). Therefore, in considering this issue as a 'wicked problem' taking a novel approach to that of the normal semester teaching has relevance in learning enhancement.

This case study will seek to explain the rationale for adopting a creative pedagogical Design Thinking interdisciplinary workshop, for a range of degree students, in phase one of the development. It will explain post workshop reflection that phase two became a COIL interdisciplinary hybrid workshop to enhance the cultural perspective of students'. For one set of degree students the workshop in both years 2022-2023 and 2023-2024 was used to assist the assignment answers within the Omni Channel Fashion Module delivered to stage two of the BA Honours Fashion Management. It will demonstrate how learners became more aware of the SDGs, the issues of fast fashion consumption and cultural differences in a shorter time scale. Through describing the workshop and then providing the anecdotal learner feedback, the case study will validate the use of a COIL Design Thinking workshop in lieu of a prolonged semester approach. It will evidence how learners recognised the development of both their sustainability knowledge and cultural awareness. The case study ends by highlighting the need for educators to be more innovative, collaborative, and interdisciplinary in their practices to embed sustainability concepts now and in the future. However, planning a hybrid workshop comes with challenges and recommendations for future development are posited.

The Case Study

Teaching and learning pedagogies

Teaching and learning are fundamental concepts in most educational settings, but what do they truly entail? For educationalists, we look to pedagogical developments and ideologies and consider those most meaningful when developing degree programmes. Increasingly it has become more important to develop some of the key skills in students, such as Meta Skills (Pratomo, et al., 2021), intercultural awareness (Lee, 2024), and Sustainable Development competencies (UNESCO, 2024) for the workplace. For the future workplace, learners need to be problem solvers and creative thinkers and have environmental awareness (World Economic Forum, 2023). By creating a more interactive and engaging learning environment for

students with the use of authentic assessments within an experiential learning context (Azeez & Aboobaker, 2024) can only benefit future graduates. To facilitate this type of interactive and engaging approach, Design Thinking was used as the pedagogical underpinning for the development of the two workshops. Although consensus on what Design Thinking varies, (Waidelich et al., 2018), it is clear it can play a key part in the 'awakening' of students in the classroom.

Design thinking fosters pedagogic value through collaborative efforts, research, ideation, and rapid prototyping, laying a foundation for developing metacognitive skills (Pratomo et al., 2021). Brown (2009) highlights it can assist students in their ideation, handling ambiguity, and managing uncertainty through fast-paced activities that enhance cognitive flexibility. This is furthered by Noh et al., (2021) who note that Design Thinking will encourage the cultivation of diverse thinking styles, embodying the development of affective skills such as curiosity, which can underpin the problem-solving aspects of the learner. As a tool, it has been used in many settings giving rise to more entrepreneurial approaches to problems in shorter time scales.

It is a nonlinear process consisting of five stages being to empathise, define, ideate, prototype and test. By posing a problem teams can empathise with both the situation and end users, which in this case is sustainability and fashion consumers. Teams can begin to define the problems from a human perspective and in this scenario the issue of fashion over consumption becomes a key problem requiring change. It is not hard to identify fashion over consumption as an issue for the planet. The ideation phase allows for teams to begin to look for solutions to the problems. It is here assumptions can be challenged, in this case the consideration of the SDGs within the fashion context. However, as an 'in classroom activity' the steps of prototyping and testing are challenging as the student teams are not actually in the workplace.

Notwithstanding this Singh and Blessinger, (2024), and Bremner et al., (2024) have noted that skills development within degrees is paramount, but there are a myriad of skills frameworks to consider as well as education for sustainable development goals (ESD). These include meta-skills (Skills Development Scotland, 2023), Top Ten future skills (World Economic Forum, 2023), Digital skills (Rakowska & de Juana-Espinosa, 2021) and Entrepreneurial skills (Joensuu-Salo, et al., 2022) to name but a few. Part of the issue for degree developers is how to embed the skills development into programmes, but it reinforces the need for developing more engaging learning activities to develop the graduate mindset.

Taking things one step further in exposing students to skills, a cultural perspective can be added through the auspices of a COIL element.   COIL is not a new concept having been around for two decades (Guth & Rubin, 2015). It is a cost-effective approach relying on ICT as the medium for tasks to be completed and for students to work together on projects, quizzes and assessments. Appiah-Kubi and Annan (2020) highlight that intracultural competency is gained through experiential learning as identified in their STEM students working on a COIL project. It can be argued that COIL embodies Design Thinking. When students and staff from different cultures partner collaboratively on projects, they will by default move through some of the stages of Design Thinking and improve their public speaking skills (Al Mansoori, 2024). Collaboration and partnerships are key for COIL to work and careful planning is required to ensure outcomes are met for what can be a 4–6-week collaboration overall. There has to be recognition by staff that students will have other opinions and possibly be more future thinking than staff (Smith & Macgregor, 1992) and in effect staff become facilitators. Cicmil et al., (2006) note that the management of the project has to have deliberate interactions to create a respectful learning experience, where staff need to manage the students' expectations. Despite the last 2 stages of the Design Thinking process not being feasible in the classroom

the reflective phase of experiential learning becomes the most important for all involved being the 'what have you learned' moment.

The context

For experiential learning to work in practice, a suitable context is required to place the learners into a state of reality to practice in. Fashion manufacturing and consumption are relevant where particularly fast fashion consumption has been responsible for some of the planet's destruction. The 'need for speed' (Fernie & Grant, 2019) through fashion consumption has grown exponentially with consumers wanting to get their fashion products delivered instantly. The varied methods of communication have provided more and more information driving increasing consumption in today's fast-paced world (Bläse et al., 2024). Notwithstanding this, global temperatures have risen surpassing the 1.5 degrees Celsius (BBC News, 2023) predicted and part of this is due to the annual textile waste created by fast disposable fashion which is claimed to have reached 92 million tons (McKinsey, 2023). This poses a large issue as the over consumption and disposal of fashion is a vicious cycle where landfill sites are growing exponentially giving rise to more pollution which in turn raises the earth's temperature.

Education on these issues is a requirement in the development and understanding of the impacts of overconsumption on the planet and essential in fashion and textile university degree programmes. Finding a suitable module to embed this workshop can be a challenge where sustainable issues are often placed in modules with 'sustainability' in the title, rather than integrated within other appropriate modules such as those which cover the supply chain in the delivery of fast fashion. One such module used in this case study is Omni-Channel Fashion whereby students on the Fashion Management Honours degree study fast fashion supply chains, the logistics mix and how sustainable development goals can impact on channels of distribution. They are tasked with making a long and unsustainable fashion supply chain shorter and more sustainable. They have to take into account the SDGs and the 7Rs, which are rethink, refuse, reduce, reuse, repair, repurpose and recycle (Grose & Mansfield, 2023). The length of supply chains is a key issue in fast fashion manufacturing and is a key contributor to climate change concerns. As referred to in the introduction, implementing legislation is not enough to solve these issues. This is in part due to the lack of global consensus on legislative practice.

To address some of these concerns, adopting an interdisciplinary workshop in the classroom setting can assist in developing a curious and questioning nature where students begin to see the wicked problems (Earle & Leyva-de la Hiz, 2021). Wicked problems are those which are "complex, intractable, open-ended, and unpredictable" (Alford & Head, 2017, p. 397). The interface between sustainability and fast fashion is a wicked problem as the fashion industry needs to find more sustainable solutions in producing and selling fashion items to slow down and prevent the destruction of natural resources. It is here that the use of the SDGs becomes the catalyst in the discussions within the context of fast fashion and improving sustainability. Consequently, aspects such as the circular economy (Anon b, 2024) and the 7Rs of sustainability (Grose & Mansfield, 2023) are key elements in providing solutions. The circular economy works on the principal of circular supply chains for fashion manufacturing combined with the 7Rs. An important factor to us as educationalists was to gather feedback, report findings, reflect and improve the workshop where we could. This is a common educational approach adopted by Gibbs (1988).

The workshop operationalisation

Workshop one 2022-2023

The workshop materials were developed together between a Senior Lecturer in Fashion and Textile design with 30 years of experience and relevant knowledge of sustainability issues alongside a Fashion Management lecturer with extensive Fashion Management experience. The workshop was jointly developed and delivered as an initial pilot for 58 stage two students from a BA honours fashion management degree in the academic year 2022-2023. The initial stages of the workshop set the scene for the students and pedagogically, the first three steps of the Design Thinking methodology, defining, empathising and ideating were embedded into the workshop tasks. Giving an introduction to the topic of what sustainability is provided the defining phase. This was enhanced by inviting the university sustainability strategic lead to give a short presentation to students to highlight the university strategy on sustainability, the relevance of knowing about UNESCOs work and the possible impact it can have on them as individuals. This acted to set the scene and raise the students' interest in sustainability. The empathising phase came by highlighting the problems of overconsumption through the lens of fast fashion. This was underpinned by Elkington's (1998) triple bottom line theory clarifying what sustainability means. The triple bottom line theory includes the human response to people, profit and the planet in all that we do to ensure we do not deplete the world's natural resources as they are not finite. The ideation phase was developed by giving the students problems and merely hinting at solutions by layering in concepts which can help with the problems. Here information on the circular economy (Araujo-Morera et al., 2021), considering the make, reuse, and remake approach to ensure there is no waste produced during manufacturing was presented. This was followed by providing context to the 'wicked problem' of over consumption by highlighting the SDGs (many students were unaware of these prior to the workshop), the issues of fashion overconsumption and the rise of e-consumption via fashion companies' practices such as that of fashion brands SHEIN.

These issues were integrated into the workshop activities where the 58 students were split into 10 teams for the tasks while staff acted as facilitators. The tasks examined what SDGs are considered important to the fashion industry, followed by a deeper dive through team discussions whereby two SDGs were self-selected for consideration. Questions were asked about the problems of consumer consumption and behaviour (defining), impacts on manufacturing of fashion (empathising) and hypothesising how the fashion industry can introduce circularity (ideating). There were two intervals where the student teams had to provide feedback on the work they had produced to the rest of the class.

Workshop two 2023-2024

A further workshop was planned for the following academic year in 2023-2024 where the number of staff and students was increased adding in fashion and textile design students from the Scottish University, to give a total of 55 students in 10 teams. Additionally, the workshop became a hybrid workshop to incorporate the Cape Peninsula University of Technology (CPUT) fashion students in a COIL arrangement. This afforded the opportunity to add cultural perspectives to the workshop for the students. The workshop structure and activities remained the same but to facilitate the online students the management of the workshop changed. The hybrid element was managed over the Microsoft teams' platform and one member of staff at CPUT facilitated the 30 students in 6 teams there, while three members of staff facilitated the ICT and in-person students at the Scottish University. WhatsApp was used as another ICT medium between the lead in Scotland and the staff member at CPUT to manage the task timings efficiently. Students also had to present their work at stages in the workshop where, through the use of Teams, CPUT students were on

screen in the in-person setting and the Scottish students' presentations were streamed live to CPUT adding another dimension to the workshop collaboration.

Student feedback for 2022-2023

To investigate what students thought about the 2022-2023 workshop anecdotal reflective questions were asked at the end. Here the 58 students were encouraged to reflect, if they wished to, anonymously on Post-it notes. A verbal ethics statement was made to the class, which indicated anonymity would be guaranteed in the event of any published work. The two reflective questions asked were:

1. What have you learned about the SDGs?

2. How will the SDGs impact on your personal life?

From the Post-it note student feedback (71 % answered), it was clear they had been more engaged with the topic delivered via a workshop rather than lecture dissemination and felt they had learned new information. Four themes emerged from the first question being 1) SDGs' themselves; 2) the damage caused to the environment; 3) the future of the environment; and 4) how unaware the students were of the issues prior to the workshop. Most of the feedback highlighted that it was the first time the students were made aware of the SDGs and realised some of the SDGs were more pertinent to the fashion sector than others. A student highlighted "I learned what SDGs are and what their objectives and aspects are. Focused on (SDG) 10 and (SDG) 17 that are fashion-related". Others focussed on the damage caused by fashion with a fashion management student noting *"Fashion impacts a lot more than is seen in the media. Everything circles around."* Some students were future thinkers and noted thoughts such as "I learned what they are, and the goals set for achieving by 2030"*.* Not surprisingly some students were just not aware at all of the SDGs as one student noted, "How much actually goes on behind the scenes, usually when you go into a store you don't think about the impact you are making".

For question two, three themes were identified: 1) considering the student mindset; 2) the action required and 3) in some cases, the students' thoughts about themselves. The majority of students noted they needed to change their mindset with one stating, "I will think more about where I am buying clothes from and what I am buying so that I don't return as much clothes". Some of the students noted the action they would take, "it reaffirms my want to help look after the planet in ways I can", while others thought about how knowing about the SDGs would be beneficial to themselves: "It should help me with fair working hours and a fair job later in life".

Student feedback 2023-2024

A similar set of questions were asked during the 2023-2024 hybrid COIL workshop where the CPUT students completed a Padlet with answers and the Post-it note approach was used again for the UK students (about 60 % answered each question from the UK and from CPUT). The four questions were

1. What have you learned about the SDGs?

2. How will the SDGs impact on your personal life?

3. How will you be more sustainable?

4. How has this workshop assisted in your learning?

Similar answers were identified from both the UK and CPUT students for question one. For example, they identified the SDGs themselves, again as something new. A majority of the UK students noted they had

learned about the SDGs as did some of the CPUT students with one noting "I was vaguely aware but gained a better understanding through this workshop". For question two, answers were a little more in-depth in nature: "It has given me a more in-depth insight into the negative effects which SDGs is having on the industry. It has also given me more ideas on how to benefit the industry such as by renting" (a UK student).

 "It helped me understand that everything we do, or manufacture impacts the earth somehow. From the raw materials used, the production process, the final product and the packaging as well. Sustainability is really essential throughout every process. It also gave me a better understanding about the SDGs" (a CPUT student).

For question three, the answers picked-up on mindset with a UK student noting they, "believe myself and my peers in such a consumerist society, it's important to stay educated and to educate people around me about the importance of the SDGs and fashion". A CPUT student noting something similar stated, "It impacts my buying thought processes". These responses clearly highlighted the need for education embedding these concepts for change.

For the final question relating to the workshop itself, several UK students noted how it would help with their assignment which related to the Omni channel fashion module previously mentioned. One comment was very clear on the contribution it made to their learning, noting it helps:

"Through coursework as well as the thought process of similar or related sectors" and a CPUT student noted "The insights gained from this workshop can be integrated into professional and student work in many ways. For example, it can be applied to find innovative solutions for addressing specific SDGs in projects or research. It can also influence decision-making processes such as reducing waste promoting fair trade and advocating the rights of underpaid workers."

Interestingly, there did not seem to be any cultural awareness throughout the comments, but it was clear when listening to students talking in both rooms, that they felt that they had learned something and were able to act more on this area in the real world. A few students in the UK did note it was really interesting to work with students from an international university as they were surprised at how little these students knew about SDGs in comparison to themselves. There is a different agenda in respective countries depending on their political, social and economic standpoints. [1]

Analysis of feedback on workshops

The 2022-2023 feedback was positive from the cohort stating they had learned a lot in a short space of time. The deliverables of this in-person workshop were three-fold: firstly, it was interdisciplinary via the two facilitators working together from different disciplines; secondly, it had a pedagogic underpinning which encouraged students to problem solve; and thirdly, there was a clear sense from the student feedback that they had had an enriching teaching experience. However, the teaching team recognised that they had delivered this to a small cohort as part of the Omni-Channel Fashion module. This was due to resources, student numbers and finding a suitable timetable slot and room to facilitate this workshop. Staff had to be booked six months in advance for the session. The design thinking approach had stimulated students

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[1] More student comments can be found from the interview taken during the workshop and used as a news item for the University.

https://www.rgu.ac.uk/rgview/student-experience/6557-grays-and-ccb-students-tackle-sustainability-in-the-fashion-industry-at-interdisciplinary-workshop

though and their level of understanding had improved. On reflection, the event highlighted an opportunity for an interdisciplinary workshop for students across programmes that could potentially enhance the student experience.

The deliverables of the second workshop in 2023-2024 are clear through students' understanding of the problems of fashion consumption and their responsibility to SDGs. Student feedback noted in this case study along with the Omni-Channel Fashion module assignment, show that student perspectives had changed regarding their awareness and impact of the SDGs on the fashion sector. More in-depth answers were presented in the assignment answers than in previous years noted by the assessor, where a four-hour workshop engaged the students better than using the previous lecture and a scaffolded tutorial session during the semester. It was noticeable in the answers they posited for the last question in the coursework which asked them to select an SDG and say how this would impact on a fashion supply chain. For those students who missed the workshop, their independent assignment answers were standard in approach and did not evidence the depth gained by others from participation in the interdisciplinary workshop.

Overall, the second Design Thinking workshop in 2023-2024 was more interdisciplinary where the COIL approach added in intracultural skills development (Appiah-Kubi & Annan, 2020), which was missing from the use of UK degree students only who were primarily domestic in culture in the 2022-2023 event.

Reflection

Reflection is an important part of building a suitable pedagogical approach in the teaching sphere and for subjects which don't always translate well as they are legislative in nature which sometimes means creativity may be required in the approach. Reflection took the form of Kolb's (2014) cycle through observing the workshop, collecting and evaluating student feedback and assessments, and discussing with the facilitators the future steps which are required to further enhance the workshop. However, as with these types of projects, there are barriers to making the changes required. What worked well was evident, as the student feedback outlined a more experiential approach had taken place.

Recommendations for future workshops included adding another discipline to the mix. A discipline such as supply chain management or engineering would bring another perspective to the session. The supply chain forms a larger part of the destruction of the planet via fast fashion consumption as the 'logistics mix' (Fernie & Grant, 2019) uses up the planet's natural resources, no matter how many environmental steps companies take. Indeed, a separate guest lecture to a set of students on this topic in 2024 suggested that they would have been a good fit as students could begin to see how transport, warehousing, and consumption were causing an issue and changes, such as the 7Rs that are necessary to give the SDGs prominence. However, many universities work in siloes (Bremner & Air, 2023) and engineering timetables which work to facilitate this is an issue. This is often a common complaint of COIL projects (Crawford, 2024) along with a myriad of other issues as noted by King Ramírez (2020). It leads to the suggestion that universities need to relax the timetabling with sessions embedded at certain times to allow different disciplines to come together. For example, it could be an 'interdisciplinary Monday'. The workshops could be planned more holistically and be more representative of best practices in the business world, similar to the development and creative phases of some companies such as Apple (Chen, 2024). Students are then engaged in more meaningful skills development such as Meta-skills and those required for the future as noted by the World Economic Forum (2023).

Another recommendation considered the inclusion of another international university. However, as with many COIL-type projects, this is not as easy due to many barriers, one of which is the potential time difference (Crawford, 2024) and, in this case, the differing degree of fashion consumption between the western world and other parts of the globe. Ironically and importantly, as noted earlier on, it is the voices of the underrepresented which need to be heard to convey the environmental SDG message across to those of us who overconsume in more developed parts of the world. The time difference can act as a barrier as suitable times have to be arranged for the workshop to occur in tandem. In the case explained here, there is only a one-hour time difference, which makes this manageable for a live synchronous workshop, but adding in another university from another country may make this unmanageable unless they were from the same time zone. Additionally, a day for planning the workshop had to be boxed in well in advance to ensure everyone was available. One step the team have taken for 2024-2025 is to add in a small postgraduate cohort of International Fashion Business students from the Scottish university to add more diversity and inclusion.

A final recommendation worthy of mention at this stage is ICT, and for information technology to be compatible for students to engage across intercultural boundaries. Although the workshop was hybrid across a Microsoft Teams platform, the students in the UK could access this platform, but the South African students could not, due to many data regulations and the possible incompatibility of programmes installed at each university. Hence, the team had to get used to Padlet, Zoom and other technologies utilised. Additionally, the workshop materials could only be shared with the facilitator in CPUT via email to then cascade to their students as our VLE in the UK demanded considerable data protection allowances before CPUT students could be added to the module. This year, to assist with some of this, Google Drive is being trialled as a more compatible information communication method, which may lead to the workshop teams being mixed across both universities rather than working with students solely from their own university. This would enhance the collaboration and seek to embed the SDGs in a more meaningful pedagogical way.

Conclusions

This case study has discussed a particular approach at Robert Gordon University, a Scottish university, which has piloted embedding SDGs into degree programmes via the use of an interdisciplinary workshop. The Design Thinking approach has underpinned the pedagogical development. By building in a COIL element in a subsequent year, it has enhanced the workshop experience giving the students a new appreciation of cultural perspectives, plus the difficulties of working across time-zones and with different technologies and accessibility requirements. It has added an intracultural perspective to the embedding of SDGs into the curricula. Student feedback has shown that the workshop has proven to be a success in the years it has been running and, with the year-on-year enhancements, the workshop continues to evolve, for example, by adding more cohorts. Student feedback has been positive as it has identified the SDGs for them in a way which was direct and experiential and not only benefited the assessment submissions but developed certain meta skills in the students, such as curiosity. The comments posited highlight students' development and a change in their mindset; the 'awakening' that occurred is not something which is easily achieved by a lecture design. However, running workshops such as this, when universities use siloes for managing resources and planning, can lead to issues such as operational barriers of time, timetabling constraints, ICT and an inability to enhance the workshop even further. More has to be done to provide the ability for staff to engage with 'flexitive' pedagogies which mirror problem-solving practices in the workplace if universities are going to be fit for the future.

Acknowledgements

Biographies

Dr Pauline Bremner, Associate Professor, lectures in Retail and Fashion Management at Robert Gordon University. As part of her remit, she directs a programme for students' skills enhancement, leads institutional projects, and has presented on pedagogy topics at many conferences, including Advance HE, and QAA.

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Josie Steed, Associate Dean for Research, at Gray's School of Art, focuses her research on raising the profile of Scottish manufacturing and creative businesses within a global context. She has been involved in many knowledge exchange projects for the Arts & Humanities Research Council (AHRC) and the Scottish Government amongst others.

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