Final evaluation of the Office for Students' Catalyst A Programme for Pedagogic Innovation Projects

February 2020

Report to the OfS by London School of Economics and Political Science

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Small-Scale Pedagogic Innovation Project Evaluators

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Executive summary

This is the final evaluation of the Office for Students' (OfS's) Catalyst A Programme for Pedagogic Innovation Projects (overseen by the Higher Education Funding Council of England (HEFCE) from January 2016 to April 2018). The programme's aim was to stimulate research and development in pedagogic innovation and 67 projects in higher and further education institutions in England and Wales were funded up to £50,000 each in the following thematic areas:

- Assessment and feedback
- Collaboration and co-creation (with and amongst students)
- Employability
- Inter/multi-disciplinary education
- Learning analytics
- Skills development
- Technology enhanced learning
- Transition and retention
- Virtual reality and immersive learning.

A defining characteristic of the programme was the inclusion of students at every stage of the innovation process including design, delivery and evaluation of projects. In many instances, students were key collaborators in the planning and execution of projects as well as being end-users of the innovation.

This report details:

- The conditions for pedagogic innovation
- Enablers and inhibitors for innovation at the levels of the sector, institution, project and practitioner
- The potential role of students in pedagogic innovation
- Impact of the programme
- Lessons learned.

Key findings

1. Critical to the success and limitations of small-scale innovation is an understanding of the context in which the innovation is located and the relevant factors which enable and inhibit such innovation:

   a. At the **sector level**, enablers included validation from external bodies, funding, and opportunities to share knowledge with peers from other institutions. On the other hand, the growth of a risk-averse culture driven by rankings and metrics may serve as an inhibitor to innovation activity.

   b. At the **institutional level**, innovation was enabled by senior management support, strong cross-departmental channels of communication and a culture of collaboration. Inhibitors included lack of awareness, reluctance of colleagues to engage, internal procedures and technical systems that posed barriers to collaboration, and a lack of prioritisation for education projects.

   c. Success factors at the **project level** included sufficient time and funding to plan, develop, revise and deliver the innovation. Student engagement was critical as was strong

communication across the project team. Inhibitors included employment and personnel changes, lack of protected time, a culture that failed to support experimentation and failure.

2. Although there were challenges associated with recruiting and retaining student collaborators, staff members were virtually unanimous in their recognition of the value of working with students as partners in pedagogic innovation projects. Staff perceptions of the benefits that students bring to this work included:

   - Increased buy-in of the innovation amongst peers

   - Enhanced relevance of the innovation for students

   - Insight and creativity that students contribute

   - Enhanced capacity for outreach and dissemination

   - Positive impact on students' learning and confidence.

3. When describing their involvement in the projects, students tended to emphasise their role as researchers, evaluators and developers.

4. For the purpose of evaluation, a distinction was drawn between students as *partners* in the project teams and students as *end-users* of the innovation.

5. Student *partners* reported developments in the areas of

   - Confidence, self-reflection, listening, team-working and time management

   - Evaluation and research skills – such as focus group and interview technique, survey design and data analysis

   - The capacity to identify, analyse and resolve day-to-day project challenges that emerged. They also described a better understanding of institutional processes and relationships with members of staff.

6. Student *end-users* who worked on projects that provided metrics about performance reported enhanced understanding about how to evaluate the strengths and weaknesses of their work and increased confidence in asking for help. They also reported an enhancement of their

   - Ability to track feedback and achievement

   - Capacity to reflect on their work and progress

   - Scope to analyse day-to-day challenges.

7. Students reported enhanced relationships both internally (within the institution) and externally (with professional bodies, employers, disciplinary networks). One of the most significant findings in this strand of work is the potential for such projects to help increase students' sense of belonging in the organisation – particularly for those students who were project partners.

8. Engaging in a pedagogic innovation project had significant, and at times unexpected, impacts on members of academic and professional services staff who formed part of the project teams. These impacts were in the areas of relationships, approaches to teaching and learning, professional identity and growth, and institutional processes and practices.

Section 1: Introduction

Background and context

The Catalyst Fund Programme – Strand A – (hereafter 'Catalyst A') was led by HEFCE (now the Office for Students (OfS)) from January 2016 until April 2018. The programme's aim was to stimulate research and development in the area of pedagogic innovation in higher and further education institutions in England and Wales. Sixty-seven projects were funded up to £50,000 each (on a 1:1 matched funding basis). The dominant project themes were:

- Assessment and feedback
- Collaboration and co-creation (with and amongst students)
- Employability
- Inter/multi-disciplinary education
- Learning analytics
- Skills development
- Technology enhanced learning
- Transition and retention
- Virtual reality and immersive learning.

A defining characteristic of the programme was the prioritisation of student voice in the design and delivery of projects, a theme that has been underexplored in the education literature to date. This is one of the core areas of evaluation that we consider in this report. Another key driver behind the programme was the opportunity given to project teams to take risks with innovation and to enable them to experiment with a range of approaches to innovation without fear of failure.

Evaluation

The report authors were appointed as evaluators in May 2017 and have gathered data through the following activities:

- Analysis of project business cases
- Six webinars (three in July 2017 and three in October/November 2017)
- Meetings with the Catalyst A advisory group
- Programme-wide interim survey of staff and students (September 2017)
- Programme-wide final survey of staff and students (April 2018)
- Programme conferences – March 2018 (Birmingham) and December 2018 (London)
- Interviews with staff and students (15) – January to March 2018
- Project site visits (four) - June/July 2018

Following our analysis of business cases, webinar conversations and an interim survey, we submitted an interim evaluative report in November 2017.[1] This report builds on the findings of the previous report, drawing principally on the programme-wide final survey (April 2018), projects' final reports to the OfS,

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[1] Available at: https://www.officeforstudents.org.uk/advice-and-guidance/teaching/innovation-in-learning-and-teaching/evaluation/.

interviews and site visits. Additionally, conversations with project team members at Catalyst A conferences in Birmingham and London, and our review of a selection of outputs from the projects (including websites, blogs, articles and conference materials), have informed the evaluation.

Survey and interviews

Staff from 59 projects responded to the final survey, with 101 respondents completing the questionnaire. Fifty-three students (representing 12 projects) began the survey, with 40 completing the questionnaire. (It should be noted that, in the final survey, a large number of student responses (n=27) came from a single project.)

Semi-structured interviews were carried out between January and March 2018. The majority were conducted by phone and a minority took place in person. The interviewees were selected in order to offer a cross-section of projects according to theme, type of institution and geographic region. In total, 15 members of staff and four students were interviewed. Discussions at site visits (June/July 2018), which included staff and students, were also recorded and are considered alongside the other qualitative data.

Defining innovation

Recent literature on pedagogic innovation defines the term variously. Sharples et al., considering innovation in the context of technology, define 'innovative pedagogies' as 'novel or changing theories and practices of teaching, learning and assessment for the modern, technology-enabled world' (Sharples et al. 2016). Walder, exploring academics' attitudes to pedagogic innovation, describes it 'as any new teaching practice… with the purpose of improving learning'. Innovation should be transformative and may address attitudes, approaches and outcomes (Walder, 2017).

As Kirkwood and Price (2014) suggest in their analysis of 'enhancement' in the literature, the wide-ranging and often uncritical use of such terms makes it challenging to make claims and comparisons across small-scale research projects. They argue, however, that observing 'cumulative lessons', across a number of such projects, is an effective approach to understanding lessons learned. We suggest that the same is likely to be true of innovative pedagogies, and Catalyst A offered an excellent opportunity to work across a sizeable programme of projects to explore themes and outcomes that occur cumulatively and offer insight into areas of practice, policy and research.

Limitations

The following are recognised limitations of this evaluation:

1. It is too early to determine the longer-term impact of this innovation work on students and staff.

2. The time-intensive nature of the qualitative component of the study required us to select a sample of projects. While we attempted to be systematic in our identification of interviewees and site visits, these nonetheless are only a subset of the wider projects and there is inevitably selection bias.

3. The students who responded to our survey calls tended to be those who acted as project partners and may therefore offer a particular perspective.

Section 2: Conditions for innovation: inhibitors and enablers

Critical to understanding the success or limitations of small-scale pedagogic innovation projects is an awareness of the contexts in which innovation takes place. We therefore sought to explore the factors, which facilitate and hinder innovation from the start of our evaluation work, taking advantage of the opportunity presented by the 67 Catalyst A projects. As acknowledged in the interim report, the enablers and inhibitors of pedagogic innovation were in many cases found to be two sides of the same coin. For example, the presence of time and funding were key enablers whereas the absence of these factors posed significant constraints on project work.

Here we consider the enablers and inhibitors of small-scale pedagogic innovation at the different stages in the life cycle of the projects from a multi-level perspective. The life cycle of projects refers to all stages including inception and initial funding to project development, implementation, evaluation and dissemination of results.

Below (summarised in Table 1), we consider which different and overlapping factors may facilitate or hinder the progress of pedagogic innovation, at the following levels:

- the sector level – the higher education sector as a whole
- the institutional level – the organisation and/or the particular department or unit in which the project is located
- the project level – the project itself and the project team, the group of key individuals leading the development and implementation of the project
- the practitioner level – the individuals (students and university staff) at which the innovation project is targeted or who were involved in the project.

Table 1: Enablers and inhibitors

Level	Enablers	Inhibitors
Sector	Validation from external bodies External funding Facilitation of cross-project interaction, sharing and dissemination – face-to-face and online	Lack of online sharing space Risk averse culture in higher education institutions driven by priority of metrics
Institutional	Senior management support Supportive institutional/departmental culture Positive communication across the institution Cross-departmental/institutional collaboration and partnership	Culture Insufficient senior management support Insufficient departmental support Lack of engagement from colleagues Lack of awareness in institution Internal institutional procedures

Level	Enablers	Inhibitors
	Culture	(financial and project management processes)
		Technical issues – other institutional priorities may intersect or overtake innovation project
		Growing focus on metrics and outcomes
Project	Time Funding Communication among project members Student engagement Online collaboration An iterative approach Pitching the project at the right level Failure as option	Time (for coordination, for work on the project) Funding Communication among project members Insufficient student engagement – getting students involved in a sustained way Employment and personnel changes Technical issues
Practitioner	Time and timing Working harder Evidence-based and reflexive approaches to innovation – Self-reflection as key to learning process Building supportive relationships	Time (to do, embed, evaluate) and timing Competing pressures on students and staff Funding (need to provide project applicants with further guidance)

The sector level

At the sector level, validation from an external body – in this case from the OfS – was considered to be an important enabler of innovation lending authority, legitimacy and increased buy-in for projects within home institutions. The value of the project was signalled through the award of outside funding. A significant number of project teams indicated that the project simply would not have gone ahead without the provision of even these reasonably small sums of funding matched by institutional funding. Project teams noted that the facilitation of cross-project interaction, the opportunity to share experience and practice, and disseminate findings both face-to-face and online, were also important enablers.

It is evident that the university staff engaged in pedagogic innovation projects welcomed opportunities to discuss their projects, share practice and learn from each other. Many indicated that they would have welcomed more opportunities for dialogue, including through a project online space. This would be worth bearing in mind in the design and development of any future educational innovation project schemes. At the same time, it is interesting to note that many of the project teams also sought out their own networking and practice-sharing opportunities through the organisation of or participation in regional, national and thematic events.

Some project participants reflected on the role of the Research Excellence Framework (REF) and the Teaching Excellence and Student Outcomes Framework (TEF) in shaping institutions' attitudes towards pedagogic innovation. They suggested that the emergence of a risk-averse culture in higher education institutions, which was being amplified by changes in the broader higher education sector, was both a concern and potential inhibitor of innovation. For some, this impacted on the appetite and receptiveness of higher education institutions to engage in pedagogic innovation:

> '*A lot of pedagogical innovation can be done at pretty much no cost, if only senior management would be willing to let go of their precious metrics and rankings.*'

Interestingly, the provision of funding by an external body was seen by others as a way of countering this risk-averse behaviour. As one of our final survey respondents noted:

> '*The Catalyst funding is essential for overcoming the risk-averse culture that often exists in higher education institutions: i.e. if HEFCE are willing to fund it, it must be ok.*'

Moreover, another project interviewee suggested that the TEF was resulting in greater institutional level support for evidenced-based approaches to education:

> '*This is a research intensive institution and so there's a lot of staff who [think that]…if their teaching works that's fine and they're just going to carry on doing it… Equally there's a growing group of people…that are actually interested in learning and teaching and are trying to look at an evidence-based decision model… Like everyone, we are reacting to the TEF.*'

Others responded more cautiously:

> '*I think one of the really big drivers is REF, actually, and unfortunately TEF doesn't quite counterbalance REF.*'

The institutional level

At the institutional level, senior management support was considered to be an important enabler of projects. The seal of senior management approval metaphorically 'opens doors' for project teams and was likely to be reflective of a culture supportive of innovation in the institution or at least in some parts of it. This also tended to support positive communications about the innovation project across the institution. However, support from senior management did not always translate into supportive departmental cultures or well-embedded norms of cross-departmental collaboration and partnership, which was also considered to be an important success factor for pedagogic innovation projects. Projects which sought to bridge several academic departments and accompanying disciplinary cultures and professional services were likely to face greater challenges in this area.

> *Question: And would you say there is a culture of support and encouragement towards pedagogical innovation at your university?*
>
> *Answer: I would say it depends. I think probably from the centre, yes, but not necessarily, at school level. There's a strange tension here… I think I would honestly say from my school I have tended to feel not valued.*'

Other oft-cited inhibitors at the institutional level were lack of awareness of projects in the institution and lack of engagement from colleagues. These two issues are likely to be closely linked to the presence or absence of senior management support and positive communication around pedagogic innovation, as well

as the broader institutional culture and incentivisation of education and innovation work. In addition, some participants pointed to obstacles in terms of internal institutional processes and procedures – technical, human resources-related and financial – which slowed down progress on projects; this was particularly critical in the case of the Catalyst A programme, given the reasonably short time-span for the projects.

The project level

At the project level, time, timing and funding emerged as the most critical enabling or hindering factors. While the allocation of time and funding created a space and resources for pedagogic innovation, shortages of time and limited funding also posed significant challenges. Many project participants pointed to the short time lag between the announcement of the project award and the start time for their projects. As a result, some were delayed in getting started as they needed additional planning and preparation time once the funding had been awarded. Many projects had to undergo internal institutional processes before they commenced – such as completing ethics approval processes, recruiting new members of staff and purchasing, installing and learning how to use new technologies. Even once projects were operational, some had to contend with difficult personnel issues and employment changes, as well as on-going technical challenges, all of which ate into precious project time. Furthermore, in many cases, it was evident that staff had no designated release time to work on the project. Likewise staff and students alike, particularly those on the programme teams, frequently had no allocated time to work on the projects within their timetables, rendering project management and communication more difficult:

> 'The staff members and the student partners had no timetabled time to work on the project and I think this was one of the most serious things. Every time we wanted to have a meeting we had to go scrambling in timetables trying to find a brief hour where we were all free…'

In addition, the timing of the first round of pedagogic interventions posed challenges for some projects, especially in relation to student engagement. Engaging students in new pedagogic initiatives (whether as partners or, depending on the project, as participants) was difficult when the project start clashed with key assessment periods for the students. The fact that the project timing did not align directly with the academic year – with most projects beginning mid-session – meant that some student participants finished their degrees midway through and, in some cases, this change of personnel was disruptive.

Nonetheless, staff members were virtually unanimous in their recognition of the value of working with students as partners in pedagogic innovation projects. Staff members spoke of students' insight and creativity, and their capacity to enthuse their peers. The perceived benefits highlighted in our research are summarised in Table 2 below.

> 'It is an assignment approach that has students at the centre and they are essential in being able to highlight the challenges faced from their perspective. A top-down approach would not work and would only reinforce the distance between knowledge and demonstration. Students have found where the gaps lie practically, as well as how these are felt holistically…'

> 'Their enthusiasm, creativity and engagement has been fantastic and the tool we have developed would not be anywhere near as good as it is without their input.'

Table 2: Staff perceptions of benefits students bring to pedagogic innovation

Insight and contextual understanding brought by students	Creativity	Increased buy-in of innovation amongst peers	Ensure relevance to students
Enhancement of the innovation	Impact of students as 'real participants'	Co-creators of resources	Breadth of perspectives – especially disciplinary ones – that students bring
Students are inspirational	Authentic student-staff collaboration	Enhanced capacity for outreach	Positive effect on students' learning and confidence

Academic project partners underlined their commitment to trying to ensure the students involved reflected the demographic and diversity of the broader student population. However, as mentioned above, a key inhibitor that projects faced in terms of student engagement was in recruiting students either to join the project team or to participate in the innovation. Student reluctance to participate was considered to be the result of a range of factors – time pressures, competing priorities, insufficient interest or buy-in to the project, and lack of confidence in their ability to work as partners with members of staff. Some project teams reflected thoughtfully on the potentially challenging power dynamics that might affect staff-student relationships and constrain the development of authentic partnership, highlighting ethical challenges that this potentially created.

> '[It is a significant] *ethical issue to ensure that students are not 'mined for data' and are genuinely involved so that their reflections are both beneficial to their learning progress and to indicate how we might develop the model of delivery.'*

Project teams stressed repeatedly the intrinsic value of the fact that the possibility of failure had been written into the Catalyst A project specification, given that failure is an integral part of the innovation process.

> *'What motivated me in this instance was a sense that failure was an option but that recording the process and understanding why it might have failed is most important. I think this is a key motivator – it allows us to be truly innovative, safe in the knowledge that the journey is as important as the end goal.'*

Furthermore, the very design of the Catalyst A funding stream – which enabled two iterations of many projects – underlined this notion of innovation as developmental and incremental, with adjustments and change fundamental to the process.

> *'We found that the time in-between cycles was invaluable for fully absorbing our student contributions and reorienting the work to better meet their needs.'*
>
> *'We were able to let go of ideas that proved to be less useful and integrate new ideas when they were brought to our attention.'*

The 54% of projects that went through two iterations during the funding period all noted that they had made adjustments between the first and second iteration. Many said that their changes were made

through obtaining feedback and adapting accordingly. Project teams identified a number of positive effects that the iterative approach had had on their projects, including:

- The possibility for testing, reflection and development

- The chance to achieve greater clarity about the purpose of the innovation

- The opportunity to develop more effective support for students and enhanced engagement

- Shifts to the target student audience

- Changes to the roles of those involved in running the projects

- Technical changes

- Improvements in approaches to communication with stakeholders ('*Simplifying language, simplifying scale of expectations; complexity was acting as a barrier*.')

The practitioner level

At the practitioner level, time was a critical fault-line as well. Where project participants had time, the Catalyst A innovation funding provided an opportunity for university staff to carry out, embed and evaluate their on-going projects and to build supportive relationships with colleagues in their department, across the institution and beyond. A lack of time and project funding made for difficult trade-offs and delays due to competing pressures faced by both staff and students. Several members of staff acknowledged that the only solution they found to addressing the time constraints they faced was to work even harder, which is hardly a viable long-term approach to supporting continued engagement in pedagogic innovation initiatives. The **impact** of pedagogic innovation on staff and students is explored in more detail in section 4.

In conclusion, it is worth noting that the importance and influence of these different factors varied from project to project and institution to institution – depending in part on the nature of the innovation, its reach across the institution, the size of the institution, and the range of different external and internal stakeholders involved. For example, a multidisciplinary project – involving multiple stakeholders in several academic departments as well as professional services teams – was likely to be more affected by institutional and departmental cultures of collaboration and interaction than projects focused on a programme and/or a single department.

Section 3: Students as innovators

A distinctive feature of the Catalyst A programme has been the emphasis on student involvement at every stage of the innovation process. It was a Catalyst A programme imperative that students play an active role in the projects including, for example, as proposal co-writers, steering group members, resource developers, researchers, participants, and evaluators. This section of the report will outline and evaluate contributions of students before, during and at the conclusion of the project lifecycle. Where relevant, we distinguish between students who were partners/members of a project team and those who participated in or were 'users' of the innovation.

Student roles

As cited in our interim report[2], which summarised the results of the interim survey of staff and students, staff respondents indicated that students were most frequently involved as participants in the innovation and evaluators of the innovation or project. Students (who could occupy multiple roles) were also reported to be involved in the design, development, and implementation of the projects. Other roles included students as members of project steering boards, researchers, and project ambassadors. (See Figure 1.)

Figure 1: What aspects of the project have students been involved in?
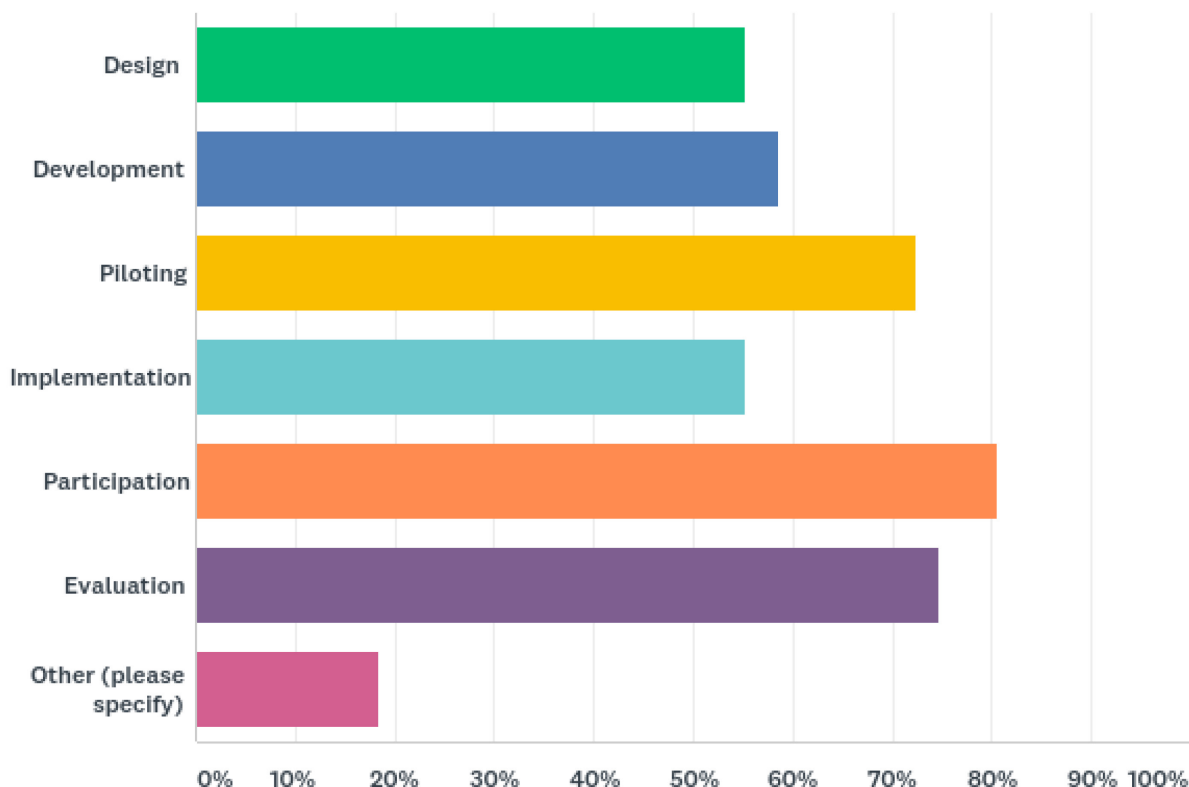
Students' accounts of their contributions

When asked to describe their involvement in the projects, students tended to emphasise their role as researchers, evaluators and developers. They spoke of gathering data via interviews, observations, videos and focus groups; analysing data and compiling reports; developing methodologies; working with technology developers and creating interactive tasks. Students operated as project interns, coordinating work across the institution, leading workshops, presenting at internal and external events and representing the projects at meetings and conferences. They also produced project communications such as leaflets, flyers and blog posts. Additionally, some students spoke powerfully about having an impact on peers – mentoring them through 'pinch points' on a course or module, when a student may be at risk of dropping out of the programme. This type of intervention tended to occur on projects with an emphasis on learning analytics and retention.

Those whose involvement was primarily as project participants rather than partners were involved in:

- Trialling 'products' and protocols created as part of the project

- Using digital tools and processes to prepare for and track progress during a range of activities, including modules, professional placements and projects

- Working with tools (digital and paper-based) for self-reflection purposes

- Engaging in workshops (e.g. skills development)

- Using technologies for self and peer learning

- Piloting novel approaches to assessment and feedback

- Learning through virtual reality environments

- Supporting students in schools.

'My work as a research assistant on the project involved organising and managing a series of data capture activities, such as focus groups and online surveys, with student groups. The aim of the evaluations was to draw insights from the experience of students to understand the impact of VR and AR learning activities on students.'

'I was collecting feedback and new ideas from higher education students. I also attended the meetings with the app developer to see what he could do with regards to the suggestions from students.'

'I have been involved as a co-researcher and also as a research assistant. I have helped to develop the methodology of 'longitudinal core effect mapping technique' applied to generate results.'

'I participated as part of a module. I went into schools to deliver an engineering day and worked alongside trainee teachers.'

'I used [the] system on two placements to set objectives and track progress.'

Sample of student descriptions of their contributions to Catalyst A projects

Projects' learning about students as co-innovators

A key finding from the programme-level evaluation is that students should form part of the core project team from the outset, as well as being involved at an early stage in the design and piloting of the innovation:

> *'If the project involves students or is student facing, it is key for them to be part of the project as producers/creators.'*

Students' perspectives, experience, expertise and capacity to involve their peers were all reasons cited for their full membership of project teams:

> *'Involve your students from the outset to make sure that you are doing something worthwhile.'*
>
> *'Listen very carefully to your students when you design it, in how you evaluate it, and in how you shape it moving forwards. They will be your best guides.'*
>
> *'Try and get student engagement and commitment from the beginning, even before writing the funding bid, to ensure this can be sustained throughout the project.'*

Project team staff repeatedly spoke of revising their initial proposals based on early student analysis of prototypes. These were not necessarily project team members, but they were student evaluators whose views were sought at the design phase of the work.

> *'The tool itself – the portfolio – ended up being far more advanced than we thought it would be and that's mainly because of the students… We used a co-design method with the students – [by consulting] them first about their experiences of receiving feedback in the VLE and then we [ran] these co-design workshops where we gave them post-it notes and play dough and paper and pencils to design their ideal portfolio – and that was essentially the design brief that went to the learning technologists to build the tool. Then those same students came back, once we had a prototype, to do 'think alouds' to tell us how we had taken their suggestions on board, and then we used the think alouds to develop the final version of the tool which we then launched with the students in September.'*

In summary, student involvement, especially in planning the project and designing the innovation should be built into the process from the beginning. Students can play significant roles in persuading peers to participate in a voluntary project and in supporting them as mentors in innovations which have a retention or developmental angle. Students can also serve as powerful project ambassadors connecting with internal and external audiences.

Section 4: The impact of innovation

A key focus of this evaluation has been to assess the *impact* of this work on students, staff, and the sector more broadly. Impact, as a number of project members have observed, is challenging to define, observe and measure, particularly when innovations are in progress or recently completed. Nonetheless, we have considered a range of indicators by which to identify elements of impact for students and staff.

A. Impact on students

Through surveys, interviews and project reports we have attempted to analyse the impact upon two broad categories of students:

- *Partners* – members of the project team, who were involved in the design, delivery and evaluation of the projects
- *End-users* – participants or recipients of the innovation.

In some domains, the distinction between the two categories is clearer than in others and we try to indicate this as appropriate.

Evidence of impact was reported in four broad areas:

1. Personal/academic/professional skills development

2. Learning experiences and behaviours

3. Learning gains

4. Relationships and networks.

A1. Personal/professional/academic skills development

Student *partners* reported a number of developments in:

a. General attributes, such as confidence, self-reflection, listening, team-working and time management

b. Evaluation and research skills, such as focus group and interview technique, survey design, and data analysis

c. The capacity to identify, analyse and resolve day-to-day project challenges that emerged.

Staff survey data confirmed the development of these skills and added (for both student partners and end-users) that employability-related attributes were enhanced. These were often linked to a particular discipline, vocation or industry.

Those students working with data, and within projects focused on digital innovation, experienced an additional area of development. Here, staff observed an increased awareness of personal data management and ownership, digital protocols and selection of online platforms. Students reported an improvement in general confidence in working with technology and a better understanding of its potential.

> *'[The project has] got me thinking about 'listening'... everywhere I go I think about it now. And I find myself stopping in conversations and thinking 'what is the point of this conversation? Am I really trying to understand this person, or just put my point across?' It's impossible to be a good listener all the time, but I think I've become a better listener, and someone who listens to people more frequently than before.'*
>
> *'I hated technology before I got to complete the assignment for the module… I was anti-technology. I was all pen and paper, and because of that module [project] it just completely transformed my views and now I'm writing for a technology company! A transformation in itself.'*

A2. Learning experiences and behaviours

Student *end-users* who worked on projects that provided metrics about performance reported enhanced understanding about how to evaluate the strengths and weaknesses of their work, and increased confidence in asking for help. They also reported an improvement in their:

- Ability to track feedback and achievement
- Capacity to reflect on their work and progress
- Scope to analyse day-to-day challenges.

Student *partners* reported feeling more empowered about their learning. This was confirmed by staff who reported that students had developed a greater stake in their educational experience. Evidence showed increased student independence and authority in relation to activities such as the design of dissertations, performance, group projects and in external activities including teaching and placement work.

> *'It opened my eyes to how digital resources could enhance the arts lessons, and how beneficial it can be for both teacher and student.'*
>
> *'...everything that I learned from the project, the experiences and knowledge, they helped me… towards my dissertation and … now towards my masters.'*
>
> *'This project has greatly enriched my learning experience. It is brilliant in its simplicity and fun to do. Undertaking placement, especially for the first time, can be quite overwhelming so having a tool to focus learning needs and track progress without placing additional stressful demands is hugely beneficial. It is immensely satisfying to have a visual tracker of how far you've come. So valuable for building confidence.'*

The vast majority of students were positive about the impact of the projects/innovations on their learning. However, a small number of students (n=2) reported that increased information made them more anxious about their work and adversely affected their performance. Another suggested that the innovation '*just seemed to be something extra to think about while trying to [complete] assignments'.*

A3. Learning gains

The following student learning gains were reported by staff, often in projects which had an element of learner analytics and the tracking of student progress in relation to the pedagogic innovation:

- Increased engagement with online materials
- Increased module marks

- Increased rates of attendance and retention

- Enhancement of students' assessment and feedback literacy and a subsequent improvement in NSS scores

- Increased employability – evidence cited in support of this claim was an increase in research and work placements. (Students also indicated that they perceived their employability to be enhanced through participation in Catalyst A projects.)

These are self-reported findings and, potentially, offer the evidence that Viberg et al. (2018) have suggested is largely absent from the literature on learning analytics and retention and attainment. They also align with some of the findings of research into gamification in the review by Dicheva et al. (2015). We would suggest that further research is undertaken so that evidence is gathered systematically over time to further explore these claims. So far, however, these trends are in line with Viberg et al.'s broader observation that the work in this area is moving from *prediction* of enhanced retention and attainment towards an *improved awareness* of students' learning experiences with supporting evidence to validate claims.

> *'It has greatly benefited my learning and placement experience.'*
>
> *'We had one student who said, '… if it hadn't been for the support you gave me and understanding my work, you know, I would have walked'.*

A4. Relationships and networks

In many ways, the building of relationships is a less quantifiable element of impact. Yet, as a theme, it has emerged powerfully at every stage of the evaluation. Students reported enhanced relationships both internally (within the institution) and externally. Those who were project partners spoke about having a better understanding of institutional processes and relationships with members of staff. In particular, they suggested that they were better able to communicate with staff and described having increased insight into a lecturer's educational perspective; one student spoke of seeing *'the other side of higher education – particularly how teachers work for the benefits of students'*. Interestingly, one respondent to the staff survey expressed a reciprocal perspective: *'The project had an impact on my own empathy for the student perspectives and the social demands of being in a collaborative learning environment.'*

More broadly, students cited increased links with schools, industry and professional networks and mentioned an awareness of a capacity to instigate change beyond the university; an example of this is the influencing of schoolchildren's understanding and confidence with STEM subjects (Fogg-Rogers et al., 2017).

Involvement in disciplinary and professional networks offered students an enhanced 'real world' perspective on their subject.

> *'In terms of the impact it has on me, I felt like a colleague [not] a student, which has really helped me personally in my own personal growth and my own self-confidence… being part of this project, being part of this process even, it's given me an opportunity to show my worth.'*
>
> *'[The project] allowed me to use my love of working with children in connection with an industry I love – aviation. It has also helped [me] to understand the importance of impacting the young generation and how every effort is valuable in inspiring children to go into STEM.'*

'As a music student, my desired industry is incredibly saturated. So for anyone that is thinking of becoming self-employed, [the innovation] is a hugely helpful stepping stone in to the real world, whilst still having a reasonable safety net if things go wrong.'

In conclusion, the impact of the innovation projects upon students has included:

- personal and professional skills development
- increased confidence and reflection in academic work
- enhanced retention and attainment
- opportunities for community engagement
- introduction into professional and disciplinary networks
- improved understanding of governance and university systems, etc.

While a small minority of students found learning analytics interventions unhelpful, the majority of students appeared to have benefited from them. One of the most significant findings in this strand of work is the potential for such projects to help increase students' sense of belonging in the organisation – particularly for those students who were project partners: 68% of student respondents to the interim survey said their sense of belonging to the institution had been enhanced through participation in the project.

B. Impact on staff

In this section, we explore the impact of pedagogic innovation on members of staff in higher education and further education involved in the Catalyst A pedagogic innovation projects. It is evident from our research data that the opportunity to engage in a pedagogic innovation project had significant, and at times unexpected, impacts on members of academic and professional services staff who formed part of the project teams as well as broader impacts on other members of staff within and beyond the participants' particular higher education institution. These impacts broadly fit into four key areas:

1. Relationships

2. Approaches to teaching and learning

3. Identity and growth

4. Institutions.

These themes are explored in more detail below.

B1. Relationships

The opportunity to engage in a pedagogic innovation project led to the development of new and/or stronger working relationships for the Catalyst A project team members. Respondents pointed to the creation of new working relationships between staff and students, and new/stronger relationships within the faculty and broader institution. These led, in some cases, to cross-faculty working, and in others to the uptake of the innovation in other programmes and faculties.

Project members also highlighted the development of new/stronger relationships with partners beyond the university, including local and national industry, local government, schools, volunteer bodies and community. In addition, new networks emerged with other higher education and further education colleagues who were working on similar themes. These were facilitated through the significant amount of

dissemination activity engaged in by most projects (which is discussed in more detail in section 5). Several respondents also noted they had developed increased professional regard for project members thanks to their participation in the project.

In building relationships with students, it is evident that many project teams gave careful thought to the nature of those relationships – including the possible challenges these might pose to their student partners as well as to developing their projects from one academic year to the next. In our interim survey, one practitioner, reflecting a broader perception among the Catalyst A innovators, noted:

> *'Involving students in curriculum design requires time, resources and space to be able to develop thinking and activity.'*

Another project group welcomed the opportunity to be starting their project on 'a level playing field' with the students:

> *'Neither of us had any experience with gaming or from a technical point of view but it puts us on a level playing field with what the students are experiencing. It was a good positional place for us to start…'*

B2. Teaching and learning

> *'We cannot ask students to evolve their thinking if we keep teaching them in the same way.'*
>
> *'…by having more agency in the creation of the curriculum, students feel more engaged in their learning and that the quality of work and their satisfaction with the educational experience is enhanced.'*
>
> *'In order for [staff and students] to engage with a new teaching/learning dynamic, it is necessary to help them to understand the possibilities of co-creating learning materials and how they can use those products.'*

A rich seam of data emanating from our project research highlighted the impact that participation in a pedagogic innovation project had had on our participants' conceptions of teaching and learning.

As highlighted in the first quote above, some Catalyst A innovators recognised the inherent tensions in wanting students to learn in new ways without changing approaches to teaching. It was also noted by some that students also need to 'learn to learn' in order to engage in more open active teaching and learning approaches. These reflections underline the important feedback loop in the interaction between the way teachers teach and the way students learn, a theme which has been explored in the educational research literature by Trigwell et al. (1999) among others, and could be usefully investigated further in the specific context of pedagogic innovation. Another strand meriting further research in terms of better understanding the process of pedagogic innovation relates to the potentially disruptive effects of innovation for both teachers and students which was noted by another project respondent:

> *'Innovative teaching approaches tend to disrupt some certainty and comfort usually provided in more traditional forms of teaching and assessment. Implementing changes… requires upfront honesty, emotional support and promotion of resilience from both teachers and students.'*

In terms of concrete impacts on teaching and learning, participants noted:

- Shifts from teaching to learning and a more student-centred focus to education

- The introduction of new modes of delivery, including the increased use of online tools, which were seen to enhance opportunities for flexible learning

- Greater coherence in module design.

It is also clear from the feedback from project participants that in many cases the experience of interacting with students both as members of project teams as well as participants in the innovation gave academics and professional services staff a more nuanced understanding of the diversity of their students and insights into how they learn, as well as greater empathy for them. They also recognised possibilities for empowering students in the learning process through the introduction of the pedagogic innovation.

> *'The students developed more insight into how they learn and their responsibilities in the teaching and learning relationship.'*
>
> *'The revised focus was more effective in promoting the dialogue we had wished to create with students about their learning and this supported their development as reflective learners.'*

Other insights resulting from engaging students in pedagogic innovation included the (not wholly surprising) recognition that some students are willing to try out new ideas, while others would prefer to be 'spoon-fed answers'; some students are more technologically adept and receptive than others; the importance of embedding online tools into the curriculum at the point of need; and the critical role assessment plays in driving students' engagement, echoing insights in the education literature.

B3. Identity and growth

> *'An extremely valuable process of both personal and professional development. It has provided a structure and support in which to gain positive feedback for ideas, and the opportunity to generate new knowledge and ways of working through dialogue with others who share an interest in and passion for learning and teaching across the university.'*

In the final project survey, most project participants reported that the opportunity to engage in a pedagogic innovation project had enabled both personal and professional growth. Participating or leading a project had enabled participants to challenge misconceptions held by themselves or other colleagues. The Catalyst A innovators spoke about their increased understanding of the process of pedagogic innovation, which notwithstanding very real challenges, had been highly motivating and gave them the thirst to pursue similar work. (*'An appreciation of process, aspiration, ambition and motivation to continue.'*)

Academic and professional services staff also reflected on the impact their project had had on how they viewed the relationship between education and research in their roles: the project had enabled them to see the synergies and the intrinsic value of the links between education and research. One of our respondents noted the project offered, *'a great opportunity to merge your teaching tasks with research'* and another underlined a reflexive shift towards engagement with educational research, speaking of *'a realisation that I need to move to a more self-determined approach to determining and shaping my own pedagogic research.'* Several participants working in further education (FE) settings highlighted the impact of the project in enhancing 'the ethos of HE in FE'.

B4. Institutions

In exploring the impact of innovation on staff, our research data yielded interesting insights on the impacts on other members of staff in their institutions, on institutional approaches to innovation and on institutional practices more broadly. One project team pointed to the introduction of changes to institutional ethics frameworks for research projects as a result of their project. As already acknowledged, access to resources was a recurrent theme in our data; the possibilities presented by both the prestige of having a project funded and the provision of financial resources to innovate went hand in hand. While noting successes in spreading their innovation across their own faculty, to other programmes and faculties or more broadly across the institution, participants also shared interesting observations on the challenges of sustainability.

Section 5. Dissemination

An important feature of the programme has been the dissemination activity of individual projects. This section delineates and evaluates the methods of dissemination undertaken, the range of outputs that were shared, and the networks (existing and newly established) which facilitated the distribution of findings and materials.

Project dissemination

Projects disseminated findings widely both within their institutions and across the sector and, in some cases, internationally.

External dissemination has taken the form of:

- Conference presentations (keynotes, plenaries, symposia, workshops, posters and papers) – projects had or were scheduled to present at 86 different conferences

- Websites and blogs – 48 projects reported developing websites and blogs

- Digital networks – including JISC mail lists

- Journal articles – 37 projects reported one or more articles that had been submitted to and/or accepted by peer-reviewed journals (these were primarily education journals, such as Active Learning in HE, ALT, Journal for Learning Development in HE, International Journal for Students as Partners, Studies in HE and Teaching in HE)

- Full day seminars and conferences organised around the theme of the innovation project

- Social media (Twitter, Facebook and Instagram)

- Press releases (used by 35 projects)

- Newsletters

This range of dissemination suggests that the Catalyst A programme has had wide-reaching impact in terms of raising the profile of pedagogic innovation across the UK higher education sector.

Internal dissemination was varied across the programme and frequently relied on existing institutional networks, publications, events and information-sharing structures. Projects made use of the following modes of sharing findings with their local communities:

- Meetings – departmental meetings, steering group/committee/board meetings

- Events – networking sessions, staff training/away days, new staff inductions, internal conferences, local/community events

- Visual displays – poster exhibitions around campus, one project shared a film produced by project participants on plasma screens around their institution

- Digital channels – institution websites, email lists

- Publications – newsletters, internal academic journals.

Programme-wide dissemination

The Catalyst A programme team held three programme-wide events, two of which were aimed at sharing and disseminating findings. The first two events were open only to members of project teams and the third widened its audience to include members of the further and higher education sector more broadly. Student voices were prominent in the second and third conferences, both of which incorporated student panels into the plenary programme and encouraged students to attend as delegates.

Six webinars were hosted by the evaluators and these provided additional opportunities for projects to share findings. These were, however, limited by the restrictions of the digital environment in terms of connectivity, quality of communication and number of participants in any given session. Nonetheless, they demonstrated that project staff were keen to share findings and learn from programme peers.

Additionally, there were attempts to encourage projects to share through a JISC mail list; however, this resulted in relatively little interaction. The projects and programme would have benefited from additional online opportunities to share work-in-progress as well as project outputs (presentations, papers, websites, videos, blogs, etc.).

Overall, dissemination of this work has been driven primarily by projects themselves, in the form of publications, conference/workshop presentations and digital communication (blogs, websites, social media, email lists). A more systematic, sector-wide dissemination of the programme outputs and findings would enable further impact and reach of this work.

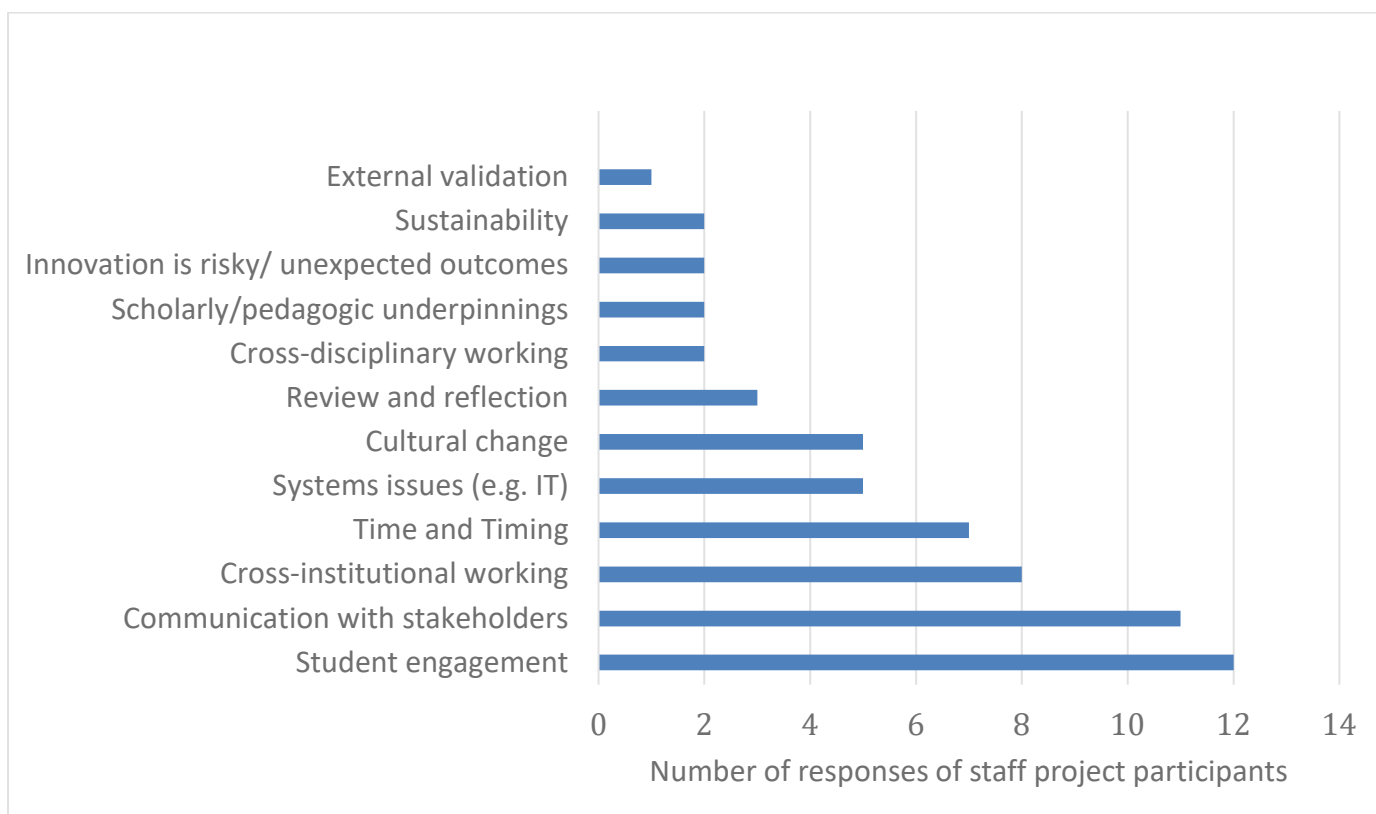# Section 6: Lessons learned and guidance for future innovators

'It will be the best, most fulfilling work you ever do. Plan it well, stick with it when it gets challenging, be prepared to be unpopular, and listen very carefully to your students when you design it, in how you evaluate it, and in how you shape it moving forwards. They will be your best guides.'

In this final substantive section of the report we draw together the key findings about lessons learned in the process of undertaking pedagogic innovation projects, with a focus on guidance for future innovators. These range from highly practical considerations over the time for and resourcing of pedagogic innovation, and the importance of securing the buy-in of key individuals in the institution, to deeper more values-oriented recommendations about the transformative impact of engaging in educational innovation work.

In the final project survey, in term of lessons learned, respondents cited various aspects of the theme of engagement with students (cited 12 times out of 67 responses). (See Figure 2.) This was followed closely by colleagues who foregrounded the importance of communication and consultation with internal and external stakeholders (cited eleven times). For some, this was critical for ensuring buy-in; for others, this related to ensuring good project outcomes. Another group of respondents (eight) stressed the complexity of cross-institutional relationships, with several pointing to the challenges associated with working with central units.

Issues relating to time, timing and timetabling were emphasised by seven project participants as being key in understanding and planning for processes of innovation. Respondents noted the need for more time at the design and development phase, more time for promoting and motivating staff and student engagement, sufficient lead-in time to complete the necessary ethics procedures. At a more fundamental level, participants noted that innovation could not be created overnight but rather that it builds and evolves incrementally. Several of these themes are discussed in greater depth below.

Figure 2: Themes of lessons learned on implementing small-scale innovation

Number of responses of staff project participants

Theme	Number
External validation	1
Sustainability	2
Innovation is risky/ unexpected outcomes	2
Scholarly/pedagogic underpinnings	2
Cross-disciplinary working	2
Review and reflection	3
Cultural change	5
Systems issues (e.g. IT)	5
Time and Timing	7
Cross-institutional working	8
Communication with stakeholders	11
Student engagement	12

Student engagement and student learning

'Go ahead!! It's a fantastic learning opportunity both for you and your students, particularly if you engage them as partners in your work.'

'[The students'] enthusiasm, creativity and engagement has been fantastic and the tool we have developed would not be anywhere near as good as it is without their input.'

Engagement with students was both a fundamental requirement and particular innovation of the Catalyst A funding stream. Project participants had lots of advice to share with future innovators about working with students both as partners and participants in pedagogic innovation.

They highlighted the value of working with students both from a community building perspective as well as recognising the range of different perspectives that students were able to bring to bear on the project. They emphasised that students were more likely to be supportive of innovation than staff, and were more comfortable with technological innovations. They stressed the creative potential of bringing students together to work collaboratively with members of staff and the high levels of interest and engagement of students in undertaking research about their learning. At the same time, they noted the importance of involving students from the outset, investing time in establishing relationships of trust and authentic partnership between students and other project partners, fostering an understanding of different needs and ways of working. They also stressed the importance of interrogating the potential power dynamics that may shape staff-student relationships, as well as the need to be mindful about the other demands on students' time (study obligations, caring responsibilities, other employment, etc.) throughout and and to reward students appropriately.

> *'Student interpretation of 'student-led research' could at times be challenging, especially in terms of their understanding the external deadlines. Their expectations were at times difficult to manage in relation to project work that did not relate immediately to their academic course.'*

In reflecting on lessons learned, some project participants stressed the new understanding they had developed of the critical role of students as partners in the innovation process as well as about the nature of student learning. One project team noted shifts in student responses to learning resulting from the introduction of new approaches and tools:

> *'Novel competitive teaching tools (Clinical Leadership game; Lego Serious Play) … have the potential to transform passive presenteeism in student behaviour to deliberate, active and collaborative can-do behaviour.'*

Another highlighted new insights into the values students place '*on accessibility, both to learning environments and resources, and to academic staff.*'

And yet another pointed to lessons learned about the impact of educators' narratives on students' '*learning gains, emotional status and performance.*'

Planning and organisation

> *'The more time you spend conceptualising, planning and designing your project at the beginning, the more prepared you will be to manage it once it is underway and to deal with the inevitable challenges and obstacles that confront you along the way e.g. timetabling, change of personal circumstances amongst participants.'*

In reflecting on their experience of undertaking a pedagogic innovation project, Catalyst A innovators highlighted the importance of taking time to scope out the project. Those that had done a considerable amount of preparatory work, or even initiated the innovation previously, and were using the funding to further develop a particular aspect of the project, found themselves well placed to undertake the OfS innovation work in the time frames of the Catalyst A funding round.

> *'I think the fact that we were able to piggyback this onto an existing institution-wide project…has really helped, so that it has a momentum. It had gone through the various sort of education committees and things, people were aware of what it was about and so we had staff who were willing to give some time.'*

On the other hand, project participants who were initiating a new innovation from scratch found the time frames rather challenging in terms of recruiting staff, securing ethics approval, engaging students, building cross-institutional and cross-disciplinary relationships, acquiring or preparing relevant technologies in order to get started – not to mention responding to unexpected developments along the way. With this degree of complexity in mind, one project participant highlighted the importance of having a very clear scope and requirement specification, to avoid the risk of 'scope creep', and a clearly defined end to the project. Another project participant recommended a pilot phase prior to the broader introduction of the innovation to test out ideas and to trial new technology and approaches. Another advised that building in timetabled provision would also facilitate the implementation of the innovation.

In terms of building the necessary support and advisory infrastructure for pedagogic innovation, several respondents underlined the usefulness of forming a steering group (or similar) involving the key people in the institution working on a related agenda. This was invaluable in terms of ensuring full institutional support and understanding of the way the project fitted into the broader context:

> *'The group had an understanding of the big picture of the benefits of integrated learning and the possible mechanisms as well as the detailed subject knowledge and employer requirements.'*

Others pointed to the value of having a good support team in place as well as personal support, and yet others encouraged project teams to recognise and be prepared to support teaching staff, students and other project participants (depending on the innovation). Project innovators also underlined the value of building in evaluation from the start to ensure input and feedback from participants throughout the duration of the project as well as at the end. Participants in the webinars exploring approaches to evaluating pedagogic innovation (organised by the project evaluators in July 2017) stressed the usefulness of learning about approaches to evaluation and suggested that they would have valued further developmental support in this area.

Finally, while ensuring the necessary nuts and bolts are in place, in terms of the planning and implementation of an innovation project, quite a number of respondents to our final survey highlighted the underlying values of engaging in pedagogic innovation – which is ultimately directed at improving students' education and educational outcomes.

> *'Keep in mind the moral purpose of why you are doing this.'*

> *'Secure a team of individual who share your enthusiasm and goals.'*

They also encouraged future innovators to take a long-term view.

Communication and consultation

> *'People have many different expectations and assumptions about a project, so communicating these at the outset is important.'*

Effective communication and consultation with both internal and external stakeholders emerged as another important lesson learned about the drivers of successful pedagogic innovation. Project participants suggested that regular and effective communication enabled positive buy-in from academic departments, students, and all other relevant stakeholders across and beyond the institution. They also considered this important for ensuring sustainability and enabling the move from a single initiative to embedded practice.

> *'Time is needed to get buy-in; there are no shortcuts to achieving this*.'

While recognising the rich possibilities of the breadth of perspectives and the positive creative dimension of engaging with a range of stakeholders, project teams also recognised that maintaining regular communication could be challenging. Recommendations to future innovators included *'ensur[ing] all team members meet together and meet regularly to agree on approaches and the adoption of any new approaches to ensure everyone is using the same process'* and developing an internal communications strategy very early on in the project.

Understanding pedagogic innovation

'Innovation is the best thing about education; it is all about exploring and discovering. Fear of failure can be a hindrance as there is more learning that can come out of so called 'failure'. And any learning is useful.'

'Conducting the first cycle we learned where we had been overly ambitious in our expectations and were able to tailor it to fit student needs. We could make adjustments in the second cycle that enabled us to reach the objectives of the project…'

Not surprisingly, project participants' prior experience of pedagogic innovation varied considerably. Nonetheless throughout the multiple interactions (webinars, surveys, reports, interviews, site visits, OfS events) with project participants it was clear that many project teams derived valuable insights into the nature and process of pedagogic innovation itself as part of their processes of review and evaluation that they were keen to share with future innovators. These included the notion of innovation as integral to education, the importance of ongoing review and reflection, the value of being in a position to take risks, fail, learn and move on, and the importance of seeing innovation as an inherently dynamic, iterative, adaptive, step-by-step process and, as such, not being overly ambitious at the start.

One participant used the metaphor of a ladder to encapsulate the nature of innovation:

'Think about what is achievable in the timeframe and look at innovation as a ladder – take one step at a time'.

Another advised future innovators to follow the momentum of the project as it unfolds:

'[Don't] be constrained by your initial aims and objectives because the point of innovative and creative thinking is that new directions will present themselves as the project evolves.'

In terms of learning about approaches to project design, several participants noted the importance of innovation projects being underpinned by a strong pedagogic and scholarly rationale.

Additionally, project participants reflected on the relationship between institutional dynamics and pedagogic innovation. Projects highlighted the importance of having 'institutional capital' (connections and positive relationships) which enabled them to move things forward horizontally across different departments and services in the university or further education college. One project team highlighted potential tensions between the role of certain professional services in further and higher education settings (which tended to be more focused on service delivery) and academic teams which drive the development of education whose work is more likely to be underpinned by evidence-based pedagogic innovation and research. This tension was also reflected in challenges in moving from small-scale experimentation to the creation of a sustainable scalable environment for the innovation.

'The focus of professional services on the delivery of processes to support learning and teaching may not sit well with the experimental nature of research, finding ways to engage them in the process could make the introduction of new technologies, and the process required to manage them in the long term, more effective.'

The student perspective

Student project team members and participants were asked through surveys and interviews about what would motivate them to participate in future innovation work. In their responses, students (many of whom were core members of programme teams) indicated that the following considerations were most important to them:

- Knowing that the project would enhance employability

- Knowing that the project is embedded in the curriculum – part of the main teaching or assessment

- Having the opportunity to work with academics as partners

- Having sufficient time.

It is noteworthy that, in terms of motivation, 'being paid' was lower down the list of priorities, as was 'hearing from previous student innovators'. However, clearly this does not equate to a recommendation not to pay students engaging in pedagogic innovation. Elsewhere we have found that paying students appropriately was seen as a significant motivator for encouraging students to engage in pedagogic innovation and validating their contribution.

There are also important equity considerations here in terms of trying to create spaces in which a diverse range of students can choose to get involved in innovation projects. Finally, students suggested that having a greater role in the management of the projects would be welcomed as would having a bigger say in how funds were spent.

Section 7: Concluding observations

In this final section, we outline some key insights into the process of pedagogic innovation pointing to some of the possibilities and challenges of small-scale innovation projects for achieving sustainable and sustained educational change.

Key insights into the process of pedagogic innovation

- The importance of **involving students at very early stage** of the pedagogic innovation process. A key strength and originality of the Catalyst A funding strand was the primacy given to the student voice. Working with students on pedagogic innovation was viewed extremely positively by the Catalyst A innovators notwithstanding certain challenges.

- Being involved in a pedagogic innovation project was considered to be an **enriching experience for members of staff** (academic and professional services), bringing opportunities for personal and institutional growth. But there are also very real constraints particularly as concerns time, funding, reward and recognition.

- Project participants repeatedly acknowledged the value of a **sector-level funding programme** to support pedagogic innovation by enabling risk-taking and experimentation. This was seen as particularly important in the face of an increasingly metrics-driven approach to education. Our evaluation underlined the importance of creating such opportunities from both sectoral and institutional perspectives.

- **Building in evaluation** from the start – thus enabling project participants to make changes and develop their innovation as the project proceeded – was found to be an integral and important part of the process of pedagogic innovation. The design of Catalyst A projects to run over two academic cycles facilitated a scholarly approach to evaluation. Highlighting the complexity of evaluating education, given the multiple factors at play, the Catalyst A innovators drew on a range of different evaluation tools and sought to triangulate their findings.

- **Time and timing** are critical to the process of pedagogic innovation. In this case the timing of the programme was not synchronised with the academic year cycle, which for some projects created challenges in terms of student engagement.

- The **community-building dimension** of pedagogic innovation should not be underestimated. Project participants hugely valued the opportunity – face-to-face and virtually – to discuss their on-going project work, share good practice and exchange ideas (as well as challenges) within their own institutions, with Catalyst A project participants working on similar and different themes, and across the broader sector.

- From the perspective of students, projects which were **embedded in existing curriculum and assessment regimes** had a higher uptake. However, students who opted to participate in project teams may have found it a more transformative experience in terms of their learning and development as well as their identity in the wider institution.

- Projects were generally **alert to ethical dimensions** of their research and practice and this featured, frequently, in the evaluation and implementation strategies developed at the beginning of the project life cycle. This awareness is in contrast to work by Viberg et al. (2018), who observed that a consideration of ethics was often overlooked in projects addressing learning analytics implementation and research.

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Acknowledgements