Pilots Completion Report

Document details

Document owner	
Document author	
Current version	
Issue date	

Version control

Date	Version	Change details

Title of the Pilot	**Exploring flexible sustainability learning at scale with the RoundView**
Pilot ID Number	FLP-Pilot-ID78

Pilot Completion Report Template

Report Category	Report Requirement
Overall Rating *(Fully Delivered, Partially Delivered, Not Delivered)*	
Summary	*Please give a summary of what your pilot delivered. With a focus on progress toward the original aims. (Circa 1000 words)*
Deliverables	*Please list your pilot's deliverables*
Relevance	*Has the pilot topic and its activities met the information/experience needs of the intended stakeholder groups? To what extent are the completed pilot outcomes still in line with the needs and priorities of the Flexible Learning Programme?*
Efficiency	*To what extent did the methods/approaches used in this pilot lead to improvements in efficiency (financial/staffing/resourcing etc)? What other approaches could be considered in light of the pilot - would these be more or less efficient?*
Effectiveness	*To what extent did the methods/approaches used in this pilot lead to improvements in effectiveness (learning/outcomes/experience/flexibility etc)? What other approaches could be considered in light of the pilot - would these be more or less effective?*
Outcome	*To what extent was the pilot able to meet/exceed its objectives? To what extent has the pilot led to improved outcomes or behaviours in the stakeholder groups? Were there any other unintended positive or negative outcomes from the pilot?*
Sustainability	*To what extent has the pilot identified the potential for its activity to lead to the long-term behaviour/operational change? What would need to happen to make these changes happen?*
Financial	*See separate report but use this space for any financial narrative that needs to accompany the report.*
Lessons Identified / Learned	*Please Consider enabler and inhibitors in the following areas:* • *Systems and process* • *Incentives and capacity* • *Policy and strategy* • *Student experience* • *Physical Estate* • *Culture*
Materials or publications	*Please list all the materials/publication against this evaluation report*
Report approval and comments	*To be completed by a delegated person agreed by the workstream governance group.*

Flexible Learning Pilot: Exploring flexible sustainability learning at scale with the RoundView: Final Report

PI / Project Lead: Dr Joanne Tippett
Pilot manager and Research Associate: Dr. Jamie Farrington
Teaching and Research Associate: Fraser How
Research Assistant: Junyi Li
Research Associate: Matt Sanderson

Table of Contents

Contents

Table of figures

Section 1: Summary

This pilot experimented with flexible ways of delivering sustainability learning at scale across the University of Manchester, exploring how best to utilise the multi-award winning RoundView toolkit for sustainability learning. During the Flexible Learning Pilot (FLP) we engaged extensively across stakeholder groups to better understand their needs around teaching and learning in the context of sustainability, and to gather feedback around their sense of engagement and belonging to a community of practice for change. This included approximately 32 events with over 1178 people associated with this aspect of the pilot, either directly set up as a core activity, or supported by student helpers in outreach activity, or other workshops where the questions and concerns around the topic of flexible learning for sustainability have been included (See appendix for list of events).

Objective 1: Develop and make available substantial resources, capacity and learning for the flexible teaching and learning of sustainability at the University

We have substantially revised and updated our learning resources and guidance, based on the learning and feedback received through the surveys (n=69 for registration surveys and 15 for post-workshop surveys), 5 focus groups (approximately 12 people per focus group, with some people attending more than one), interviews (n=9) and learning artefacts emerging from events.

A compact, stand-alone exhibit for self-guided RoundView learning and a new hands-on learning tool were prototyped and tested. The new learning tool, Our Global Shared Story acts as a powerful prompt for interdisciplinary thinking. We delivered 15 face-to-face RoundView workshops, allowing us to test and further iterate our updated and new tools, workshop plans and guides, generating a wealth of insight and experience.

The workshop plans and guides are evolving as more people make use of the tools and approaches that have been developed through this FLP. The ThinkingWare workshop planning tool has been upgraded to the ThinkingWare Workshop and Teaching Platform, now better suited to curate and make these resources available, able to be flexibly adapted by users on an ongoing basis.

Some discipline specific resources have been created and tested. It has become apparent that this is best achieved iteratively and step by step over time with different combinations of colleagues and learners. A strategy that we found to be effective was to build discipline-specific questioning (how does this learning relate to my studies / area of work / future career) into the learning process where possible. The challenges of creating sustainability teaching resources in a discipline appropriate way are a key part of what led us to focus more on the development of digital tools and the ThinkingWare platform. We will continue to work closely with various staff across different disciplines to take this forward into the next semester and beyond, building on connections strengthened through this FLP.

We have trialled place-based installations of our learning resources and gathered feedback that led to a new prototype of a compact stand-alone exhibition, which is receiving very positive feedback from libraries and museums.

We have created new media that can be used in a variety of contexts - presentations, digital tools, teaching slides with smaller chunks of material that can be used modularly, and video assets. We have created a prototype virtual field trip and gathered feedback. This is not the

final ‘aspirational’ output of a fully interactive virtual field trip, but already provides a very useful teaching resource and foundation for future design. These will be made available on the ThinkingWare Platform. The draft field trip can be seen here: https://new.express.adobe.com/webpage/5n0rDXpsf3jGO

Our original aim of exploring how to turn existing resources into ‘bite-sized’ digital learning resources was superseded by the creation of a more complete prototype of a digital tool that will enable deeper testing and exploration around pedagogy, evaluation, assessment, and the need for flexible digital pathways. This is a significantly greater and more useful achievement than our original plan. The RoundView Evaluation Tool prototype can be seen here: http://165.232.99.173/rv/ (this prototype suitable for laptop and desktop, not tablet and phone yet).

Objective 2: Improve learning design through using Design by Team infrastructure and services and generate feedback, learning and experience to further develop this service

We have engaged with the Design by Team support on offer, and have written up our experience, which has been very positive, in the Outcomes section of this report. In particular, this helped us reflect on how we can improve assessment and evaluation of learning during workshops or in follow-up learning (ideally to be linked to digital badges) using innovative pedagogies or tools. This has led to several tests of new approaches. The challenges experienced in gathering effective pre- and post-workshop data were drivers of our strategic shifts during the pilot in terms of digital learning tools.

Objective 3: Culture change and growing community of practice, with enhanced capacity and motivation to embed flexible sustainability learning across the university

Figure 1 Student volunteers and PI at NorthWest youth climate conference

We have increased student capacity for facilitating and leading learning sessions using the toolkit. This has included student-led sessions with civil engineering PASS tutors, support at

cross-university facilitated workshops, student-led outreach events in community festivals and libraries and student-led workshops with school groups. The cohort of students involved in supporting this work has grown and deepened, clarifying how this approach can be enhanced to better meet student needs, and enable wider capacity building.

We have supported staff in their practice of teaching sustainability, while shaping our strategy for the future through the provision of more flexible, adaptable materials combined with open digital tools and an ongoing invitation to collaborate.

We have gathered data from a wide range of stakeholders around their sense of the issues pertaining to a 'community of practice' in sustainability. This report includes lessons for flexible learning around practice, pathway, place and pace, and includes insights into enablers and inhibitors for flexible learning practice in general as well as in a sustainability context. The insights gained informed our strategic choices and lessons reported on in this document.

We achieved the improvements envisioned with the ThinkingWare workshop planning toolkit, working with Research IT to enable workshop plans created using the tool to be shared between users to enable collaborative development and the implementation of a workshop plan library. Responding to the learnings that arose in the project, we were able to take this work further and evolve the toolkit into more of a platform for data sharing and creating infrastructure, which we will be able to use on an ongoing basis after project completion. This will enable us to continue to work strategically towards our broad objective of supporting and improving the flexible teaching and learning of sustainability across the University. The platform can be accessed here: https://thinkingware.manchester.ac.uk/

Section 2: Deliverables

- Workshop plans and guides (different lengths and entry points)
- Discipline specific learning resources
- Digital learning tool bite-sized prototypes
- Increase in student capacity to deliver peer sessions
- Teaching staff increased capacity to deliver sustainability related teaching
- Improved assessment / evaluation of learning strategy
- Summary of participant group needs for teaching and learning around sustainability
- Better media / digital resources
- Feedback on Design by Team experience
- Write up of UDL review
- Place-based trial of installation with feedback
- Learning captured across pathway, place, pace and practice in relation to sustainability teaching and learning
- A series of events and feedback gathered from staff and students around the community of practice, belonging and capacity to change
- Improved workshop planning tool

Section 3: Relevance

Has the pilot topic and its activities met the information/experience needs of the intended stakeholder groups?

The sections below develop a needs analysis for each stakeholder group as set out in the original project proposal, based on feedback and findings during the Flexible Learning Pilot (FLP). During the pilot we have prototyped and trialled ways and processes that can address many of these stakeholder needs, discussed below. This section ends on discussion of the completed pilot outcomes of this pilot and the match with the needs and priorities of the Flexible Learning Programme as a whole.

Note that any words in quotes below were taken from focus groups, interviews, the pre-and post-trial workshop or words written on Ketso leaves during focus groups with stakeholders during the FLP.

Ketso is a hands-on toolkit for engagement and learning, which has emerged from the same foundational research that led to the RoundView. It has been used as a complementary tool in many of the sustainability learning workshops, as a means to encourage dialogue about understanding and for workshop participants to develop ideas about sustainability relevant to their context. It has also been used in workshops to gather data from stakeholders during the FLP. Participants write their ideas on colour-coded leaves, and share them on a central workspace to build a picture of the group's thinking.

Teaching staff from across the University

Teaching staff from the Department of Materials stated: 'Sustainability is a popular topic, and the University, from an admissions perspective, likes to use it to dangle a hook to get students interested in it.' A concern was raised, however, that embedding sustainability may appear to be a tick-box exercise in some areas (for instance, a brief nod to the UNSDGs as a list of what is covered without much depth or links to the curriculum being made). As our website says, "Every course at Manchester contributes towards the UN's Sustainable Development Goals, so no matter what you're studying you'll be playing an active role in the protection of people and planet."

Teaching staff who attended the "Flexible Future Teaching and Learning through a lens of Sustainability workshops" we ran during the FLP considered how to include sustainability as part of strategic planning for teaching across the University. 'The other thing that I think, where the RoundView is a real interest, is this bigger, longer-term objective of how do we have something general and flexible enough that it can be embedded into different programmes.'

A key theme that emerged in the feedback from teaching staff was the need to offer a "critical core of hope" to our students when we offer this sustainability learning. There is a consistent thread of feedback from both staff and students that the RoundView has value in this regard, with shifts in thinking from workshops such as: "More hopeful for rectifying climate issues"; and "Importance of hope for creating a better future".

There was a clear sense that integrating sustainability into teaching is important, but it is not always easy for staff to see how to best do this. Efforts often end up feeling fragmented, and there is a risk of providing conflicting messages, for instance introducing various tools and

processes that work at different conceptual/spatial levels without clarifying the links (and possible conflicts and / or synergies between them).

There was a general sense that we need to find a way to promote and speak about sustainability that resonates with students, and this might at times require us to use different language. For instance, from medical and health sciences perspectives, the word sustainability isn't even in the vocabulary at the moment. If the issues were to be framed as public health and health inequalities, it may gain more traction.

One finding that emerged from the workshops and engagement was recognition of the potential value of framing sustainability learning as critical system thinking skills in terms of student engagement and interest across disciplines. Systems thinking is a key element of the UNESCO core competencies for sustainability leadership. Framing sustainability learning as an opportunity to develop skills in solving complex problems across silos, could help address a perceived lack of relevance for some student groups.

The training we developed for the PASS programme with Civil Engineering emphasised the systems thinking aspects, and was well received. This also gives a way for PASS mentors to deepen the learning with first-year students, and to discuss how it applied to their module, as in the future all Civil Engineers will have learned the RoundView in the first semester.

In light of feedback on the value of clearly integrating systems principles into the RoundView game dynamics, we are currently rethinking the design of the core RoundView graphics to be more immediately recognisable as systems diagrams.

A need for opportunities to learn and engage with the RoundView at different stages across a degree was highlighted. In Civil Engineering, a need to introduce the RoundView from the very start of teaching was identified, and it was seen as a valuable addition to be able to offer further opportunities to deepen learning about the framework and develop engagement and communication skills, with an invitation to volunteer as assistant facilitators in later workshops.

Programme Directors (PGT in SEED) see a need for extra social activities a few weeks after Welcome Week (linked to the new idea of Welcome Month within SEED), and that the RoundView workshops might provide a useful offer, especially for international students who may have arrived late and missed Welcome Week.

Teaching staff would value ways of flagging to the students that they had been given an opportunity to develop employability skills. This could be enhanced with the offer of a digital badge for this component of learning.

In order for sustainability learning to be embedded more widely, staff need to understand its value. Champions for change need sources of evidence and references to point to demonstrate such value, especially when arguing for changes in Intended Learning Outcomes, teaching practice or professional accreditation. We aim to compile the evaluation and feedback from this pilot and prior experience to provide a report on learners' experience of the RoundView and Ketso as learning innovations, as one such source of information to be shared as a resource on the ThinkingWare platform.

We have developed new ways to adapt the toolkit to different types of learning and contexts during the FLP, which will inform the resources we make available to staff for use in their teaching. However, there is still a need to address barriers within individual disciplines, which include fears of subject matter erosion.

Support & service staff

(UoM Library, Directorate of Student Experience -Stellify and Student Union)

This stakeholder group is particularly interested in opportunities for students to build skills that are useful for future employment, and to link such skills development to their university learning. There is interest in opportunities for both staff and students to be part of a wider process of change.

Feedback from these stakeholders highlighted the need to be: 'Cocreating teaching resources with the library student team', with discussion of the potential value of training library staff to run RoundView workshops. These could be offered as part of the library's in-class offerings for staff and students. The potential for RoundView workshops to be hosted in the library was discussed, leveraging their resources and space to reach a wider audience, including students and community members. A challenge of communication was raised, with a concern: How do teaching staff know that such workshops are available to them as a resource, and what will increase uptake?

We discovered a barrier with our current offering for this stakeholder group. They need to have clear ways to record and measure which staff have had training, such that there is visibility in their support for sustainability and social responsibility. We learned that in a recent discussion of which training to use for staff, the UoM library debated whether to train staff in the RoundView or Carbon Literacy. They decided to go for Carbon Literacy in part because it issues a certificate. The fact that we do not yet have a way to certify learning with the RoundView shows that this approach does not yet meet some of the key needs for this user group. This is an issue that could be at least partially addressed with the ability to issue digital badges. We have made some progress towards the potential to issue digital badges, thinking of ways we could use the digital learning tools developed during the FLP to assess learning, but we do not yet have clarity on how or when Digital Badges can be issued through Canvas, and will need support in developing this option.

Student co-creators and supporters

(Those keen to develop their skills and experience further)

A key need in this stakeholder group is to be given opportunities to develop knowledge and understanding of sustainability thinking and learning, and practical skills to make use of this in their chosen careers. This includes gaining the ability to be able to put volunteering opportunities and activities on their CVs and LinkedIn profiles. An example of such a post is:

> "Recently I joined the RoundView team as a volunteer at Farnworth Library, where we welcomed over 20 children and parents to explore sustainability through hands-on activities…. I realized that even simple messages require deep understanding, because public engagement in sustainability isn't just about communication — it's about translation. Thank you to the incredible RoundView team and the curious, imaginative young minds who reminded me that every climate conversation — no matter how small — plants a seed."
> https://www.linkedin.com/posts/fanqi-shang-80918433a_sustainability-climateeducation-publicengagement-activity-7337208929795375107-CrMO?utm_source=share&utm_medium=member_desktop&rcm=ACoAAAXNK6MBkJP-AiJGzdMfZP3NamohVatFZs0

Whilst the opportunity to use volunteering towards Stellify is valued, what this group of stakeholders seem to particularly value is the ability to put a line item on their CV that helps tangibly demonstrate employability skills.

A key learning from feedback, especially from international students, was the value they gained from using the RoundView toolkit in engaging with community members and peers, as they were able to build their confidence and skills in communicating and engaging with different groups of people.

Figure 2 Student helpers running a RoundView stall at Primary School Fair

A key stakeholder need that emerged in discussions for postgraduate students, in particular international students, is to have opportunities to do something to build skills and network in the 'hungry gap' after submitting their Master's dissertation in August, and finding out the results in November. Sept, Oct, and Nov. are a crucial time of stress for these students, who are often not very well connected to networks and their local communities if they stay in the UK during this time. For those who wish to take advantage of the graduate visa, it is an important time to build their CV and have something to show on their profiles and experience section. This is often also a time when students need a boost in confidence and opportunities to engage. Even once the RoundView is embedded further into the Stellify Award, this will not address this 'hungry gap'. We are exploring ways to offer ongoing volunteer opportunities at this time, in particular through engaging with local schools through libraries, but this will need some support for coordination.

Student trial activity participants

(Participants in workshops/modules where RoundView trials or resources are offered)

Participants from this stakeholder group gave feedback that they valued the opportunity to learn about different degrees and disciplines, and to meet staff working across the University in the cross-university workshops we ran as part of the FLP. In general, we gained a sense from this stakeholder group of needing opportunities to develop tangible employability skills. Sustainability education training that can be applied to career applications (LinkedIn profiles, CVs/Cover letters) is valued.

Several of the participants in the trial workshops highlighted a desire to be trained as volunteers and ambassadors to help deliver the RoundView to more people, but this was not a universal need.

A desire to gain some hope for the future was a common theme amongst this group, with broadly positive feedback that taking part in a RoundView workshop helped to foster 'confidence to make change' and 'opened up the idea that change is possible.'

Student participants expressed feelings of empowerment. One participant posed the question, 'How can we collaboratively create next steps, get people to share the positive things they do.' One participant suggested the RoundView could be linked to activism and political education.

There was also feedback that students value the possibility of attending social events with a purpose, as a way to meet new people. The lure of refreshments was also mentioned, both as an incentive and as a way to make the events seem more special and welcoming.

UoM staff connected with sustainability

(Learning &Development staff, Environmental Sustainability team in Estates, any interested parties)

One need for this group is to find ways to bring in people from outside of the 'usual suspects' into the debate about sustainability on campus and engagement for action. There is awareness that shifts towards sustainability require wider stakeholder buy-in and behavioural change. They value new ways to encourage engagement with sustainability that help shift the thinking from this being just a specialist area.

One question we had at the beginning of the FLP was the extent to which the RoundView could add value to a group of people who are already relatively expert in the field. We briefly introduced the RoundView in a workshop around sustainability in construction projects across the University, with a good representation from staff working in Estates. It was interesting to hear this reflection from a participant:

> "Thank you for the opportunity to engage with the RoundView process during the recent workshop. I really appreciated the chance to step back and reflect on sustainability from a broader perspective and consider the long-term impacts. It's rare, especially when working within a specific niche, to take the time to connect with the bigger picture. I thought it was great that even in a room full of sustainability professionals, it [the RoundView] still prompted fresh thinking and meaningful discussion." PhD Researcher and member of Construction Management Group.

A particularly encouraging outcome from this workshop was that a few members of the Construction Management Team went on a few weeks later to take the RoundView learning resources to use as part of a workshop around air quality in a primary school. This is an example of the empowering nature of the toolkit and embedding flexible learning outside of the walls. The value of this can be seen in this LinkedIn post:

> "Using the Ketso tool and RoundView puzzles, pupils explored how their everyday choices shape the air they breathe. They listened to one another, challenged assumptions, weighed up solutions, and made personal commitments to action.
>
> The data they generated proved one thing clearly: children must not be left out of decisions that affect their world. In the school, the shift was tangible and the science connected. Air quality stopped being abstract numbers on a page. It became their playground, their classroom, their breath and their lives. What began as a research project turned into a story of empowerment": https://www.linkedin.com/posts/obuks-ejohwomu-4a8aa29_sustainablefutures-airquality-stemeducation-ugcPost-7356601167566524416-7QVm?utm_source=share&utm_medium=member_desktop&rcm=ACoAAAXNK6MBkJP-AiJGzdMfZP3NamohVatFZs0

A further need for this stakeholder group is an ongoing process of training Environmental Sustainability Champions, an annual need which could be met in part through cross-university RoundView workshops.

Outreach and civic engagement teams

(In particular FSE outreach)

This stakeholder group needs enjoyable activities for widening participation and bringing children onto campus, with activities that link to research and teaching on campus. Being able to teach sustainability in a way that links to the school curriculum would be a distinctive bonus.

A further need for this stakeholder group is finding ways to build skills for students to engage with children and community members, especially for the student society focused on engineering outreach. There is an appetite for civic engagement, but also an awareness that it takes a lot of scaffolding to enable students to engage effectively, especially when the engagement involves communicating scientific principles and ideas in an accessible way.

During the FLP we trialled a workshop on campus for a local primary school, using the RoundView learning tools to introduce sustainability, followed by pupils writing a poem about what they had learned. Feedback from the students and teachers was very positive, with 73% of the participants agreeing that they knew more about sustainability after the workshop (n=53). 'I've learnt more about how to save the planet more to make it better, and I know what is wrong to do to our planet'.

The FSE outreach team gave feedback that they would be keen to run the workshop again, and that they felt it was a useful introduction to both the university and sustainability for the pupils.

All stakeholder groups

A common theme was the need for a way to make sense of often contradictory messages, and to overcome a paralysing sense that the problems are too complicated to be solved.

Stakeholders valued the RoundView as a way to cut through the confusion and give hope that a better future is possible.

There was a clear need for new ways to build community and collective intelligence in the often fragmented field of sustainability learning. As one participant noted, we need to see sustainability as "Bigger than carbon, sustainability is greater than climate change (Stuck at net zero)".

There was a general sense of value in opportunities to bring staff and students together as part of a wider process of change, and the need to foster truly interdisciplinary thinking and learning to endeavour to create positive solutions as a university.

A major step forward in meeting these needs is developing the ThinkingWare platform as a site for sharing and developing ideas amongst the growing community of practice looking at how to embed sustainability learning across our activities.

FLP needs and priorities

A key tension that could emerge in promoting flexible learning is between allowing for flexibility in terms of pace and place, and the inherent value of getting people in-person in a room and talking to each other, which requires a degree of inflexibility in both regards. One way in which this pilot addresses this tension is through developing multiple opportunities for face-to-face sustainability learning, offered at scale through the use of boundary objects, along with pathways to take that learning into skills development and further engagement through a rolling programme of events at which students can volunteer.

One of the priorities of the FLP is to encourage learning beyond our walls and lifelong learning amongst our alumni and their communities. The Round View's capacity to promote wide-scale civic engagement and sustainability learning has been strengthened during this pilot. The next stage of development offers real potential to reach global scale and impact from flexible learning through the UoM.

One key area in which this pilot may contribute to the needs and priorities of the Flexible Learning programme is through offering a way to scaffold a thread of learning and developing a shared language across sustainability teaching at the University. This could be usefully applied to the development of micro credits, as is currently being tested in the Humanities Pathfinder. For any other micro-credits that have an element of sustainability, the RoundView, and in particular the digital Evaluation Tool developed on this Pilot, could offer a way to link and build learning across the credits.

Section 4: Efficiency

To what extent did the methods/approaches used in this pilot lead to improvements in efficiency (financial/staffing/resourcing etc)? What other approaches could be considered in light of the pilot - would these be more or less efficient?

The following two sections discuss the flexible learning aims of teaching **efficiency**, followed by **effectiveness,** through lessons learned in the four key dimensions of Pathway, Place, Pace and Practice.

Practice: Scaling up interactive, face-to-face learning through boundary objects

An innovative pedagogical feature of the RoundView is the use of physical, hands-on learning tools, in the form of wooden puzzles combining play, visual art, poetry and science, to enable increased efficiency, in terms of being able to scale up interactive face-to-face teaching and learning in large cohorts. These act as 'boundary objects', building shared meaning whilst encouraging dialogue amongst participants engaged at a table.

Figure 3 RoundView learning tools as boundary object

The fact that you can use these boundary objects at multiple tables at the same time allows this dialogue and learning to be scaled up, enabling hundreds of participants to be engaged at a time. This allows one experienced teacher/facilitator to run a large workshop, with the help

of a few less experienced volunteers. At the same time, it offers skills development opportunities for the volunteers.

This FLP allowed us to test different configurations of learning resources (sequencing, mix of types of resources and timescales) and the types of instructions needed for facilitators to be able to use them effectively. This has enabled us to iteratively redesign the boundary objects to make the game dynamics and key messages more readily comprehensible for participants and less experienced facilitators. The feedback and observation from these trials have enabled us to simplify and better codify the process, packaging and instructions, so that the tools should be easier for non-experts to use and to use in workshops for large cohorts.

Whilst many of these improvements pertain to delivering the RoundView and thus efficiency in terms of scaling up sustainability learning, there are broader lessons for efficiency in terms of the use of boundary objects in teaching and learning.

A key learning from our testing is the value of very clear visual coding of the components of tools and the way they are packaged, to make it easier for participants and facilitators to quickly find and deploy different boundary objects, gather and move them after use.

One idea that emerged in the focus groups with student helpers was to create a storage and carrying handle for the 3-D word puzzle games, which would enable them to be easily moved around tables during workshops, and provide free-standing space for the instructions. These are currently being prototyped, and we aim to have these new tools ready to test in large-scale workshops planned for the next academic year.

The pilot has enabled us to explore the use of such boundary objects in different ways, varying different combinations and orders of using the tools, timing of sessions and contexts, from very brief interjections in workshops focused on a particular topic, to stands at community festivals, to workshops for school visits to the university or libraries. It allowed us to try out workshop plans of different lengths (15 minutes, 1 hour, 2 hours).

This allowed us to observe how the boundary objects were used and the learning / problems that arose with them, and generated feedback from the student volunteer facilitators and project team to further improve the tools and guidance for using them. This was a valuable learning process, of wider relevance. It demonstrates the value of taking an iterative approach to designing learning innovations, with multiple ways to gather feedback and input.

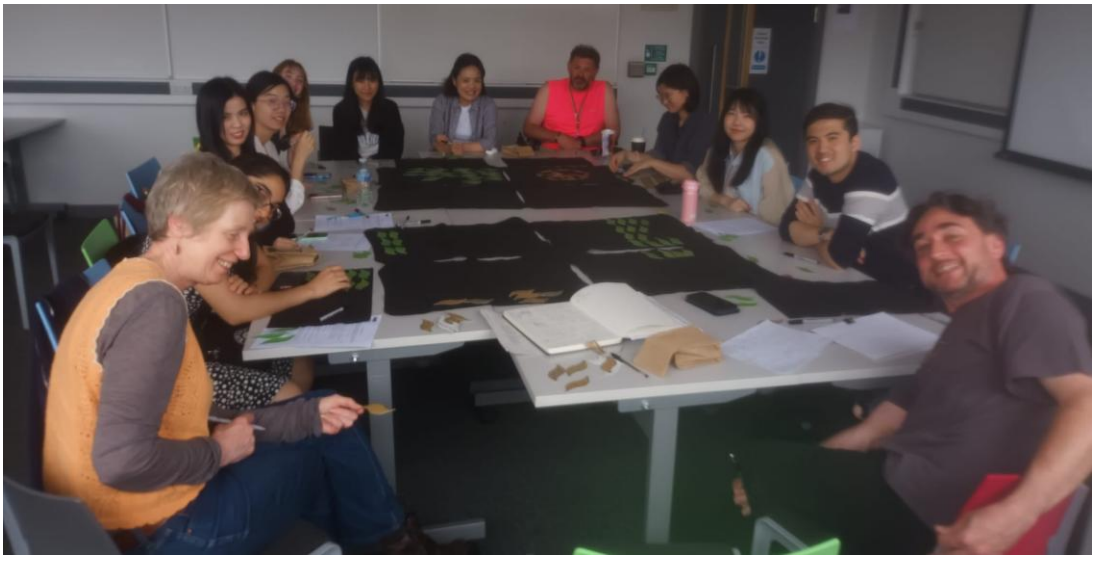
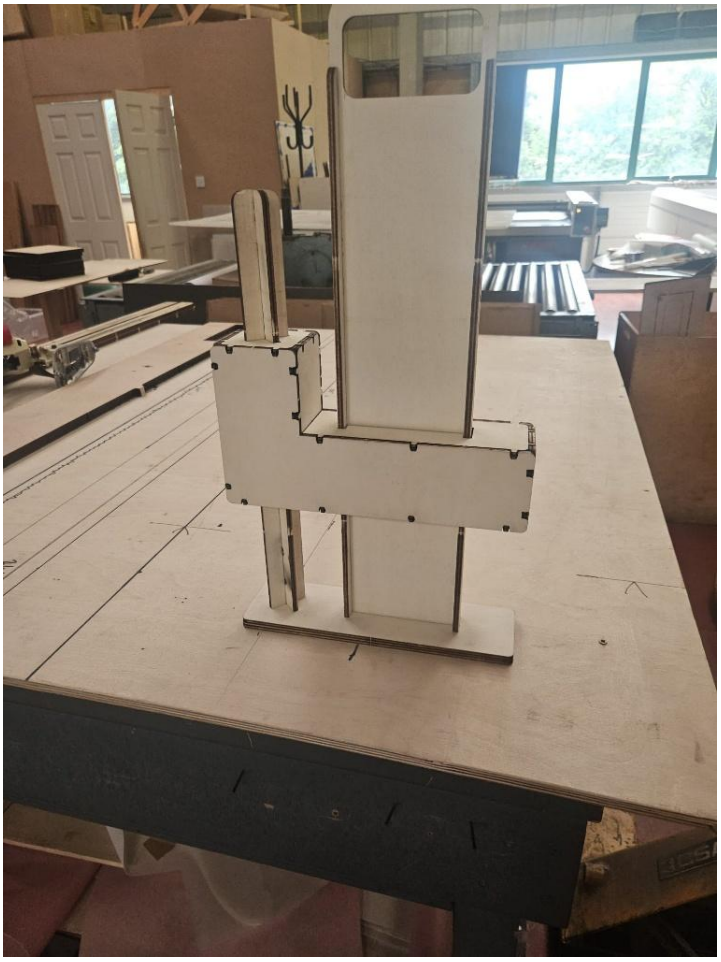


Figure 4 Focus group using Ketso with student volunteers, staff and project team



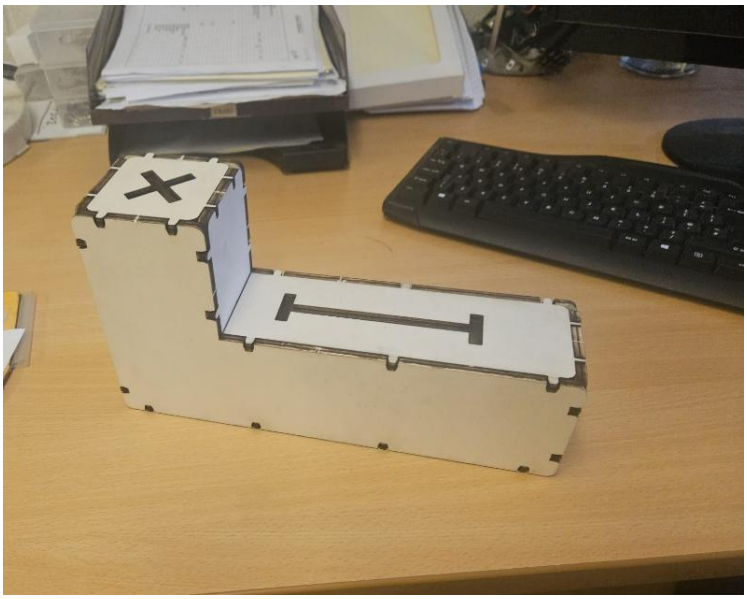


Figure 5 Prototyping carrying handle and instructions

.

Place: Offering large-scale, cross-university workshops open to all students and staff

During the FLP, we were able to try this process out in the largest spaces that can be booked through the Central teaching system (e.g. the Horseshoe and Blended Theatre B in Nancy Rothwell and Simon 3.44a, allowing cohorts of up to 150 in theory, but realistically closer to 120 when set up cabaret style). The lessons learned will be put to use in our trials in the next academic year, allowing us to further explore the efficiencies offered by the use of different spaces for teaching and encouraging dialogue.

Figure 6 Use of boundary objects across multiple tables

We have booked the Whitworth Hall for several days in the next academic year, in week two of teaching in semesters one and two, to allow us to teach up to 250 people per session in a series of 5 - 6 workshops. As far as we are aware, this is the only space on campus that can allow for more than 150 people. Booking the hall for several days, so we can set up once and then use the same set-up several times with different cohorts, will be more efficient in terms of staff time and effort to set up rooms and move equipment. An unknown at this point is how the acoustics will work for a teaching setting with up to 250 people.

These cross-university workshops will allow for a further element of efficiency, by maximising the reach and value of teaching that is already scheduled into the timetable. For instance, in semester 1, Tippett would have been running 3 two-hour workshops to her PGT and UGT classes, each with a half-hour set-up and break-down time. Instead, by being able to

use a very large space, such as the Whitworth Hall, she will offer 5 two-hour workshops for larger cohorts. This will allow for students on the modules she is teaching (UG1 circa 100 students and PGT circa 150 students) to attend a session for this core learning for the module that best suits them, and to learn from students and staff from across the University. At the same time, it offers the opportunity for more people to engage.

Place: sessions run in teaching rooms booked as part of the core curriculum

An alternative approach to offering large, cross-university workshops is running sessions within scheduled class times and spaces, for smaller cohorts. This is less efficient in terms of the number of people reached per academic staff, but more efficient in terms of the effort required to set up and promote the larger-scale workshops.

There are many occasions when academics may wish to run RoundView workshops focused on their particular student cohorts. For instance, for the last three teaching semesters, a colleague in the Alliance Manchester Business School has run RoundView workshops as an ice-breaker and introduction to conceptual framing for her PGT classes. She values the face-to-face interaction and engagement encouraged by the physical toolkit as a means for her cohort to get to know each other.

We have been asked to support a workshop dedicated to the first-year Civil Engineers in Welcome Week next semester, both to set the framing for sustainability that will then be drawn upon and developed throughout the next few years of study, and as an icebreaker and opportunity for students to get to know others in their cohort. This workshop offers an efficiency gain as an interactive way for Civil Engineering staff to meet the new cohort of students in an enjoyable workshop, whilst also teaching a large cohort of around 100 students in one session.

Practice: alternative pedagogical approaches, digital first

Another approach that could be considered instead of scaling up sustainability learning through face-to-face interactions is focusing on digital-first learning. In this pilot, we have developed some of the building blocks for such learning, endeavouring to build on the pedagogical qualities of the face-to-face learning and tools. These have yet to be developed into a fully self-led digital pathway. Once the resources are fully developed, this could offer an efficient way to teach the content and will offer new ways to reach wider audiences. Issues related to the effectiveness of this alternative approach are discussed below.

Section 5: Effectiveness

T*o what extent did the methods/approaches used in this pilot lead to improvements in effectiveness (learning/outcomes/experience/flexibility etc)? What other approaches could be considered in light of the pilot - would these be more or less effective?*

Practice: alternative pedagogical approaches, digital first

One aim of this Pilot was to prototype digital learning tools that could be used in a similar way to the hands-on learning tools of the RoundView, which will enable us to experiment with digital-first learning pathways. We have prototyped the RoundView Evaluation Tool, which we will be able to test in the Humanities Pathfinder FLP next semester. For this Pathfinder, we will experiment with a synchronous hybrid RoundView session using the new digital learning tools for those engaging online, whilst participants in person engage with the physical tools. We have tried a version of this in the past on the Master's in Sustainability Education, using Padlet for the online learners, but the experience was sub-optimal for the online students. It is hoped that this new tool, and others we would like to develop if possible, will bring the online experience closer to parity with the face-to-face experience than in those earlier experiments. A short video of this workshop can be seen here: https://www.youtube.com/watch?v=Hlm2dBa7nmA

There are trade-offs inherent in taking a digital-first pathway versus teaching in interactive, face-to-face workshops. Digital-first teaching, especially when they have a high degree of asynchronous content, offers the advantages of flexibility in terms of pace for the learner. Of particular relevance for sustainability learning, however, is the reduction of opportunities for social learning. As one survey response pointed out, "I think this kind of discussion is far superior to self-led digital learning, if I were a student this type of discussion opens all different kinds of avenues of thinking".

In the FLP Humanities Pathfinder pilot, we are innovating with social quizzes and ways to encourage some element of such dialogue in asynchronous learning. What this does not allow for, however, is the development of oracy and critical dialogue in real time with colleagues, both critical employability skills. Opportunities to practice speaking and engaging with others were seen as especially important values in the feedback gathered from students with English as an additional language during the FLP.

One way this can be addressed in part is through having some synchronous sessions as part of the digital-first approach. In the past, we have tried 'sitting' online users at tables using a portable webcam during live face-to-face teaching, as the participants were playing hands-on games. This had partial success and required dedicated teaching staff to manage the online interactions. This is not an efficient use of staff time when there are just a few online learners (in Tippett's module last academic year, there was one online learner, and one member of staff needed to facilitate these interactions in the workshops). This led to a lot of lost learning time and distraction for staff and students in both settings when the technology/sound/ability to communicate didn't work effectively ("The workshops were a bit tricky being an online student"). This challenge of addressing engagement in hybrid and online workshops is a barrier to effective learning, and requires careful consideration in learning design and resourcing to try and address this gap.

Practice: alternative pedagogical approaches, nature of tools

We are aware that we need an array of flexible resources and approaches in scaling up sustainability learning, and that many of these approaches are complementary. For instance, a recent innovation for the RoundView in library settings has been to develop an easily photocopied wordsearch as a complement to the 3-D learning tools.

The RoundView learning tools started as printed, 2-D matching games and diagrams before being developed into 3-D learning tools. An alternative approach to using the 3-D tools is to use such 2-D matching games. These offer the advantage of being lighter, more readily portable and cheaper to produce (more **efficient**). With such tools, there is the option to make downloadable, print DIY versions freely available to end-users, which have the potential to increase reach, being free apart from printing costs and the time used to prepare the tools for use.

There are downsides, however, in terms of **effectiveness**. The design of the 3-D tools is well aligned with Universal Design Principles, and their tactile nature helps engage people on different levels. The use of visual clues, word puzzles, poems and art in the game dynamics is enabled by their physical form, and the act of putting them together encourages dialogue.

> "People learn differently through words and pictures. What you have done here is brilliant, it means you can interact with the ideas. Every side is different, and you can learn something around each corner." (Library staff member, Stockport Borough).

A key affordance is the fact that they have been designed to come together in one way, such that the answers are built into the game mechanics, and are revealed as the tools come together. This has advantages for both learners and facilitators, who report feeling more confident running the workshops, as the key ideas are set into the games and are thus easier to teach. During this Pilot, we have been able to trial for the first time having volunteer student facilitators use the 3-D tools to run events and workshops without an experienced facilitator, with positive results reported by the facilitators. A difference we have noticed since we have encoded more of the learning into tactile 3-D tools is the increased interest and willingness to use the tools to facilitate conversations amongst non-expert facilitators. A further advantage is the increased likelihood of the ideas being spread with integrity and consistency, as the tools themselves do some of the core teaching, with the game dynamics and design revealing hints and the 'correct' way to put the pieces together. There is less worry on behalf of the facilitator about being able to remember all of the details correctly when the game dynamics reveal the answers.

Such teaching through the game dynamics is more difficult to do with 2-D resources, as they neither 'click into place' in the same way as a rigid puzzle with specific shapes, nor allow for the 3-D building of images and poems on multiple sides. We are very keen to take the learning from developing the 3-D tools into as effective a 2-D design as possible, then to make this widely available as free downloads for people to make themselves. These will be accompanied by guides for use, contributing to a global commons of learning resources. This will ideally include full colour versions and black and white versions with easy cut-lines, to be as accessible worldwide. An iterative process of further development to enable coproduction and evaluation, will be needed to make these as effective as possible.

Without expert facilitation, it is difficult to use the 2-D tools to prompt the same level of interaction as the 3-D versions. A key ambition is to scale up the availability of the 3-D games in libraries and public-facing spaces, so that as many people as possible can gain the benefits

of interacting with these boundary objects, and generating dialogue across boundaries of age, discipline, sector and cultures in the process.

Pathways - digital badges and combining physical and digital learning

We have an ambition to provide follow-up learning after face-to-face sessions through digital learning tools. This will allow ways for participants to recap and deepen their learning. In particular, with the new Digital RoundView Evaluation Tool, we think we have developed a way to assess (and deepen) learning that could provide a valuable follow-on to introductory sessions. We envision incentivising engagement with this tool through offering this as a pathway to gain a digital badge. In the first instance, this will be as a follow-on to introductory synchronous sessions, but eventually there are likely to be digital-only and pathways to gaining badges, with the possibility of exploring self-led learning through accessing RoundView learning tools at installations in libraries or public-facing spaces.

We would like to explore ways to link wide-scale civic engagement and learning to gaining digital badges and /or downloadable certificates (for instance that could be printed and put on the fridge after a child has engaged with the RoundView). This would give us a way to find out who has engaged and what they have learned (capturing impact data that would otherwise be lost). It would also offer an efficient way to 'top up' and deepen learning, and if needed, ideally it would also provide a corrective for any misconceptions that might creep in the absence of an experienced instructor.

Each manifestation of the pedagogical tools (physical 2-D, physical 3-D digital and physical/ digital combinations) has advantages and disadvantages - pedagogical, pecuniary, practical and planetary, and a successful scaling-up strategy is likely to use a combination of these in different contexts and at different times.

Practice: integrating hand-written and tactile development of ideas with peers into teaching practice

As part of this project, we synthesised a series of reflective learning journals from UG1 and PGT to evaluate pedagogical practice. These reflective journals require reference to hand-written essay plans that are developed in workshops during the module, with pictures of the essay plans developed on the Ketso Connects that the students are provided with as personal study tools. They provide an interesting lesson for practice in an age of AI, with many reflections from students on the value of being able to move their ideas around using Ketso leaves, to be able to see possible structures of essays forming in front of their eyes. This hands-on learning process is resisted by some, as slow and less efficient than going straight to a computer, but there is a real value in such slowness, as a means to develop critical thinking and encourage peer discussion and learning. In an age of AI, including a requirement for hand-written work in progress, which provides a space for reflection of learners' own thoughts and ideas, may become a useful adjunct to writing assignments. This offers an alternative to going only to timed, written exams as a means to circumvent the over-use of AI in assessment.

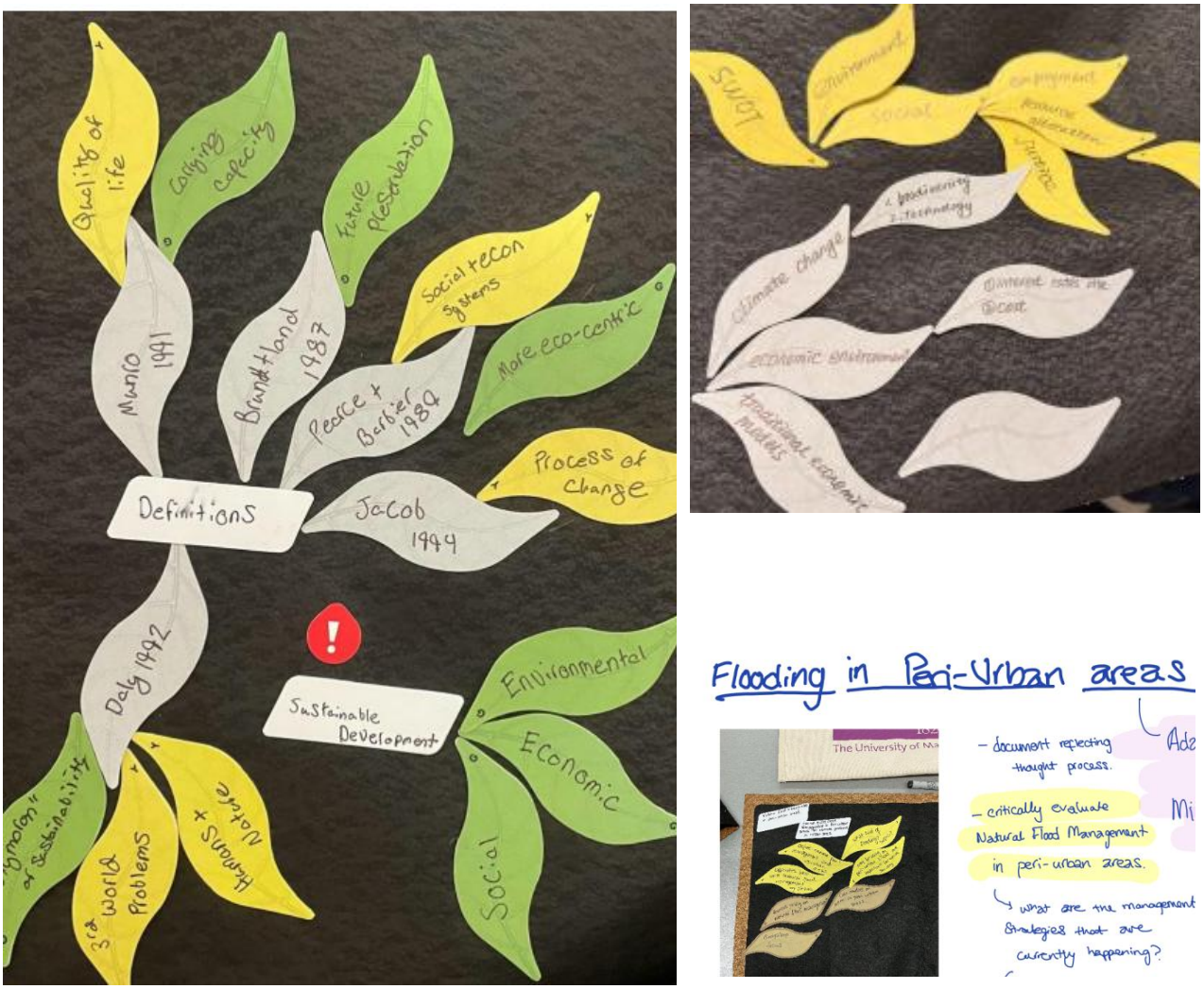


Figure 7 Ketso Connect used to develop essay plans

Pathways: mapping sustainability through the curriculum

Discussions with Civil Engineering colleagues, alongside testing elements of RoundView teaching with PASS leaders and mentees and the FSE Outreach team during this Pilot, led to shifts in thinking about how the RoundView can be integrated across the curriculum as a support to sustainability learning. From next year, all UG1 Civil Engineering students (circa 100) will be taught the RoundView in Welcome Week, with staff invited to the workshop. Students will then be offered the opportunity to act as volunteer assistants in large-scale workshops run by Tippett in week 2 of teaching in semesters 1 and 2, allowing them to build employability skills. They will have the option to volunteer through the outreach team in FSE (who have used the RoundView in workshops with primary school children) and with the wider community, gaining points through Stellify. We will use the lessons of the pilot to further support PASS leaders in tutoring years 1 and 2 students. Sustainability has been mapped across the curriculum, including areas where the RoundView will add value in modules across all years.

The idea has been raised of having an installation of the RoundView self-guided teaching exhibition in the student common room in the Nancy Rothwell building, to provide both a wellbeing activity, as well as an opportunity for these students to review and discuss key concepts in an informal setting.

Overall, this approach will build flexibility in terms of providing students with a range of options to deepen knowledge and skills, alongside some core provision within scheduled teaching time. These options can be taken up at different times and to different levels, to suit students' varying contexts and needs.

Pathways: scheduled curriculum time, versus optional sessions and options for deepening knowledge and skills

A common theme that emerged from the focus groups and interviews we carried out was that an already crowded curriculum is a major barrier to scaling up sustainability learning. There was discussion across Faculties that staff are reluctant to lose what is considered core learning. For example, there is a "worry amongst staff that it [sustainability learning] may squeeze out the traditional learning skills: e.g. technical reading of Latin". Even supportive staff struggle to find 2-hour or even 1-hour slots in their teaching for additional learning.

One solution suggested by colleagues in SALC was to add it to the list of compulsory additional training that all students are supposed to undertake. However, discussions with PSS highlighted the limitations of such mandatory Non-Credit Bearing Units, with an incredibly low completion rate. This points to a major challenge of a lack of engagement with any learning that is outside of scheduled teaching time, a limit to many types of flexible learning. A concern was also raised that adding core sustainability learning to the list of mandatory Non-Credit Bearing Units might be off-putting and lead to a negative attitude towards this topic amongst students (and indeed possibly staff if it was to be added to the required training for staff). As one survey response noted: "I think embedding it in the curriculum of degree programmes will be more effective than presenting it separately with things like health and safety online training (which, let's be honest, most people dislike and engage with superficially)."

For Civil Engineering, next semester we will trial scheduling a RoundView as part of the compulsory activities in Welcome Week. This circumvents the challenge of trying to find space during teaching time, and has the advantage of being a time when attendance is usually high. There are, however, challenges, such as an overload of information in that week. In addition, some international students may end up missing welcome week due to visa issues, so they would miss this core learning. This is one reason why SEED has decided to designate the first month as Welcome Month, to give more opportunities for students to engage socially and experience such 'welcome activities'. The offer of interactive RoundView workshops in week 2 of teaching was seen by a PGT Programme Director as a welcome addition to the activities on offer for students in this month.

Pace: opportunities for catch-up and review

A disadvantage of offering core learning in highly interactive face-to-face learning is that it is harder for students to catch up effectively on the learning if they are unable to attend the session. If this learning is seen as core, it is helpful to be able to offer catch-up opportunities. Having a series of workshops that any students can attend, such as the cross-university workshops we have been trialling in the FLP, is one way to do this. This is only effective if staff and students are aware that these are on offer, an ongoing communication challenge.

Catch-up opportunities could also be achieved through offering an asynchronous, digital-first option for those who miss / cannot attend the face-to-face sessions. A further innovation we would like to trial is offering opportunities for self-facilitated learning through installations of the RoundView games in accessible spaces on campus and in the wider community. This could be a guided exercise tailored to particular contexts, with specific tasks that students need to complete, and would be usefully complemented by the use of the new digital RoundView Evaluation tool that has been developed in this Pilot. We could also develop useful follow-on exercises after learning the RoundView using the stand-alone exhibits, such as exercises to practice teaching the RoundView to peers, as a way to build skills and practice before using the resources in public-facing events.

Practice: offering support resources for staff

A key outcome from the FLP is the further development of the ThinkingWare workshop planning tool. The new platform will allow teaching staff, or any individual with an interest in producing a workshop plan, to share this knowledge in a very practical format. Upgrading the platform enabled by the FLP allow for workshop plans to be shared between users, and there is now a public 'workshop plan library' that will allow us to share workshop plans of different lengths and designed for different contexts. These can be opened and adapted, with the ability to change duration and start time, and to rearrange / add / adapt steps to fully customise the plan. Once adapted, the plans can be saved, downloaded, printed and shared with others.

Whilst the revised ThinkingWare platform has only been finalised and released in the last week of the FLP, several colleagues have been introduced to it and found it highly beneficial to be able to learn from decades of workshop planning experience encoded into the tool. There have also been very positive comments about how this will increase the efficiency of teaching planning, with the ability to rapidly plan sessions of different lengths and work out the timings using the tool.

Pathways: civic learning and employability skills for students

An aim of the pedagogical development of the hands-on learning tools has been to enable non-experts to run workshops and events that introduce RoundView learning, in ways that work in their context. A key finding from Tippett's British Academy Innovation Fellowship was that non-experts could pick up the tools and use them to run workshops. Members of a local arts charity in Dumfries have used the toolkit independently to run workshops in schools, community events and at an event crafting questions for national politicians.

In this Pilot, we have had an opportunity to work with student volunteers to test their use of the RoundView learning tools in external engagement. During the pilot, student volunteers ran family drop-in sessions, plus a school visit, in five libraries in the 2025 Festival of Libraries, and also managed stalls (without the project team assisting) at least four public-facing events. An interesting emerging finding for this stakeholder group was the high value placed on being given the opportunity to build their communication and engagement skills.

Figure 8 Student volunteers running a stall at Manchester College

For international students, this also included valuable opportunities to learn about the place in which they are studying and to embed themselves in the wider Greater Manchester community. A further interesting finding was the extent to which the international volunteer students valued having opportunities to practice speaking English. Using the RoundView kit as a focus for dialogue in their engagement gave them something to focus on and talk about with people, and was seen as very valuable as a way to build confidence.

It emerged in discussion that having an opportunity to practice engagement with groups of students first, before going into the wider public, was highly valued, as a scaffolded approach to building confidence and skills. This points to the value of building an ongoing cohort of students who support RoundView learning with peers - not just for the spreading of sustainability learning, but for the student experience of the volunteers. There is an interesting lesson about pace here, students will likely come to this at different times and need multiple opportunities to engage if it is to work with their circumstances and learning journeys.

Place: installations of interactive exhibits in public-facing spaces

We trialled an installation of the RoundView as a stand-alone exhibit for a few days on campus during the Pilot, and were able to observe that it was used, but within the timeframe we were not able to assess what people were able to learn from self-guided engagement.

Figure 9 RoundView stall in Samuel Alexander Foyer

Feedback from these earlier trials of such exhibitions in libraries had indicated that the original set-up took up too much space and needed better guidance as to how to use the tools if it was to be unstaffed. We had a meeting to prepare for the FLP just before Christmas with colleagues from MIE who had been key partners in developing the RoundView. They introduced an idea of an impactful way to use drawers to stage a learning process they had seen in a museum, and thought this could be useful for the RoundView. Building on the spark of this idea, during the FLP, we were able to prototype the first compact, mobile interactive RoundView exhibit, modifying a set of 'off-the-shelf' drawers.

Figure 10 Prototype of RoundView interactive stand

During the FLP, we have taken this interactive stand to five libraries, and two community festivals to gather feedback, and it is seen as a key step forward for libraries and museums, helping them see how they might integrate the RoundView into their settings. This new exhibit was demonstrated to the Greater Manchester Library Climate Action Group in July. There was broad agreement in the group that ideally there would be one of these stands in each of the 100 libraries in Greater Manchester, as a resource for communities, adult learners, home-schoolers and families. A promising recent development following the use of the RoundView learning tools at the North West NextGen Net Zero Youth Conference is that Oldham and Salford youth services have already arranged to borrow RoundView toolkits held in those library services to engage with young people, a promising indication of the perceived value of the approach. The RoundView workshops we ran are shown in this video about the event:

https://www.linkedin.com/posts/youth-focus-north-west-yfnw_climatesummit-youthclimateaction-netzero-activity-7355972120310366211-LnwH

Whilst there is a production cost in providing physical toolkits to libraries, such interactive exhibits represent an efficient way to reach a wide audience with both sustainability learning, and the message that the University of Manchester is supporting such learning.

Being able to test this new prototype is a promising breakthrough in thinking about flexible learning and place, bringing the ambition of having stand-alone exhibits for use in libraries, galleries and community centres closer to reality.

Figure 11 RoundView Interactive stand trialed in Bolton Library

Section 6: Outcomes

To what extent was the pilot able to meet/exceed its objectives? To what extent has the pilot led to improved outcomes or behaviours in the stakeholder groups? Were there any other unintended positive or negative outcomes from the pilot?

This section is structured around the three Pilot Objectives as set out in the original proposal.

Objective 1: Develop and make available substantial resources, capacity and learning for the flexible teaching and learning of sustainability at the University

Resources

A key element of meeting this first objective was the development of the ThinkingWare platform to increase the shareability of ideas. The workshop planning tool itself is built on a conceptual framework that makes explicit decades of experience of running and planning workshops. It then provides a draft workshop plan with chunks that can be moved and adapted to suit the new context for the user, providing a malleable framework, built on a powerful underlying understanding of effective co-production (Tippett and How, 2020).

Workshop plans for RoundView sessions of different lengths, which have been tested and developed during the FLP, along with support resources to run them, will be made available for users to download and adapt on the platform. The feedback we have had from student volunteers and staff during the FLP has helped us to create new guides to using the tools,

which were tested in the facilitator training workshops, and a guide to running a RoundView stall at a community facing event or in a library setting.

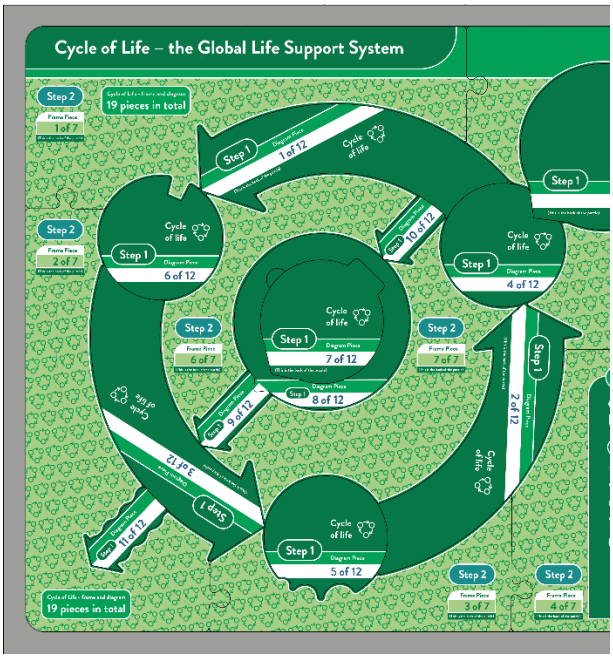
The Pilot gave us the time and feedback from co-developers to really consider each learning tool and how they work together in different ways in response to the types of learners, setting, time and space available. A positive unexpected outcome was the development of a new way to teach the Global Shared Story (timeline of the Earth) with three-stage game dynamics and wooden puzzle pieces. We had been trying to develop the game mechanics to show logarithmic scales and tell the story of life's development since the early development of RoundView games for the National Trust before the pandemic, with multiple prototypes, but none has worked effectively as a 3-D game. In the pilot we were able to prototype and test a new way to teach this story. The new prototype has proven very popular with learners so far.

Figure 12 New learning tool - Our Global Shared Story

The Cycle of Life learning tool provides a useful resource for teaching systems thinking, especially when carried out as a two-stage process. A shift that emerged from this Pilot was redesigning the Cycle of Life game to embed learning systems thinking principles into the game dynamics through a two-stage process using diagram pieces followed by handing out an 'answer frame' in the form of a second set of wooden jigsaw pieces. Participants are asked to put the diagram pieces together to show how the Earth works as a system before the 'answer'

is revealed. This has been well received in workshops, and has been shown to work well as a stand-alone short exercise that can be integrated into multiple teaching contexts, being tested in ESOL and science teaching settings, as well as family festivals during the FLP.

However, setting out the game in these two stages proved challenging in large scale workshops, with assistant facilitators struggling to work out which pieces needed to be used when. During the FLP we were able to rapidly develop two new prototypes based on feedback from student volunteers. This enabled us to test different ways to delineate the stages and package them such that they are easier to manage in the workshops. The design improvements will prove useful in the design of any other physical learning tools that need to be staged for effective learning.



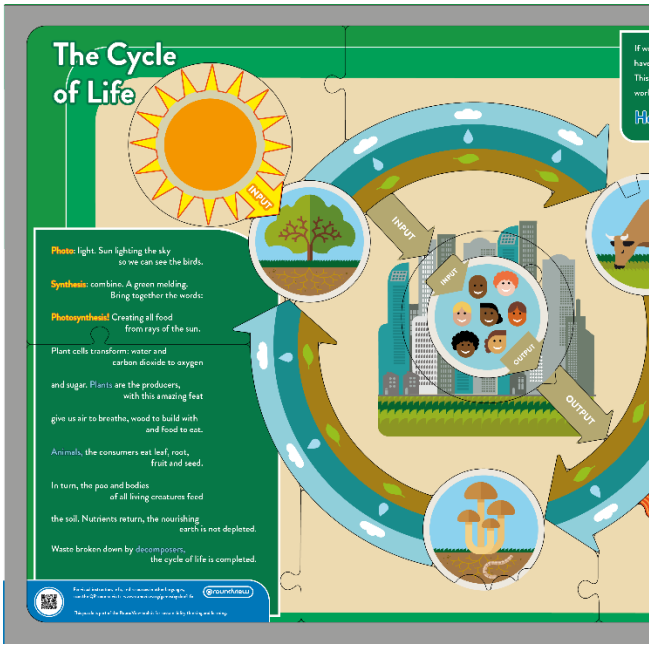


Figure 13 New design for Cycle of Life

Developing and testing new learning tools led to new insights into ways to use these as short modular exercises that can be adapted and used in different ways, with or without teaching

sustainability. A notable trial of this was using the timeline game in a 15-minute plenary session, with the first stage of the hands-on tools being used in a lecture hall setting for the North West Youth Conference, NextGen Net Zero Youth Conference.

These tests have led to the development of support resources for stand-alone exercises, to be shared on the ThinkingWare platform, and have already inspired a teacher trainee to develop a lesson plan for teaching about the three types of rock using the timeline.

A further unexpected outcome has been a more fundamental revision of the whole suite of RoundView learning resources based on the feedback and learning than we expected. A notable example of an output from this coproduction process is that Taking a RoundView Game changed radically throughout the FLP, with a key idea introduced by a colleague from MIE that our attempt to show solutions was not as impactful as the side showing the problems the 'a' side had powerful images, whereas the 'b' side of solutions just had words, and was clearly the back of the puzzle. This led to a major redesign at the start of the FLP to really bring out the idea of 'flipping' from problems to solutions, with both the examples and the labels for the Root Causes / RoundView Guidelines. We have tested this throughout the FLP, and found it really helps to reinforce the idea of flipping from problems to solutions. It is a much more powerful and impactful learning tool now, but in need of further iteration (possibly even with a new poem!), based on the huge amount of feedback we were able to gather during the FLP.

Figure 14 Revised 'Taking a RoundView' game, flipping from problems to solutions

A very useful shift has been to find a way of representing each of the three root causes of environmental problems with stacking word puzzle block games, each with a side demonstrating the problems and giving inspiration as to solutions. We have just finalised the design for a new prototype of the first game that we develop for the National Trust, based on this feedback. This co-production has helped move the suite of learning resources to a new level, which we feel will be even more worth replicating for wide-scale use, and worth investing the time and effort that will be required to develop into multilingual resources for global scaling up.

Figure 15 Earlier artwork for 'Balance' learning tool

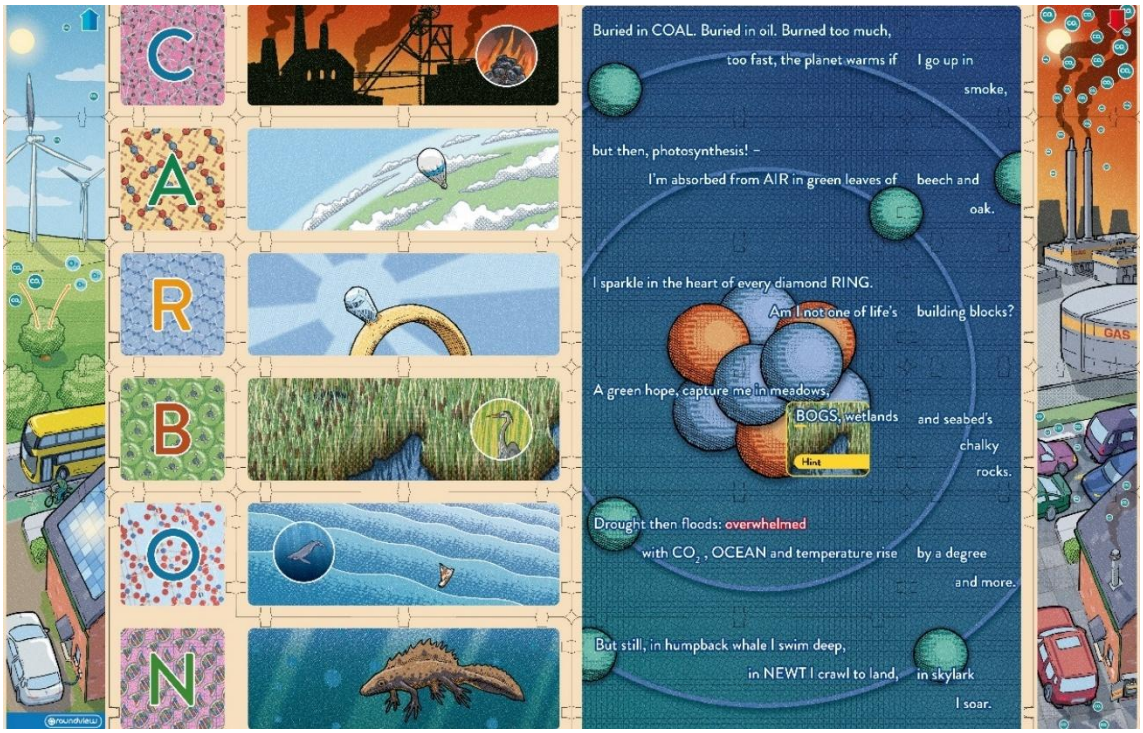


Figure 16 Artwork for 'Balance' learning tool at the end of the FLP with ‘spot the difference’ graphic of ‘business as usual’ scene and an alternative a positive approach to the RoundView Guideline ‘Balance natural flows’

A further change that we are starting to explore is a redesign of the core RoundView graphics, to better teach systems thinking as part of the learning dynamics. This is in direct response to the feedback from UoM teaching staff on the FLP about the value of the way the RoundView teaches systems thinking, which has promoted a deep rethink of the tools to really bed this strength into the teaching resources.

All of these changes will increase the pedagogical power of the learning resources, as well as enhancing clarity and ease of use - with beneficial impacts for both teachers and learners.

There is a lot of scope to develop further tools in the realm of teaching sustainability and systems thinking. Indeed, we have draft resources to show the links and synergies between the Planetary Boundaries, Doughnut Economy and the RoundView to share on the ThinkingWare Platform. We are also working on transferable ways to teach links between sustainability/The RoundView and the UNSDGs, as well as other commonly taught frameworks, such as DPSIR and STEEP/PESTL as analytical frames (which are commonly used in industry/Graduate Assessment Centres and therefore of wide value to students).

We have created a prototype virtual field trip:
https://new.express.adobe.com/webpage/5n0rDXpsf3jGO

We see this as fulfilling three purposes:

- A virtual field trip for students who are not able to come onto campus / go on a field trip (distance learners, those with mobility problems).
- An additional way to learn about the RoundView from the perspective of the landscape - useful for learners across the University and beyond
- A useful introduction or review for students who take Tippett’s module, Planning for Environmental Change, who go on a field trip to this area.

We have had some feedback from students that the field trip gives a good introduction and sense of the landscape and “The virtual fieldwork is a great alternative for those who can’t access the campus”. This learning resource will also include instructions for self-led field trips that can be accessed by public transport (and wheelchair).

Feedback from students so far has included a note of the potential value of “adding more interactive features, such as quizzes or short tasks during the video to keep students engaged”, and “It would also be helpful to include more diverse perspectives or case studies from different regions to broaden our understanding”. The feedback gathered will prove useful when there is more capacity / funding to develop this resource.

Working with the SEED communications team, Sustainable Futures, the Humanities FLP Pathfinder team, and Media Services, we have created new video media assets (all still being edited, but to be posted to the ThinkingWare Platform very soon). Each has a role to play in supporting flexible learning.

A key barrier to flexible sustainable learning that has become increasingly apparent during the FLP, is the challenge of cutting through the noise of messages to effectively communicate with students and staff about available opportunities. During the FLP we worked with the SEED communication team to film short testimonials from students that we can use in communicating upcoming opportunities such as the cross-university workshops that will be

offered next semester. These emphasise the value of the learning to the students, in particular gaining employability skills.

We have created a short piece about health and sustainability, as part of an open training resource aimed at SMEs and local organisations being developed by Sustainable Futures. This will act as a signpost to the RoundView and will point to opportunities for learning online, in events and (eventually) from installations of stand-alone exhibits in libraries and other public-facing spaces. We can also use the asset to communicate with staff and students, especially in health.

We have also created a short video that quickly reviews the core principles of the RoundView, setting them in the global shared story of the formation of the Earth. We see this as a useful asset for students to review learning after face-to-face sessions. and to be used in a digital-first pathway. It will also provide a useful resource for a quick recap of the key principles for student volunteers and staff who plan to run events.

The latter two media assets draw on the development in thinking about core messages and how to communicate the RoundView that has been emerging through the FLP.

Capacity

We have exceeded our expectations in terms of capacity building for the student volunteers, with key new learning emerging around the value for the students of being given opportunities to engage with different groups of people, using the learning tools as a boundary object to enable conversation, and in the process gaining confidence and skills. A youth leader, who attended the facilitator training, commented "Running sessions like this and learning how to run sessions like this is such a critical skill for many different sorts of career paths and walks of life. It has a vast amount of transferable skills."

Shifts in capacity, and the outcomes this has led to for the students are reflected in the following quotes (recorded as testimonials, with permission):

> "I'm an international postgraduate student. I did a Master's in The University of Manchester. And the RoundView helped me a lot in developing my skills in discussing topics around sustainability, climate change, and biodiversity. It helped me interact with different stakeholders, knowing how to communicate ideas, and it [brought] my confidence up a lot coming from a different country. And it contributed to my skills and helped me gain a position in BirdLife International. And now I look forward to gaining more skills and moving forward with my career."

> "Irrespective of what your career choice may be, the RoundView is so helpful because it teaches you about sustainability and you can integrate it into your career. And how RoundView has helped me is, it's helped me land a job in something that I am so passionate about. It gave me the skills that I could add on my CV, which I think is so valuable for anybody… You gain experience by working on these workshops and you can add it to your CV, especially if you don't have any prior work experience. And that says a lot because that did really help me. Because when I moved here, I had no work experience, and as an international student, having this on my CV really pushed me and it gave me that confidence to speak during interviews."

The latter alumni will be running RoundView workshops with community groups working with Northern Ireland rail in the next few months, and says she was contacted on LinkedIn shortly after she added her volunteer experience with the RoundView to her profile. Two

other active volunteers from this semester are awaiting job interviews that they think have been aided by their experience: “I’m genuinely grateful for this opportunity, and I feel that my experience with RoundView, particularly in public engagement and communication, has really helped build my confidence and skills in these areas.”

It has been especially encouraging to see students and members of staff (PSS and academics) asking to borrow the RoundView toolkits for use in events ranging from a workshop for the Manchester Climate Change Agency, to an air quality workshop in a primary school, to hands-in activities for stalls at festivals and events.

A further element of capacity building was foregrounding the Ketso toolkit for UoM staff as a valuable tool for hearing voices and encouraging dialogue. For instance, in planning a workshop with researchers and PSS staff working in sustainability, a concern was raised by a PhD student that strong voices would dominate, and it would be difficult to get a diverse range of perspectives. In feedback after the event, one participant commented: “The workshop facilitated engagement and participation. With Ketso, everybody had a voice, if you were at the table, your voice was captured with the leaves”.

Learning

There was a significant shift in our aims and achievements for the output of prototyping digital tools. Three converging factors led to a shift in our aims and achievements: improved understanding of stakeholder needs; greater clarity around what might be required for improved learning evaluation; and very engaged interest from the Humanities Pathfinder FLP Pilot based on intermediate-stage prototypes of our digital outputs. The original aim of exploring how to turn existing resources into ‘bite-sized’ digital learning resources became perceived as a ‘nice to have’ concurrently with crystalising awareness of what would be of more critical significance, namely, a more complete prototype of a digital tool that would enable deeper testing and exploration around pedagogy, evaluation, assessment, and the need for flexible digital pathways. This was a much more complex and sophisticated digital project with greater resource requirements. The trade-off was less time for user feedback during the lifetime of this pilot. We chose to take the longer view and commit to this more substantial development, and the demo digital tool is now live and gathering valuable data. The Pathfinders pilot has funded the adaptation of this tool for use in teaching Digital Sustainability over the next months, so the sustainability and information-gathering utility of it are assured.

Objective 2: Improve learning design through using Design by Team infrastructure and services and generate feedback, learning and experience to further develop this service

Working with e-learning

A key element of meeting this objective has been working with the E-learning team to develop a digital version of the RoundView Evaluation tool as a learning resource. This was originally seen as a digital version of some of the learning that goes on in face-to-face workshops that can be used in digital-first or hybrid sessions. Working with the Design by Team (in discussing evaluation approaches and digital learning strategies) we extended our thinking to how this could be built into a digital pathway that helps capture shifts in learning, such that it could be used as a key tool in assessing learning to enable us to award digital badges to people come across the RoundView in a wide range of contexts, allowing learners to deepen their learning.

Working with the e-learning team has been incredibly helpful in moving towards the success indicator that “we will have better media and digital resources to support sustainability learning”. We are looking forward to testing the RoundView Evaluation Tool with a wider range of learners and in different contexts.

Incorporating Design by Team expertise

It was especially helpful to explore ways to capture before and after competencies and levels of knowledge with the team, and to see examples of how this had been done using Qualtrics. During the pilot, we tried different approaches including using pre-intervention surveys in registration, with a follow-up survey (both during and before and after the workshop time, and digital and paper worksheet versions). We learned that linking the surveys to registration was relatively successful, with most people who registered providing useful information - but it was difficult to gather information from the follow-up surveys. We also found that there was a real mismatch of people who registered and who actually showed up - there was a high attrition rate, and some people came to the workshop who had not registered, so it was really difficult to correlate before and after data. The in-person, paper surveys were more consistent in terms of being able to gather data, but take more time to process, and are less likely to be used to gather data over the long-term outside of a pilot with a research assistant.

We are hoping that linking the gathering of the after-intervention data to the incentive of gaining a digital badge will improve this strategy. The digital RoundView Evaluation Tool has been designed so that we can capture data about learning from the use of the tool, building a powerful platform for further learning and the capture of change in attitudes and competencies.

Whilst we still have some work to do to test and improve different assessment strategies (for instance, in the design of multiple choice questions and ways to ask participants to choose options for their choices on the RoundView Evaluation Tool), we have developed much of the thinking ready to do this, and have tested many of the key ideas in the workshops. It would be useful to have some further meetings with evaluation experts to help us refine this strategy and design. However, the development of a digital option to accompany and use alongside the tactile toolkit has already provided a valuable new dimension. We have thus met the success indicator of having “improved assessment and evaluation strategies for the learning pathways”.

We had several very useful discussions about possible ways to design learning pathways that allow for a flexible mix of in-person and digital, synchronous and asynchronous learning. This has given us many ideas for how to achieve such flexibility, and the digital tools that have been developed during the FLP have benefited from this bigger picture thinking about the learning design. We would greatly value further input in the design of these pathways, and in particular how to integrate them into a Canvas Catalogue page.

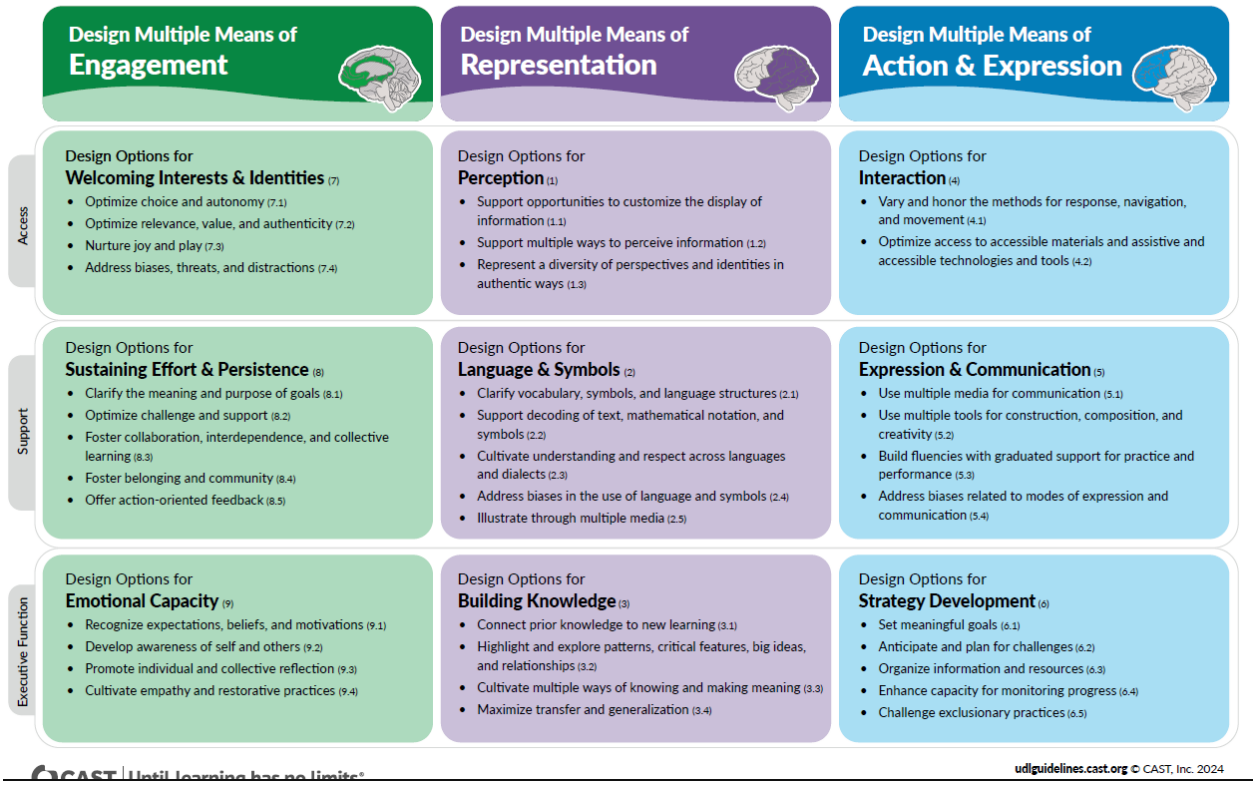
UDL & RoundView Initial Review

The following are our initial preparatory notes after internal review of UDL in anticipation of meeting with UDL specialists. Unfortunately, this didn't happen as planned, perhaps because there was not enough capacity in the FLP team to meet with us, as this pilot was in the last 6 months of the programme.

The following was not written as a document to be shared, rather as a note for an expected review with an expert. We would value the opportunity to meet with an UDL expert to review this, especially in light of the pedagogical improvements outlined above.

The Universal Design for Learning Guidelines

The goal of UDL is **learner agency** that is purposeful & reflective, resourceful & authentic, strategic & action-oriented.



	Multiple means engagement	**Multiple means representation**	**Multiple means action & expression**
Access	Exploring coherent ways to engage with the topic across context - small groups, large groups, different styles of delivery, using hands on tools or not, digital or not, peer led or not. Building our capacity for a diverse offer. Making it relevant is high on the agenda and a key part of what we seek to inform through this	Information presented in different styles and depths for different audiences 3-D tools combine visual art, poetry and word puzzles Customisation core design value for medium term digital efforts and curious about how to apply this more to physical tools under	Variety possible with the tools and being explored. They can be played at multiple levels, from a phonics lesson for an early reader, to an in-depth science learning tool Guidance on how to manage and not overwhelm and lose focus with options? What does this look like, best examples?

	work. Very much spirit of play. 'Ketso' aspects designed to produce inclusive experience and participation. Seek improved strategy around bias, threat, distraction?	active development. Conscious diversity representation feature of existing tools (4th guideline, timeline includes examples from every continent and many countries, and is seen as a potential tool for teaching decolonisation). More? Optimum amount?	Designs for accessibility underway and considered for any digital or physical tools Visual and physical clues are built into games Need to explore options for visually impaired - e.g. braille / audio description
Support	Constantly re-thinking how to present coherent frames for expressing the meaning and purpose - fully recognise the essential role this aspect plays and actively develop. Collective learning at the heart of developed processes, we always prefer peer learning and also wish to provide more avenues for individual engagement for those who prefer that. Games inherently seek to provide feedback through play. In a model of community being a combination of commonality and communication, RV provides a meta 'hub' to foster belonging and community. Aware of much more needs to go into this. Priorities, capacity!	Visual graphic strong aspect Physical games to play Poetry as way to engage with the content Translations into multiple languages well in progress, the aim is to go much further with multilingual versions Video and interactive central to the agenda Many exciting ideas in digital space are looking to explore. Hard to see our own bias - value in 'external' review…	Multiplicity of media and tools for learning and creativity is where we are at. Future intentions to move towards extending this, but already through the dynamic combinations of tools and framings and delivery mechanisms available, there are creative options for the future looking part as well as the core learning. Review, consolidation of past tools is a useful task. Digital will extend all of this and allow exploration of nuanced graduated support which will feed feedback into the physical.
Executive function	Understanding the learner's starting points,	Approach as a whole is a framework for	The RoundView could be described as a tool for

	expectations, beliefs, motivations is part of the process and a central theme of our work. It is all about individual, collective reflection, and awareness leading to broad mutual understanding and regenerative shifts in practice and yes, empathy	connection of existing understandings within a broader, enabling pattern that is intended to release tensions and induce flow towards restorative communication, thinking, perception and change on all levels. Big ideas and relationships are the name of the game here. Systems thinking, and communication/reflection experience and skills are potently transferable and generalisable	society and individuals to set meaningful goals together, to anticipate and plan for challenges. Through our modelling out (lead by example, show not tell) of the platform ideas and tools, we actively seek and build systems for organising information and resources and monitoring progress. How does this translate to individual learners? What might we enhance or consider there?

Objective 3: Culture change and growing community of practice, with enhanced capacity and motivation to embed flexible sustainability learning across the university

ThinkingWare platform

The scope and role for the ThinkingWare platform has expanded through this FLP, with the potential to have a more central role than we originally envisioned in helping to create a culture of change and community of practice. A confluence of considerations led to this realisation and shift in how we developed the platform: reviewing the needs of stakeholders, grappling with the complexities and challenges of producing discipline specific sustainability learning resources, work to unpack our RoundView resources to better make the value accessible for others to use, and considering the systemic barriers towards change in relation to the community of practice. It became apparent that an evolution of the role of this platform was worth exploring.

Originally, the objective was to upgrade the system under the hood with the help of Research IT, to facilitate the sharing of plans between users of the tool, with the vision of creating a library of workshop plans for different purposes and topics that can be shared and co-developed easily. We realised that while extremely valuable, we are well-positioned to take this further. In addition to plans created via the tool, there are strong reasons why the ability to share other information via a hub like this is a promising experiment. So rather than just sharing workshop plans, this platform has expanded into a place that can be used to share:

1) Full complete resource sets, such as workshop plans, lesson plans and associated resources like slides and media

2) Flexible modular resources, smaller chunks of usefully-shared resources that can be mixed, matched and adapted as needed

3) Extra layers of redundancy in signposting the vast plethora of sustainability-related resource and support that is available within the university,

4) Draft and exploratory resources.

This last aspect is key. The needs of different teachers and learners in different contexts are vast. Data points to the fact that common, shared approaches and resources may well be valuable and worth creating; but that will not be a quick or simple process. To move this forward, a place where 'work in progress' or experimental information can be curated and shared seems a critical step. Conceptually it sits halfway between a Dropbox or Teams shared space on the one hand, and centrally available, polished and official resources on the other. Where is the space for visible sharing and testing of unfinished and unpolished resources, able to be accessed, used, and adapted from different disciplinary perspectives? Something stable enough to be a resource that supports dialogue and interdisciplinary community building over time, but agile enough that the pressure for things to be 'perfect' is relieved and we are more empowered to co-create together.

In terms of achievements under this objective: as well as upgrading the planning tool, we have developed the ThinkingWare platform to allow such development of shared resources to be explored step by step. An additional benefit to this development is that it gives us a place to share and make more widely available the learnings from this work. As it was an IT project, with significant changes to the original platform in just a 6-month project, the site only went live on the last day of the project, so we need a little time to upload the first tranche of resources. This will then become a growing, curated repository of shared learning.

Building a community of practice

We have presented / run RoundView workshops at meetings exploring embedding sustainability into teaching and learning within SEED and across Natural Sciences (Sustainability in teaching forum) and a Programme Review in Civil Engineering. A particularly positive outcome is embedding RoundView learning across the Civil Engineering curriculum, with an approach co-created with colleagues to build the learning through the degree. It is notable that a colleague and a team of PhDs from the School of Engineering found the RoundView and Ketso so useful when they were introduced to it in a cross-university workshop, that they took the tools to a primary school to run a workshop.

The Pilot enabled the team to begin developing a community of practitioners consisting of a small number of trained staff members and student ambassadors/volunteers to assist in the running of workshops and stalls for community and school events. A learning has been that with a small amount of scaffolded learning (attending one, then assisting at RoundView workshops) with some guidance, they are able to use the toolkit to engage with community members and school children. This learning will be incorporated into guidance and brief how-to videos that will be shared on the ThinkingWare platform for running workshops for school visits to libraries, which could be run by student volunteers or library staff.

The focus groups and discussions with stakeholders enabled by the FLP gave a clear sense of the importance of developing a community of practice and peer support. For students, there was a strong sense of feeling part of a supportive community for the activities they are engaged in now, but a sense that they would like to have support as they move forward into their careers and new locations. In the facilitator training session, one student volunteer

suggested that it could be possible to link to the message of the RoundView as a pledge to maintain when going into a future career.

Several student volunteers are very keen to take the RoundView back to their countries. We know there is interest and a growing sense of belonging to a community of practice, and now need to work out how best to mobilise and support this, given the current lack of funding for the initiative. We have created a LinkedIn group, which especially meets the needs of student volunteers to build their network and visibility on this platform for employability purposes. This already has 28 members and is active.

New stakeholder groups to emerge during FLP

One way in which this Pilot exceeded expectations was in new stakeholder groups that emerged during the pilot, in particular FE educators. This stakeholder group was brought into the FLP through a current UoM student (FE Educator 1 below), who attended a workshop and invited colleagues to attend. The value of the RoundView for this stakeholder group is well expressed in the following two quotes from FE teachers who attended the RoundView Facilitators training as part of the FLP:

> "For me, I think the RoundView is a really simple but effective framework for thinking. And if we can get young people in further education who are just beginning to think about their careers to understand that framework – thinking that we can apply wherever we go – I think it's really important for them to be able to analyse decisions that they make. And RoundView gives you a tool to say, "Is this going to be positive or negative for the world?" FE Educator 1

> "It's a worldview: it's a way of fitting everything else that you know about sustainability into an overall framework, which has always been missing previously. Activists are really, really good at telling you what's going wrong: they're really, really good at telling you how many problems there are in the world. They're not so great at telling you how we can live in the world. I genuinely believe that every teacher standing in every classroom in the country should understand the RoundView. It's so important and it gives you such an optimistic view of how we could work – how human beings could be reintegrated into natural systems. But it just needs to be out there." FE Educator 2

This looks to be a stakeholder group which may readily take up the RoundView learning resources and use them to great impact. A further FE educator, who is now a Green Changemakers Facilitator across FE providers, attended several RoundView workshops and events as part of the pilot. She has gone on to deliver RoundView sessions in at least two FE Colleges already, commenting: "It's a brilliant leveller at the start of the Green Changemakers course and informs everything that comes after".
https://www.linkedin.com/feed/update/urn:li:activity:7346062387944300544?utm_source=share&utm_medium=member_desktop&rcm=ACoAAAXNK6MBkJP-AiJGzdMfZP3NamohVatFZs0

The following feedback was from a participant at one of these events (posted on LinkedIn):

"Much appreciation to those who I was lucky enough to be with yesterday for the GreenChangemakers RoundView space hosted at Kirklees College. I don't think I have ever sat and explored the impact of what we are doing to our planet and really got it, like really got it but more so, could see how, through the RoundView, we can start to feel a part of the solution. It always felt so big before."
https://www.linkedin.com/feed/update/urn:li:activity:7349702747417460737?utm_source

=share&utm_medium=member_desktop&rcm=ACoAAAXNK6MBkJP-AiJGzdMfZP3NamohVatFZs0

Two FE Colleges have committed to installing a RoundView interactive exhibit in their learning spaces, and one will be sending a lead for Personal Development Tutors and their newly appointed Student Sustainability Champion to the RoundView sessions we are running next semester. FE Educator 1 (current student in MIE) is planning to use the RoundView toolkit to provide sustainability training to SMEs in Worcester.

We have recently had promising indications of the potential of using the RoundView for business sustainability learning from Siemens Energy. They came across the RoundView toolkit through a stall at the Manchester Green Summit. They went on to sponsor the RoundView to have a stall in the STEM village at the 2025 Royal Norfolk Show, as a means to engage with local schools and communities around the broader picture of sustainability and how electricity generation and transmission can contribute to sustainable futures. They discuss the RoundView in a LinkedIn post as "a toolkit that encourages people to think differently about how we can avoid harming the planet in the first place and instead work toward a more sustainable and regenerative environment. This kind of thinking is essential as we face many global challenges." https://www.linkedin.com/posts/sacha-ball-b1b03415a_great-to-be-back-at-the-siemens-energy-offices-activity-7323732885125959680-WpAQ

Another stakeholder group that emerged is educators in Teaching English as an Additional Language. During the FLP, we were able to test the RoundView learning resources with three different levels of learners in a workshop. Whilst this uncovered the need for development of more support resources, such as matching word and picture cards and lists of vocabulary, the feedback was very positive. A particularly interesting finding was the value that some of the participants placed on learning something that was similar to what their children were being taught in school, having never had the chance to go to school themselves. They said that it would help them to better understand and talk to their children about what they were learning.

Section 7: Sustainability

To what extent has the pilot identified the potential for its activity to lead to the long-term behaviour/operational change? What would need to happen to make these changes happen?

The Pilot has definitely identified potential for its activity to lead to long-term change, and has put in place some key building blocks to enable this, in particular the revised concept of the ThinkingWare platform as a powerful way to share sustainability learning practice and resources amongst UoM stakeholders.

It has advanced our thinking around assessment, with the potential to use the digital prototype RoundView Evaluation Tool as a follow-on activity, linked to issuing digital badges. A component of sustainability is the Humanities Pathfinder developing and using the Evaluation Tool.

The Pilot has led to significant improvements in the RoundView learning resources, which means that future iterations will be easier to use and have more pedagogical impact. We will need to do further work to ascertain the full nature and extent of the learning that these tools enable, both in facilitated and self-guided sessions, but we have been able to demonstrate that

even a minimal interaction with the early version of the tools has promoted fresh thinking and a sense of hope for the future.

There are still questions about scale and reach. The following is broken down into different levels of support and effort that would help sustain and amplify change.

Making the most of ongoing teaching and activities with minimal additional support

At a bare minimum, Civil Engineering is putting in places processes to embed the RoundView across its curriculum, and there are lessons from this FLP that will increase the impact of Tippett's ongoing teaching.

As long as Tippett is teaching, it is likely this will include RoundView sessions, and these can be opened up to wider cohorts. One outcome from this pilot is that we have explored ways to create beneficial synergies between the activities of the Environmental Sustainability team and this teaching. The Central Environmental Sustainability Team runs a programme of Sustainability Champions, with students applying for this two-semester-long voluntary position.

For the academic year 2024-2025, the training for the 50 or so Champions will include a 2-hour introduction to the RoundView, with the champions being offered a choice of dates from cross-University workshops that are planned for weeks 2 and 5 of teaching. This will offer a grounding in the core ideas of sustainability, and for those who are already studying in this field, it will give them an opportunity to learn about how others think about sustainability, so they can become more effective advocates and communicators. The Champions can then go on to run further RoundView events. In discussion with the Environmental Sustainability team and an academic from the School of Biological Sciences, we have added a workshop in week 5 to the planned cross-University workshops, to allow for the Sustainability Champions who were not yet in post by week 2 an opportunity to catch up. This is scheduled in the timetable slot for the Environment Sustainability Projects, a branch of the Final Year Projects, so there should be at least 15 participants already 'booked' for the event.

The Environmental Sustainability team has offered to provide space at their stall in the Start of the Year Fair in Welcome Week, for a RoundView game or two and promotional materials to register for these open cross-University workshops. This represents a beneficial synergy, as it reduces the pressure on the RoundView team to staff a stall, and at the same time gives an immediate event that students can sign up for, which was lacking for the Environmental Sustainability team.

These cross-University workshops that provide synergies across existing activities require a minimum of:

- Booking a large room for several contiguous days, ideally the Whitworth Hall (and ideally this would be a less onerous process once we have proven the principle, we are hoping this will become routine for the second week of teaching, like the Whitworth is consistently booked for Welcome Week).
- Provision of tables and chairs in the room (one barrier that was discussed during the pilot is that tables are rented in for each event in the Whitworth Hall, so each use would cost at least £500. The PI raised this with the office of the Registrar as a major barrier to use of the space, and there will hopefully be tables available for use from September).
- Student volunteers to help with the set-up and facilitation.

Given the physical nature of the RoundView learning tools, another key need is an easily accessible space to store the materials between use. It is pleasing to be able to report that a small store room has been made available for this purpose, but the carts and toolkits will need to be moved to a different building when staff move out of Humanities Bridgeford Street.

Maximising the value of ongoing teaching with some support

Assistance in communicating the workshops and promoting them to staff and students would help maximise the value of cross-University workshops. The SEED comms team will help, but further assistance in making sure it is circulated to staff, PS staff, the SU, library staff and students across the University would be very helpful. Communication to students who have already attended a RoundView workshop (e.g. Civil Engineering first years who attend a workshop in welcome week) would be needed if they are to be made aware of the opportunity for them to further develop their skills and act as volunteer facilitators.

It was also seen that we need clear and compelling resources to promote workshops and opportunities to develop skills to students. We are working with the SEED comms team to develop short videos of student testimonials, but further work needs to be done to develop and test compelling messages that work across the University.

Registration and numbers need to be managed, and if the teaching is to be part of compulsory teaching for any unit, then tracking attendance and communication with the relevant academics needs to be managed. It is not yet clear how such a cross-university workshop would integrate with SEATS and data entry into that system, if that was deemed necessary, in addition to a list of attendees. In order to make the most of the teaching space and the effort going into running these workshops, it is important that there is a good attendance rate. It would help to ensure that at least some of the sessions are run as compulsory teaching to increase the likelihood of attendance. In addition, it is hoped that running the sessions early in the teaching semester would help increase attendance and engagement. Indeed, the experience in this pilot of relatively low turnout to workshops, despite professed interest and registering for workshops, shows the importance of holding cross-University workshops early in the semester.

Some financial support to be able to recompense student volunteers who wish to put in extra effort, and / or to bring in flexible expert assistance for peak times of running workshops / developmental work would be highly beneficial.

If there was some ongoing funding, it would be helpful to be able to provide refreshments in the cross-University workshops. Student feedback suggests it is an incentive, but more to the point, it shows that the workshops are valued by the University. It was also really helpful to be able to reward the volunteer team with a lunch when convening co-production feedback sessions. This is a small amount of funding relative to the value of such team building sessions that help build a community of practice and encourage ongoing co-production.

The learning on the FLP made it clear that to make the most of volunteer opportunities for students, there needs to be a person with the dedicated role of coordinator, and this role can't be a student volunteer. It is too important to maintain good relations with our external stakeholders, and too much to ask of a volunteer to perform this role. An idea was raised in one of the co-production sessions with staff and students that we should apply for a GTA for this role, attached to a module for which it makes sense, so we are trying this for the next academic year. However, as these roles do not start until the start of teaching, and often the GTAs and academics are not informed of the hours allocated until close to the start of

teaching, this would not cover a key time when we need this support, with volunteer opportunities lined up for September and October. A key finding from this FLP is that such volunteer opportunities are particularly important for PGT students. Ideally, we would have a role supporting the project, including the coordination of volunteer opportunities. If we were able to support this properly, we have the real potential for our students to become sustainability ambassadors, further spreading their learning and engagement in their new job roles, communities and even new countries.

It would be helpful if a session introducing the RoundView could be embedded into New Academics Training, so that new academics are aware of it and know that there are opportunities for them to embed it in their teaching / access the learning resources / sign post their students towards opportunities to attend workshops. This also offers an opportunity to introduce new staff to the ThinkingWare platform, which can help them to plan lectures and workshops as they start their teaching career.

Another idea that was discussed was the need for visible demonstrations of the RoundView learning resources on campus, with signposting to opportunities for skills development and engagement. Ideally this would include physical installations of the RoundView interactive stand. This will require funding to procure the physical kit/s. Crucially, it would also require an intervention to help overcome the risk averse reaction we found when we tried to have a stall in the library, where it was deemed a health and safety risk to leave wooden puzzles out unstaffed.

In addition to the library, possible locations include student hubs and commons rooms (for instance Civil Engineering are keen to have a set accessible to students), and possibly public-facing spaces, which would help us promote the sustainability commitment of the University of Manchester to our wider community. There is currently a RoundView installation in the exhibition space at the Renold Building in the SISTER district, and there is a plan to convert this to the new compact, mobile exhibition space prototyped during this FLP in September.

Figure 17 RoundView stall at SISTER community day

The RoundView initiative has no core funding, and there are concerns about sustainability in terms of ongoing core functions - for instance, hosting the website, and the £1000 per year or so needed to maintain and host the ThinkingWare platform. For the next year, the SEED teaching IT fund is supporting its hosting, and alternative funding would need to be found if this is not continued for the following year.

Support and infrastructure needed to create a growing community of practice

- Further help and support with developing the digital learning tools and pathways to gather pre- and post-learning
- Enabling the issuing of digital badges, both inside and outside of the University, and free of charge so we can achieve maximum reach, especially in the Global South, as well as gathering impact data
- Conversation with the UK National Commission for UNESCO to explore the possibility of co-accrediting the digital badges
- Provision of a Canvas Catalogue space, with free access to the world
- Provision of a CRM to track people and levels of experience, ideally linked to events and volunteering opportunities
- Ensuring that the RoundView is a pathway within the new Stellify model
- RoundView volunteer opportunities coordinator post

If we want a continuous and growing cycle of capacity building across cohorts, there is a need for ongoing support. This needs to go beyond Tippett carrying out activities during her unpaid work (she is on a 0.6 contract), which is the likely next step given that none of the rest of the project team have any funded time or ongoing role on the project after the FLP. This will be especially important if we are to gather further evaluation data and continue to learn from and improve the process.

If there was a RoundView team / some roles assigned to the RoundView, either centralised or school-based, we would be able to offer more training and sessions across the University. The team could either deliver sessions in programmes / cross-University sessions, or provide training for academics to deliver their own sessions. It could be fruitful to explore opportunities to coordinate such workshops and roles within the library, and it would be important to consider the volunteering coordinator role and how to maintain relations and opportunities with external partners. Given that many of the opportunities are with libraries, this is an avenue well worth exploring.

A recurring theme that emerged in discussions with stakeholders around scaling up sustainability learning, and the RoundView as an approach to do this, within the University was the need for more visibility and support from senior leadership. It would be really helpful to have members of the SLT attend workshops. There were several Ketso leaves from feedback workshops along these lines: “Get Duncan to come to a RoundView workshop”. “Link into the university's 2035 plans” There was also discussion about the value of a top-level commitment to supporting scaling up for the RoundView: “Like MMU Carbon Literacy All by 2026”.

Following on from a British Academy Innovation Fellowship with the UK National Commission for UNESCO and an AHRC/ESRC supported secondment with Manchester UNESCO City of Literature, we are developing an ambitious strategy for scaling up the

RoundView for civic engagement and learning across sectors and countries. Thinking of flexible learning and place, we have an ambition for every school in the world to be within walking distance of a RoundView learning toolkit, adapted to their culture and language. We can "start small" with the ambition of working with every library in Greater Manchester, working with our UNESCO designations of City of Literature and City of Lifelong Learning. The support and input of staff from across the University has been vital in the successes we have achieved so far. Continued university support would help us to achieve this ambition whilst also providing opportunities for our students and staff to develop their learning and skills.

Section 8: Financial

See separate report but use this space for any financial narrative that needs to accompany the report.

The staff costs for the additional month for the three RAs working to the end of July were funded and charged directly to the SEED impact budget: P130818 N0706

There was an additional + £2,850.00 contingency from the FLP

The total spent and committed comes to £78,681.64, with £285 on casual staff not yet paid as it is still with P&OD. The casual staff costs and staff costs are our best estimates, having no access to the final charges from P&OD, however the final spend should be just within the total project budget of £78,744

Section 9: Lessons Identified / Learned

Please Consider enabler and inhibitors in the following areas for FLP and our objectives:

Systems and process

Inhibitor (flexible learning): One finding that came to light in discussions with staff was some confusion about whether or not we are allowed to incorporate flexible learning into the curriculum. For instance, a lecturer based in SALC was told that it was not possible to include both online and in-person components of teaching.

Inhibitor (pedagogical innovation in general): Lack of flexibility in programmes. If you want to change learning outcomes or assessment processes, you need to undergo a 2-year review committee.

Inhibitor (co-production of learning with students): If we want to take coproduction with students seriously, we need to be able to recompense them for efforts and roles that go over and above what could reasonably be expected as a volunteer intern / over the points needed for Stellify. There is an equity issue here for students from less well-off backgrounds, where even a small amount of pay (made in a timely fashion) can make a very big difference. Even when there is funding to do so, as we had during this Pilot, there is a significant barrier of an incredibly lengthy and complex process. We started trying to pay 7 students for a few days of work in February. One student is still waiting to be paid. The paperwork, administration and yo-yoing between the School and P&OD took up an inordinate amount of the time for both the PI and Pilot Manager.

We received contradictory advice regarding employing casual student staff, having thought this could be done through a fairly simple voucher system, or at least through a simple PR7, but then being told that the only way to pay students for even a few days was to employ them through the CAS1 system. Even having gone down this route, we have had questions from school PSS staff as to why this decision was made. There seems to be several layers of confusion about what is necessary, and how to go about these processes.

One of our most precious resources is the intellectual work of our staff and the quality of the time and interaction with our students. The amount of time taken to endeavour to slightly recompense our students for their phenomenal effort has been utterly draining. This has negatively impacted the time spent on the rest of the FLP for both the project manager and PI.

Inhibitor (scaling up sustainability learning / any core learning through the University): There was no member of staff or area of the university that we encountered on this pilot that did not feel over-stretched. It can be very difficult to introduce new ideas, especially when there are options and flexibility, to overstretched staff. This is made even more difficult with very long lead planning times for planning timetables, curriculum, changing ILOs, etc.

Enabler (efficient interactive learning at scale): The use of physical, 3-D learning tools as boundary objects to encourage dialogue in a range of settings, including large groups and self-led learning, is a significant, potentially world-leading pedagogical innovation, and contributed to the project becoming a Finalist in the Educate North Awards 2024. Feedback from surveys and workshops following the trial workshops points to the value of this pedagogical innovation, for example:

- "I found the presenting of complex ideas in this form very effective and would like to use it in my teaching (UoM academic)"
- "I think it would be great - not just in terms of sustainability, but also in the way it can affect ways of thinking. System based analysis is useful in a lot of other subjects, and the interactive element can help to trigger thoughts you wouldn't obviously get through individual research or traditional teaching"
- "Like the games as a way to interact and share knowledge"
- "Hands an approach is powerful
- "What works: "Hands on-problem solve collectively"
- Shift in thinking: "Learning about the environment can be interactive"

As AI becomes an increasingly ubiquitous backdrop to our work, it is an especially interesting time to be considering the nature of face-to-face learning, tactile tools and ways to encourage critical dialogue and the development of thought processes.

There are certainly pedagogical insights that would be of general value outside of sustainability learning from this development process. It may, however, only be worth taking the effort and resources to reproduce such tools for other learning contexts that are seen to be of value across large cohorts of people, and/or where the quality of dialogue about the ideas is especially important. Other contexts where highly interactive, impactful hands-on learning tools might be considered worth the effort include: Ways to Wellbeing, equality and diversity, decolonisation, sexual consent, etc. Questions to ask to determine whether this is worth the effort are: is this an idea/area of learning that needs to cross boundaries, that could

create a shared language, and/or that requires meaningful dialogue and reflection amongst diverse cohorts?

We can distil key principles for developing such tools, but some of the development is very particular and requires testing and interactions for each concept/area of learning.

Incentives and capacity

Enabler (scaling up sustainability learning through the University): the sense that learning the RoundView brings hope and provides a positive way for us to discuss the future

Inhibitors (scaling up sustainability learning / any core learning through the University):

- Staff members lack time and capacity
- A wide range in terms of capacity of teaching staff to engage with the subject area within their teaching.
- Lack of space in a crowded curriculum
- Incredibly poor take-up of compulsory extracurricular learning across the University

There are significant challenges of effectively communicating with staff and students about opportunities for flexible learning. There are so many different channels and so much information that it is hard for messages to cut through. From a project perspective, it is time-consuming and not always clear how best to use the multiple channels that are available. Even if you think you have a system, it is likely that the channels / key people will change – so this needs constant updating.

There is often a challenge for staff who are trying to teach in flexible ways, especially across disciplines, that it is hard for this work to be recognised within departmental work load allocation models. It would be helpful to have a debate about how to best encourage and reward such activities.

Policy and strategy

Enabler (scaling up sustainability learning through the University): Clear messages from leadership at all levels that sustainability learning is a priority, and support to embed this flexibly.

Participants in the stakeholder workshops we ran called for:

- 'A University-wide review of environmental sustainability teaching'
- 'More joined up content for environmental sustainability - a centralised team.'
- 'Different ways to learn beyond the [traditional] classroom'.

Student experience

Inhibitor (student engagement): We are seeing a rising lack of engagement with face-to-face teaching. There is consistent reporting of a notable drop-off in student engagement over the semester (with the exception of professional degrees in medicine, where accreditation is partly dependent on attendance). We need to have a deeper discussion about how to counter this drop-off, and the significantly negative impact on the student experience for both learning and building social skills and connections.

This also has a very negative impact on the academic experience, it is incredibly dispiriting to teach to a dwindling number of people in a room – and this is likely to have an impact on enthusiasm and in turn student engagement.

Enabler (student engagement): Important face-to-face workshops need to be prioritised early in the semester. The incentive of being able to obtain a digital badge may be a useful additional incentive for attendance.

Enabler (student engagement): Where there is professional accreditation in the degrees, we could do more to use this as an incentive to attend, by making it clear that a lack of attendance will have professional consequences. It is notable that attendance was not seen as an issue in Medicine, but is a major issue in Town Planning and Civil Engineering, both of which require professional qualifications. Could we better track attendance and make it clear that obtaining professional accreditation is dependent on a minimum level of attendance - and enforce that? This still begs the question about approaches in programmes without professional accreditation.

Physical Estate

Inhibitor (interactive face-to-face teaching): Rigid lecture theatre style layout of flat teaching space. Rooms are not planned for flexibility. Cabaret style is not prioritised by the University. This results in valuable teaching time being wasted on having to rearrange flat teaching spaces at the start and end of allocated sessions (this can be to the detriment of the student experience, especially in large classes where rearranging the tables can be quite chaotic).

Enabler (interactive face-to-face teaching): One major breakthrough that can be partially attributed to this Pilot is a new provision in the timetabling process of being able to ask for set-up and set-down time on either side of workshop teaching sessions. This is an issue that Tippett raised with SLT following a combination of the experience of crossing campus with RoundView materials to run workshops, and feedback from her PGT module that students felt that moving tables and setting up the rooms was wasting their valuable learning time. This will lead to an improved student experience, but it still puts the burden of room set up on academic staff / GTAs.

In terms of Flexible Learning, it would be really helpful to have a review of our use of flat teaching space across the University. At the moment, almost all of our flat teaching space is set up like lecture theatres, and does not allow for effective small group interaction. The tables are also so close to each other that it is not possible for someone using a wheelchair to move effectively through the room and interact with students.

Could more/most/all of our flat teaching space be set up in a default cabaret style, and then it gets moved to lecture hall style if needed? This might encourage more staff to consider interactive teaching and group discussions, to make the most of face-to-face student time for peer-learning.

An alternative would be adding an ability to request a different layout when requesting rooms in timetabling. What if some rooms are set up cabaret style as the default and these can be requested? It would seem a more efficient use of space than wasting half an hour to an hour of possible teaching time either side of an interactive session. When the rooms are booked for longer with this new (and very welcome) ability to request set-up and break-down time, there is a loss in terms of ability to use those rooms for teaching.

Culture

Enablers (scaling up sustainability learning through the University):

- Evident appetite for and interest in sustainability flexible learning from staff and students.
- Network of collaborative staff members (and students)

Inhibitor (scaling up sustainability learning through the University): There are still pockets of attitudes that sustainability is seen as peripheral to particular disciplines. We heard feedback from a Science and Engineering perspective that sustainability is seen by students as a 'humanities' topic, possibly in part because of the focus on the SDGs and emphasis on the social elements. Conversely, we heard from colleagues in SALC who said there was often a sense that sustainability was really an issue for Engineering and the Sciences. A SALC lecturer indicated the difficulty of persuading both students and academic teaching staff of the relevance of environmental sustainability to their area of study. There are concerns amongst academics about bringing in new areas that may 'squeeze out' more traditional learning skills.

Inhibitor (to building a shared language of sustainability across the University): One of the questions that we asked in the feedback workshops on the FLP was "Should or can we find/agree a coherent/aligned core content across faculties & disciplines?", There can be a sense that it is not appropriate to try to 'enforce' a particular view or framework.

There is rightly a strong, and extremely important, sense of the need to protect academic freedom, and to encourage debate and critical thinking about any ideas that are taught at a university. At the same time, there is value in creating shared meaning and sharing frameworks that can be used in creating that meaning.

Solving the sustainability challenges we face requires input from across academic disciplines and the sectors our students go on to work int. Wide-scale understanding of a transferable systems framework, such as the RoundView, has the potential to promote interdisciplinary dialogue and learning across silos. This is a fruitful area for debate. For instance, as a University we have adopted using the UNSDGs as a means to communicate about links between our teaching and sustainability, with varying degrees of depth and clarity. How could we learn from this process, and improve our critical thinking and application of frameworks in the process of such learning? This is the sort of 'work in progress' that we aim to curate on the ThinkingWare platform to progress such critical thinking.

Section 10: Material/Publication:

Please list all the materials/publication against this evaluation report

Resources, guides and workshop plans will be uploaded on the ThinkingWare Platform

Climate Change Learning in Initial Teacher Education: University of Manchester Institute of Education, Jan 2025, Summary and reflections from conference facilitatorshttps://manchesterpgcesecondary.co.uk/wp-content/uploads/sites/432/2025/04/Climate-Change-Education-Conference-Report-2025.pdf

Edwards, M., Alberro, H., Brown, S., Gilchrist, A., Howes, A., Lock, R., O'Brien, J., Stelma, J., Tippett, J., Williams, J. (2024) 'A transformative agenda for climate change and sustainability education: A response to the Call for Evidence for the Curriculum and Assessment Review from the Department of Education', 14 pgs. November 2024, School of Environment, Education and Development; Sustainable Consumption Institute, The University of Manchester panel with special interest in sustainability and climate change education

Tippett, Joanne; Heysham, Nourhan; Ejohwomu; Obuks; Adelekan, Adeyemi; Brown; Claire; Carroll, Daniel; Cheung, Clara; Choi, Sarah; Li, Junyi; Maqbool, Rashid; Mohandes; Saeed reza; Okorie, Okechukwu; Wu, Qian; Yu, Yue (2025) "The Future of Sustainability Tracking at University of Manchester: Inclusive Community Discussions, Workshop Report", University of Manchester Material Resource Management Group: Construction & Refurbishment Sub-Group, and Better World Initiatives Fund, Faculty of Science and Engineering, University of Manchester, June 23rd, 2025.

Tippett, J. and Li, Junyi (2025) "Transition Wilmslow- Workshop to Develop Principles for Responding to Planning Applications, Workshop Outcomes", Transition Wilmslow and Ketso, Quaker Meeting House, Wilmslow, 11th May 2025

Appendix: Events run as part of FLP

Event/Host Organisation	Numbers (estimated)	Dates
PGCSE Teacher Training RV Workshop (SEED)	150	10th January 2025
AMBS Icebreaker session MSc IME students	25	30th January 2025
FSE Outreach Primary School day-long Workshop on campus, two forms	53	12th February 2025
Workshop for PGT Risk Management Students, Engineering	50	20th February 2025
Sister Innovation District Community event (Outreach)	15	1st March 2025
The Manchester College Careers Day, RoundView stall and workshop for teacher trainees	30	4th March 2025
Student Volunteer and team coproduction focus group	12	12th March 2025
RoundView stand-alone stall in Samuel Alexander Foyer	Observed at least 5	w/c March 17th - March 28th

Event/Host Organisation	Numbers (estimated)	Dates
Staffed RoundView stall in Lounge of Main Library		
Civil Engineering PASS Leaders RoundView training	15	26th March 2025
RoundView stall at UG MIE conference	10	28th March
Flexible Learning Pilot Cross University workshop	20	31st March 2025
Civil Engineering PASS workshop with mentees	30	1st April 2025
Sustainability Champions Stal UoM Food and the Environment, run by student	15	9th April 2025
Flexible Learning Pilot Facilitator Training and focus group	10	28th April 2025
RoundView Stall at Manchester College Animal Health Day (Outreach)	10	28th April 2025
Main Library RoundView Stall	5	29th and 30th April 2025
RoundView Stall at Manchester College Animal Health Industry Day	20	30th April 2025
Flexible Learning Pilot Cross-University workshop	11	1st May 2025
Flexible Learning Pilot Cross-University workshop	6	7th May 2025
RoundView for Teaching English as an Additional Language Workshop, St. Johns Church, Old Trafford	30	9th May 2025
Transition Wilmslow workshop	24	11th May, 2025
Getting serious about sustainability: Research, education and advocacy, SEED Symposium	40	22nd May 2025
Library Workshops as part of Festival of Libraries (student helpers building skills at events in Trafford, Stockport, Wigan, Salford and Bolton libraries)	85	4th - 8th June 2025

Event/Host Organisation	Numbers (estimated)	Dates
Stall at Manchester Metropolitan Sustainability Festival, run by student	15	6th June 2025
Briefing for Bolton Library Services staff	20	11th June 2025
Manchester University Universally Manchester, Community Festival	60	14th June 2025
Sustainability Construction tracking workshop	30	23rd June, 2025
Royal Norfolk County Show – RoundView stall in STEM Village, sponsored by Siemens Energy	200	26th-27th June 2025
Eco School Festival (Chorlton C of E Primary School), run by students	20	28th June 2025
Focus group for FLP (staff and students)	7	30th June 2025
Student Volunteer and team coproduction focus group	15	1st July 2025
Focus group for FLP (staff and students)	10	8th July2025
Civil Engineering Programme Review	15	10th July, 2025
North West Youth Conference, NextGen Net Zero Youth Conference	60	12th July 2025
Air quality workshop for primary school	30	18th July, 2025
Workshop with Greater Manchester Library Services Climate Action Group	10	22nd July 2025
Manchester Climate Change Agency Recruitment Workshop (run by UG student)	15	1st August, 2025
Total number of events: 32 **Total number of participants (estimate): 1178**		