# Independent Project

## How might we design constructively aligned online resources for the Distributed Design studio on Product Design with Professional Experience BSc?

# Introduction

This digital resource is the result of pedagogic research into the challenges and opportunities in teaching product design remotely.

While the pandemic threw up many challenges and issues for teaching a practice based course like Product Design, the studio that I teach - Distributed Design - was well prepared for the disruption.

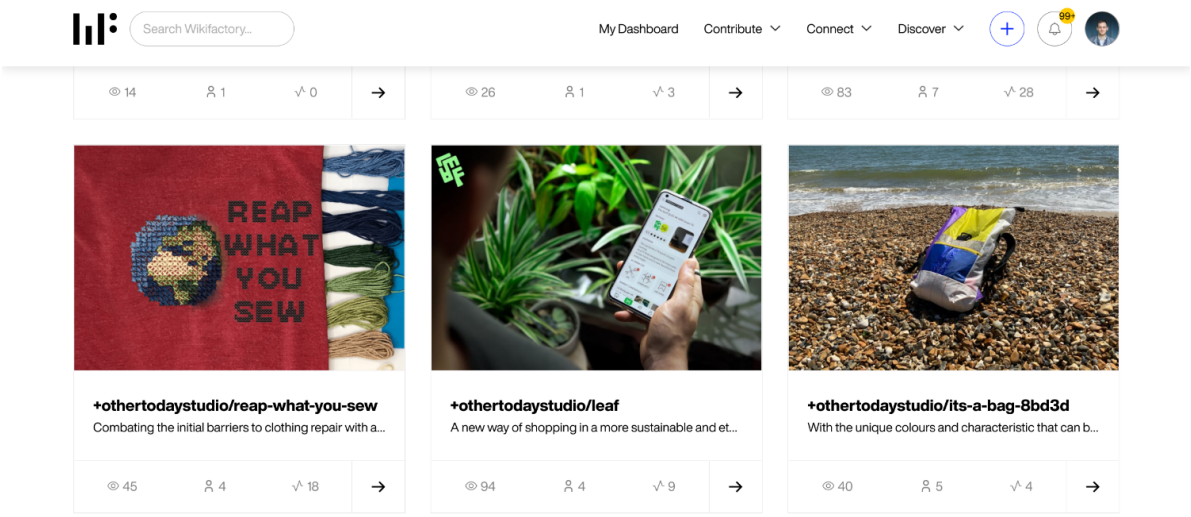
*Distributed Design* is an approach to that aims to reduce the planetary impact of manufacturing by sending digital design files instead of products (bits not atoms) to be made in distributed networks of local mini factories.

> "It is easier to ship recipes than cakes and biscuits" attributed to John Maynard Keynes

The approach has the potential to distribute power, knowledge and wealth as passive consumers shift to become critically conscious creators and citizens. The book *Viral Design: The COVID-19 Crisis as a Global Test Bed for Distributed Design* (2020)[1] hailed 2020 as the year that the discipline of Distributed Design shifted from science fiction to much needed reality - as supply chains broke down, makers and maker spaces shared files and 3D printed and laser cut PPE on demand and local to need.

While Brighton University's technological response to lock down was swift and consistent, our studio was already using industry standard tools from product design: Slack for messaging, Zoom for calls, Wikifactory for hosting and sharing portfolios and Miro for collaboration.  A challenge faced by our studio during the beginning of the pandemic was to adapt our teaching to mandated software and platforms unfamiliar to those working in the design world.

This research explores whether instead we should be using the communication, publishing and collaboration tools used professionally in design to constructively align (Biggs and Tang 2011)[2] student's digital learning with the digital skills they need for industry.




# Context

In *Rethinking Pedagogy for a Digital Age* (Beetham, 2013)[3] Beetham argues that **resources and tasks** should align so that students can build the confidence to be creative with digital technologies. It is important therefore that the digital technologies align with their digital resources:

> In facing uncertainties of the near and more distant future, we can be sure that learners are better off- more resilient- if they have a broad repertoire of capabilities at their fingertips, those closely aligned with **academic expertise** and **professional practice** and those they evolved from their **digital experiences**, along with hybrids of the two. Learners will be well served by tasks, programmes and environments that **generate uncertainty**, and foster a repertoire of resourceful responses.  (Beetham, 2013, p.279)

Product designers often work in distributed teams and are used to certain creative and collaborative functionality that corporate and educational tools such and Microsoft and Blackboard struggle with. As Gilly Salmon (2013)[4] highlights learning a new software requires intense e-moderation, technical support and multiple stages of student engagement from socialising to learning by doing.

There is an argument here therefore that the resources given to students should reflect professional practice and the assessment formats they are given. Recommended software and formats from Brighton University include Microsoft word .DOCS,  My Studies HTML and Microsoft .PPT slides - all three are formats little used in design education or practice.

Alternatively a design tutor could prepare a brief for students submitting a poster using InDesign, a graphic layout application so that the resource format matches the expected deliverable.  In the Distributed Design Studio, we ask the student to submit their work as MARKDOWN files hosted on Wikifactory.

Wikifactory is an open design platform that allows students to share their ideas with a global network. Inspired by the collaborative practices of software designers Wikifactory is a way for designers of hardware to share their work with others.

`To be shareable the content is written in a simple code call *Markdown* which is saved as a 'readme' file.`

This is a standard in documenting open source projects and we thought it important for students to create their portfolios in this manner. We wanted to create a portfolio format that focussed on the work of the student and enabled that work to to travel be shared between platforms and formats. When a student creates an InDesign portfolio, the content is locked in that format, working with markdown ensures that student work can live on after assessment.

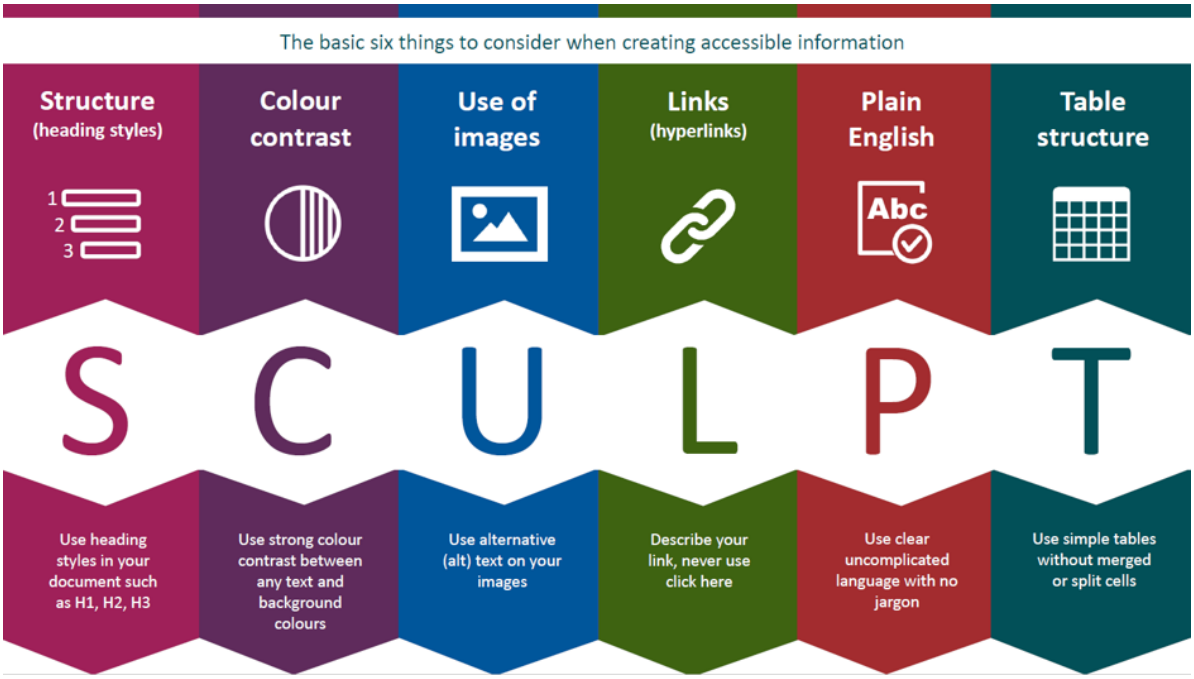
During the remote learning of the pandemic I have been using a mix of platforms to share resources and briefs with students. I have used Wikifactory to host briefs, powerpoint for presentations, miro for collaboration and I send PDF 'invitations' after each session and all of these are shared on Teams and duplicated on Mystudies. How can I improve this workflow and reduce the range of formats?

# Research Question

The research question then is *how might we design constructively aligned online resources for the Distributed Design studio on Product Design with Professional Experience BSc?*

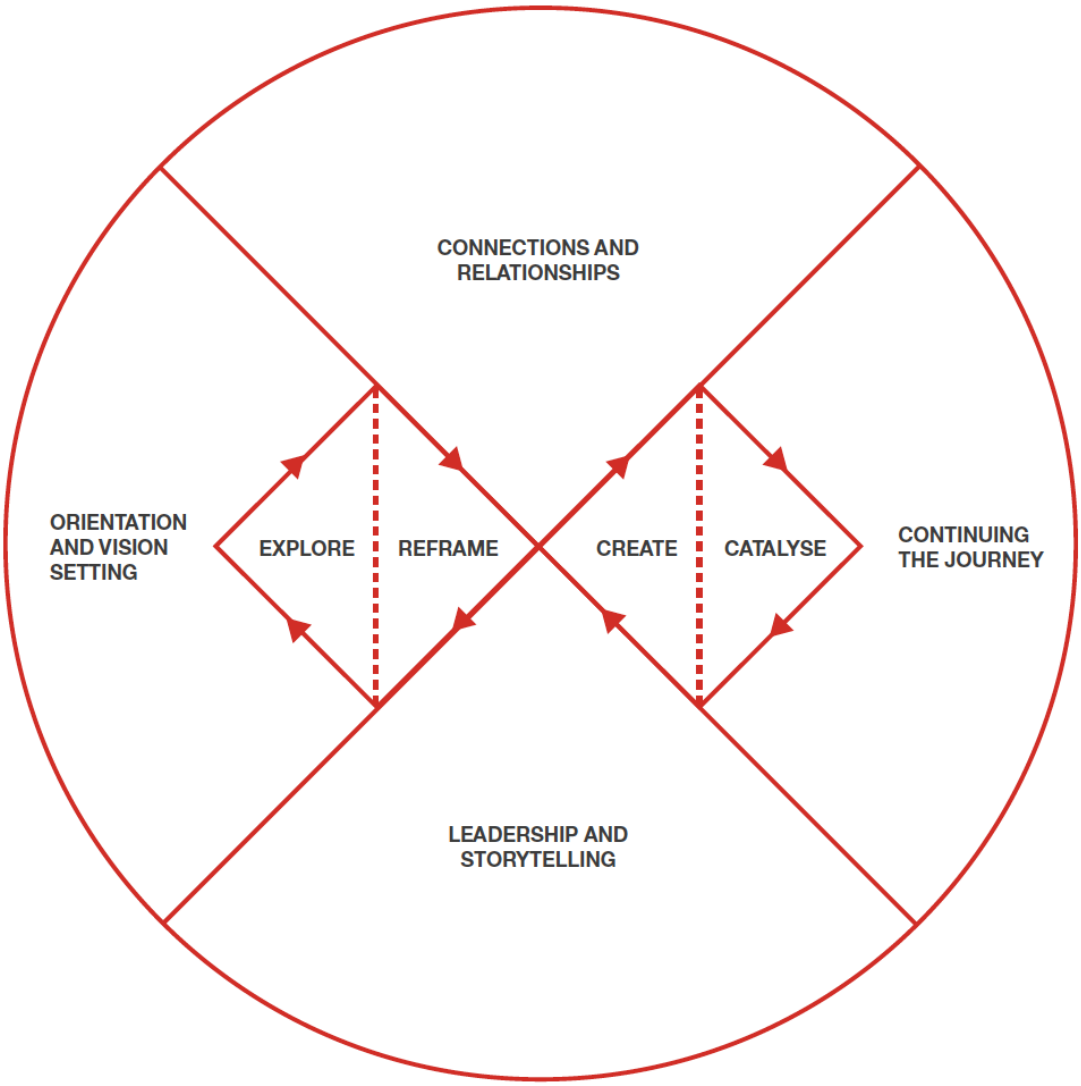
This question into four requirements for a successful resource.

1. **Appropriate** = Biggs and Tang (2011) argue that choices of teaching methods should be constructively aligned with intended learning outcomes and evidence of achievement. Resources should be in a format professionally appropriate for the discipline and reflect the open design ethos of the studio and the aesthetic considerations of design in general.
2. **Accessible** = Any online resource should be compliant with the Web Content Accessibility Guidelines version 2.1 (WCAG) and SCULPT guidence developed by Helen Wilson [5], which as well improving sites and documents for students with disabilities makes it easier for students who view content on phones or who have poor wifi. Formats used for assessment evidence should be identical for each student so that we can focuses on the work of the student.
3. **Adaptable** = In Open Design, information published online should be able to be downloaded, produced, copied and modified (Open Design Now 2011). Inspired by the The Open Educational Resources movement our resources need to be able to move easily between formats and platforms so that they can be rewritten and updated everywhere. Post assessment portfolios should be able to reformatted easily to share with a global network.
4. **Asynchronous** = To enable *Technology Enhanced Learning* our resources need to be able to accessed and understood without a lecturer present and produced in such a way that a student who has missed an in-person workshop can catch up on their own - this might include interactive, audio and video content.




# Approach taken

I have approached this research with a design research methodology as set out by the UK design council in their Strategic Design Framework (2021).[6]



In the research or *Explore* phase of the design process the Design Council advises that research should:

- Dig into the **existing system**. Ask how have previous structures and frameworks come about and what assumptions are they based on.
- **Start with making**: create a prototype both to test if something works and to reveal the system around it

To dig into the existing systems I used qualitative research and interviewed students and teaching staff to gather insights on the current system in the context of the pandemic. I reflected on my own teaching resources and collected all the teaching materials that I had made in the last two years - spread in an unorganized fashion between powerpoints, miros, pdf's and docs.  I also interviewed the school's Learning Technologist to understand current guidance.

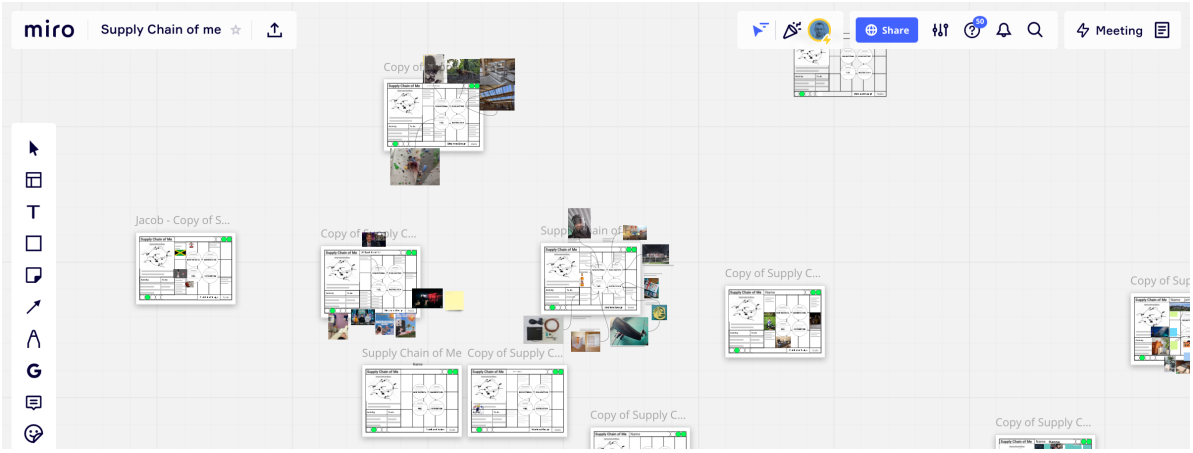
Secondly I took a practical approach and researched formats that met my 4 requirements and began prototyping my own. I researched exemplars from other lecturers, read up on accessibility guidelines and pushed the current systems to their limits testing the functionality of Blackboard, Teams and Share point. By creating an online digital resource I was able to learn by doing and find out what did and didn't work.

# Findings

## Staff and Student Interviews:

The module I teach is the "studio" module, this is a double semester spanning module where students work on a series of open briefs. During remote learning we delivered most content as interactive Miro workshops. Now face to face I have been adapting this content for in person teaching. Some staff teach in a lecture style where content is delivered and discussed afterwards whereas others use a more workshoped approach.

> "Miro was useful as it gave a paper trail. There is a difference between online materials given before or after a class. Engagement in practice in person is better (from a students perspective) **but having a resource is useful to refer back to.** Theory teaching on teams is productive but engaging workshopped stuff is better in person as it is not really possible to record a workshop." - student interviewee




In discussions one interviewee noted that students were unlikely to engage with asynchronous materials sent before a session but found it useful to revisit resources after the live sessions. Students and tutors alike miss the paper trail that a Miro board gives - after the workshop we can see the ideas collected on the board. During live sessions run with post-its and discussion very little is recorded.

> "Now the lockdown is over, recording of lectures is something students want but it is difficult to provide now. It is good practice is to allow students who haven't been able to come in to have something catch up with. But we should discourage embedding remote provision into the course - this is a hands on course and tech as a service not great pedagogically. "

An attempt to provide this resource has been undertaken with a "Learning Unit Repository" the idea for this is that the tutors record mini lectures in relation to the live work shopped sessions that can be viewed asychronously. The issue here however is that

> "Hybrid has turned out to not be a halfway between online and inperson, that the challenge is that is it both at the same time." - staff interviewee

In other words it is double the work! The challenge is to find a way to keep records of learning resources online without it becoming stale or too much work.

Staff and students agreed that the format for these learning resources should match those from practice:

> "Because we are product designers who use digital tools in our work, **it is vital we use similar to share information** and that the integration could be tighter." - staff interviewee

# Learning Technologist Interview:

I contacted the schools Learning Technologists because on Sharepoint it says:

> "If using external solutions that are not supported by the university please ensure no assessment data is held on the site, that you are aware of the terms of use of the site and that you do not require your students to register with an external service. If you are interested in using an external solution to support your teaching but want guidance please speak to your Learning Technologist, who will be happy to help."

I initially took this to mean that I was limited to using the university server based programs. However after call with the Learning Technologist I found the restrictions were a lot looser than I thought. Many more formats than .doc can be considered accessible in fact a correctly formatted PDF is even more accessible than a word doc. The plain text that markdown works with is perfect for text readers, especially when rendered online as a HTML webpage.

The two other limits to using alternative platforms is that we cannot use websites that require student's credit card details and cannot store assessment data on external sites.

The biggest insight from this interview was that Mystudies should be seen as a **signpost**. This means that you can use almost any platform and format so long as you point to it from Mystudies and have some document or text explaining where the teaching materials are. The Digital Enabled Learning Principles are principles to aim towards not a rule book to follow. This means that if my resource can meet the principles it would be an acceptable alternative.

It transpired that the Learning Technologists markdown and the university has it's own Github site. The guidence to use Word is a general rule to enable all staff to create resources without needed too much technical knowlege. It does not preclude more technical courses using appropraite software and formats to their disciplines. The Learning Technologist gave the example of computing department using the app Twitch, commonly used by gamers and streamers to record their lectures.

This opened the way to experimenting with Gitbook as a quick and interactive way of hosting resources aligned with design practice.

## Prototype

In prototyping this learning resource I have tried 4 ways of creating asynchronous content

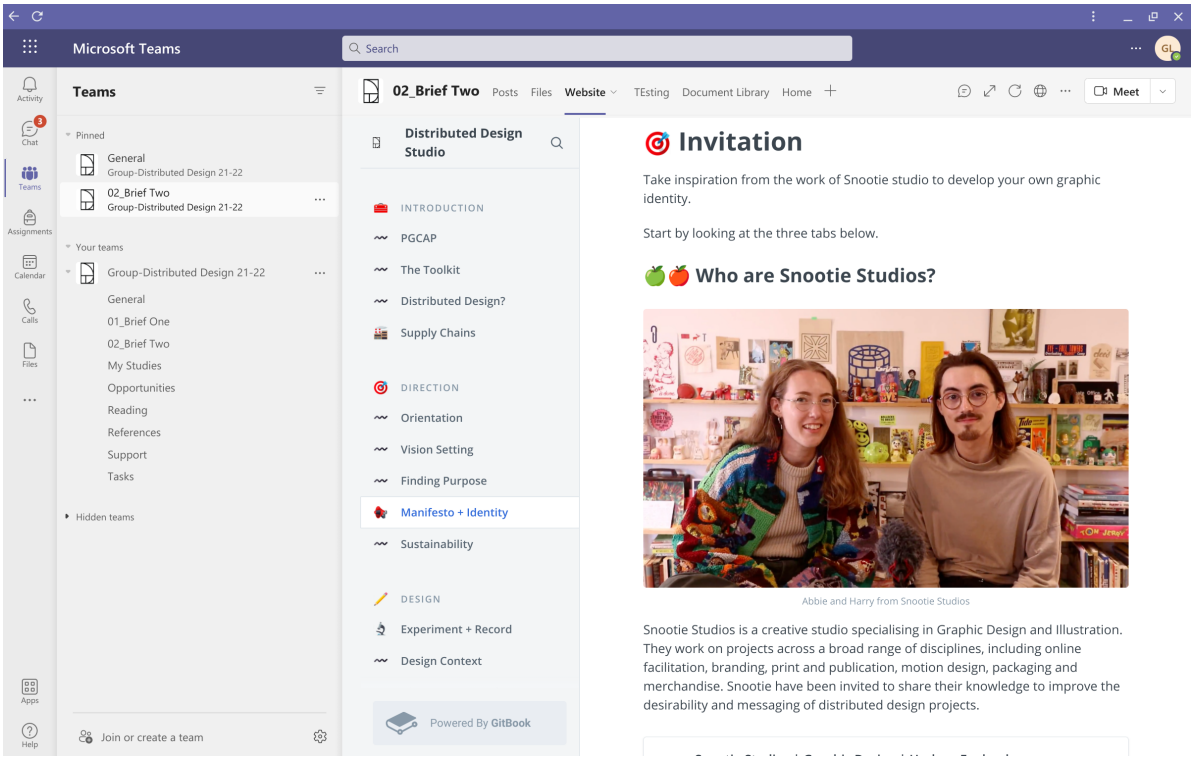
1. I recorded 4 podcasts as 20 minute conversations with guest designers. These were really easy to record but have proved time consuming to edit and as of submission are not ready to be listened to.
2. I recorded 4 inspiration videos with guest designers introducing their practice, however these too have proved too time consuming to upload.
3. I created and cleaned up Miro boards from last years remote teaching - these work as references however I have only used one as a live resource and it was slightly uncomfortable as the class went quiet for 30 minutes.  I will use more of them in live teaching in the forthcoming term to see how they work as hybrid resources.
4. The major protoype has been the collation all of this into a Gitbook. This Gitbook is a collection of markdown files hosted on Github that are rendered as this HTML web page and possible to save as a PDF.

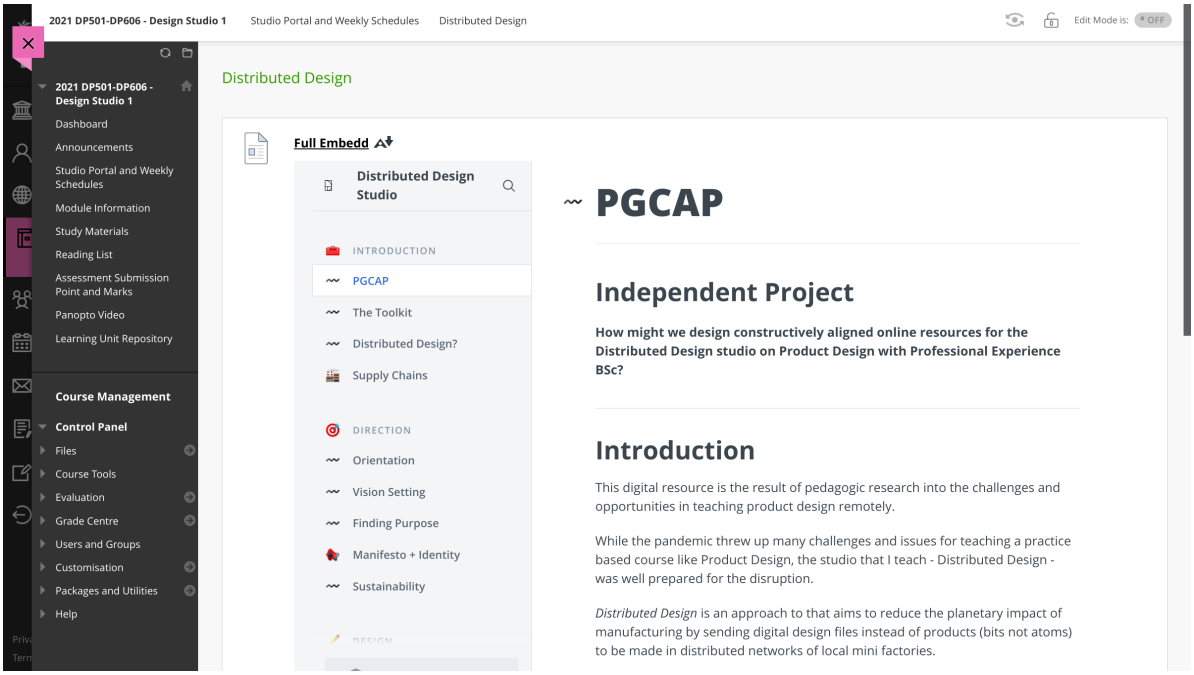
# Conclusions

I have developed what the Learning Technologist called a "continuous development pipeline". This a work-flow for creating and uploading resources that takes less formating than typing or pasting into blackboard.

1. I write offline with the application TYPORA which has a source code mode and a WYSIWYG view.
2. Then I upload the markdown file to GITHUB
3. Which is then syncronised to view on GITBOOK
4. This can then be embed in TEAMS and MYSTUDIES in multiple ways
    1. As an iframe or link to the whole gitbook or a specific page
    2. As a pdf of the book or page
    3. As a html file.

After showing staff and students, the best method is by using an iFrame as this enables me to embed the Gitbook cleanly into Teams and mystudies.




This means that it can be easily signposted and at all times the content in different locations has the same content. Students loved that it could be accessed from the Teams app on their phones. I am able to share the content to different places such as Wikifactory where I get the students to submit their work. To prevent the problem of their assessment material being solely on the third party site Wikifactory I am able to get them to submit their README.md files to Mystudies and open them in any markdown reader. In conclusion the use of markdown for learning resources is:

1. **Appropriate** as it is the same format that the students submit their work in and is related to the open design ethos of the studio and the rendering of the markdown in Gitbook is aesthetically well designed.
2. **Accessible** the gitbook achieves a 93% Web Content Accessibility rating and the shortfalls are mainly missing descriptions of images and poorly descriped links which will be easy to fix.  The content mostly meets SCULPT guidance but this can be improved and  the content works really well on phones and for those with poor wifi.
3. **Adaptable** = Github enables forking which means I can share my resources with others to be downloaded, produced, copied and modified and I able to easily create pdfs and upload

content to multiple platforms.
4. **Asynchronous** = The toolkit has been written in such a way that it could be followed as stand alone resource and also host my weekly learning summaries in an easy to read and find format.

# Recommendations

This Gitbook has not yet been used in its entirety for teaching, so the next steps will be to trial the platform as the sole location of my teaching resources. As I learn more about the code and get comfortable writing my resources this way I will be able to improve and develop the book.

There is a desire from my course to use more appropriate technologies to the design profession. This technique mirrors the version control and publishing in the industry and the way that I am assessing my students. The next steps will be to share this workflow with my colleagues to create a unified open and adaptable resource that is constructively aligned to the design profession.

# Appendix


1. Kate Armstrong (Editor), Julia Gay (Editor), Paula Sánchez Toribio (Editor), Emily Whyman (Editor), 2020, Viral Design: The COVID-19 Crisis as a Global Test Bed for Distributed Design, IAAC, Barcelona ↩

2. John Biggs (Author), Catherine Tang (Author), 2011, Teaching For Quality Learning At University: What the Student Does (UK Higher Education OUP Humanities & Social Sciences Higher Education OUP) ↩

3. Beetham, H, Sharpe, R 2013, Rethinking Pedagogy for a Digital Age, London 2013 ↩

4. Gilly Salmon, 2013, E-tivities: The Key to Active Online Learning Paperback ↩

5. Council, W., 2021. SCULPT for Accessibility | Worcestershire County Council. [online] Worcestershire.gov.uk. Available at: https://www.worcestershire.gov.uk/sculpt [Accessed 7 November 2021]. ↩

6. Design Council, 2021, Beyond Net Zero - A Systemic Design Approach [online] Available at: https://www.designcouncil.org.uk/resources/guide/beyond-net-zero-systemic-design-approach [accessed 4th Nov 2021] ↩