Vol 13 | Issue 1(2025) | pp. 183-206

JOURNAL OF
Perspectives in Applied Academic Practice

https://jpaap.ac.uk/

RecSpace reflections: Cultivating cross-disciplinary engagement through creative practices in higher education

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ABSTRACT

This article offers a case study of RecSpace – a STEAM-informed, interdisciplinary initiative led by academics at the University of the West of Scotland (UWS) during the 2022-2023 academic year. The project aimed to incorporate creative-practice education principles – such as student-centred and place-based learning – in an interdisciplinary space, and sought to demonstrate how creative educational approaches can bridge disciplinary divides and promote collaboration among students, faculty, and community partners.

In this case study, we reflect upon the process and experience of delivering the project, critically examining the challenges of creating an interdisciplinary learning space beyond traditional academic structures. We argue that our experiences on the project are illustrative of both the challenges and barriers to such interdisciplinary working, while also evidencing the potential value to institutions as routes to address a range of strategic institutional and sectoral challenges. In doing so, we aim to highlight how the challenges that we face as creative educators often mirror the kinds of creative problem-solving skills we seek to imbue in our students and reflect upon how our specific experiences might offer more general takeaways for creative practitioners developing similar projects.

Keywords: communities, 'collaboration and co-production', inter/multi/trans/disciplinary, creative practice, STEAM learning

Introduction

This article presents a short case study of 'RecSpace' – a STEAM-informed and interdisciplinary project led by academics at the University of the West of Scotland (UWS). The project, piloted over the 2022-23 academic year, aimed to apply creative-practice education principles and practices, such as student-centred and place-based learning approaches, outside of creative-practice specific disciplines and spaces. The project emerged during a period of considerable challenge and precarity for provision for arts and creative-practice subjects in higher education, brought about by the impact of COVID-19 (see Simamora, 2020; Li et al., 2021) as well broader political and ideological debates about the value of the arts in education (see Belfiore, 2015; Cameron, 2021; Meyrick & Barnett, 2021). In developing this project, we sought to demonstrate the ways in which creative-practice educational approaches can be used to bridge disciplinary boundaries, and foster collaboration and learning between students from a range of subject disciplines, levels of study, and points of entry in higher education, a range of stakeholders from within the university, and a range of community partners and groups within the wider Renfrewshire area in which UWS's Paisley campus is located.

In this case study, we reflect upon the process and experience of delivering the project, offering a critical framing of those experiences in the context of wider discussions and debates relating to the position of the arts in higher education. We will offer an account of how the project evolved, highlighting the challenges faced in developing an interdisciplinary space of working beyond curricular silos and outside of established university schools and structures. Furthermore, we will explore the project's strategies for tackling these barriers and how it attempted to address these challenges. Finally, we will reflect upon the outcomes of the project, including exploring possible applications of how lessons learned here could be applied elsewhere.

Background

The concept of RecSpace originated from a series of ongoing, informal conversations among colleagues across different schools and departments, who all shared a desire to foster more interdisciplinary collaboration between students. We were increasingly recognising that as campus spaces evolved through increased hybrid learning, implemented in response to COVID-19, students were potentially missing out on the kinds of organic interactions that come from being physically, and synchronously, present within a shared space (Aristovnik et al., 2020) and the sense of belonging (Mulrooney & Kelly, 2020; Misra et al., 2023) and togetherness (Bellamy et a.l, 2021) which comes with such experiences.

Where the project was a response to challenges posed by the pandemic, it also responded to a range of sectoral and institution-specific challenges. From a sectoral perspective, the project emerged during a challenging period for arts and creative practice subjects within UK higher education. Broader political discourse around the ‘value’ of the arts has become ‘inextricably linked to the challenge of ‘making the case’ for the arts to justify public cultural funding given increasing funding pressures facing public service provision’ (Belfiore, 2015. p.3), including increasing challenges facing the arts, humanities, and creative practice subject areas in UK higher education (see Gilmore & Comunian, 2016) and beyond (see Mintz, 2021). In 2024, at least 14 UK universities were reported to have been implementing redundancy programmes, which affected arts degrees, or actually closing down creative courses (Jowette, 2024). As such, in developing RecSpace, we were keen to emphasise the significance and importance of arts and creative subjects within our own higher education context, and to demonstrate the value of arts-based and creative practice educational approaches in other spaces within the university.

From an institutional perspective, the timing of our discussions aligned with the University's launch of a new curriculum framework, particularly emphasising *Academic, Personal, and Professional Development* (APPD) through dedicated modules shared across the university. We saw this as a chance to map our ideas for flexible, interdisciplinary learning in a way that mapped to the University’s wider aspirations. We sought to identify an initiative where students could come together, to form self-directed groups, and work on shared goals that encouraged collaboration beyond their immediate disciplines.

The RecSpace project, from its outset, was informed by the notion of STEAM education, that is, an educational approach which seeks to integrate creative arts practices with ‘STEM’ subjects (science, technology, engineering and mathematics). We were eager to demonstrate how student-centred pedagogical approaches, which typify much of arts-based educational practice, can demonstrably improve and augment the way that STEM subjects are taught (see Connor et al., 2015). Having seen and participated in the success of similar initiatives at other post-92 HE institutions, such as Birmingham City University's STEAMHouse project (Burns et al., 2021; Columbano, 2021), we were eager to look at how STEAM-based

approaches might be embedded as a means of facilitating the kind of skills-based advising curriculum proposed by APPD.

That said, while motivated by STEAM-approaches' "aspirations to link work between (inter-) and beyond (trans-) disciplines" (Mejias et al., 2021, p.210), we were also conscious of the criticism often levelled at other STEAM-based initiatives in which "the incorporation of the arts in STEAM proposals often takes place at the service of other disciplines and that authentic artistic content is scarce or simply non-existent" (Sanz-Camarero et al., 2023, p.1139) and 'the framing of arts as serving rather than equal to the various STEM fields' (Mejias et al., 2021, p.210). In developing this project, our aim was, in part, to trial an approach to STEAM-informed education in which arts practices formed a core, agenda-setting component of the educational spaces being developed. Through RecSpace, we as academics and educators were eager to foster space-based learning (Schmidt, 2012). We aimed to create a space – both physical and virtual – within our institution in which students could come together outside their disciplinary silos and engage in a student-centred, skills-based and outward-facing set of activities which connected participants with the wider community in which their campus is located. Here, our aim was to foster rich communities of practice (Wenger, 1998) in which students and other stakeholders are 'informally bound by what they do together' as well as by 'what they have learned through their mutual engagement in these activities'; creating a blueprint for repeatable activities which could serve a variety of purposes for different students and stakeholders, while sharing the same core goals.

We wanted to make space for exploring the often messy and difficult nature of collaboration (see Adamson and Walker, 2011), for both students, academics and wider stakeholders, and to create space for such messy collaborations to happen outside of the often inflexible confines of the formal curriculum, acknowledging that in a world that can be seen as increasingly "uncertain and messy", there is a need to develop appropriate and applicable risk management skills (Boyd, 2021).

Funding for RecSpace was secured through an internal Vice-Chancellor's Innovation Fund, which supported innovative pedagogical practices aligned with the university's strategic goals.

Overview of Project

Foundational Principles of RecSpace

As outlined above, RecSpace aimed to emphasise the importance of arts and creative subjects within the university context, demonstrating their value in interdisciplinary education (see Belfiore, 2015; Gilmore & Comunian, 2016). From initial development meetings as a project group, we explored key values, features and characteristics which we wanted to embed in our proposed project. The most prominent were captured below, providing a guiding blueprint as we designed what this activity would look like in practice:

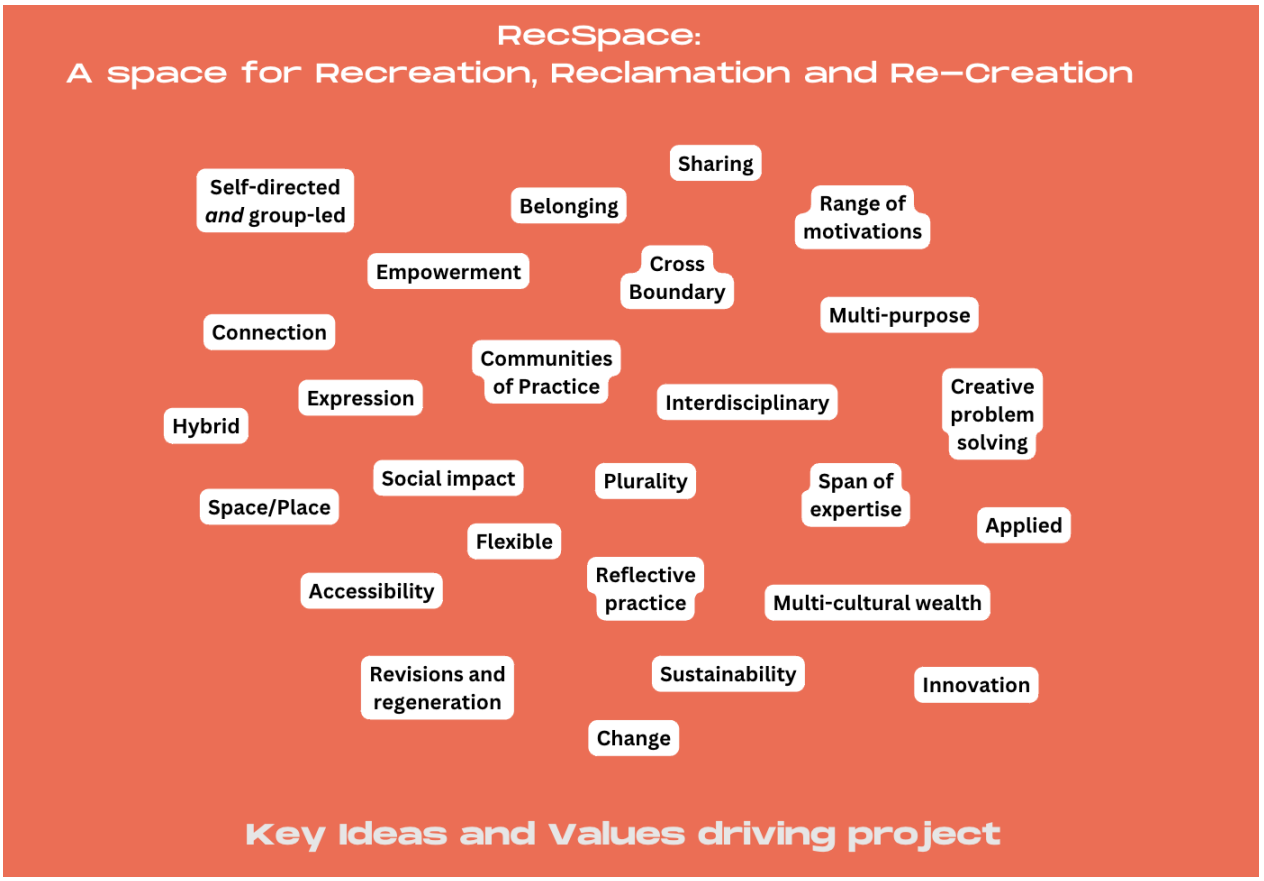


Figure 1 Key ideas and values driving project

RecSpace as place-based learning

We chose to pilot the project on our Paisley campus, which, while welcoming students from all of our campuses, would use Paisley's unique social, cultural, and economic context as a focal point for student interaction. The University of the West of Scotland spans four campuses across the West of Scotland - Ayr, Dumfries, Lanarkshire, and Paisley - with an additional campus in London. Paisley is our oldest campus, with an educational presence dating back to the mid-1800s. Historically, the town has been a significant industrial hub with a rich cultural heritage. However, like many areas across Scotland, Paisley has experienced the harsh effects of industrial decline, leading to widespread economic hardship and high levels of deprivation.

When we began shaping our project, Paisley was undergoing comprehensive regeneration. The Paisley Town Centre Vision, published in 2019, outlined an ambitious plan to revitalise the town by 2030. This vision aimed to restore its cultural and economic vibrancy, shifting perceptions of Paisley as outdated, and re-establishing it as a thriving, dynamic hub. Central to this was the transformation and relaunch of key cultural spaces like the Paisley Museum & Art Gallery, Paisley Town Hall, the Paisley Learning and Cultural Hub, and the Paisley Arts Centre.

We felt it was notable that the arts took a central role in these plans. There was a palpable sense of renewal and pride in the town, with a collective desire to reclaim and reaffirm the importance of Paisley's historical and future contributions. Our project aimed to tap into this energy, providing students with opportunities to engage creatively with the town's regeneration while fostering interdisciplinary collaboration.

In addition to the university's broader commitment to fostering meaningful connections with local communities, the project team strategically positioned RecSpace within the institution's renewed curriculum framework. By emphasising collaborative learning, RecSpace sought to equip students with valuable transferable skills - including adaptability, problem-solving, and interdisciplinary teamwork - while simultaneously deepening their engagement with the wider community. In doing so, the project served as both an educational and civic initiative, bridging the gap between academic study and real-world impact.

Schmidt (2012, p.53) emphasises that 'place-based learning' is delineated by two core elements – "*interest*", referring to "our need to attend to what is immediate, tangible, and local", and "*plasticity*" – approaches which foster "the development of compelling and globally legible outcomes and ideals". By rooting our project in Paisley's rich narrative, we sought to foster students' sense of *interest* – their sense of belonging within the university but also to deepen their connection to the local community. Likewise, by embedding these transferable skills into the project design, we aimed to foster that sense of *plasticity* – developing the means to engage with the cultural history of the space while also developing approaches to tackle socio-cultural issues which exist in the present.

Structure and implementation

During the funding process, the awarding panel raised key questions. These concerns highlighted the broader institutional aspirations and practical challenges of implementation. In response, our team proposed the following key points, summarised in Table 1 below, outlining how the project design addressed scalability, student collaboration, facility management, and staffing needs.

Table 1 Overview of Key Project Design Elements

Aspect	Details
Scalability	While the project was being proposed as a pilot, it had been designed with scalability in mind, with the potential to support both extracurricular activities and curricular integration. The intention was for the project to align with the University's Curriculum Framework and Strategy 2025 policies, with the option to scale and become a core part of the student experience. The project could offer extracurricular, interdisciplinary collaboration opportunities, or be embedded into existing curricula, fostering flexible, cross-departmental interactions.
Bringing Students Together	To encourage interdisciplinary collaboration, RecSpace was designed to bring students together in both formal and informal ways. The project would offer space for non-credit-bearing extracurricular activities, alongside opportunities that could be mapped to students' curricular commitments (e.g., Work-based and Work-related Learning modules). Events planned for each term would allow students from various schools to participate in a dynamic environment, with the possibility of more formal recognition as the project evolved.
Facility Management	RecSpace was envisioned as a hybrid space, located both within a physical space on campus, and equipped with technology to support seamless interaction between physical and virtual participants. While some equipment would be purchased specifically for the project, other resources, like computers and tablets, would be resourced or repurposed from within the university. A full internal audit was proposed to identify available resources, reducing the need for new purchases and optimizing the university's existing technological infrastructure. The space would then fall to the project team to manage, with staff rotating for support.
Staffing Needs	We had allocated budget for staff buy-out to support project coordination and development, ensuring that some existing teaching responsibilities would be covered during the project. Project leads would manage this cover and allocation of funds to provide cover.

The project was designed to take place over a calendar year, with multiple iterations occurring at different points in the academic cycle. Operating as a hybrid space, participants would engage in creative collaborative workshops, coordinated by academics, arts practitioners and local community groups. The intention of these workshops was to bring together students from a range of disciplines, fostering creative communities across and within cohorts throughout UWS. In time, the wider ambition was to create physical spaces on each of the university's satellite campuses, linked by an overarching virtual space, which would consider how interdisciplinarity and collaboration have shaped the various and diverse communities to which each campus belongs.

Each iteration followed a three-phase model, structured around a four-week project with live sessions every Wednesday afternoon. The three phases - Happening, Incubating, and Realising - formed the core structure of the initiative, providing students with a clear framework. The diagram below illustrates this model of interdisciplinary collaboration and problem-solving activity, whereby students shape the project dynamically based on their expertise and evolving insights.

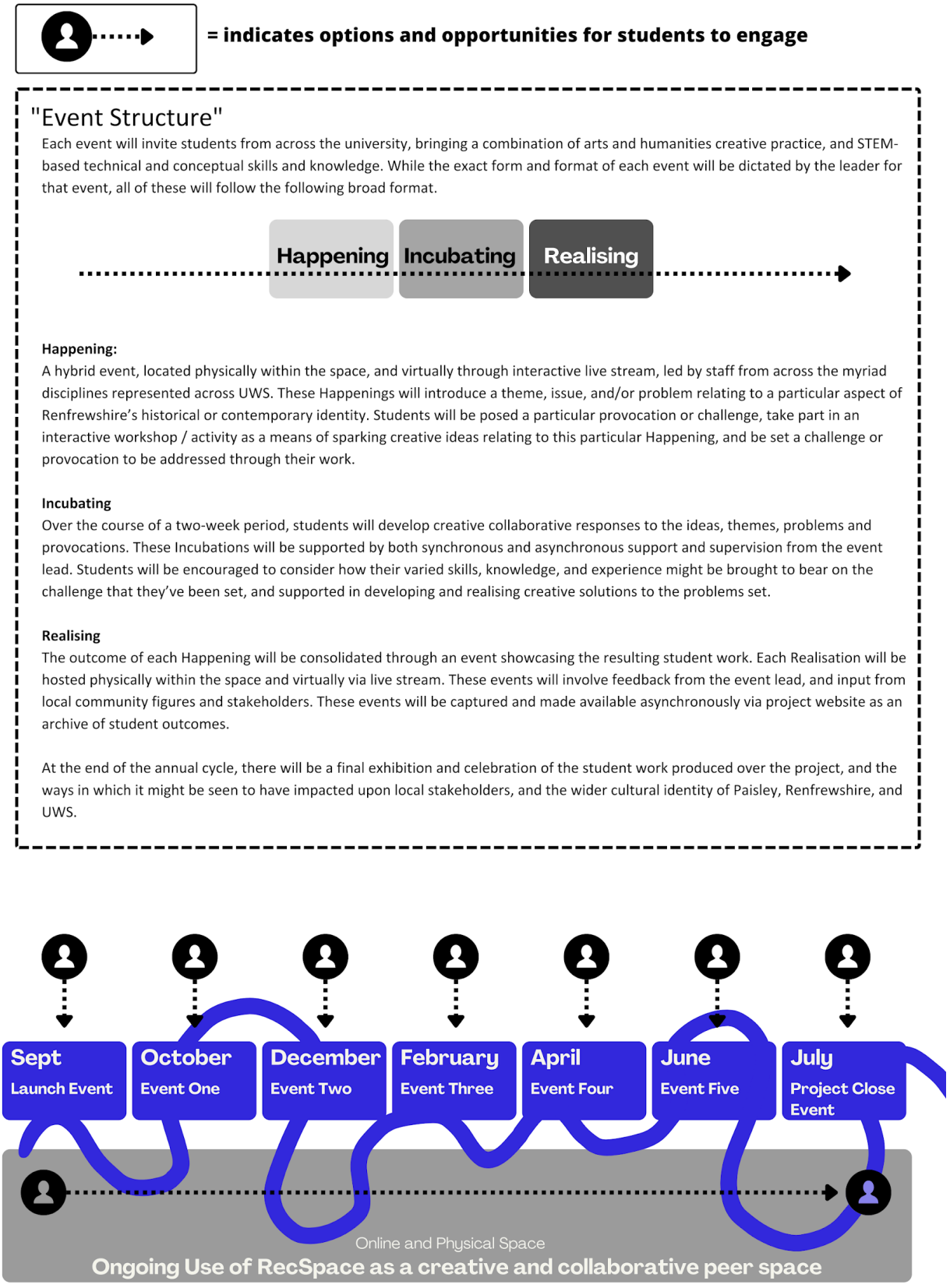


Figure 2 Overview of original event structure

Each iteration of RecSpace was planned to unfold as follows:

Happening Phase: This initial phase introduced students to a specific theme or challenge related to their local community. Hybrid events, led by cross-disciplinary staff teams, provided participants with provocations that encouraged creative exploration. Workshops and skill-based sessions equipped students with the necessary tools to develop their ideas collaboratively, including problem-framing, brainstorming, and exposure to relevant case studies.

Incubating Phase: Next, students engaged in deeper exploration, developing their responses to the initial provocation. Staff, disciplinary experts, and community partners provided guidance and feedback, ensuring that students' projects remained relevant and impactful. Additionally, tailored support helped students strengthen their skills and confidence, allowing them to contribute effectively within interdisciplinary teams. This phase often led to unexpected collaborations, fusing artistic and scientific methods.

Realising Phase: Finally, each iteration culminated in a showcase event where students presented their projects. As highlighted in figure 2, these events were attended by community stakeholders and university staff, reinforcing the real-world applicability of students' work. Student reflections were key here to capture lessons learned, successes, and areas for future growth, ensuring that insights gained could inform future iterations.

Securing an appropriate physical space for RecSpace was a significant challenge. After extensive discussions with the internal estates department, we identified a promising location within a new campus development. However, delays in building works pushed the project launch from September 2022 to January 2023, further compounded by staff strike actions. Recognising the need to maintain momentum, we used this period to refine logistical planning, procure essential equipment, and develop multimedia kits that students could use once the space became available.

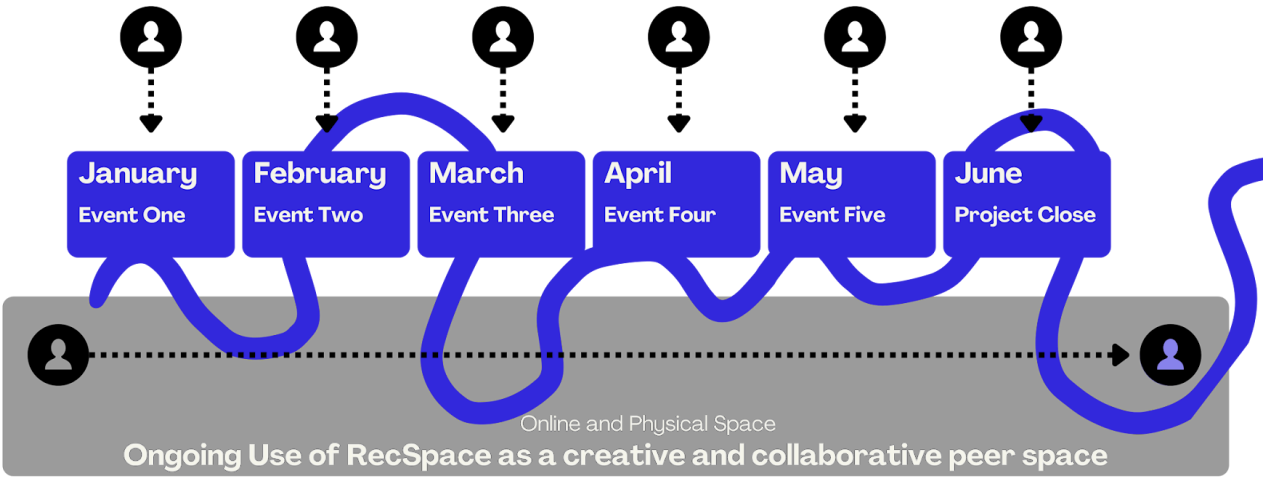


Figure 3 Overview of revised event structure

For our rescheduled January launch, we planned four Wednesday sessions to start in January. This first session would last four weeks, culminating in a showcase where participants could share their progress and outcomes. While we anticipated that some students might continue with RecSpace as we transitioned to the next event, we also recognized that others might not have the time to stay involved. These showcase events would also serve as an opportunity to welcome new participants who were joining the next iteration. We provided a range of flexible ways for RecSpace members to stay connected throughout the project's lifespan, allowing them to engage at a pace that suited their individual schedules.

During this time, we also focused on student recruitment, leveraging cross-school networks to highlight RecSpace's interdisciplinary nature and attract participants from diverse academic backgrounds. These efforts not only helped sustain interest but also ensured that when RecSpace finally launched, it was ready to provide a well-structured and engaging experience from the start.

Toolkit

Another way we used this development period was to design a **collaborative toolkit** to support participants throughout each phase of RecSpace. Working with two local community arts practitioners, we developed a digital resource that reinforced the core values of the project while providing structured guidance on interdisciplinary collaboration. Given that many students - particularly those from STEM backgrounds - may have limited experience with creative, interdisciplinary teamwork, the toolkit gave an important introduction to creative problem-solving in a collaborative setting. Drawing on the concept of communities of practice (Pharo et al., 2014), we aimed to cultivate a shared sense of belonging, ensuring that students and staff could engage confidently from the outset.

Structured over four weeks, the toolkit included practical exercises on team formation, ideation, and project development. Table 2 provides an overview of the structured approach embedded within the toolkit:

Table 2 Overview of toolkit

Toolkit overview	Description
Purpose	A guide to support collaborative, community-based participation in interdisciplinary practice, tailored to the RecSpace project.
Format	A digital PDF, designed to be flexible and adaptable for various events. The PDF would be available online and in printed format, and compatible with university assistive technologies.
Structure (4-week format)	• Week 1: Understanding and exploring the context. • Week 2: Creative exploration and ideation. • Week 3: Refinement, preparation, development, and prototyping. • Week 4: Implementation and legacy.
Key features	• Practical exercises and icebreakers to build team dynamic. • Guidelines for project briefs, resources, and suggested timeframes. • Suggestions for free collaborative tools and documentation methods. • Techniques for ideation and problem-solving. • Advice on prototyping and project planning. • Tips for implementing and showcasing outcomes.

Figure 4 Sample of Toolkit content

Its flexible structure meant it could be adapted to support future interdisciplinary initiatives. The toolkit featured our developed visual branding, where this aesthetic identity supported a connected and cohesive experience, helping participants feel connected—whether engaging in person or online.

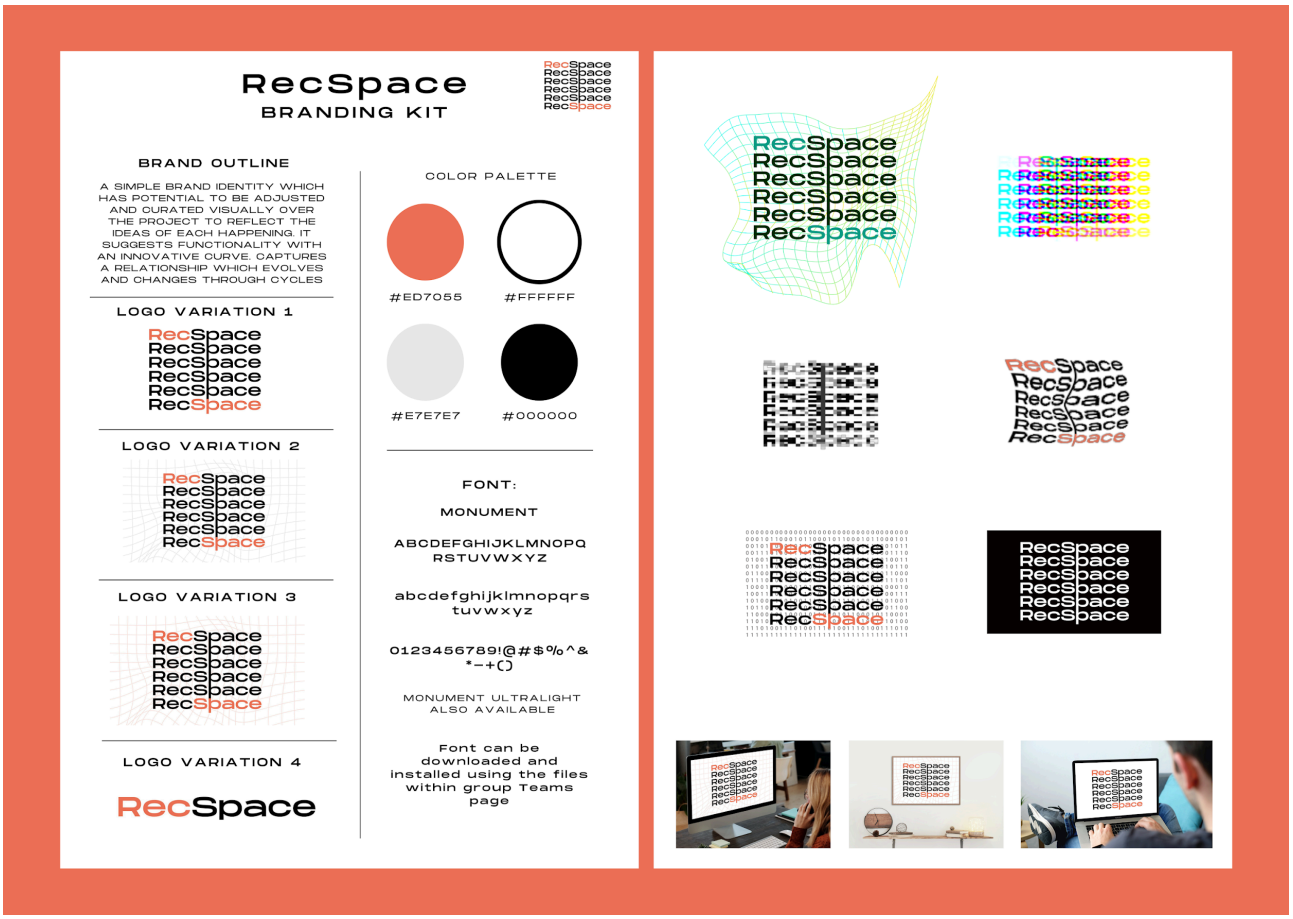
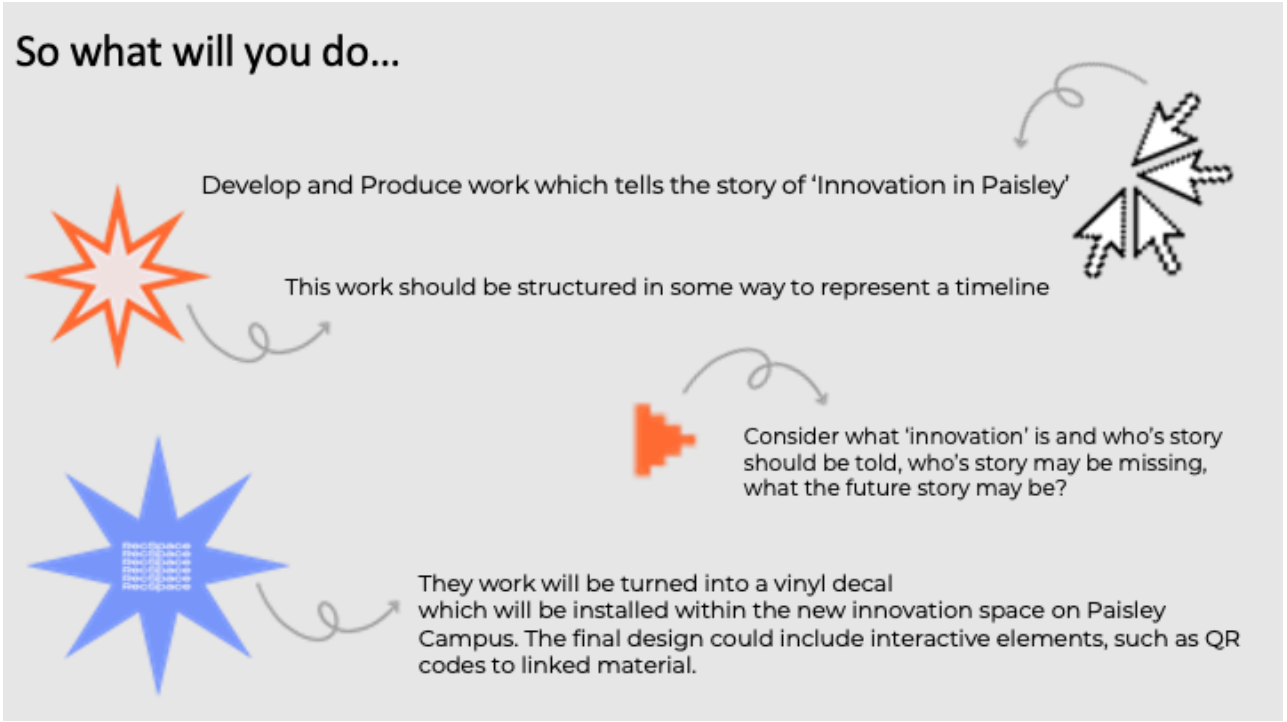


Figure 5 Example of visual branding and project identity development

Evolution of RecSpace and Examples of Key Iterations

The first iteration

In January 2023, RecSpace launched with its first 'Happening,' exploring innovation in Paisley. Originally a four-week project, it was extended to six weeks due to student scheduling conflicts, ensuring full participation in live sessions and workshops. Slides detailing the focus for this first iteration were explored during the first session (see Figures 6 & 7 below).



REFLECTING ON THE BRIEF

OBJECTIVE (Provocation)	Create a lasting piece of art that tells the story of "Innovation in Paisley" to be showcased on Paisley Campus and appreciated by both the campus community and visitors.
Timeline Structure	Structure the work to represent a timeline that traces the evolution of innovation in Paisley. This doesn't have to be linear or chronological. Consider the key moments and themes that have shaped Paisley's journey of innovation.
"Inclusive Storytelling"	Reflect on what "innovation" means. Consider whose stories could be told, whose stories might be missing, and what the future of innovation in Paisley might look like. Think about how to represent a diverse range of perspectives and make the story meaningful to a wide audience.
Format	The final work will be turned into a vinyl decal and installed in the new innovation space on Paisley Campus. This is your chance to leave a lasting mark on campus with a piece of art that will be seen and appreciated for years to come.
Interactive Elements	There are options for you to include interactive features, such as QR codes linking to additional information, which could support further engagement. You have the freedom to experiment with different media, bringing innovation to life through creativity and technology.
Collaboration & Community Engagement	In this project you will work with a local digital artist who will be providing a range of skills workshops, supporting you to try out different ways to bring your ideas to life. We also would encourage you to explore existing archives and community resources which contain details about innovation in Paisley.
Collaborative Group Dynamic	Collaborate with students from various schools within the university to bring together different perspectives, skills, and expertise to the project. This is an opportunity to share your unique talents and showcase what you do best, while also learning from the skills and experiences of your peers. Don't be afraid to step out of your comfort zone and try something new — whether it's a new creative technique, a leadership role, or exploring a discipline you haven't worked in before. By working together and embracing each other's strengths, you'll discover new ways of thinking, create innovative solutions, and develop skills that can be applied far beyond this project.

Figure 6 & 7 Example of week one RecSpace activity brief

Bringing together Physics, Visual Arts, and Filmmaking students, the project fostered interdisciplinary discussions. There were several fascinating interactions, including when one of the Physics students used an

equation to explain their perception of creativity, with a filmmaking student then bringing this to life through animation. From initial feedback over these weeks, students highlighted the value of having the freedom to create without assessment pressures and expressed interest in future interdisciplinary projects beyond the RecSpace context.

A key outcome was the "Threads of Innovation" timeline (Figures 8 & 9), set for installation in the Enterprise Hub. Developed with a local digital artist, the piece resulted from dynamic collaboration, reflecting the evolving nature of innovation in Paisley.

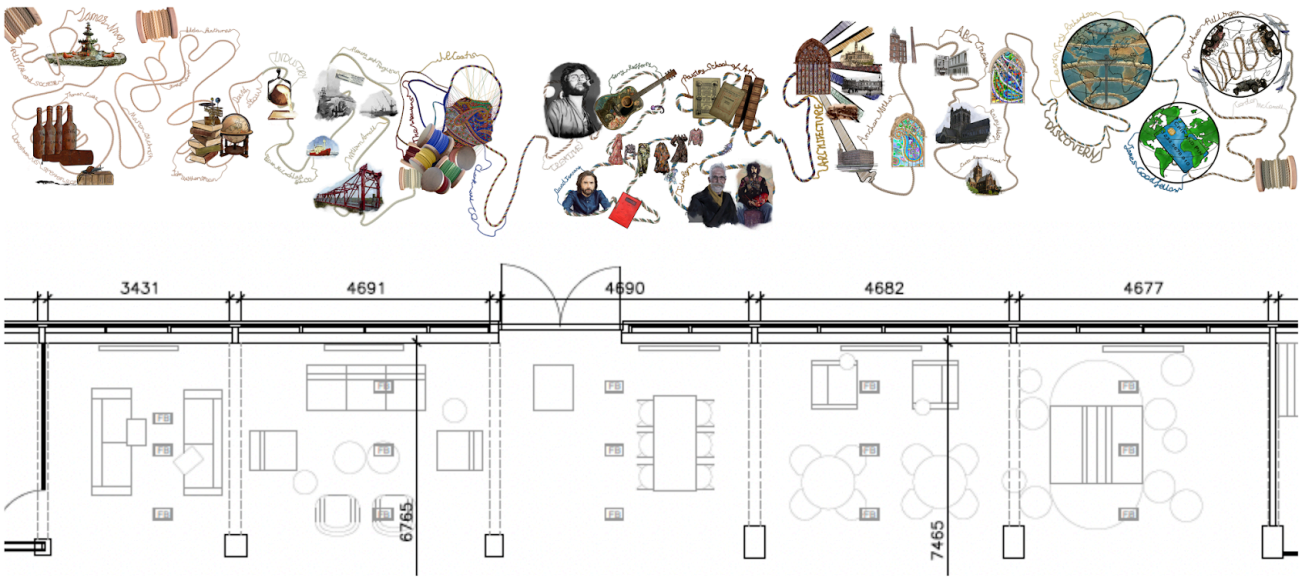


Figure 8 “Threads of innovation” timeline vinyl decal installation plan

Figure 9 "Threads of innovation" timeline vinyl decal installation details (featuring Discovery, Creative, Architecture, Industry, and Political and Societal)

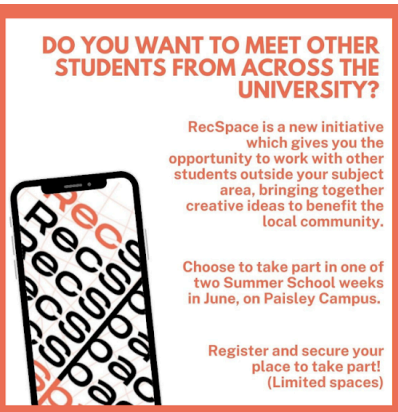
This first iteration showcased the project's potential to intersect with existing curricula in productive ways. One participant was able to earn formal credit for their contributions through their Work-based learning module, demonstrating RecSpace's ability to bridge informal and extracurricular activities with formal, credit-bearing learning opportunities.

The second iteration

The second iteration evolved due to various logistical factors, necessitating a shift to an intensive week-long summer school format (see Figure 10 below). This condensed model provided a structured, immersive experience, aligning with student schedules post-Term 2.

Figure 10 Modified Summer school structure

Additionally, this structure for the summer term supported students needing re-sit opportunities and assisted a new cohort of international students who had limited pre-arrival orientation. RecSpace helped them integrate into the university and local community while fostering interdisciplinary collaboration.



RecSpace is an interdisciplinary initiative which gives students the opportunity to work collaboratively with other students from outside of their subject area, as well as stakeholders within the university and the wider community.

Our world is a complex place, filled with complex and ever-evolving problems. RecSpace is a space where students can consider these problems, and work collaboratively on real-world projects, with a chance to have an impact and make a mark on issues and challenges in creative and innovative ways. We want to embrace the power and creativity that stems from interdisciplinary working, where students are given the chance to think and experiment beyond the boundaries of their degree programmes and established practices.

As part of our summer school we are running two different week-long projects aimed at bringing together students from across the university to work as a team on inter-disciplinary collaborative projects that involve the local community. These happenings will run Monday to Friday on the weeks of June 5th – 9th, and June 12th – 16th from 10am – 5pm on Paisley Campus.

Lunch, snacks and hot drinks will be provided each day.

Read on...

Over the course of the week, participants will:

- Be introduced to the RecSpace project and meet the team;
- Be given a collaborative task, set by stakeholders within the Renfrewshire community;
- Work together to develop innovative solutions to real-world issues;
- Develop creative and communication skills, with access to a range of technologies.

What we need from you:

- A commitment to join us from 10am – 5pm, Monday to Friday, on either June 5th – 9th or June 12th – 16th, in RecSpace on the Paisley campus, to work collaboratively on a theme, issue and/or project;
- A desire to work with students from other disciplines, and stakeholders within the community;
- An openness to thinking outside of your own disciplines, practices and experiences.

Everyone is welcome and all talents, interests and contributions are recognised - even if you are simply interested in meeting others!

What you'll get in return:

- The opportunity to be part of a new interdisciplinary community of learners,
- The chance to take part on live projects with real-world impact on the local area and beyond;
- Training in and experience in presentation skills and creative communication;
- An excellent way to demonstrate adaptability, creative problem solving, and collaborative working which you can use on your CV and/or applications for postgraduate study;
- The potential for your experiences to be used within a Work Related Learning context.

Spaces will be allocated first come first served - as spaces are limited we recommend registering sooner rather than later!

If interested in this free opportunity, please register here - https://forms.office.com/e/2uq0v9BFvF

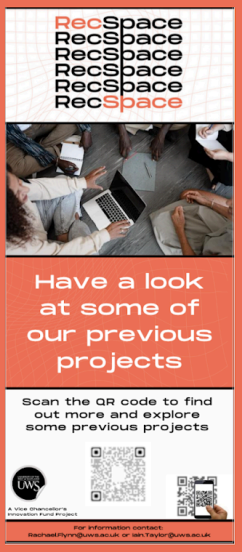


Figure 11 Examples of RecSpace promotion

For this iteration, students worked on projects exploring reimagined physical campus spaces in Paisley. Community organizations like ACCORD Hospice and Sewing Together All Nations provided real-world engagement, prompting students to develop creative solutions such as volunteer networks and mobile arts-based therapy. These discussions also highlighted cultural differences, notably regarding hospice care, leading to valuable peer-to-peer learning.

A key benefit of the week-long format was improved engagement with community partners, balancing meaningful collaboration with manageable time commitments. Students presented their projects to senior university and community stakeholders , generating ideas that sparked further institutional interest. This model successfully bridged students, decision-makers, and local organizations, fostering sustainable impact and innovation. This refined structure responded to the varied needs of students, such as international student orientation and resit opportunities, demonstrating its adaptability and ongoing relevance in supporting interdisciplinary learning and community engagement.

Insights and recommendations

In this final section, we reflect upon the lessons learned from the RecSpace project. While the challenges we encountered are not unique to our institution, the strategies and methods developed from our experiences have the potential to be instructive for others. As Kolb (1984, p. 49) notes, reflection is "the process whereby knowledge is created through the transformation of experiences." Building on this, more recent scholarship on reflective practice - particularly within creative and academic contexts - emphasizes the value of reflexivity in developing professional practice (e.g., Schön, 1983; Moon, 1999). We therefore begin with our personal reflections as practitioners before considering how the experiences, challenges, and resolutions of the project might offer meaningful insights for others working in similar academic and creative contexts.

The first point of reflection relates to the tensions which exist between the conceptual principles which inform projects such as RecSpace, and the organisational realities of their implementation. Our commitment to STEAM-informed interdisciplinarity, combined with Schmidt's (2012) concept of 'space-based learning' (which embraces the socio-cultural challenges present in students' immediate environments), meant that securing a fixed space for the project was initially problematic. Competing institutional priorities and resource constraints required us to adapt and rethink our approach. As a result, a key challenge in implementing the project became how to facilitate 'space-based' learning within uncertain or inconsistent physical environments.

We do not think it is unreasonable to suggest that such dilemmas of balancing conceptual principles with the hard realities of institutional space and resource, are broadly illustrative of the wider challenges faced by educators across the HE sector who strive to create work which exists outside of formalised timetabling and curricular silos. Adaptability - that is, the capacity of educators and educational designs to 'modulate' in the face of unforeseen challenges "without having to change the entire system and without dissolving into chaos" (Green et al., 2021, p.871), became a crucial skill that we deployed in bridging the gaps between underpinning educational concepts on one hand, and often harsh organisational realities on the other.

The ability to 'modulate' in this way, quickly adapting tasks, settings and provision, while keeping the essence of a project intact, became a core part of our experience running the RecSpace project. While, as previously noted, critics of STEAM-based approaches have quite rightly pointed to the arts in STEAM as often being positioned as subservient to the STEM fields, our experience of implementing this project points to the value that arts-based approaches at the centre of inter/transdisciplinary collaborations. As creative practitioners, we are often tasked with reacting to the unexpected and experimenting with new approaches, and in the RecSpace project, we were able to apply these skills in a cross-disciplinary context, where both staff and students were equal participants. This not only allowed for a productive transfer of creative thinking into an educational setting but also highlighted the flexibility of these approaches in addressing complex challenges across disciplines. Indeed, it was enriched by incorporating new perspectives and approaches from areas outside what is typically viewed as arts-based disciplines. Additionally, it was particularly rewarding to see the new working practices we established being adopted by stakeholders within the project, such as considering the RecSpace model as a means of induction for international students, retention and progression for students requiring additional credit, and as a model of community partnership working. We believe that this demonstrates the broader applicability and impact of such collaborative methods, and makes a strong case for similar future projects to consider having an arts-based practitioner in a central coordination role of inter and trans-disciplinary projects.

As illustrated above, fostering interdisciplinarity in student collaboration requires similar interdisciplinarity in the collaborations of staff and other stakeholders who design and facilitate such learning. This, of course, can prove challenging, especially where the resource of staff time and availability are limited. In RecSpace, collaboration took many forms - across internal teams, external partners, students, and cross-school efforts. However, coordination of such collaboration requires a marshalling of different levels of experience in, and enthusiasm for, such interdisciplinary work (see Herro et al., 2019). Our experiences of leading this project reinforced wider observations from within the literature on STEAM-based education, particularly, the arts element of STEAM taking place "at the service of other disciplines" (Sanz-Camarero et al., 2023, p.1139), and, indeed, at the service of other institutional and organisational priorities (Mejias et al., 2012).

In her reflection on the barriers to STEAM-based education, Catton (2021, p.43) highlights that the additional time required to work collaboratively, and to create truly interdisciplinary experiences, is often a key factor. Given that an effective transdisciplinary team "is composed of members who have developed trust and mutual confidence" - allowing them to "transcend disciplinary boundaries" and move towards a more "holistic approach" - allocation of additional time for collaboration between colleagues is important if we hope to foster similar interdisciplinarity in our students (see Choi & Pak, 2006). Alongside this though, collaboration of this nature also requires a nuanced set of skills, including the ability to empathise with the differing motivations, constraints, and priorities of multiple stakeholders. As creative practitioners, we often bring pre-existing aptitudes in navigating ambiguity, working across disciplinary boundaries, and engaging with diverse perspectives - skills that are particularly valuable in interdisciplinary, multi-stakeholder educational contexts. Recognising and further developing these capacities can enhance our ability to lead and sustain meaningful collaborative initiatives. As such, one clear lesson from this case study for practitioners who are looking to apply a similar model is the need to intentionally build in additional collaboration time for experimentation, discussion, and testing of ideas, prior to the formal commencement of a designed project. This preparatory phase is not only about logistical coordination but also about fostering the trust, shared understanding, and adaptability required for meaningful interdisciplinary work (Bennett & Sunderland, 2016). Ideally, this might take the form of structured preliminary workshops,

reflective dialogues, or facilitated exercises designed to surface different stakeholders' motivations, potential challenges, and areas of alignment. The prioritisation of time and the development of collaborative competencies supports establishing stronger foundations, allowing interdisciplinary learning and innovation to thrive.

The next key point of reflection, closely linked to the previous, concerns the often unnoticed or un-resourced labour and time required to make these collaborations successful. If we want to encourage and sustain this type of work, there needs to be greater recognition of the effort involved. While the outputs of the project were acknowledged as highly valuable by various stakeholders, our experience of leading and managing the complexities of interdisciplinarity highlighted a persistent challenge: key aspects of project work - such as adapting to setbacks, managing diverse stakeholder needs, navigating institutional processes, and ensuring compliance – often demand significantly more time and labour in practice than they do in principle.

As creative practitioners and educators, we pride ourselves on fostering rich, student-led, and space-based learning experiences. However, delivering these experiences outside of traditional curricular and disciplinary structures has reinforced how difficult it is to sustain initiatives that do not fit neatly into formal teaching and assessment frameworks. In a higher education sector increasingly shaped by resource constraints, there is mounting pressure to demonstrate immediate, tangible outputs that evidence impact in clear and measurable ways. Yet, the nature of activities such as RecSpace often unfolds more subtly, with their true value emerging over a longer timeframe for students. This aligns with findings that interdisciplinary learning outcomes can be both knowledge-related and skills-related, developing over time (Lai et al., 2022). A symptom of this emphasis on immediacy is that institutional focus tends to centre on curricular and disciplinary priorities - particularly those tied to assessment and progression - at the expense of activities that sit beyond them. This is problematic, as it risks marginalizing the broader, long-term enhancements that interdisciplinary and co-curricular projects can bring to student learning and institutional culture.

For such initiatives to bear fruit, project leaders and other stakeholders must make more explicit the often-overlooked labour of responding to and managing unexpected challenges. Further, institutions must find ways to better support and reward these forms of engagement, ensuring that the slower, less immediately visible impacts of interdisciplinary and creative education are valued alongside more conventional measures of success. This is particularly pertinent given the increasing resource constraints in higher education, which can limit the capacity for such innovative projects (Universities Scotland, 2024).

As Willet and He (2023, p.17) note, effort and labour in academia are often "semivisible," existing along a continuum rather than as a simple dichotomy of visible and invisible work. While some aspects of projects like RecSpace - such as stakeholder-facing events and formal reporting - are highly visible, other crucial elements remain less apparent to those making resourcing decisions. These include the ongoing work of navigating institutional and sectoral barriers, fostering and managing interdisciplinarity, and engaging with external collaborators. If these aspects are not actively surfaced and acknowledged, there is a risk that STEAM-based initiatives will continue to be under-resourced, limiting their potential and impact. The effort required to support interdisciplinary and creative education should not be seen as a burden - it is an investment that yields substantial benefits. Such initiatives equip students with the ability to work across disciplines, embrace complexity, and engage with real-world challenges in a way that more traditional learning structures may not fully enable. These skills - adaptability, creative problem-solving, and collaborative working - are increasingly valued both within academia and by external partners and

employers. Therefore, as creative education practitioners, we have a role to play in making the case for these benefits by ensuring that reporting mechanisms not only capture the successes of such initiatives but also articulate the labour and structures necessary to sustain them.

In doing so, we must proactively highlight the "masking factors" that obscure elements of this work (Willet and He, 2023, pp.20-21) and consider whether other forms of invisibility may also be at play. From our experience, there is widespread enthusiasm within the sector for interdisciplinary, creative, and student-led initiatives. However, for such approaches to thrive, their challenges must be more explicitly acknowledged - not as barriers, but as opportunities for institutions to develop more sustainable ways of embedding and valuing this activity and resulting outcomes.

Conclusion

The reflections above stem from the challenges of applying STEAM-based educational principles in practice, and highlight the ways in which practice becomes shaped by a need to develop strategies to navigate the organisational and practical barriers which emerge. As discussed, the iterative nature of RecSpace reinforced the idea that creativity is an evolving, process-driven practice, requiring constant adaptation and reflection (see Schon, 1983). Rather than viewing these challenges as obstacles though, they became integral to the learning experience - both for students and educators - by highlighting the importance of creative problem-solving, interdisciplinary collaboration, and flexibility in a situated context. As each iteration of the project was shaped by unique constraints, we observed how different adaptations fostered distinct communities of practice (Wenger, 1998), reinforcing the notion that creativity does not happen in isolation but is deeply embedded in social and institutional contexts, and often in flux. This aligns with earlier discussions on the labour involved in interdisciplinary work, where much of the effort required to make such initiatives successful remains "semivisible" (Willet & He, 2023). Recognising this, educators seeking to embed creativity in their curricula must acknowledge that process is as valuable as product, and that meaningful interdisciplinary learning often emerges through negotiation, iteration, and engagement with real-world complexity (see Jackson & Shaw, 2006).

Moreover, this experience underscored that creative problem-solving is a highly transferable skill, equipping students with the confidence to work across disciplinary boundaries and adapt to uncertainty - key attributes for contemporary professional landscapes (see Kleiman, 2008). The RecSpace project demonstrated how engaging with real-world constraints, rather than simplifying learning experiences for the sake of more straightforward logistics, helps students develop resilience and adaptability. However, for such pedagogical approaches to be sustained, they require institutional support for considered risk-taking and experimentation within a learning and teaching space. Structure within higher education can often privilege stable, predictable models of learning that align with assessment structures, yet creative education demands space for iteration and critical reflection (Biggs, 2003; Orr & Shreeve, 2018; Murphy & O'Neill, 2022). The challenge lies in balancing institutional requirements for measurable outcomes with the need for open-ended, process-driven learning experiences that cultivate creativity and interdisciplinary thinking (Kleiman, 2008).

Without mechanisms that allow for flexibility in curriculum design and resourcing, there is a risk that interdisciplinary and creative initiatives will remain undervalued and under-supported - particularly in a sector increasingly driven by demands for immediate, tangible outputs. This ties into earlier discussions on the pressures facing HE institutions, where funding and resource allocation tend to prioritize more easily

measurable forms of impact (Universities Scotland, 2024). As such, fostering creative, interdisciplinary learning requires not just pedagogical commitment from educators but also a broader institutional culture that values and enables experimentation, recognising its long-term benefits for students, and the wider local and global communities they connect with.

This, we believe, is a valuable takeaway from this case study - not only for us as creative education practitioners but also for colleagues seeking to develop similar projects in the future. STEAM-based and inter/trans-disciplinary education initiatives, such as RecSpace, are designed to equip students with the skills to navigate uncertainty, preparing them to respond effectively to complex and evolving challenges. As Dishon and Gilead (2021, p.400) argue, such approaches are "intended to mitigate the risks of an unpredictable future by instilling in students the capacity to react to fluctuating circumstances".

In retrospect, when reflecting upon the challenges outlined in the case study above, in forcing us to think differently about the delivery model, these challenges forced us to engage in the same kinds of live, situated, and real-world creative problem-solving activities that we wanted to provide for the students participating in the project. As Haryani et al. (2021) note, for educators to successfully nurture and develop creative problem-solving, critical thinking, and collaborative problem-solving skills amongst students, they must first be grounded in, and prepared to, apply these skills themselves. By embedding these principles into the design, development, and implementation of STEAM-based educational projects - and by foregrounding and leveraging the expertise of arts and creative practice educators as facilitators – we can create approaches which are adaptable, sustainable, impactful and effective in delivering truly interdisciplinary and transdisciplinary experiences for diverse groups of students.

Biographies

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