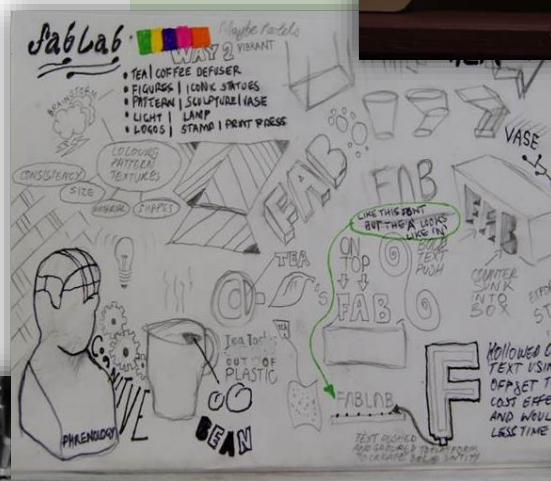# 'In The Making' Connected Communities Project – Facilitator Perceptions

Nick Astle, Research Coordinator

Ian Taylor, Senior Research Fellow, University of Liverpool

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CONTENTS

Background

In 2016 the University of Salford led a project "In the Making" to explore how digital fabrication technologies could empower disabled people[1] to participate more fully in education and employment. This project offered a short course that allowed participants to gain training in 3D printing technology. The technology was explored as an avenue in which they could be creative, and also design solutions for their own specific problems.

An external evaluation of the project was undertaken, focusing on participant reaction, with the analysis compiled as a report.[2]

The technology was explored as an avenue in which they could be creative, and also design solutions for their own specific problems.

The findings from this pilot project were very positive, with the document identifying the benefits gained by participants and providing constructive suggestions regarding the way forward.

The most important messages to emerge were that participants wanted an opportunity to engage in a more formal programme of training, and a chance to develop expertise through work experience.

This has led to two further pieces of work:

1. An investigation of employer perceptions (published separately)

and

2. An investigation of the experiences of the project's technical facilitators (this report).

The second (featured in this report) explored the impact that the original training initiative had on professional practices, based on the responses of the facilitators.

…participants wanted an opportunity to engage in a more formal programme of training, and a chance to develop expertise through work experience

This exploration was undertaken by carrying out a series of in-depth interviews with technical facilitators from the original project. This report provides a detailed analysis of the evidence generated from these interviews.

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[1] When we talk about disabled people, we use the term to mean "anyone with lived experience of disability or health issues", as articulated by Disability Rights UK (https://www.disabilityrightsuk.org/). For a critical account of how such terminology may contribute to the reclaiming of the term "disabled", please see Alice Wexler and John Derby's 2015 article, "Art in Institutions: The Emergence of (Disabled) Outsiders" in *Studies in Art Education: A Journal of Issues and Research*. We acknowledge that "disability" and "disabled" are shifting categories, and ones which most of us will inhabit at some point in our lives, if not constantly. Wexler, Alice and John Derby. "Art in Institutions: The Emergence of (Disabled) Outsiders." *Studies in Art Education: A Journal of Issues and Research* 56, no.2 (2015): 127-141

[2] In The Making, Connected Communities Project – An External Evaluation (2018) Astle, N. Taylor, I. Challenge Multimedia https://doi.org/10.17866/rd.salford.7736717.v1

Introduction

The interviews revealed that the 'In the Making' Project had impacted on facilitators in a number of ways, both personal and professional. These are sequenced in Exhibit 1 below, which provides a framework for this report.

Exhibit 1. Impact – The Categories

Chapter	Impact
1	Facilitators Benefitted Personally
2	Facilitators Developed an Understanding of the Intrinsic Value of the Project
3	Facilitators Enhanced Their Teaching
4	Future Provision Will Be Conceived Differently
5	The Quality of Subsequent Provision was Improved
6	Broadening Strategic Thinking

Each of the above is now considered in greater detail.

Chapter 1. Facilitators Benefitted Personally

"It really opened my eyes to the challenges that disabled people face every day and which I take for granted."

"When you're actually working alongside people, then you have a much greater insight. I think that makes you feel much more empathetic, much more sensitive to their situation."

"It made me realise how utterly central disability is to a lot of people's lives. It dictates what they can do for a living and it dictates for a lot of them who they can spend time with."

All of the project facilitators had found the experience to be 'satisfying' and 'rewarding'. In part, this was because for them "new horizons" were opening up. They were learning from engaging in "different experiences". They had gained an enhanced appreciation of the impact of disability on people's lives and of the challenges that they faced. In addition, facilitating learning on this project meant that they were helping participants to work towards "meeting actual needs".

As already noted, the evidence from these interviews is that the impact of engaging with this project went well beyond the personal level. These impacts are considered in greater detail in the following chapters.

Chapter 2. Facilitators Developed an Understanding of the Intrinsic Value of the Project

Engaging in the project had convinced facilitators that:

For success, design courses should enable participants to **work on real-life problems**.

The key to innovative design involves **incorporating people from different communities** into the process.

3D printing technology is accessible, allowing disabled people to become successfully involved in the design process.

The project provided a template that could be replicated in the future.

Chapter 3. Facilitators Enhanced Their Teaching

It is clear from our earlier report, based on participants' perceptions, that the facilitators had proved highly successful in providing a stimulating and rewarding learning experience. However, the benefits went beyond this success.

At the outset, the facilitators had felt "nervous", "anxious" and "intimidated" at the prospect of teaching disabled students. In reality, such fears were allayed when they discovered that the participants were, in many respects, the same as any learning group, and could be treated as such:

> "disabled people are just people and you can treat them like any other student. You can banter and you can tell them off."

The real challenge, however, was that within the learning group, there was very considerable diversity. Many aspects of this have been identified including:

- A wide range of disability with some participants requiring carers.

- Differences in concentration and energy levels, with some tiring very quickly.

- Differences in levels of motivation and interest.

- A range of design skills and knowledge.

- Differences in the ability to communicate.

"When you're actually working alongside people, then you have a much greater insight. I think that makes you feel much more empathetic, much more sensitive to their situation."

As a result, each individual brought a distinct set of challenges to the learning process, and facilitators adapted to respond to this. Facilitators learned to be sensitive to participants' unique needs, becoming highly supportive and providing one-to-one attention. Great care had also to be taken to ensure that the teacher did not "get it wrong". There was a realisation that the impacts of so doing could be "much more significant" for a disabled person.

A further important message to emerge was that the facilitators needed to be aware of the constraints as to what could be achieved on a very short course.

Certainly, this course provided participants with the opportunity to be creative by experimenting with the technology. However, the limitations of time meant it was simply not possible for them to engage seriously in developing design solutions to address their own particular problems. To enable them to do this, a much longer training course would be needed.
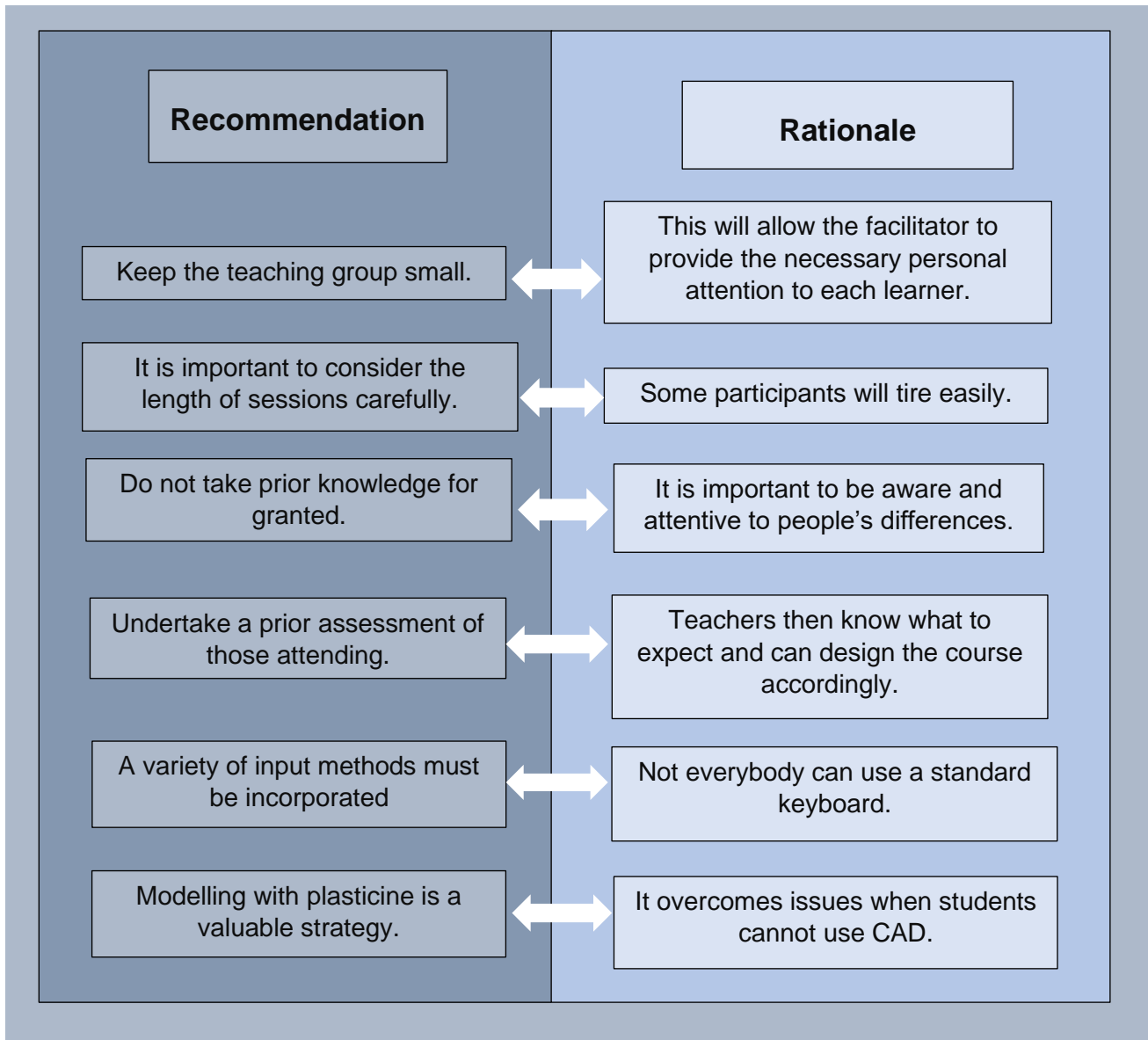
The facilitators are now also in a position to provide clear guidance to inform future provision, if a similar course – two full days – were to be offered, and this is considered in greater detail in the next chapter.

Chapter 4. Future Provision Will Be Conceived Differently

As a result of their experience on the course, facilitators are now able to make positive suggestions as to how future provision can be considered from different perspectives.
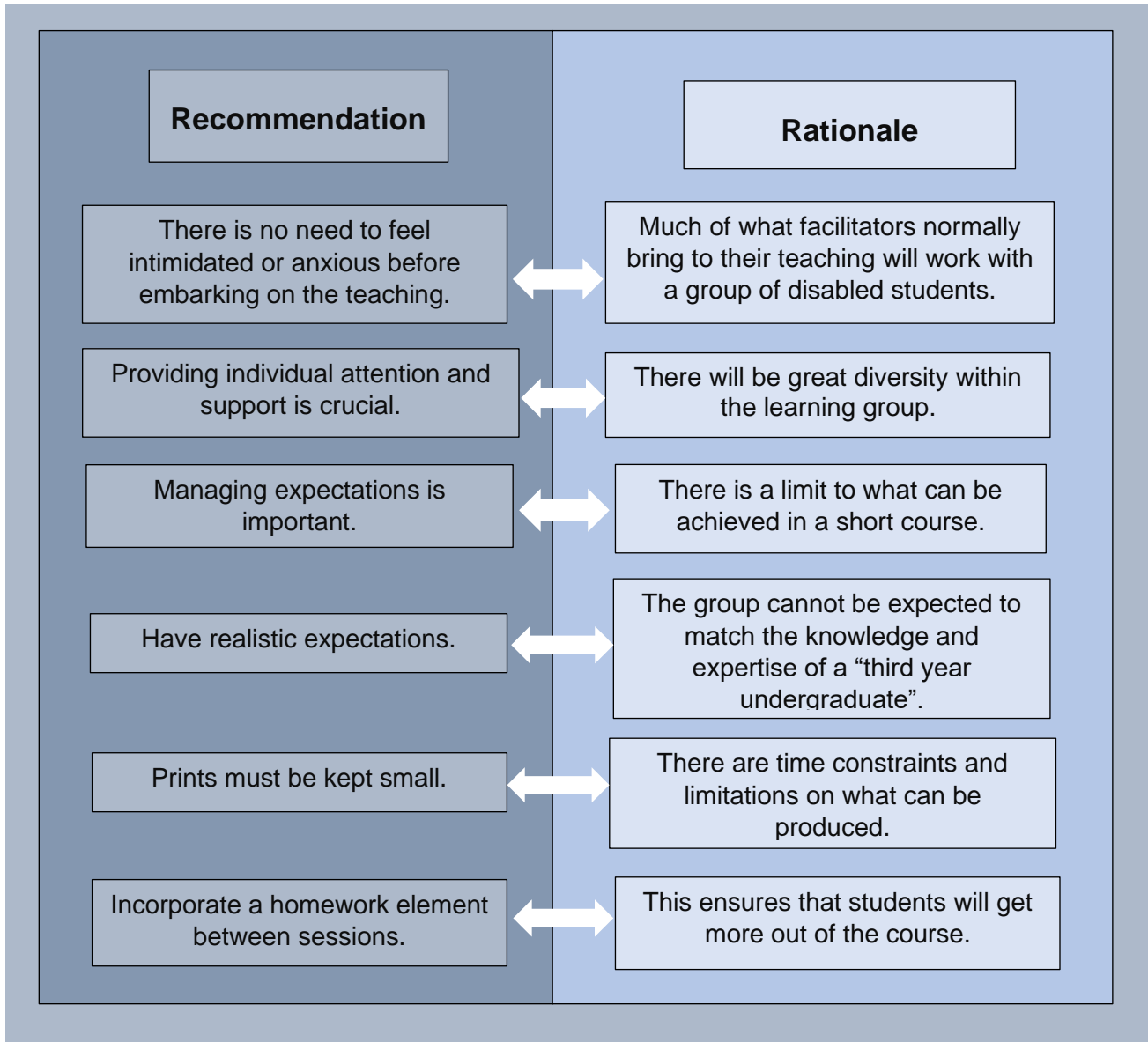
The experience meant that participants were able to provide recommendations for improvement, articulating the rationale on which these were being based. This guidance is represented in Exhibits 3 and 4 below:

Exhibit 3. Before the Course – Planning and Preparation

Recommendation	Rationale
Keep the teaching group small.	This will allow the facilitator to provide the necessary personal attention to each learner.
It is important to consider the length of sessions carefully.	Some participants will tire easily.
Do not take prior knowledge for granted.	It is important to be aware and attentive to people's differences.
Undertake a prior assessment of those attending.	Teachers then know what to expect and can design the course accordingly.
A variety of input methods must be incorporated	Not everybody can use a standard keyboard.
Modelling with plasticine is a valuable strategy.	It overcomes issues when students cannot use CAD.

"Disabled people are just people and you can treat them like any other student. You can banter and you can tell them off."

Exhibit 4. During the Course – Facilitating the Learning

Recommendation		Rationale
There is no need to feel intimidated or anxious before embarking on the teaching.	⟷	Much of what facilitators normally bring to their teaching will work with a group of disabled students.
Providing individual attention and support is crucial.	⟷	There will be great diversity within the learning group.
Managing expectations is important.	⟷	There is a limit to what can be achieved in a short course.
Have realistic expectations.	⟷	The group cannot be expected to match the knowledge and expertise of a "third year undergraduate".
Prints must be kept small.	⟷	There are time constraints and limitations on what can be produced.
Incorporate a homework element between sessions.	⟷	This ensures that students will get more out of the course.

"It really opened my eyes to the challenges that disabled people face every day and which I take for granted."

Chapter 5. The Quality of Subsequent Provision was Improved

In the last two chapters the focus was on the teaching of the course itself. In this chapter, attention switches to explore what impact the experience had on subsequent professional practice. The analysis here falls into two parts: 'Impact on Subsequent Teaching' and 'Impact on Subsequent Design Work.'

Impact on Subsequent Teaching

Two messages emerge. As a result of engaging with the course, the facilitators have become more aware of issues relating to disability, and this is reflected in their subsequent teaching. Much greater thought is now given, for example, to ensuring that the spaces available for teaching are accessible. In addition, issues and practices relating to disability are now much higher on their teaching agenda, as represented below:

> "I'd say my awareness of accessibility has really increased. It definitely expanded that and made me very aware of the issues. If one of the students designs something I'm now asking 'can you turn a wheelchair in that area?' or 'are those door handles usable by someone who doesn't have any grip strength?"

In addition, successfully addressing the challenges posed by the participants on the course has meant that changes have now been made to subsequent teaching practice. Facilitators are now much more aware of the diversity that exists in any group that they teach. There is now greater sensitivity to meeting individual learning needs, and a shift towards providing one-to-one attention. This is exemplified in the comment below:

> "Because of the diverse needs of the group, my teaching method was running around to each individual, saying 'are you okay, are you stuck?' 'Do you need any help?' and then moving on to the next person. I've done my best to keep that approach for the able-bodied students. I think they appreciate that you're taking a personal interest in them."

The impact of the course was not simply on subsequent teaching. It extended also to the facilitators' professional design work.

"I'd say my awareness of accessibility has really increased. It definitely expanded that and made me very aware of the issues. If one of the students designs something I'm now asking 'can you turn a wheelchair in that area?"

Impact on Subsequent Design Work

Delivering the course had broadened facilitators' horizons. They now gave greater attention to addressing the needs of disabled people when designing:

> "It made me very aware of the issues and that there are good reasons for the restrictions and regulations [relating to accessibility]. For me, it reinforced the idea that you're designing things that everyone should be able to use."

In addition, as emerged earlier, delivering the course had reinforced the message that "the key to successful and innovative design lies in working with different communities with different problems and questions".

Up to now this report has focussed on the range of impacts resulting from facilitating the course. In the following chapter, we look beyond this to consider wider strategic implications, focusing initially on how connection with the 'In the Making' project has influenced one organisation: 'Makerspace', to expand and enhance its provision relating to diversity.

Chapter 6. Broadened Strategic Thinking – A Case Study

> **Makerspace**
>
> A 'makerspace' is a **collaborative work space** inside a school, library or separate public/private facility for making, learning, exploring and sharing that **uses 'high tech' to 'no tech' tools**. These spaces are open to children, adults and entrepreneurs and have a **variety of maker equipment** including 3D printers, laser cutters and CNC machines,
>
> Makerspaces are designed to prepare those who need the critical 21st century skills in the fields of science, technology, engineering and maths (STEM). They provide **hands-on learning** and aim to promote critical thinking skills. Some of the skills that are learned in a makerspace pertain to electronics, **3d printing, 3D modelling**, coding, robotics and even woodworking.
>
> The makerspace featured here is the Morson Makerspace at the University of Salford. Although externally sponsored, it is **primarily open to the students and staff** of the University. However, there is a strong drive to **collaborate with industry**, who can **make use of the technology** available and also **provide projects** for students to work on. The Salford Makerspace was evolving at the same time that the 'In the Making' project was offered. This created **opportunities for both parties to collaborate**.
>
> *Based on extracts from the interview with Director, The Morson Makerspace at the University of Salford.*
> *Authors' emphasis added.*

Connecting with the course has meant that the Salford Makerspace has changed its view about what the organisation should be for in relation to enhancing the learning experience for disabled people. This involves:

- Adopting **a broader perspective** of what the learning practice should offer, away from a narrow focus on "defined engineering outputs" to having a greater emphasis on '"artistic expression".

- **Expanding the use of the 3D technology** available at Makerspace to address the needs of disabled people in the local community.

- **Widening participation** by opening the facility to disabled people.

- **Enriching the learning experience** of engineering and design undergraduates and **promoting an active connection with the community** by involving these students in projects focusing on design for disability.

- **Building connections** with University departments (e.g. Orthotics and Prosthetics) and with local charities (e.g. Seashell Trust)

In the comment below, the interviewee explains how the project encouraged a shift in strategy to collaborate with a local charity for children and young adults with sensory impairment and learning difficulties:

> "In the past we would have really have been check-listing and questioning the benefits of working with organisations like Seashell Trust but, because of this project ['In the Making'], it was quite clear how assistive technology can be applied to bring learning for students and also allow us to be part of the community. So for us it's a very positive influence."
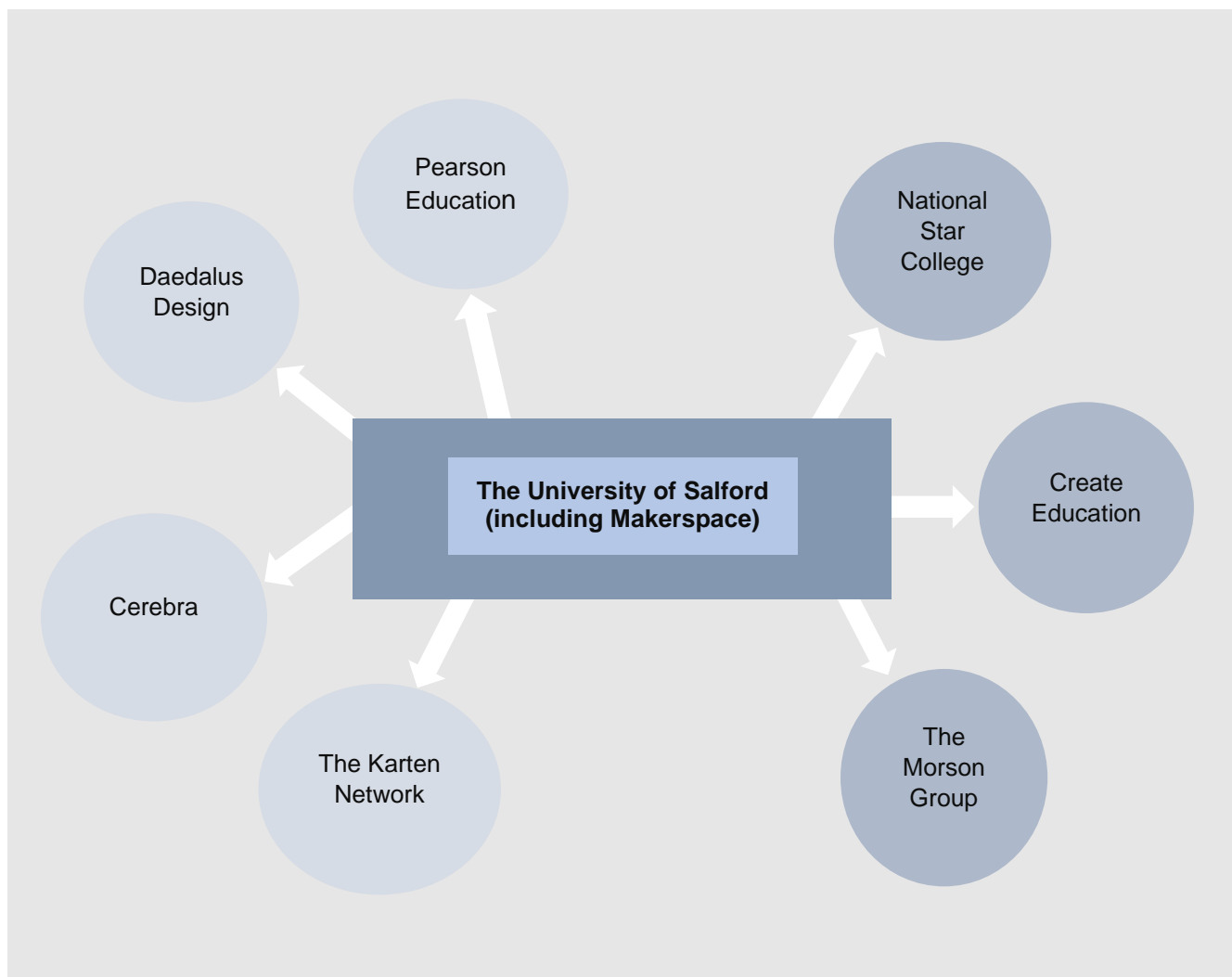
The bulk of the above represents an intention to enhance the quality of learning to be offered. The most significant development, however, appears at the end. This theme of extending collaboration will be considered in greater detail in the final chapter of this report.

Chapter 7. Broadened Strategic Thinking – the Bigger Picture

In this chapter, attention extends beyond a narrow focus on the 'in The Making' project to consider the broader picture. It draws on evidence from interviews to consider how collaborations featured in the previous chapter can be extended to enable this project to move forward. The aim here is to build on the success of this initiative, to develop a training course in product design targeted at disabled people. This would be a first step towards increasing the number of disabled people working in the product design industry; an outcome identified as highly desirable in the companion report to this document.

The exhibit below offers a simplified representation of the landscape, and here we discover the richness of the context in which the proposed training programme is located. What is now clear is that the University of Salford is ideally placed to take advantage of this rich context, when taking development forward.

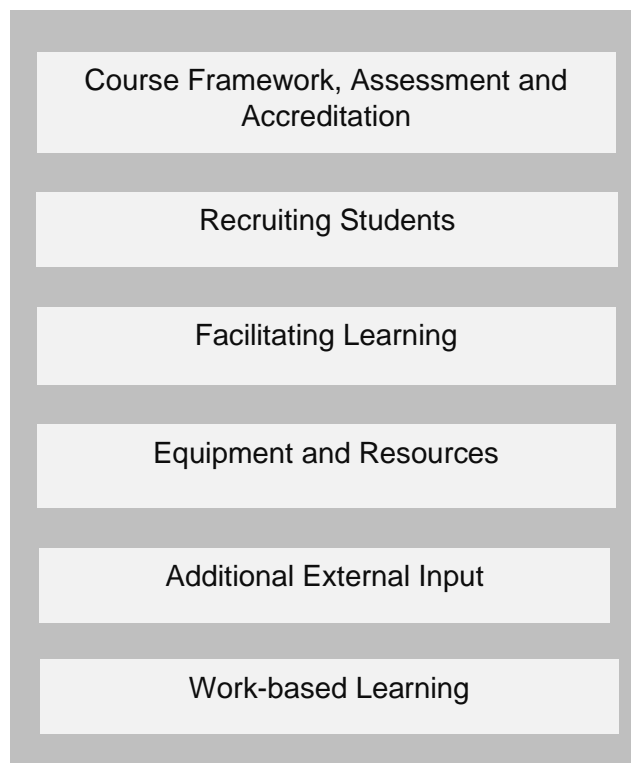**Exhibit 5. The Training Course – Potential Collaborative Partners**

The central core will be a collaboration between the University of Salford, as principal partner and driving force, and the Morson Makerspace. This partnership will build on the undoubted success of the 'In the Making' project.

As already noted, The Morson Makerspace is located on the campus at the University of Salford. This provides an opportunity for the proposed training course to make use of the facilities and resources there. This will give access to their 3D printing technology and build on the connections already made with local industry and Salford undergraduates (see previous chapter).

The evaluation of this project has also enabled the University of Salford to extend its knowledge of other organisations whose expertise, resources and connections have the potential to enhance the proposed training experience.

All training courses may have a number of constituent elements as below:

Exhibit 6. Training Course – Constituent Elements'

Course Framework, Assessment and Accreditation

Recruiting Students

Facilitating Learning

Equipment and Resources

Additional External Input

Work-based Learning

While responsibility for the planning, preparation and presentation of this course will lie primarily with the University of Salford, the following analysis indicates where and how external expertise could enhance the learning experience

Course Framework, Assessment and Accreditation

Initially, one plan is to put on a short training course as a trial and then to work towards offering a suitable off-the-shelf BTEC course and trial and evaluate it. One approach would be for the University of Salford to engage with Pearson Education to provide a course framework, and rigorous assessment and accreditation which will be universally recognised and transferable.

Recruiting Students

National Star College is one of a number of specialist organisations which provide training for young adults with disabilities. As well as having expertise in training disabled people (see below), they are also in a position to inform the selection process as they will have an insight into students who have the potential to benefit from the proposed course.

Facilitating Learning

The University of Salford have already gained experience of collaborating with Daedalus Design consultants, who provided significant input for the original 'In The Making' project in 2016. A similar contribution to tuition on the new course could be provided by a company such as Daedalus.

Equipment and Resources

As already mentioned, it is planned that the training course will draw on the facilities and equipment made available on the campus by the Morson Makerspace. Further support could be gained from the Ian Karten Charitable Trust who provide funding to purchase appropriate technology for training disabled people.

Additional External Input

Create Education represent a very valuable resource. They have long-standing experience of delivering training in 3D technology. They have built up an extensive network of supportive organisations. They also have education ambassadors who do demonstrations, lead workshops and brainstorming sessions. They provide free resources, CPD training and specialist support to help educators and communities introduce and embed 3D printing into their environments. Such support could enrich the quality of the learning experience on offer.

Work-based Learning

Work based learning is an essential feature of any training programme. We have learned already in the [companion report](#) that, while there is widespread support for bringing disabled people into the product design industry, such companies (SMEs) do not provide an ideal training environment for any student, especially at this very early stage in their development. While a large local engineering company like The Morson Group could provide work-based learning opportunities for some students, this is unlikely to fulfil demand.

One alternative to traditional workplace provision is to adopt an approach based on the establishment of a digital hub. This would provide a connection with the community and local industry, giving genuine work experience to students. The students could undertake designs to address real needs. In addition the hub would create opportunities for undergraduates to work alongside the disabled students, engaging in real problem-solving.

The Cerebra Innovation Centre, based at the University of Wales provides an example of this approach in action.

Sponsorship for Further Study

A further feature of the proposed training course involves encouraging sponsorship to support participants. The Morson Group have a long-standing commitment to encourage young people to go into engineering, with an emphasis on widening diversity. They provide scholarships, work placements and job opportunities for disadvantaged students at the University of Salford. It would follow logically that Morson may be willing to sponsor disabled students who had successfully completed this training course and were seeking to undertake further studies.

Some Concluding Comments

The interviews revealed that facilitating the 'In the Making' project had impacted positively in a number of ways. Facilitators were able to articulate how they had benefited personally. They were also able to focus on how their teaching had improved, both in relation to meeting the learning needs of disabled people on the course, and subsequently. An increased awareness of disability had also impacted positively on their design work.

In addition, the experience gained by the facilitators had impacted upon them in two further important ways. They had gained a deeper understanding of the intrinsic value of the project. They were convinced, for example, that design courses should allow participants to work on real-life problems. They appreciated now that 3D printing technology is accessible, allowing disabled people to become successfully involved in the design process. They had also gained expertise which could be used to inform others as to how to improve further provision, both in relation to planning and preparation and with regard to facilitating the learning. Not only were they able to provide practical advice, but they were also able to articulate an educational rationale which underpinned this.

Perhaps the most important impact saw a shift away from educational process towards adopting more strategic thinking and planning. This can be seen in a limited sense when consideration is given as to how the Morson Makerspace has responded following its contact with the project.

A much more ambitious analysis is provided in the final chapter. Here we learn a little of the landscape and reveal the richness of the context in which this project is located. The defining elements of a training course are presented, along with ways by which active collaboration with a variety of agencies could enhance the quality of the learning experience on the proposed new training course.