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Editorial

Earlier this year we re-launched the in-house journal *Education in Practice* ([volume 4, Issue 1, May 2023](#)), and we are delighted to publish the second issue with eight new papers written by University of Birmingham staff. The journal is hosted by the University of Birmingham with the aim of sharing good practice in teaching, learning, assessment and enhancing the student experience. We encourage all staff, including academics and those from Professional Services, to submit papers for consideration in the journal; we also welcome contributions from undergraduate and postgraduate students, which would most likely be in collaboration with a member of staff. Papers can be in the form of a short case study or a longer research paper or review.

Education in Practice was designed as an interface between newsletters/blogs and journals that cover educational research. It provides an opportunity for all staff to share and test ideas across the University and to potentially develop contacts and collaborators to develop a community of good practice. It can also be seen as a route to publication for those staff who are new to publishing on the practice of teaching and learning. As noted in the editorial in the [first edition of the journal](#), it allows those who want to get more involved in the scholarship of teaching and learning to explore, develop and share ideas with a wider community.

There are eight papers in this issue of the journal. Teaching students face-to-face and/or online has been considered with respect to the student experience in the paper by Favero *et al.* This has also been explored in the context of laboratory practicals in the paper by Elsworth *et al.* and the latter has been put in the context of making content accessible to students. Favero and Gibson give further consideration of how to ensure the education we deliver to students is inclusive by describing the use of accessibility statements, and Mckenna's paper forms a case study in building inclusive learning environments. All subjects have what might be considered to be challenging topics that are part of the curriculum, and the paper by Hatchwell describes using co-authored learning agreements as an approach to dealing with these.

There are two papers on assessment and feedback. The paper by Psyllou *et al.* is a case study that brings together the concepts of formative assessment and scaffolding in assessment and how this has been developed within a module. Svingen considers the importance of ensuring that students engage with the feedback that they receive; this is in the context of essay-based assignments and suggestions are made on how to improve engagement.

Taking a broader view of the responsibilities of the University in the civic and global context and in making contributions to global challenges, the paper by Jenkins and Pänke describes the development of a taught year in civic leadership.

We warmly welcome contributions to *Education in Practice* from anyone working at the University of Birmingham. We would be delighted to hear from you.

Jon Green, Alison Davies, Michael Grove , Marios Hadjianastasis, and Sarah Letters

Building inclusive learning environments for postgraduate students with specific learning difficulties (SpLDs) across higher education: a case study approach

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Abstract

This article explores inclusive learning environments in the higher education (HE) context for postgraduate (PG) students with a specific learning difficulty (SpLD) including, but not limited to, dyslexia, dyspraxia, dyscalculia, and attention deficit hyperactivity disorder (ADHD). A case study design was employed to investigate the context, specifically for graduate management trainee (GMT) participants on the Elizabeth Garrett (EGA) programme at the University of Birmingham (UoB). Inclusive practices are present but not consistent across HE. The pedagogical context and conceptual environment require enhancement to encourage disclosure of SpLDs and develop more inclusive teaching environments, drawing on the andragogical approach to adult based learning combined with a social model of disability. This paper offers theoretical and practical solutions for educators across HE to enhance inclusive learning environments in collaboration with postgraduate learners with SpLDs.

Background: neurodiverse learners in UK HE contexts

Record levels of UK domiciled young people are entering UK HE institutions. 272,500 students, a 7% increase from 2020, are choosing advanced study (UCAS, 2022). Of these, 130,000 are registered with a specific learning difficulty (SpLD) including, dyslexia, dyspraxia, dyscalculia, and attention deficit hyperactivity disorder (ADHD) (HESA, 2022). This learning drive may be explained, in retrospect, by Labour government policy in the late 1990s. The 'widening participation' agenda encouraged students with disabilities, amongst other minority groups, to enter higher education (Layer, 2004). While the policy was welcome, the reality for students with SpLDs entering institutions was predicated with a medical model of

disability, which suggests that disability is a defective part of the student that disadvantages them (Cigman, 2010). This approach is still evident in HE. Later Conservative government legislation, namely The Equality Act (2010), may have inadvertently supported this approach. While the Act has provided a legal basis for people with protected characteristics to ensure fair treatment, the Act struggles to recognise the positive nuances that disability can bring. Mos-Shogbamimu argues that the Act is “is devoid of complexities and no longer fit for purpose” (2018, p. 1). Research has shown that the HE sector should be striving for a more nuanced approach to disability that considers the social model, which proposes that society has a responsibility to adapt and change to create inclusive environments for everyone (Oliver 1998; Cooper, 2006; Griffin and Pollack, 2008).

Using a case study approach, the following paper explores access to support and the context of the learning environment for PG learners with SpLDs at UoB. The unit of analysis concentrates on PGs enrolled on the EGA programme. EGA is a 2-year Masters in healthcare leadership. It is commissioned by the NHS Leadership Academy. There are two distinct streams of the programme, Graduate Management Trainees (GMTs), who are recent post-graduate students and standard participants, who are often senior NHS clinicians who may have been out of mainstream education for some time. While they share a common curriculum, the constituency of learners is different. This matters, in a practical sense: most GMT entrants are younger and have more recent experience of HE. They are generally more likely to identify special needs and articulate support needs, but not always - a common theme in HE. Standard participants with SpLDs are evenly distributed among the learner population, however, compared to their GMTS counterparts it can be more challenging for typically older adults on the standard programme to identify need and then source support. For this reason, the paper focuses on GMTS participants, who require different strategies for support compared to standard programme learners.

The aim of the programme is to develop participants into confident leaders who challenge the status quo and elicit tangible and sustainable change to improve patient care and experience in the NHS (NHS Leadership Academy, 2023). The learners are PGs who join UoB as part of a dedicated programme of leadership learning affiliated to their NHS organisation. The combination of education and work experience is a significant part of the pedagogy that

underpins the programme. A thematic exploration of the literature highlights the factors constraining inclusive learning environments across HE. Based on the case study findings, practical solutions are suggested to build more inclusive learning environments for postgraduate students across HE.

Reframing disability and supporting inclusive teaching practice

As part of HE institutional policy, students with SpLDs are required (international perspective) or encouraged (from a UK perspective) to disclose their SpLDs (Hansen & Dawson, 2020). This policy implies that a reciprocal relationship exists between institutions and students, whereby if students disclose, they are then supported with accommodations to facilitate their learning. Considered through the lens of critical realism (Sayer, 2000), an alternative viewpoint suggests this approach places the loci of responsibility for disclosure of SpLDs purely with students. Therefore, the relationship is only conducive to inclusive learning practice if the student discloses. Furthermore, the wider HE system does not have any formal mechanisms to encourage PG students to disclose, unlike at the undergraduate level where students have the option to disclose built into their UCAS application (Office for Students, 2019). The processes to disclose are cumbersome, and students fear stigmatisation and labelling, which prevents them from disclosing. Furthermore, the paradigm in which SpLDs is situated – in the disability arena – can promote inaccessible learning environments (Clouder *et al.* 2020).

These issues relate to institutional structural bias. While unintended, the current SpLD context in HE diminishes the responsibility of institutions and faculty to find other mechanisms to encourage and support disclosure, and provide inclusive teaching practice (Clouder *et al.*, 2020). This perspective can be defended owing to staff resource and capacity issues, which has an even greater impact on traditional large group teaching, for example (Hansen & Dawson, 2020). While this is an important consideration, reframing disability is required. Layer's (2018) HE 'Triangle Model' (Figure 1) infers turning the model of disability on its axis with inclusivity at the base of all HE environments. Rather than the current approach, which requires students with SpLDs to request support through disability support advisors, who construct a reasonable adjustment plan to guide lecturers on learning and assessment adjustments.

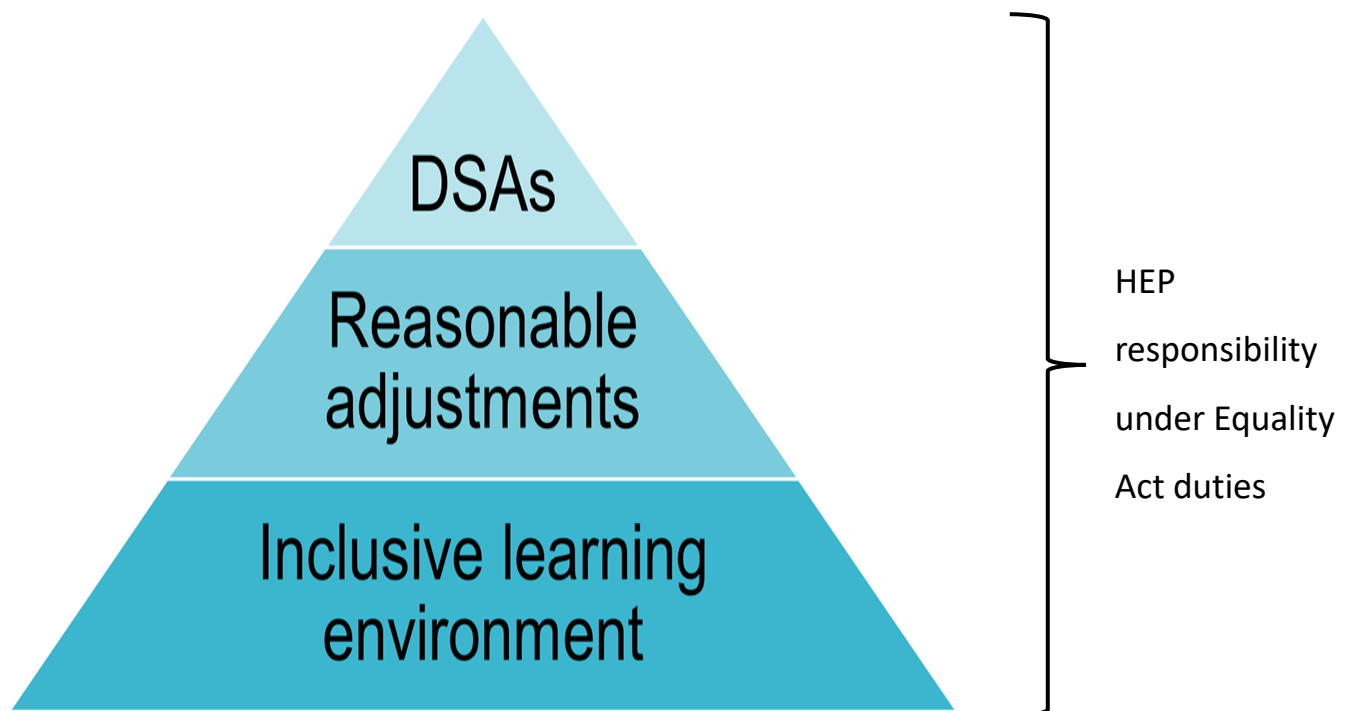


Figure 1: Inclusive Learning: HE 'Triangle Model' for Disability (Layer, 2018)

This approach is widespread across HE and relies heavily on lecturers knowing how to support their learners. Without mandatory universal training for educators during their probation period or via postgraduate certification in higher education, teaching (PGCHE) quality and consistency of inclusive practice remains elusive in HE. The challenge is for educators to enhance the quality of their inclusive academic offer, which requires institutions to shift the paradigm away from SpLDs viewed negatively to a position where it is seen as an advantage (Eide and Eide, 2011).

Despite these challenges, UK HE institutions, including UoB, have come a long way to support students with SpLDs. Institutions are making assistive technology available; recording lectures, developing alternative assessment methods and learning resources, including staff training and induction (Office for Students, 2019). However, there is more work to do across the sector. Inclusive practice is widespread but not consistent, and currently only around 20% of students registered in UK HE institutions disclose their SpLD (Layer, 2018). Returning to critical theory, perhaps the answer is in theoretical framing,

which can provide us with resources to build knowledge around what inclusive practice means and what is preventing it (Clegg, 2015).

One such example is ontological thinking that encourages interrogation of the fundamental, underlying mechanisms, which perpetuate inequity in learning environments. Some of these exogenous (external) mechanisms have been discussed above, such as institutional structural bias, in both government legislation and HE policy, and a medicalised view of disability (Sayer, 2005; 2011; Clegg, 2015). But we need a process of retroduction to probe further. This would entail using “a mode of inference in which events are explained by postulating (and identifying) mechanisms which are capable of producing them” (Sayer 1992, p. 107). From a retroductive perspective, the mechanisms which appear to be missing from encouraging disclosure and creating inclusive learning environments at UoB are communication gaps and a lack of SpLD-specific training or developmental resources to support lecturers. Similar issues are prevalent across the HE sector (Clouder *et al.*, 2020).

Remedying these gaps is challenging. HE institutions still rely heavily on traditional methods of teaching and assessment, which are inflexible and often punitive towards students with SpLDs (Jansen *et al.*, 2017; Smith, 2017; Clouder *et al.*, 2020). Furthermore, the neoliberalisation of HE, and external shocks such as COVID-19 and Brexit, have placed additional pressures on lecturers to act as marketeers to fill courses and plug gaps, or to take on extra teaching and research where staffing levels have been impacted (Walker *et al.*, 2021). There is no overall panacea to address these issues. However, embedding a cultural shift in discipline-specific approaches to learning and teaching may help (Griffin & Pollak, 2009). Revisiting an andragogical (adult-focused) approach combined with Layer’s (2018) learning inclusion model, where inclusive practice is embedded in teaching design and delivery for *all* students rather than adjusted for those with SpLDs, is fundamental.

Andragogical theory places the learner at the centre of their learning experience. They work with their facilitator (lecturer) to create learning environments that are based on their life experiences, existing knowledge base, wants, needs, and motivations (Knowles, 2020). Opposed to pedagogical (child-focused) theory, the practice is more self-directive, collaborative, and requires facilitators to be more inclusive and transactive in their approach

to knowledge sharing (El-Amin, 2020). Central to the andragogical approach is the need for lecturers to evaluate their teaching philosophies, ways of working, and approaches to improve their facilitating style. Coupled with collaborative curriculum design, educators can adapt and hone course content and delivery (Bouchrika, 2022), to better meet the needs of students with SpLDs. This proposition leads to discussion of the following case study.

Case study: the work-based learning model incorporating inclusive practice

The UoB EGA programme is embedded in the work-based learning approach (WBL). The multidimensional concept illustrates a bridge between participants, higher education, and the workplace (society). Opportunities for learning are practical but theoretically led and help prepare learners for real world leadership in the NHS (QAA for HE, 2018). There are numerous approaches to WBL (Major, 2016). The EGA approach is an integrated model, which involves practical leadership opportunities in the NHS, delivered through the NHS Leadership Academy, UoB, and the University of Manchester as the academic delivery partners (Major, 2016). This holistic approach enables participants to situate their on-the-job work in the broader context stimulated by the NHS.

The use of this hybrid learning model permits a diverse and inclusive approach to learning, which means the most appropriate methods for teaching, learning, and assessing can be adopted. The blended-learning focus (Banados, 2006) acknowledges that some approaches are more appropriate than others given the level of the material being taught and the readiness and academic stage of learners. For example, the programme uses two types of in-person learning groups between GMTs and standard participants (general NHS staff also on the EGA programme) to achieve the same learning outcomes. GMTs participate in Inquiry and Action Groups (IAGs). These are led more formally by the tutor, where directed readings and activities to support leadership inquiry are provided for assessment. Participants are encouraged to discuss real NHS challenges and suggest leadership approaches to solve problems Mumford (1996), but it is not a requirement. Through this approach participants experience responsibility for their learning which is rooted in theory and experiential practice-orientated foci (Bradfield, Cairns and Wright, 2015).

Effective learning environments are complex and fluid. There are many aspects to an environment that can change or influence the outcome for a student depending on the exogenous (external) and endogenous (internal) conditions (Sayer, 2000). For example, the physical environment, social and cultural conditions (Hiemstra, 1991). Through participant feedback and on reflection (Luft & Ingham, 1955), the author had neglected this standpoint during her initial EGA cohort. Despite experiencing dyslexia personally, the author did not actively engage students in discussion around their SpLDs. Following this revelation, the author evaluated student needs and adapted large group and small group teaching spheres to include more photo imagery and use of abstract principles to explain definitions. This more overt approach to effective, and crucially inclusive learning environments, also uncovered a challenge in the broader EGA programme at the institutional level at UoB, and ultimately across HE, in equity for support for PG learners.

The challenge is to create learning environments which are more inclusive for PG participants with SpLDs. At undergraduate level, there is a more formalised system for disclosure (via UCAS) and clear signposting (at open days and Freshers Fairs, for example). The current problem in HE for PGs is one of communication. The provision for EGA participants with SpLDs is excellent, however the complexity of the system that supports participants to disclose their SpLD and apply for support is unclear. Part of this can be attributed to the programme recruitment process. GMTS participants are recruited by the NHS Leadership Academy directly, not the University. This adds a layer of navigation and access complexity for support, and the potential for communication breakdown. For example, GMTS participants may disclose their SpLD to the NHS Academy, but due to data protection issues the disclosure has not been shared with UoB. However, participants believe that as they have disclosed, they will automatically receive support, which is not the case. This one area of communication difficulty highlights the complex arena in which the programme operates between different stakeholders. Elucidating a data sharing agreement between stakeholders to anticipate this issue is something that HE institutions should be considering in the contracting of their programmes.

Furthermore, specific neurodiversity training for lecturers is neither mandatory nor routinised if delivered at programme level. However, unique to the EGA programme is the

‘trio’ teaching model, which does provide opportunities for effective peer review and observation of practice. The Health Services Management Centre (HSMC) has also recently re-introduced peer reviewing across its programmes to evaluate the learning experience of students to improve teaching practice. These elements will help to embed and sustain opportunities for learning and development of practice to support PG with SpLDs.

The EGA programme does illustrate good practice in relation to student feedback, with inbuilt mechanisms to foster participant feedback about their learning experiences. There is an extensive formal feedback set up, which includes a set of surveys that follow in-person teaching residentials, which also occur at set points in the programme. They are administered by our Professional Services Team rather than by the tutors. The results are reported annually to the NHS Leadership Academy via the Programme and Practice Board. Also, quarterly nominated cohort representatives provide written and oral feedback via the programme Directors. On reflection (Gibbs, 1998), the issue with this approach alone is that feedback tends to become longer and more problematic; limiting the opportunity for dynamic and responsive changes to be made in the learning environment more regularly (Gray, Riegler and Walsh, 2022). The informal approach is led by the tutor. Tutors invite written and oral feedback following in-person lectures at each opportunity, which is typically once every month. Tutors focus on asking limited but specific questions, such as ‘in what ways did today’s activity challenge you?’ The critical step is to loop back and tell participants about the changes made to tutor practice (Brennan and Williams, 2004).

Tutors also invite feedback during assessment activities. Assessments are pedagogically situated in the work-based learning model (QAA for HE, 2018) and informed by Nicol and MacFarlane’s (2004) theoretical model and principles for good feedback practice, which combines academic-focused essays and work-based assignments. The 500-word reflective pieces assess participants’ fitness to practice in healthcare leadership, whereas the essays form the theoretical basis of healthcare leadership. Tutors also embed feedback on draft work and supplementary notes to support participant learning. Participants are also offered 1:1s if the feedback on assessment requires further explanation. On reflection (Schön, 1983), only the informal feedback mechanism highlights the need for tutors to adapt their teaching environment for participants with SpLDs. The informal route also highlights the

issue of the complexity PG learners with SpLDs have when disclosing and understanding the process for support. Therefore, it is critical for academic staff to have the capacity to build relationships with participants that foster an environment where learners feel comfortable to disclose such challenges- smaller group and individual tutorials are crucial (Layton, 2015).

The EGA programme offers a beacon of good practice, with opportunities to develop. However, to remedy the wider inclusive practice issues across HE, the following development points are suggested: earlier opportunities and encouragement for participants to disclose SpLDs alongside improved communication of available resources, improved support for lecturers to develop inclusive learning environments, contracted data sharing agreements, and formalised evaluation methods to review learners' experiences. Fundamentally, theory and practice need to be re-aligned in HE to arrive at inclusive learning spaces which encourage self-directive and collaborative learning- much like the EGA approach - with practical tools to support lecturers and students to navigate processes of support and adapt teaching practices, following Layer's (2018) 'inclusivity first' approach.

Conclusion

This paper has evaluated the situational context for UK HE postgraduate students with SpLDs and specifically, EGA GMTS participants with SpLDs at UoB. Literature suggests that the HE system does not encourage students to disclose SpLDs (Office for Students, 2019). The processes are cumbersome, and students fear stigmatization and labelling, which can prevent disclosure. Moreover, the current disability paradigm can inadvertently promote inaccessible learning environments (Clouder, Karakus, Cinotti, and Ferreyra, 2020). Current evidence and data highlights that inclusive practice is widespread but not consistent, and currently around only 20% of students registered in UK HE institutions disclose their SpLD (Layer, 2018).

Therefore, this paper calls for several approaches to action. First is theoretical and linked to practice, whereby HE contexts revisit the andragogical (adult focused) approach reformed with Layer's (2004) learning inclusion model, which is illustrated by the UoB case study. This requires lecturers to evaluate their teaching philosophies, ways of working, and approaches

to improve their facilitating style and delivery, to better meet the needs of students with SpLDs (Bouchrika, 2022). Second is conceptual whereby an inclusive process model of support for learners with SpLDs needs to be designed with accompanying visual explanation (notes and video), as well as empirical data concerning participants with SpLD experiences of their learning environment to inform inclusive practice and design.

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Using co-authored Learning Agreements when teaching challenging subject matter: a case-study from History of Art

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Introduction

This article evaluates the benefits of using learning agreements, co-authored by lecturers and students, when teaching challenging subject matter. It centres on a case-study from my own experience teaching a History of Art module, demonstrating how co-authored learning agreements can help to scaffold student's critical engagement with visually graphic source material. A co-authored learning agreement (sometimes called a 'learning contract') is a set of principles or directives agreed upon by students and lecturers through equitable negotiation, that will govern how a class or course is taught, and how students will engage with this teaching (Anderson, Boud and Samson, 1996/2014). In the following sections, I outline how to develop a co-authored learning agreement and discuss the pedagogic rationale of using this method. I then evaluate its efficacy through analysis of a student feedback survey (a tailored version of the College of Arts and Law's student module feedback form, with a mix of qualitative and quantitative questions) from a class sample size of 14 students. I conclude by situating the learning-agreement method within the wider context of affirmative learning environments.

Discussion of co-authored learning agreements remains a nascent topic in higher education (HE) pedagogy, with the majority of recent scholarship focusing on their role in blended and online study (e.g. Morrisey, Savage and Compton-Daw, 2020; Morgado, Pereira, and Quintas-Mendes, 2008). Moving beyond this context, I attend to their application in HE within the field of trauma and memory studies. Overall, I argue that co-authored learning agreements empower students and foster independent learning, encourage lecturers to reflect critically on their own practice, and help to create affirmative, equitable learning environments by respecting the individual needs and experiences of all participants.

Developing co-authored learning agreements

As the name indicates, a co-authored learning agreement is designed and agreed upon jointly by students and lecturers (Anderson, Boud and Samson, 2014). It is intended to frame the way a class, course or programme is taught, and guide how students and lecturers engage with the learning material and each other. It covers both modes and methods of teaching delivery, and student and lecturer behaviours and responsibilities. This means that students and lecturers should both share the responsibility for developing the agreement. Given the potential for unequal power dynamics between students and lecturers (Symonds, 2020), it is important that the agreement is designed within an inclusive environment and through a process of open discussion. As this requires a significant degree of trust, as well as a shared understanding of subject and teaching methods, it is necessary to scaffold the process by providing students with contextual material in advance. This material will include information regarding the concept and aims of developing a learning agreement (where this is new to the students), as well as information about the class/course content and available teaching methods. It is a key criterion of co-authored learning agreements that they serve the intended learning outcomes (ILOs) of a given class, course or programme, so this information needs to be clear to all participants at the start of the process. A virtual learning platform (VLE) can be used to share this information: providing this material to students before class will give them the time to process and think through the reasoning and possibilities of the learning agreement with regard to the course/class subject matter and ILOs. This is an important early indication of how the learning agreement can engage students in critical thinking.

Students should then be given an opportunity to respond, and to suggest what they would like to see covered in the learning agreement. This may include requests for particular teaching methods, guidelines for how to engage with different types of material, and suggested ways to participate in class. The lecturer should also reflect on their own approach in discussion with the students, thus emphasising the equity of the discussion. It is important to note that the learning agreement does not need to dictate course content, rather the focus should be on developing guidance for how content is engaged with. Open discussion about the learning agreement can happen in a flipped classroom, in group

debate, and with an additional opportunity for anonymous online discussion. The important issue is that students feel able to freely express themselves, so it is necessary to provide multiple fora in which students can share their views, including anonymous options. Once the principles of the learning agreement are drafted, it should be reviewed by all participants, with ongoing opportunities for evaluation and update. It should be openly available throughout the duration of the class/course and signposted at appropriate times. It is good practice in terms of fostering independent learning to encourage students to take responsibility for both activities.

Case study: Image as Witness

My own experience with co-authored learning agreements came with teaching an History of Art module, 'Image as Witness', to BA finalists and MA students. This was an optional module of my own design, taught through a combination of weekly lectures, seminars and student presentations. The core questions posed by the module included: how accurately can images bear witness to the world and our experiences of it, good and bad? Are there any experiences that the image cannot accommodate or represent? What moral obligation does this visual testimony place on viewers, if any? This subject matter was developed to align with the module learning outcomes, which stated that over the course of the module, students must: demonstrate a detailed and comprehensive knowledge of the module's taught content; describe relationships between relevant artworks and cultural/theoretical contexts; and identify, analyse and compare relevant artworks produced during the period covered by the module.

The module involved analysis of graphic images of violence, sexual violence, wounding and death throughout, as an essential component of the intellectual exploration of images' power to witness. Figure 1 is one such example: plate 3 from Goya's *Disasters of War* depicts violence, pain and death in abject detail; other plates from this series explicitly represent bodily wounding, torture and rape. Students needed to be prepared to look closely at such difficult images and discuss in detail the challenging historical and theoretical issues attending them. This was obviously a big ask for two main reasons: first, this material evidently has the potential to be quite distressing; second, the module asked for students to push their critical abilities and apply these within an ethical and intellectual framework that

I knew was not familiar to them. This is where a co-authored learning agreement became necessary, to ensure that students fully understood the content and intellectual aims of the module in advance, and that I understood what students felt they would need in order to engage successfully with this topic.

I used a flipped classroom in the first lecture. Having used the VLE to summarise the module's key topics and ILOs in advance, and provided set reading on pedagogies of testimony, I first asked my students to reflect on a series of questions about their learning goals. Example questions included:

- What do you want to learn from this course?
- What sort of learning activities would be useful to help you engage academically with difficult images?
- Should any subject or type of image be off-limits?
- Do we want some sort of code-of-conduct for student presentations?
- What will we do if anyone finds a particular image/s very upsetting?

Following this in-class discussion, we jointly agreed a set of guidelines about class content and behaviours, and the students nominated two of their peers to write these up and send them to me for upload to our VLE. These principles remained in place throughout the module, students could check on them at any time, they were sign-posted towards them when they had to prepare their presentations, and there was an opportunity to review them in weeks 2 and 7. Example principles from this agreement include:

- No images or subjects are off-limits, but there must be a strong and clearly articulated educational rationale for why we need to talk about/ look at something, directly related to the key questions for that week.
- Lecture and seminar slides will be uploaded at least 5 days before class.
- It is everyone's personal responsibility to check the content of a reading/lecture/seminar/presentation **before** coming to class.

Pedagogic rationale

I used co-authored learning agreements in this course in order to realise a number of pedagogic and pastoral goals. The intellectual basis for the module was Susan Sontag's theories about the ethical problems posed by images of war, that:

“Perhaps the only people with the right to look at images of suffering of this extreme order are those who could do something to alleviate it...or those who could learn from it. The rest of us are voyeurs, whether we like it or not. In each instance, the gruesome invites us to be either spectators or cowards, unable to look.” (Sontag, 2002, p.89).

Drawing on this, I aimed to get students thinking about their own agency in selecting, looking at and analysing a range of complex images. My goals were to foster independent learning, and create an affirmative, equitable learning environment that supports and encourages critical engagement and independent thought. By these means, I intended that students would be able to meet the skills-based and intellectual goals identified in the module's ILOs, which included developing detailed and comprehensive knowledge of the subject, and the ability to critically analyse source material. Finally, given the often-explicit nature of the material I would be presenting, I was aware that there were pastoral implications: the images we looked at had the potential to be emotionally challenging. It is not my role as a lecturer to engage in detailed pastoral intervention, but I did need to address the possibility that wellbeing issues would arise, so I aimed in my course design to respect individual learners and try to make sure all students were included and are able to participate. The three main devices I used were the learning agreement, content notes, and regular signposting towards pastoral provision within the School and College.

Evaluation

I elicited feedback from my students about their views on how the learning agreement worked, as well as their perception of the learning they engaged in during the module as a whole. This was done by means of an anonymous online student feedback form, comprised of qualitative and quantitative questions drawn from the College of Arts and Law's standard student module feedback template, and the data presented here is from a sample class size of 14. Students were asked to indicate their consent if they were happy for their responses being shared in publication. A note of caution: this module has only been taught once so far, to a small group of students who opted to take it, and who, as BA finalists and MA students,

had already developed a good degree of confidence in managing their own learning: the feedback thus represents the views of a select group. Having said this, this evaluation has elicited deep, if not broad, feedback and the results showed a strong, positive response to the use of learning agreements. Quantitative feedback was sought about whether students “found it useful to agree a code-of-conduct [learning agreement] at the start of the module”, and 100% of respondents answered with “agree”/ “strongly agree”. This correlated with two other pieces of quantitative feedback (Figure 2): 100% of students agreed that “the teaching methods on the module helped them learn” and likewise 100% of students agreed that their “understanding of the subject has increased as a result of taking the module”.

Qualitative feedback provided additional evidence that the learning agreement was fulfilling two clear functions, one to do with educational experience and the other to do with their learning. The following are examples of qualitative statements from the student feedback about the learning agreement:

“Was helpful in setting an intention of keeping a safe space where if anyone is affected by the content that they feel validated in setting boundaries when in the education setting.”

“In this module, there have definitely been some images and material that can be disturbing. Making sure before the module started that everyone understood that every individual would have a different tolerance toward explicit content and that we have to be respectful and thoughtful was crucial.”

“Is useful, it defines the scope of our research and what to do.”

“Helped me to understand the importance of justifying my use of imagery.”

This feedback showed that the agreement both helped to make the educational experience feel inclusive and respectful and also helped students to develop their skills and knowledge, in particular around establishing a rationale for referencing and critiquing visual sources. The positive response of students here matched my own appreciation of the co-authored learning agreement as a tool for both skills development and inclusion. As a lecturer, the learning agreement enabled me to refine my approach so as to better meet student needs and expectations when working towards the module ILOs. It also provided me with a sense

of security and confidence, that I was doing my best to meet the ethical and pastoral aspects of my role.

Affirmative learning environments

In this article, I advocate for using co-authored learning agreements to create affirmative learning environments. I have demonstrated their role in scaffolding student engagement with explicit visual material in the context of the humanities. Challenging and explicit material can be difficult to encounter, both emotionally and intellectually, and has the potential to be “triggering” for some learners (Dufree and Rosenberg, 2009; Marciniak, 2010; Rodier, *Meagher and Nixon*, 2013). Scholarship from the field of memory and trauma studies has asserted the importance of creating “safe” or “affirmative” learning environments to scaffold student engagement with challenging material. While I remain sceptical that one can guarantee a classroom will be emotionally or ethically “safe” when studying challenging material (Sleigh, 2023), I do concur that an affirmative learning environment is important. Students need to be a) recognised and respected as individual learners with their own intellectual agency, and b) supported to engage with the material in question in an appropriate analytical way. Co-authored learning agreements can be paired with other inclusive methods in order to create affirmative learning environments. Used in tandem with devices such as content notes and flipped classrooms (Hatchwell, 2023; Ray, 2020), they can scaffold appropriate academic engagement with important but potentially difficult topics, in a manner that is accessible to a diverse range of learners. Learning agreements encourage students to reflect critically on the material they are being presented with, on the learning outcomes they are aiming towards, and the learning methods they are using. They are supported to become active participants in the learning experience, making conscious choices about how and why they engage with content or learning processes.

Learning agreements remain an emergent topic in HE pedagogy. Initial discussion in the 1980s and 90s looked at the constructive role they might play in promoting student accountability within the learning dynamic (Knowles, 1986; Laycock and Stephenson, 1993). More recent studies have focused on their use in this regard in online and blended learning (Morrisey, Savage and Compton-Daw, 2020; Morgado, Pereira, and Quintas-Mendes, 2008). In this context, they perform a regulatory function, guiding students’ independent learning and online participation. Further scholarship has considered the role learning agreements

can play in fostering teamwork and encouraging student responsibility as part of the development of positive learning environments (Barkley, Major and Cross, 2014; Ellerbrock, 2014). A differing perspective on their function emerges in feminist scholarship and legal and conflict studies: these approaches have considered the ways in which learning agreements can address some of the pastoral and/or ethical issues that arise when teaching challenging subject matter (Lawrence, 2014; Rothman, 2014). Through my own experience, I have found that learning agreements are able to encompass a dual function, both constructive and ethical. Drawing together the branches of scholarship identified above, I contend they can help to bridge the constructive learning goals of a course with the ethical and pastoral demands of engaging with challenging content. I argue they are therefore of specific use within the field of memory and trauma studies in the humanities, and in particular, that they align with the sorts of values and approaches advocated by the critical pedagogy movement (Seal and Mayo, 2021; Coy, 2014). The critical pedagogy movement attends to issues around power relations within education, and the need to develop democratic learning environments which recognise students as individuals. These principles mirror the pedagogic aims and functions of the learning agreement in a HE setting: to help foster independent learning and drive critical thinking. The use of co-authored learning agreements can thus be seen as part of a wider project of developing equitable, inclusive and ethically aware learning experiences. Such experiences meet the intended outcomes of HE degree programmes in terms of fostering independence, self-regulation, and criticality.

Acknowledgements

Student feedback was collected anonymously, and students provided their consent for this data to be shared in publication. I am very grateful to my 'Image as Witness' students for giving their permission for me to discuss their feedback in this article.

My use of learning agreements was inspired by Jon Sleight. His own reflections of ethical and inclusive learning methods in museum education can be found in his forthcoming book *What Are Museums For?* (Bristol UP, 2024). I am very grateful to Jon for being so generous in sharing his knowledge and experience.

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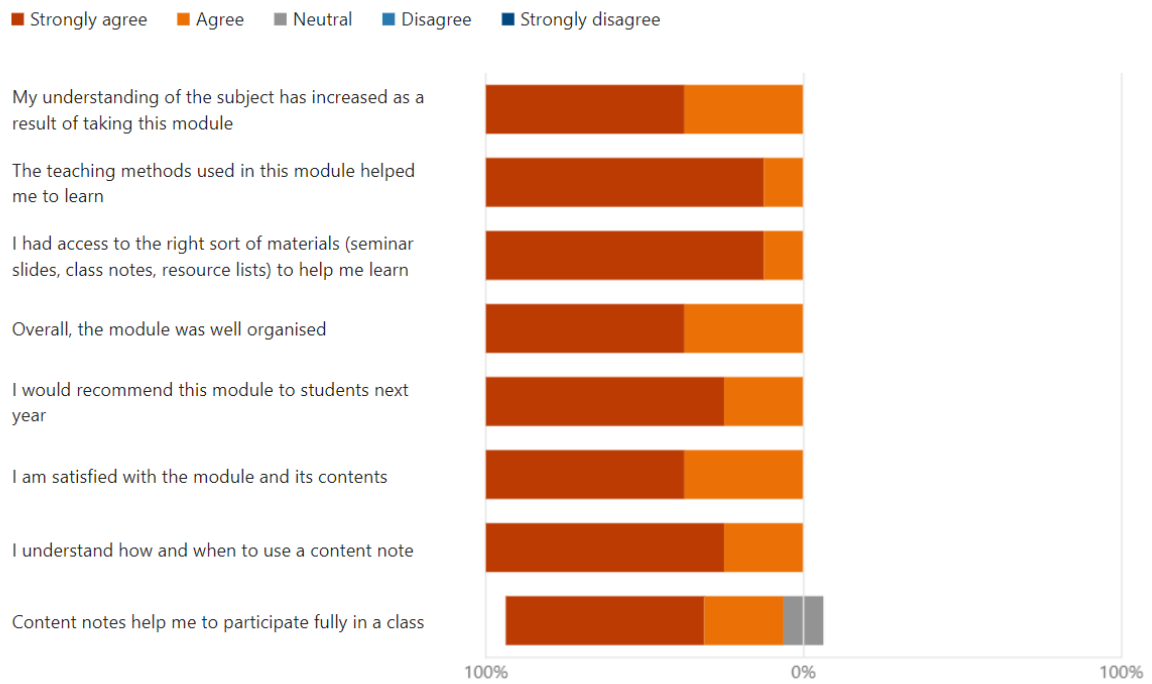
Supplementary information (illustration):

Figure 1

Francisco de Goya, *Lo Mismo* (*The same*), Plate 3 of *Los Desastres de La Guerra* (*The Disasters of War*) (Harris No. 123 III) (1863-92), etching, Scottish National Gallery, purchased 1967, accession number 2704.21. Creative Commons CC by NC.



Figure 2
“Image as Witness” Student Feedback Form (2022), quantitative question responses, sample class size of 14, responses collected anonymously via MS Forms.



Developing laboratory practicals for the modern curriculum: a place for virtual laboratory sessions

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Abstract

Laboratory practical sessions are often noted as highlights when considering student feedback on the module *LC Clinical Exercise Biochemistry*. Strategies to make content accessible to all students is key, irrespective of educational background or prior lab experience, to enable students to interact and engage with the sessions to achieve the relevant module learning outcomes. Students can often feel anxious or under prepared for such sessions, as the laboratory is often a novel environment and it is not feasible to provide 1-1 support for groups when delivering laboratory classes to 100+ students. Incorporating virtual laboratory sessions may be one method to minimise anxiety and lack of preparation, and to enable students to rehearse in a low-risk environment to prepare for upcoming in-person laboratory practical sessions. This review focuses on learnings from *LC Clinical Exercise Biochemistry*; an undergraduate module delivered in the School of Sport, Exercise and Rehabilitation Sciences at the University of Birmingham and examines existing literature on the value of virtual laboratory applications in teaching. This review helps to inform best practice for maximising the outcomes from undergraduate laboratory practical sessions to ensure equitable student experiences and improved learning outcomes.

Introduction

"The laboratory has won its place in school; its introduction has proved successful. It is designed to revolutionize education. Pupils will go out from our laboratories able to see and do"

Griffin, 1892. (Rosen, 1954)

Laboratory practicals have historically been considered an integral component of university science courses, with the *Commission of Professional Standards and Practices of the National Science Teachers Association* suggesting the inclusion and benefit to students was “too obvious to argue” (Hofstein and Lunetta, 1982, p. 201). Yet, as time has passed, the true value of laboratory practical labs has been questioned, with restricted budgets, time-pressures, increasing student numbers and a lack of empirical data to support claims of revolutionising education. Perhaps though, this is more a reflection of the lack of properly controlled scientific research and differences in interpretation of what a meaningful outcome of a lab practical looks like for students. Are improving grades the only important metric? Or is the opportunity for open-mindedness, curiosity, and creativity of equal importance in enabling students to become the scientist (Hodson, 1993). Although laboratory practicals have long been part of science courses, their integration with rapidly developing technological advancements has not been fully explored. The integration of computer laboratory simulations into student learning platforms is one such example. Whilst it is unlikely that the tactile hands-on experience can be fully recreated in a virtual setting, significant steps are being made towards bridging the gap between physical laboratory space and the virtual world. This is a step progressing at a rapid pace, in part due to the COVID-19 pandemic (Vasiliadou, 2020) and emergence of artificial intelligence (AI). In this review, we aim to make the case that laboratory practical sessions are still an integral component of undergraduate science modules and can be adapted to embrace the technological revolution, through the lens of an existing first-year undergraduate module - *LC Clinical Exercise Biochemistry*. We also discuss the potential utility of virtual, online laboratory simulation to enhance the student experience and learning outcomes.

The laboratory practical in biological sciences: insight from LC Clinical Exercise

Biochemistry

LC Clinical Exercise Biochemistry has been a longstanding first year module delivered from the School of Sport Exercise and Rehabilitation Sciences. Formally known as *LC Cell Physiology and Biochemistry*, the module has transitioned to a more applied clinical focus attracting students from a mixed range of educational backgrounds and from a variety of courses from physiotherapy to molecular biology. The overarching aim of the module is to provide a comprehensive introduction to biochemistry and metabolism, with application to

clinical populations in both health and disease. In the 2022/23 academic year, 295 students were enrolled, and a key feature of the course has been to provide students with the opportunity to experience a laboratory setting and apply their acquired knowledge from lectures, seminars, and online activities. The laboratory practical was completed in week 5 of the module. Week 4 had a dedicated seminar to the running of the session alongside online Canvas materials, including lab safety and video demonstrations of lab skills. In week 6, informal feedback was collected on how students experienced the laboratory practical during a small group seminar. Key themes identified by several students were that they enjoyed the opportunity to gain hands-on experience in a lab, it was a new experience that they hadn't thought about much before and that for some it brought up some feelings of nervousness as they didn't want to 'mess up' experiments.

Having had the opportunity to engage with students about their experiences, the general feedback suggested that the lab practical was a positive and enjoyable aspect of the module. In fact, there was an indication that utilising a more applied approach to learning was favoured as it avoided the repetition of lectures and seminars. However, some students reported some anxiety towards the laboratory sessions, which was most evident in those not from a biology background in previous education.

How the nature of the subject can influence teaching practice and the use of a laboratory practical session

Students graduating from human biological sciences and related disciplines should be able to demonstrate proficiency in foundational concepts and possess the skills needed to practice as professionals (White *et al.*, 2013). Whilst this is a lofty goal for a single first year module, the very nature of *LC Clinical Exercise Biochemistry* guides students towards this outcome. Foundational or threshold concepts are taught on an almost weekly basis. In week 1, students are taught about elements, molecules and cells - the basic building blocks of human anatomy, before diving into carbohydrate, protein and lipid metabolism in weeks 6, 7 and 8. Each of which, when mastered, can transform a student's grasp of the discipline, yet a lack of understanding can prevent progression into applied settings (Loertscher *et al.*, 2014). Because of this foundational nature, there are a wealth of well-written textbooks that can assist student learning, and many of our teaching materials follow themes

presented in them. To acquire skills needed to practise as professionals, it is not sufficient to rely solely on traditional teaching in the module and thus, journal clubs, collaborative student-led sessions, and the laboratory practical feature as key components of the module.

Focusing specifically on the laboratory practical component of *LC Clinical Exercise Biochemistry*, simply giving instructions for students to follow, then expecting positive outcomes and ‘accurate’ data generation is not appropriate for the level of the course. Instead, providing equal opportunity to students to engage in the practice, and to experience the process of science is key (Brewer and Smith, 2011). Further to this, the class size (300 students) and financial cost of running a practical laboratory means consideration must be given to ensure students are as prepared as possible before entering the lab. This is not only from a skills competency aspect, but more importantly from a health and safety perspective. Therefore, in the lead up to the practical laboratory we have provided theoretical and practical background materials, video demonstrations of key lab components, and interactive demonstrations of key equipment such as pipettes in prior seminars. These methods have been shown to improve student engagement and understanding in practical STEM laboratory sessions (Onyeaka *et al.*, 2023, Lacey and Wall, 2020).

Creating an effective learning environment

“Learning science means learning to do science”

(Woodin *et al.*, 2010).

Being a first-year undergraduate module, *LC Clinical Exercise Biochemistry* encompasses significant diversity in relation to student academic backgrounds and experiences. For example, students who joined the module having studied human biology, chemistry or similar subjects are likely to have a better understanding of laboratory skills. For those students studying other subjects, this can create a gap in their experience and how they feel towards the laboratory session. As previously mentioned, practical sessions can evoke anxiety and ‘pressure’ for students if expectations are not managed prior to the session. Reflecting on how we, as the module team, can improve students’ experiences can be

assessed in relation to the conceptual framework for course-based undergraduate research experiences (Brownell and Kloser, 2015).

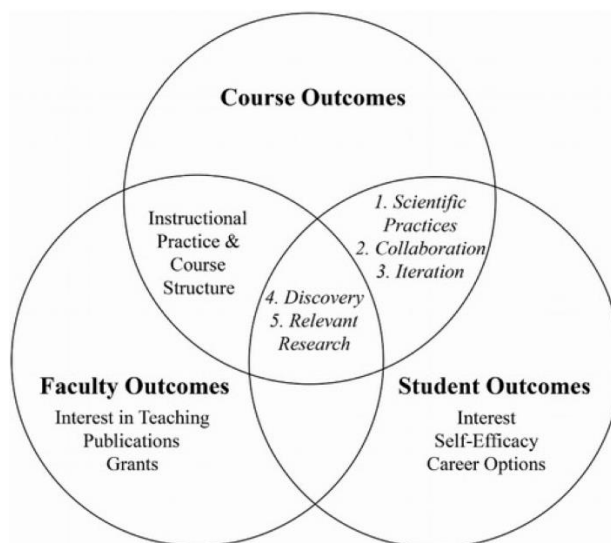


Figure 1. The conceptual framework for course-based undergraduate research experiences can be utilised to critically reflect on the interlinking impact of student outcomes, course outcomes and faculty outcomes on the learning environment created in lab practical sessions (Brownell and Kloser, 2015).

To facilitate the creation of an effective learning environment, it is important to consider what outcomes may be more important for the students (Figure 1). This could range from getting a first taste of what laboratory work is like in practice, to having a hands-on experience of implementing the 'scientific method' and generating real time data. It is also likely that some students will prefer theoretical work, but it is important for them to gain experience and understand the value and importance of laboratory experiments. Whilst developing students' grasp of the scientific method is important, the specific practical skills are only part of the picture. It is important for students "to know disciplinary ideas deeply, know how these ideas are connected and why they are important, and know when, where, and how to use this knowledge to accomplish a task" (Brownell and Kloser, 2015, p. 537). This can be achieved through practical applications of theoretical knowledge. Whilst coursework for this module has been linked to the laboratory practical sessions, the outcome of the session, whether correct data is collected or not, is not assessed. This has created a balance between motivating students to attend and engage with content, without the stress of completing a perfect laboratory experiment on the first attempt. This has helped to remove the 'pressure to perform' for a significant percentage of students and

gives a more relaxed setting to reach the main learning objectives of the sessions. One interesting outcome from the module in the past semester (Semester 2, Spring 2023) is that both the laboratory handbook and instructional video achieved similar page views on Canvas, both being amongst the top viewed pages on the module (1500 views each). Having both a visual aid and step-by-step guide was highly valued by students, with several students giving feedback that more opportunity to develop practical skills would be valued.

Challenges faced with laboratory practical sessions

“Science is not a ‘rhetoric of conclusions’, rather it is a messy, creative, social, iterative and human process”

(Schwab, 1958).

Emphasising the importance of developing student enquiry throughout undergraduate courses is not a new concept. Yet, defining what level of ‘enquiry’ a student has achieved through assessment, how much of a guiding role a teacher should play in this process, and understanding if there are varying degrees of student enquiry, are all questions that are difficult to answer (Buck *et al.*, 2008). The integration of laboratory practical sessions into biochemistry courses has been one such way to facilitate this process. However, the over-prescribed nature or ‘cookbook’-like instructions and focus on getting the ‘right’ answer can give students the impression that science is a collection of facts that we already know and a set of procedures that we need to follow step by step. Whilst delivery of this module has reinforced the exploratory nature of the practical sessions, on reflection our assessment methods do fall short of capturing students’ enquiry and experiences of the sessions. As an example, one method of evaluating the effectiveness of teaching on *LC Clinical Exercise Biochemistry* has been to collate feedback from academic staff supervising the laboratory practicals on how the session ran? For example, did students complete the objectives in the allocated time? Did students manage to collect the right answers to questions? This of course misses an important aspect of the practical; how did students engage with the course content and was the teaching provided adequate to successfully complete the objectives? Some quantitative insight can be collected from Canvas metrics. In general, students who engage with the course content more frequently achieve better

grades in the practical related coursework, indicating the level of teaching delivered is sufficient to support better student outcomes (Figure 2).

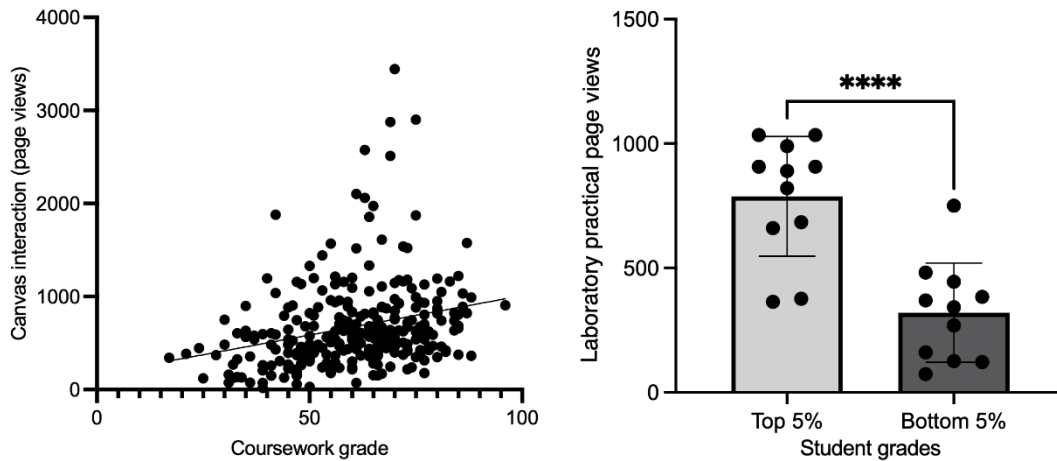


Figure 2. Canvas metrics showing that student engagement with the available taught content across the module is associated with higher grades. A: Overall student engagement with Canvas is significantly associated with grades achieved on lab-practical linked coursework ($R^2 = 0.07$, $F(1, 289) = 21.79$, $p < 0.001$). B: Students who achieved grades within the top or bottom 5% for the 2023 academic year had significantly different lab practical manual page views (top 5% = 787.9 ± 240.5 , bottom 5% = 320.5 ± 199.8 , $P < 0.001$).

Yet, the surface level interpretation of this data does little to aid the understanding of why students are not engaging with the course content. In fact, measuring student engagement is an incredibly difficult task when viewed from multiple lenses (Sinatra *et al.*, 2015). Are the teaching methods and pre-laboratory content available allowing all students, from diverse educational backgrounds, to get an equitable experience of the lab? Or will those with a background in biology be at a significant advantage? Are students who feel more confident in the lab to 'experiment' going to have a better experience rather than worrying about failing to get the intended results? Do all students see equal value in laboratory-based skills in relation to a future career? Of course, differences in previous laboratory skills experience are impossible to remove as it is a first-year module, however, thinking about the opportunity students have to develop competency going forward is key. Can we give all students the opportunity to develop competency in a lab setting following the course? This

will likely require the provision of suitable practice and opportunity to experience a lab setting more frequently, something that is often limited by the cost, space, and resources for running labs. This is perhaps where we can be aided by the rapid development in technology – the use of virtual laboratory demonstrations.

Laboratory practical sessions in the technological revolution

Practical laboratory demonstrations are a key component of developing the future generation of Biochemical scientists and feature throughout the dimensions of the UKPSF framework listed by the Biochemical Society (Smith, 2022). The idea of virtual laboratory (vLab) demonstration or participation has been considered as a potential tool to enhance student learning for several years. Across the literature, vLabs have been used to describe teaching materials from passive video demonstrations to more active virtual laboratory tasks. Early research into vLab demonstrations has shown that when used as a ‘pre-lab’, knowledge of, confidence in, and experience with the lab techniques can be improved (Maldarelli *et al.*, 2009). Implementing online vLab demonstrations with interactive components can help students to understand difficult and seemingly abstract concepts. Evidence from a systematic review and meta-analysis, including 23 articles, found vLabs to provide improved student affective and psychomotor skills (Udin *et al.*, 2020). However, this brought together a range of vLab modalities consisting mainly of 3D flash player videos, which lack the opportunity to build in enquiry-based learning platforms. Many studies also lacked comprehensive assessment of students conceptual understanding and science processing skills (practical tactile skills). Although limited, from this evidence there is a clear need for the integration of a more immersive student experience, avoiding exclusively didactic teacher to student transmission of knowledge (Esnard and Mohammed, 2019). It is also critical that any implementation of a vLab learning environment remains accessible to all students. One way to achieve this is to provide institutional access through a learning platform (Canvas) link and make this accessible on university computers. The very nature of a vLab or online learning tool should enhance accessibility. They can be replayed and rehearsed as the students wish until they feel competent at the exercise. However, simply providing access to a vLab system cannot be expected to improve students’ outcomes passively and requires teacher input and careful integration with existing learning modalities

(May *et al.*, 2013). Thus, vLabs should be seen as an augmentation tool to 'traditional' taught content and in-person lab practicals (Unsworth and Posner, 2022).

Research to understand the impact of vLabs increased during the COVID-19 pandemic as more online teaching was required. From this, it was evidenced that multiple forms of remote teaching should be combined for a more positive student experience. For example, combining vLabs with data analysis, literature review and science writing and encouraging critical discussion in journal club type sessions (Brandt and Novak, 2021, Chandrasekaran, 2020). From these recommendations, it is still apparent that learning outcome assessment and quality assurance needs are still not fully monitored in the combined use of vLabs with other methods of delivering teaching. It would be uncontested that practical lab experience translates into real-world applications outside of academic study. However, whether implementing vLabs would facilitate this is not known and is perhaps hard to measure accurately. More recent research has indeed shown improved test results from students who engaged with vLab activities over those receiving textbook-based instruction (Ye *et al.*, 2016). By introducing a blended learning approach to laboratory practicals, students were facilitated to work independently in a self-paced learning environment, prior to face-to-face instruction. This 'flipped learning' style, whereby students first complete tasks in their own time prior to more formal teaching, can significantly improve both student satisfaction, lead to higher summative marks and improve outcomes for those with reasonable adjustments (Chandrasekaran, 2020, Brewer and Movahedazarhouli, 2018).

However, integrating vLab learning into undergraduate courses is not without limitations. It is important that students are still fully supported in laboratory practical sessions, and it should not be assumed that completing online tasks to a high standard replaces the need for careful guidance from teachers. The gamification of laboratory practicals and running of virtual experiments (with no 'real' consequence to mistakes) could take away from the care and precision needed in the physical laboratory. The health and safety implications or poor laboratory skills are very real for in-person teaching, and so consideration for this must be given when moving from vLab learning to the real-life setting.

Whilst one motivation for implementing vLab platforms into undergraduate study could be to reduce costs of physical laboratory experiments, they are not without cost themselves. In fact, integrating vLabs into courses with a minor practical component or with large student numbers may not be feasible, costing in the range of £40-90 per student per year depending on content access levels and platform selected. Although there is growing evidence for improved student outcomes and experiences associated with implementing vLabs into undergraduate programmes, these costs may not be fully justified for all courses and will likely limit its integration.

Conclusions

Delivering high quality, accessible and purposeful laboratory practical sessions remain an important feature of undergraduate science courses. Such sessions can enable practical and problem-solving skills development and the application of theory to 'real-world' settings. The incorporation of online learning materials in the form of virtual demonstrations, pre-recorded demonstrations and linked assessments that enable students to prepare and engage with in person practical sessions can significantly improve student experiences. However, it is important that teachers support and encourage student engagement with online platforms to make sure proper understanding is achieved, especially regarding lab safety. Additionally, data on the cost-benefit of providing institutional/ course level access to vLab software is also lacking, which may limit its integration into undergraduate courses currently.

Ethical Statement: Data collected for use in figure two has been fully anonymised and processed as secondary data by the lead author.

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“Robots cannot drink coffee or real ale”: the undeniable spark of face-to-face teaching moments in digital learning journeys

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Abstract

The purpose of this study is to evaluate student perceptions of a yearly workshop, held as part of the Master’s in Industrial Project Management programme at the University of Birmingham.

This study employed action research methods to understand how the use of technology to deliver fully online and hybrid teaching during the COVID-19 pandemic (2020-21) and its immediate aftermath (2022)¹ impacted on student experience. A mix of technological tools was used, most notably the virtual world environment Virbela, MS Teams, the digital collaboration platform Miro, and telepresence robots. The data indicate that students generally preferred the hybrid teaching mode, which combines face-to-face interactions with remote learning. While fully online teaching offered higher flexibility in a time of crisis, the hybrid approach optimised both digital resources and in-person engagement, leading to enhanced student satisfaction, particularly for the social aspects of learning and community building.

Introduction

The Master’s degree in Industrial Project Management² (IPM) is a three-year part-time programme conducted fully online by the School of Chemical Engineering at the University of Birmingham, in partnership with GlaxoSmithKline (GSK)³. The programme was

¹ The WHO officially declared the COVID-19 emergency over only on May 5, 2023. See WHO. [www.who.int/news/item/05-05-2023-statement-on-the-fifteenth-meeting-of-the-international-health-regulations-\(2005\)-emergency-committee-regarding-the-coronavirus-disease-\(covid-19\)-pandemic](https://www.who.int/news/item/05-05-2023-statement-on-the-fifteenth-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-coronavirus-disease-(covid-19)-pandemic)

² www.birmingham.ac.uk/postgraduate/courses/taught/chemical-engineering/industrial-project-management.aspx

³ www.gsk.com/en-gb/

inaugurated in 2009 and converted to online learning in the academic year 2016-17. The students complete three 20-credit taught modules per year in the first two years. In the third year of the programme they conduct a research project worth 60 credits. The programme is delivered through the University's adopted virtual learning environment (VLE), Canvas⁴.

In year 1 and 2, students can participate in non-compulsory workshop that we call the 'Hub'. This offers students opportunities to interact with their peers and the teaching staff and to revise and deepen their knowledge on programme materials through targeted activities. This workshop used to be conducted over three days in person at the University of Birmingham and in another location, generally in Asia or the Middle East. In terms of content, the Hubs offer a mix of presentations, group activities, informal discussions and icebreakers and contributions from external speakers.

In response to the COVID-19 restrictions in 2020, our programme, like many others documented in academic studies (Dulama and Ilovan, 2020; Mishra *et al.*, 2020; Gherheş *et al.*, 2021, Gourlay, 2021), had to pivot quickly from the planned in-person Hubs to an online event. However, Gourlay (2021) observes that "virtual learning" is not entirely detached from "physical, material movement, placement, or practices", suggesting that it involves "embodied" (p. 58) engagements and interactions. The data from our study highlights how this emerged for both the exclusively online and the hybrid events.

In that first year, the Hubs were delivered exclusively via Virbela⁵. Virbela is an immersive virtual world environment where users can meet and interact through realistic-looking human avatars. The purpose of using Virbela was to make the interaction more realistic and engaging, and to prevent video fatigue (Salim *et al.*, 2022). Its use in educational contexts has not been widely studied yet, but Mora-Beltrán *et al.* (2020) provide a relevant case study, suggesting that Virbela brought about significant advantages related to student

⁴ www.instructure.com/canvas

⁵ <http://www.virbela.com>

motivation, participation in groupwork, and establishment of communication “without the pressure of face-to-face interactions” (p.51).

In 2021, an attempt was made to use another virtual environment, Frame VR⁶, as this had the potential to offer students a more intuitive tool by allowing the use of video along with the avatars. However, due to technical difficulties, some students were unable to access the platform and interact with the environment, and this led to reverting back to Virbela and MS Teams.

In 2022 the Hubs were held in a hybrid mode, from the University of Birmingham. By “hybrid” we mean “lectures/seminars/classes in which some students are physically present in a classroom and others join online simultaneously from remote locations” (Goria, 2022). The Hubs’ duration was reduced to two days each, but with longer hours each day compared to the purely virtual events. MS Teams was used in conjunction with telepresence robots⁷ to enable the students who were connecting remotely to interact with the classroom. Quite simply, telepresence can be defined as “the experience of being present at a real-world location remote from one’s own immediate physical environment” (Mair, 1997, p. 118). The robots used in the Hubs are remotely controlled tablet devices mounted on a moving support: the educational applications of this kind of device have been investigated recently, particularly for “homebound children” and pupils absent from school (see Johannessen *et al.*, 2023 and Velinov *et al.*, 2021). Finally, the digital collaboration platform Miro⁸ was used in all Hubs across the three years to support interaction and to gather the daily feedback from the students.

Research methodology

This longitudinal action research project (Norton, 2008) was conducted over three years (2020 to 2022) with a focus on continuous improvement, cyclical evaluation, and reflection, in a spiral of “plan, act, observe and reflect” (p. 69). Its primary goal was to assess the effects of virtual/hybrid hubs on student participation, engagement, and satisfaction. Our

⁶ <https://framevr.io/>

⁷ [Double Robotics - Telepresence Robot for the Hybrid Office](#)

⁸ www.miro.com

ultimate objective was to elevate the student experience across three cycles of the “Hub”. We utilised student feedback and reflections as pivotal tools for guiding modifications, all in pursuit of enhancing student engagement and satisfaction in alignment with our research goals. Where applicable, immediate changes were applied after the daily feedback provided on Miro boards by the students, but the larger and more systematic reflection and action was brought about by the analysis of the data gathered at the end of each Hub. Ethical approval was obtained for this study in 2020 and then again in 2022 for the hybrid version⁹.

Data gathering methods and process

Participation in the Hubs is not mandatory. Overall, 28 students out of 37 (over 75%) enrolled in the relevant cohorts participated in the Hubs over the three academic years considered. Appendix 1 illustrates their attendance patterns. The data collection methods changed from 2020 to 2021 and 2022. This change was prompted by the realisation that the initial procedures used in 2020 were overly complicated and demanding for the students to engage in. Moreover, each component of the data collection process in the first year was not producing sufficiently unique data to justify the overall complexity.

All data were collected anonymously in the three years, except for the in-depth interviews and the reflective essays, which were anonymised at the point of analysis. Wherever the students’ comments are linked to a name in the data, this has been substituted here with a numeric code from 1 to 28.

Table 1 shows the data gathering methods used. A detailed explanation follows in the text.

2020	2021	2022
Feedback at the end of each day (Miro) (17 students)	Feedback at the end of each day (Miro) (13 students)	Feedback at the end of each day (Miro) (8 students)
Reflective assignment (17 students)	Reflective assignment (13 students)	Reflective assignment (8 students)
Survey (4 students)	n/a	n/a

⁹ The code for the latest approved ethics application is ERN_2022-0484

In-depth interviews (3 students)	n/a	n/a
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Table 1 – data gathering methods by year.

From the first online Hub, all students were asked to provide feedback at the end of each day, using the whiteboard application Miro, anonymously. The board has the following sections: What was good about today, what was not so good today, Ideas (for improvement) and actions. Figure 1 below shows an example of a feedback Miro board.



Figure 1 – Miro board from the first day in the year 1 hub in 2020.

Moreover, all participating students submitted a reflective essay (500-700 words) commenting on their expectations, Hub content, technologies used, and providing suggestions for improvement (detailed guidance available on request). Students obtain a pass/fail assessment without a mark. The essay counts for 30% of their final grade in either module 3 (year 1) or module 6 (year 2), but the grade is determined by the weighted average of the module's other assessments.

For the Hubs held in 2020, students were also asked to complete a survey, consisting of 17 questions (a mix of closed and open-ended questions, available on request). Since the response rate was low (4 out of 17 participants), we interviewed three students (students 1,

2 and 3 in this study) who volunteered to support the study to gain a more detailed understanding of their experience. In the second and third year, we gathered data only from the Miro boards and the reflective assignments. All quotes included in this study come from the reflective assignments, unless otherwise stated.

Results and discussion

The student feedback on the Hubs has been consistently positive over the three years. Every method of data collection has shown high levels of overall student satisfaction. To gain a more in-depth understanding, we specifically sought students' evaluations on the content and teaching/learning methodologies of the Hubs. Additionally, we asked for their assessment of the educational technologies used and their associated benefits. These elements, naturally, are intertwined in several key areas.

In the sections that follow, we have organised our findings and discussions into two main categories: firstly focusing on the content and teaching/learning methodologies of the Hubs, and secondly on the educational technologies and their respective affordances.

Content and teaching and learning methodology of the Hubs

The content and methodology of the Hubs represent, at least in principle, an aspect of continuity between the Hubs held in person until 2019 and subsequent years. In fact, the initial goal of the move to online delivery was to preserve the content and objectives of the Hubs despite the constraints due to the pandemic. Most students were satisfied with the structure, content and methodology of the Hubs across the cohorts.

The survey conducted in 2020, with its limited responses, as explained above, showed a good level of satisfaction with the content and methodology aspects of the fully online version of the Hub. All 4 students - out of 17 – agreed that the Hubs were useful and well organised and 3 out of 4 agreed that the content was appropriate. More significantly, though all other data gathering methods (Miro boards, reflective assignments and (in 2020) in-depth interviews) broadly confirmed these findings.

Student 8 summed it up in their reflective assignment as “the workshop was structured very well, breaks frequent enough and of a sufficient duration [...] the agenda and content of the workshop was first class”. And in the words of student 10, who started out being “sceptical”: “the three-day hub exceeded my expectations. [...] the agenda as a whole was meticulously planned, well-paced and adhered to the planned objectives”. Other students (for example students 10, 13 and 20) also declared that their expectations were exceeded.

The forced move to the online Hubs was particularly concerning in terms of building a suitable social and community environment for the students – especially the first-year students who had not had the benefit of an in-person Hub before 2020. Hence, three games were introduced into the schedule: the first, a “light-hearted and fun” quiz, as described later on by student 27, to recap the previous two modules of the relevant year of the course; the second, a team building game (“The invisible path game”, available on Virbela) and finally a communication game (“the Chair game”) that highlights the importance of correct and balanced communication in projects. The Virbela game was not reproduced in the hybrid version of the Hub in 2022, where Virbela was not used. All these events were highly appreciated, for various reasons, but mostly for their potential to build social connections and render the atmosphere more relaxed and engaging.

The recap quizzes were found to be useful by all students who mentioned them in their feedback: for example, student 20 commented that they helped in reminding them of the content of the previous modules, while student 23 mentioned the “relaxed atmosphere” that supported engagement. The communication game was also very successful, both from a social and educational perspective, with student 1 commenting: “that got me thinking immediately about how I currently run my own projects” (from the interview) and students 2 and 4 being particularly appreciative, with student 2 saying, “my favourite activity at the Hub was the chair game” and student 24: “one of the most interesting I have participated in”.

The invisible path game was also a clear success, being mentioned favourably by almost all participating students (for example, student 3: “the invisible path allowed me to reflect on

the concept that people can give different feedback/advice simply because [they] can see the path from a different angle that highlight a different thinking process”).

In terms of the structure of the Hubs, several students recommended more frequent meetings, both for social interaction and community building purposes and for pedagogical purposes. This is a theme that is shared throughout the three years. Some students highlight the social aspect, such as student 11: “to create social interaction and engagement within the cohort at early stage” and student 1: “two or three of these hubs a year or [...] an extra couple of days here and there”, and 2: “let’s do this more often, [...] it doesn’t have [...] superstructural, very well-organised. I mean, just a casual one [...] two or three hours” (from the interview). Others highlight the opportunity to “deep dive one topic” (student 3) and “bi-monthly ‘mini-hubs’ to discuss a specific topic” (student 6); students 9, 4 and 18 share similar considerations. None of the students’ suggestions mention specifically in-person events, which would be consistent also with the information emerging over the year regarding the students’ limited availability and limited opportunity to travel. Due to the context, we can assume that most of them meant online events that could be held through the academic year without the major disruption to their work and studies that a two- or three-day event, including travel to a different continent, brings.

Regarding the duration of the yearly Hubs, many students have commented that the time was not sufficient to accomplish all the goals. For example, student 6 suggested “that the duration could have been increased to include more cases or to give us more time to discuss in each of the case studies or exercise”. Student 25 agreed that the workshop (on two days in 2022) was “brief”. Students 26 and 22 also concurred on this point. These reflections were more oriented towards dealing with the subject matter of the course than the social interaction aspect. Hence, also in response to this concern, the structure of the first module in year two “Projects, systems and control” was modified to incorporate two short (1.5-2 hours each) live sessions to deal with some complex issues in the programme and to introduce practical activities on the topics of causality and critical chain: these were judged by the teaching staff to be particularly difficult for the students to address without specific guidance.

In terms of communication and social interaction, on the other hand, student 1, for example, suggested that “a long-term method of ensuring communication between the students” be introduced. Naturally, students within the same cohort can always communicate through Canvas but no communication system was available for students to communicate across cohorts. Some attempts to develop a social media space for the group failed: a WhatsApp group was spontaneously started after the Hub by some students in 2020, but activity died down after a while, as reported by students 8 and 9; a Slack channel had been opened for the Hub in 2021 but was not widely used, as reported by students 7 and 8. A weekly informal live session for social and interaction purposes was also opened in academic year 2020/21, after the conclusion of the Hub, but was soon cancelled for poor attendance. Finally, a Team in MS Teams was created where all enrolled students and alumni can freely discuss any relevant topic. This allows different cohorts to interact directly, something that is not possible within Canvas, where cohorts are enrolled separately in unconnected courses. The teaching faculty are also enrolled and participate in the Team. This communication channel is currently operational and relatively well attended, with 52 users currently enrolled, 21 of which considered “active” due to regularly posting and participating in conversations and/or reacting to posts.

Educational technologies adopted for the Hubs

Utilising educational technologies was crucial for staff to administer the programme during the pandemic. It also offered a significant chance to assess online and hybrid teaching methods in our continuous effort to enhance the quality of student experiences. Even though this shift was initially dictated purely by the COVID-19 pandemic, most students appreciated the convenience of being able to take part from their own physical location. In fact, student 12 even asserted that “the objective of promoting collaboration between the students was achieved much better through the virtual workshop than through the in-person hub”.

The survey conducted in 2020 offered a moderately positive view of the technology, with all 4 students being at least neutral on overall satisfaction with the choice of technology and helpfulness in addressing the disadvantages of online work.

Miro was viewed as challenging to learn by some. Student 2, for example, had a strong comment, saying “that was a mess at the beginning” (from the interview). Nonetheless, many students praised its interactive features for collaborative planning (students 8, 10 and 13, for instance). Survey results, for example, showed that 3 out of 4 students found Miro “difficult”, while the same proportion found Virbela “easy” to use.

The evaluation of Virbela was more comprehensive, as 4 cohorts of students (divided across two years) experienced it. This was also largely positive. For instance, student 4 called it: “a very good alternative to in-person learning”, while student 6 judged it to be: “a fantastic tool” and student 7: “a very effective and positive experience”. Student 12 also had a very positive judgement: “Virbela provided an excellent platform to merge the gap between a real and virtual session”. Student 8 even declared their intention to use it in their professional setting. Unfortunately, there were some technical issues in accessing the platform, with a few students only able to access via an audio-only phone app. These were mostly due to limitations imposed by workplace hardware and software. As Mora-Beltrán *et al.* (2020) highlight in their study, preparation for use of new technology in education is crucial. In our context one student (student 1) proactively accessed Virbela beforehand to practice, despite the limited time available and other students, student 14, for example, commented in their feedback that a full pre-session dedicated to technology alone would have been useful. While constraints in 2020 made this challenging, feedback led to the provision of preparatory materials and early access to the technology in subsequent years, resulting in fewer issues overall. Some students also highlighted the time needed to navigate and control avatars within Virbela (student 2, for example) and challenges initiating conversations through the avatars.

This was in fact the most debated topic relating to the use of Virbela in the Hubs. On the one hand, as mentioned above, Virbela was used to offer more interactivity and flexibility than video conference tools like Zoom or Teams, which can lead to video fatigue or lack of personal connection when video is off (as student 18 put it, the “faceless nature of teleconferencing applications”). On the other hand, the use of avatars produced both positive and negative feedback. On the positive side, many valued the novel approach: student 2 said “it feels like you are in a classroom [...] it is more fun” and student 13 “felt

more connected to others...via the avatar and having the ability to move around"; for student 10 this enabled "a sense of togetherness, encouraged people to relax and even laugh". However, on the negative side, some criticised precisely the key characteristic of the avatars, i.e., the inability to see facial expressions and body language, affecting natural conversations. Student 7 explained this well, by saying: "I feel the conversations are not as natural...because body language and energy levels are not as easy to observe" and student 9 proposed switching to video calls for group work to "assess feelings/body language".

In the literature (Mora-Beltrán *et al.*, 2020, p. 51) Virbela is judged positively precisely for facilitating "social interactions" without "the pressure of face-to-face", as some of our students mentioned. However, both video fatigue and student preferences for keeping web cameras off are discussed in the literature as well: Gherhes (2021) even concludes that students' preference for keeping web cameras off often outweighs the benefits of seeing each other's faces.

In 2022, a significant change in the technology was introduced, with the deployment of telepresence robots used in tandem with the resumption of classroom-based Hubs in Birmingham for those willing and able to attend. The robots, displaying the user's face through a tablet, allowed for autonomous control over both communication and movement. This innovation served to bridge the gap between virtual presence and the dynamic, direct communication that comes with visually interacting with others, thereby diminishing the stark "hard binary" between virtual and non-virtual environments as described by Gourlay (2021, p. 58).

Some difficulties related to audio, internet connection and movement controls were mostly overcome in the first session. Student 18, 20, 24, 25 and 28 all connected remotely using the telepresence robots. Students 26, 27 and 19 were present in the classroom while their classmates were connected through the robots. Most overall impressions were positive: student 25 found it "a pleasant experience" and student 20 found it "very interesting experience" and "more immersive", while student 24 noted that: "I wasn't confident if other participants could hear me well [...]. I felt uncomfortable at times", even though, ultimately "I was heard every time I had something to say". However, the same student (24) also

remarked that “I don’t feel that we, as a team, performed well enough [because of] lack of contact with the team on campus”, student 26, who was present in the classroom, appreciated that the remote students “were able to speak as if we were in the same room”. Student 27, who was a first-year student in 2022, commented that “the event was more interactive than I had expected it to be” and that the students connected through the robots “were more involved and present compared to a standard video call”, even though they had difficulties sharing his handwritten notes with them for the group work. Student 18, who had participated in a fully online Hub in 2021 and was part of the hybrid hub in 2022, found that the robots “very effectively allowed a ‘real environment’ experience for the virtual attendees”. As the only student in the classroom for one of the 2022 sessions, student 19 still found “the interactions with fellow students [...] enjoyable and interesting” and the robots themselves “an impressive solution” and a “vast improvement” on the more traditional solutions alone.

Many comments across the cohorts highlight the appreciation for the social aspects that in-person activities allow. The opportunity to “talk to other students during break time or between activities” was something student 2 lamented the absence of in the online format. Student 23 was also very clear on this, by saying “it would still be better to have the hub in person” and on a similar note, student 10: “a face-to-face approach would have been a good opportunity to meet peers and lecturers”; and similarly student 8: “Always best in my opinion to have everybody co-located as this creates the best collaboration”; and, finally, student 22: “robots can’t drink coffee or real ale”, commenting on the fact that face to face in person interaction allows all those impromptu social contacts that online learning cannot fully provide.

These student reflections lead to the conclusion that the hybrid mode enables a higher quality of interaction, because it allows a more direct use of the “informal human contact outside the class” (student 22), while also enabling the students who cannot travel to participate in the activities. In 2022, the robots provided part of that face-to-face aspect that the purely online format, especially through the avatar system, did not afford.

Conclusions and further actions

While the virtual and hybrid versions of the Hubs were initially developed in response to the COVID-19 pandemic, they have since become a permanent feature of the IPM Master's programme. Based on our analysis, we conclude that the students have a positive view of the online and hybrid Hubs.

Some key takeaway findings from this work include:

1. There is a need for meticulous planning, especially when incorporating software not natively integrated within the given course system. This is particularly pertinent for part-time students who might use their company's equipment, as highlighted by the difficulties with Virbela and Frame VR. This element brings clearly into focus that the physical spaces and tools the students deal with in virtual learning are far from "undifferentiated neutral backdrops – they must always be managed, negotiated with" (Gourlay, 2021, p. 60).
2. Our part-time online students place a high premium on interaction. They greatly value the visual connectivity and prefer the benefits of seeing each other over any potential stress from video conferencing. They also treasure the social and academic opportunities provided by the Hubs (over 75% participation demonstrates this) and make an effort to attend in person whenever possible. Consequently, we should focus on leveraging technological solutions that bolster interaction and adopt hybrid approaches that increase physical student presence, echoing the sentiment of student 19 who advocated for "more students in the room." This aligns with the fundamental intent behind establishing the Hubs, and it is logical to continue pursuing this goal.
3. Intriguingly, students have expressed interest in utilising the technologies introduced in the Hubs in their professional settings to boost or refine online collaboration. As S22 eloquently put it, "in Industry 4.0... the project manager must always stay ahead, constantly evolving as technology progresses."

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Appendix 1

Participation in the Hubs by year

2020 fully online	2021 fully online	2022 hybrid
Y2 2020		
Y2 2020		
Y2 2020		
Y2 2020		
Y2 2020		
Y2 2020		
Y2 2020		
Y2 2020		
Y2 2020		
Y1 2020		
Y1 2020	Y2 2021	
Y1 2020	Y2 2021	
Y1 2020	Y2 2021	
Y1 2020	Y2 2021	
Y1 2020	Y2 2021	
Y1 2020	Y2 2021	
Y1 2020	Y2 2021	
	Y1 2021	Y2 2022
	Y1 2021	Y2 2022
	Y1 2021	Y2 2022
	Y1 2021	
	Y1 2021	
	Y1 2021	
		Y1 2022
		Y1 2022
		Y1 2022
		Y1 2022
		Y1 2022

The students attending the Y2 hub online in 2020 had previously attended an on-site Hub for their Y1 – in orange in the table; the Y1 students in 2022 will not have experienced the fully online Hub at all – in green in the table. The students starting year 1 in 2021 experienced one online Hub and one hybrid hub – in blue in the table. The students who started Y1 in 2020 have only experienced the fully online Hub – in yellow in the table.

Scaffolded formative assessment: fit for purpose?

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Abstract

The existing assessment literature has a large consensus on the benefits of two key pedagogical approaches: formative assessment and scaffolding in assessment. This practical case study focuses on combining these approaches in a quantitative economics module, presenting the implementation of a scaffolded formative assessment. A key aspect of our study involves highlighting the disparity in structure between formative and summative assessments and emphasising the need to explain this contrast to students. The findings suggest that this practice of scaffolded formative assessment is a useful pedagogical tool for both theoretical and practical reasons. Our implementation produced positive student outcomes, improving their feelings of support and engagement, as well as their perceived knowledge and overall learning experience. Furthermore, we found that providing clear and explicit guidance is vital to enhance students' assessment literacy and for them to see the links between the different stages of their learning journey. This formative scaffolded approach has the potential for scalability and applicability in other quantitative and qualitative modules.

Introduction

In the ever-evolving landscape of higher education, fostering an environment that nurtures students' engagement, motivation, and overall learning experience is paramount to their success. In this context, educators need to explore different approaches, balancing pedagogical needs with practicalities and discipline-specific demands. In this case study, we present how we introduced a scaffolded formative assessment in an undergraduate quantitative module with the aim of enhancing students' attitudes towards learning, promoting engagement, and improving their assessment literacy.

The idea of *scaffolded formative assessment* is based (i) on empowering students to develop a comprehensive grasp of complex tasks by breaking them down into manageable steps or patches (Jumaat and Tasir, 2014 for the scaffolding part) and (ii) providing students with feedback before summative tasks (Norton, 2009 cited in Neustadt, 2012 for the formative part). Thus, the aim of a scaffolded formative assessment is to encourage students to approach tasks incrementally, allowing them to build upon their knowledge, skills, and understanding at each stage. This, in turn, should cultivate students' higher-order thinking skills and develop a more holistic vision of the learning process by enabling them to interpret and utilise feedback constructively.

After a brief literature review, we present the design and practical implementation of scaffolded formative assessments in a second-year quantitative economics module. Then, we explore the encountered benefits and challenges and discuss how assessment literacy can be developed through this approach. Thus, our aim is to contribute to the pedagogical literature on the advancement of effective assessment practices and the improvement of students' overall learning experiences.

Literature review

Formative assessments play a crucial role in amplifying and enhancing student learning, as discussed in the critical literature review by Kulasegaram and Rangachari (2018). The approach of these authors is particularly interesting, as they draw on the normative educational theories to focus on the personalisation of the learning experience through assessment for learning; arguing that formative feedback provides an opportunity to adapt behaviours before the summative assessment of learning. These conclusions are in line with the findings of Leeknecht *et al.* (2021), where authors emphasise that formative assessments serve as powerful motivators for students, encouraging them to engage in studying, fostering their awareness of acquired knowledge and identifying areas requiring further attention.

In addition, Weurlander *et al.* (2012) agree that formative assessment can be an effective tool for learning, but only if the formative feedback is supportive, time-appropriate, and forward-looking. We draw inspiration from this study both for our methodology, where we

focus on students' perception of their learning experience instead of attainment outcomes; but also from the findings, which underline that complementarity between different assessment and feedback methods is important. As Weurlander *et al.* (2012) compare two different assessment methods (individual essay and group oral presentation), they implicitly conclude that *how* the assessment(s) are scaffolded will influence both their perception and effectiveness.

Nicol and Macfarlane-Dick (2006) demonstrate that formative assessment and feedback support self-regulated learning in the cognitive, behavioural, and motivational aspects. A good feedback practice enhances clarity regarding the expectations for achieving good performance, including goals, criteria and expected standards. It facilitates the growth of self-assessment skills and reflective practices in learning, provides students with valuable and high-quality information about their own learning progress, and encourages meaningful dialogue among teachers and peers. By fostering collaborative learning and constructive discussions, it is an effective way to motivate students and cultivate positive self-esteem. Furthermore, the insights feedback provides into current performance levels equip teachers to shape and refine their instructional strategies to better bridge gaps for students.

Other studies have illustrated that formative assessments play a pivotal role in promoting continuous growth, engagement, and achievement of students: studies such as Rajaram (2011) and Peat and Franklin (2002) provide evidence of the effectiveness of formative assessments in students' learning and grades. Particularly, Rajaram (2011) investigated the efficacy of formative assessment techniques in an economics quantitative (econometrics) course. The learning gains of Rajaram's (2011) extensive formative assessment project are demonstrated by the positive changes observed in students' course grades.

Scaffolding in assessment is another strong option to improve students' outcomes and their assessment literacy. Here, scaffolding refers to the guidance and support from teachers and instructors to help students effectively achieve their learning goals (Jumaat and Tasir, 2014) and relates specifically to breaking a big task into bite-size blocks. The effectiveness of the scaffolding approach is demonstrated, for example by Kruiper *et al.* (2022). These authors describe a training programme based on formative assessment and scaffolding to effectively

implement formative assessment strategies in their practice. Their findings suggested that teachers reviewed the training positively and reported scaffolding theory as a useful addition. Kang *et al.* (2014) investigated the role of scaffolding in assessment tasks and showed that employing a strategic combination of scaffolding tools can effectively encourage students of all achievement levels to apply their knowledge in generating evidence-based explanations.

The same conclusion is reached by another study: Chen *et al.* (2022) describe the implementation of a *combination* of self and peer assessment. The authors develop scaffolding self and peer assessment (SSPA) with the aim of improving student assessment literacy. The key features of SSPA include a carefully timed progression from self to peer evaluation using a rubric and a set of online and face-to-face activities to guide students through the evaluation processes. The results of this study, based on a quasi-experimental setting with a quantitative data analysis, suggested that scaffolding enhanced assessment literacy levels. We draw inspiration from this example of the combination of different known elements; we note particularly the importance of the scaffolding design.

In summary, there seems to be general agreement that employing a combination of formative assessment and scaffolded assessment by introducing a *scaffolded formative assessment* is likely to improve student's performance (Rajaram, 2011; Faulk, 2007), engagement (Neustadt, 2012), knowledge and understanding (Tien *et al.*, 2021), sense of support (Jacoby *et al.*, 2014), and assessment literacy (Chen *et al.*, 2022). This constitutes the rationale behind the design of our interventions to explore whether this scaffolded formative assessment approach would have the desired outcomes in our particular setting. To our knowledge, this type of intervention is novel in an Economics module.

Background

Our case study relates to a relatively small cohort of second-year students studying in the Economics suite of programmes within a specific context of an overseas campus of a Russell Group University. This cohort faced the COVID-19 lockdowns during their previous academic instruction, which, in addition to other factors, led to significant gaps in quantitative skills. Our challenge was to address this gap and to improve students' experience. As illustrated in

Table 1, during their first year of studies, around 30% of this group of students failed Introduction to Mathematics, and 50% failed the Applied Economics and Statistics final exam, both core quantitative modules. In addition, more than 60% of the students failed the first test of the Econometrics module at the beginning of their second year. Thus, our intervention targeted the subsequent assessment in this module in an attempt to improve students' outcomes and learning experience.

This assessment consisted of a Stata coursework, which required students to retrieve country-level secondary data from an online database (e.g. OECD, World Bank, IMF), construct a statistical model to analyse a specific economic question and report and comment on their output for policy implications. Notably, constructing the required model necessitates sound quantitative skills, the foundations of which are taught in the aforementioned first year modules. The absence of a formative assessment for this Stata coursework, which accounts for 25% of the overall grade, has highlighted the need for additional support to improve students' performance and prospects for success. The details of the intervention design and evaluations are described in detail in the next section.

MODULE	ASSESSMENT	WEIGHT	AVERAGE MARK	PASS/FAIL ¹⁰
INTRODUCTION TO MATHEMATICS	Problem Set	0.25	40.5	> 30% fail
	Problem Set	0.25	60.1	> 10% fail
	Final Exam	0.50	67.5	> 20% fail
APPLIED ECONOMICS & STATISTICS	MCQ Test	0.25	44.08	> 40% fail
	Excel Problem Set	0.25	43.73	> 30% fail
	Final Exam	0.50	32.01	> 50% fail
ECONOMETRICS	MCQ Test	0.25	37.51	> 60% fail

Table 1: Summary of students' performance in the quantitative modules (prior to intervention)

In addition, as this cohort struggled with the required quantitative skills, they felt overwhelmed by the content of the module, as well as the pace of block teaching. This was

¹⁰ "Fail" indicates fail at the first attempt; students had the opportunity to re-sit the module in the supplementary period.

reported by students on different occasions during office hours, personal tutoring meetings, and other informal interactions. There was also a pervasive sense of lack of support among the students and a low engagement with the computer labs that are an integral part of the module, witnessed by the module leaders. Recognising these challenges in addition to the lack of formative assessment for this type of coursework motivated the module leaders to introduce additional support for the students.

The above sets out the broad context of the initial intervention: the challenge was to improve students' engagement, performance, and sense of support without having to change the overall assessment design or module syllabus. These practical considerations led to reviewing pedagogical scholarship (as discussed in the previous section) in the search for existing approaches which would enable us to address this goal within our constraints. Introducing a formative assessment did not require any formal structural changes; scaffolding provided the required level of flexibility to adjust the first task to the students' level. The results and reflections on our approach may be of practical use to colleagues facing similar challenges and constraints.

Design of the interventions

The scaffolded formative assessment was implemented as an intervention in two distinct instances for the same cohort. This was possible as the design of the programme is such that the second-year cohort is split in two: depending on their pathway, some students take the Econometrics module in the first term, while others take it in the second term. This particularity enabled us to run our initial intervention in the first term, collect feedback from students, apply changes to our design accordingly; and then implement the improved intervention again in the second term.

The initial implementation involved breaking down the one task posed in the summative coursework (1000-word report on data analysis of a specific economic problem), into twelve independent formative tasks or questions. Therefore, the *apparent format* of the summative and the formative tasks were *inherently different*.

This distinct structure was initially explained in the classroom, as well as in an online announcement, before introducing the formative assessment. Afterwards, we offered students the opportunity to self-evaluate their work on the formative tasks based on provided solutions. This was then followed by a session of peer feedback using the functionality of Padlet. While all materials were made available to students via a Virtual Learning Environment - (Canvas); the teaching and the feedback sessions took place in person.

Following the long-standing constructivist research tradition (similar to Weurlander *et al.*, 2012 as well as Ogange *et al.*, 2018), we collected the data on students' perceptions of their experience, recognising that the data collection, particularly in the focus groups, was influenced by the context of interactions between students and module leaders as researchers. We gathered students' feedback on their experience of the formative assessment via an online questionnaire and in-person focus groups. The questionnaire asked students to select all options that applied to them from a provided list; the focus group discussion consisted of five follow-up questions. This primary data was collected with the ethical approval of the University of Birmingham, (ERN_2022-0687).

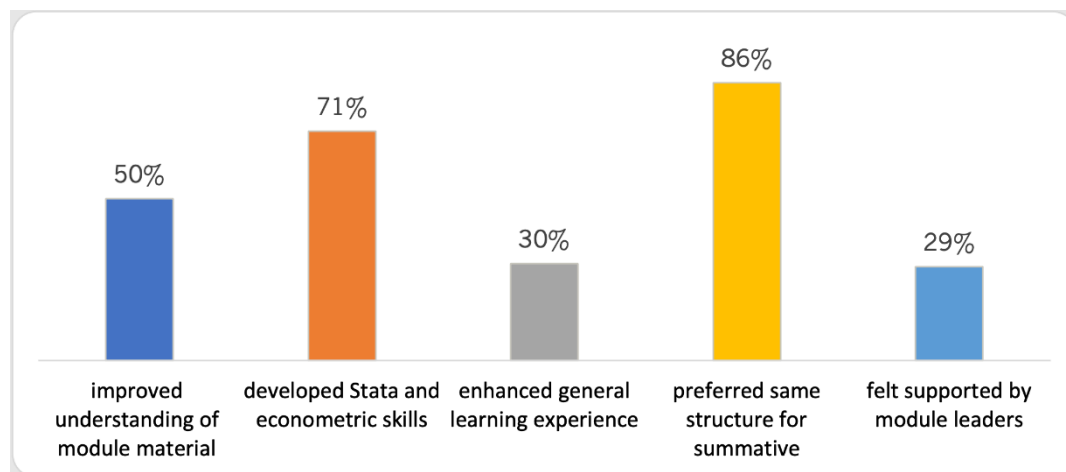


Figure 1: Results of the first online questionnaire

Note: students were asked to select all options that applied to them among the following (i) I felt supported by my module leaders prior to the summative coursework; (ii) I found that the answers have enhanced my understanding of the module material content; (iii) I would have preferred if the formative assessment had the same structure as the summative coursework; (iv) The formative assessment has improved my general learning experience; (v) The formative assessment has enhanced my use of Stata and general econometric skills, and (vi) None of the above. The % represents the share of respondents who have selected this option.

Figure 1 represents the results of the questionnaire (with a response rate of 78%) after the first intervention which reveals that our aim was achieved only in part. As self-reported, students' understanding of the material and their analytical skills were improved; however, the overall experience and feeling of support were not augmented. Students in the corresponding focus group (n=5) reported that they struggled to make connections between the two different assessment formats, highlighting the need for improvements and clarifications. Specifically, *students did not identify that the collection of twelve questions in the formative assessment represented the steps to answering the overall question of the summative one.*

Based on students' feedback and insights gathered from the initial focus group, several innovations and advancements were introduced to improve the effectiveness of the scaffolded formative assessment and to make it more fit-for-purpose. These improvements were introduced for the same module and assessment type in the second term, and included the following:

- *Bridging the Gap:* The scaffolding strategy was more explicitly outlined and explained to students during the formative feedback session before the release of the summative coursework. We emphasised the inherent difference in the structure of the formative from the summative assessment.
- *Connecting the Dots:* A clear mapping between each formative task (patch) and the overall summative coursework was provided. This mapping aimed to show students how each task contributed to their preparation for the coursework, helping them see the relation between the two assessments.
- *Making Time to Practice:* Students were given sufficient time to work on the formative tasks independently, allowing them to develop their skills and understanding at their own pace. This self-directed learning was meant to foster more autonomy.
- *Engaging with Feedback:* As students reported they preferred to work individually to avoid free-riding problems, but that they valued guided group discussions, structured instructor-led feedback sessions were introduced to facilitate and guide peer support. These feedback mechanisms helped students

gauge their progress and make improvements before the summative coursework.

	FIRST TERM	SECOND TERM
PERFORMANCE ON STATA COURSEWORK	57.6 (all pass)	57.5 (all pass)
ENHANCED UNDERSTANDING OF MATERIAL	57%	100%
IMPROVED GENERAL LEARNING EXPERIENCE	29%	83%
IMPROVED USE OF STATA AND ECONOMETRIC SKILLS	71%	100%
SENSE OF SUPPORT	29%	83%
PREFERRED SAME STRUCTURE	86%	33%

Table 2: Summary of students' performance and perceptions after the intervention

The feedback collected following the above-listed modifications showed that the incremental improvements were successful. Table 2 illustrates this by presenting the results of the same questionnaire, run after the first intervention (in the first term with a response rate of 78%) and the second one (in the second term with a response rate of 86%). Notably, all students in both iterations have passed the coursework, showing remarkable improvement from their first year. However, there is no marked difference between the performance after the first and the second iteration as the re-design of the intervention was not aimed at the content or performance improvement, but rather at addressing students' feedback.

In this context, the results in Table 2 highlight the evident difference in how students *perceived* the intervention and the additional support offered. Students' perceived understanding of the material, as well as their general learning experience, has significantly improved from the first to the second term. Furthermore, the additional materials provided had a positive impact on students' ability to apply the necessary skills effectively. More importantly, the data outlined a noticeably greater sense of support among students in addition to a substantial fall in the percentage of students who preferred a consistent structure for both assessments. The latter point highlights that more students were

convinced of the usefulness of the scaffolded (different) format of the formative assessment in preparing them for the summative coursework.

Together with the feedback from the focus groups, this indicates that the efforts to map more clearly the formative tasks to the summative coursework have contributed to a significant improvement in students' understanding of the overall assessment design and their perception of support during their learning process.

These findings provide useful insights into the effectiveness of scaffolded formative assessments and highlight areas for further exploration. By breaking down the summative coursework into component tasks, providing clear explanations and mapping, allowing independent practice, and offering feedback, students' understanding, quantitative skills, and learning experience were enhanced. We find that explaining the relationship between the formative and the assessment tasks, when structures are different, is crucial to successful implementation.

It is important to note that our findings and recommendations are drawn on the basis of a relatively limited case study, both in terms of student numbers and repeat iterations; the case is limited to one specific module. To substantiate these findings, such interventions need to be conducted and evaluated at a larger scale and across other disciplines.

Conclusions and recommendations

Overall, we have found that scaffolded formative assessment is an interesting and useful tool to consider for both good pedagogical practice and practical reasons. The practical reasons for implementing scaffolding in a formative, rather than in a summative assessment are: firstly, instructors may be constrained by the existing approved modules and assessment specifications which are usually more stringent and time constrained to change; and secondly, instructors are likely to feel freer to experiment with the design of a formative assessment, where the stakes for students are lower.

More importantly, there are sound theoretical foundations for a scaffolded formative assessment: it corresponds to the best practice principles discussed in the literature review.

Clarity of instructions, expectations, and feedback play a key role in this success. Taking this point further, subsequent practice and research could investigate whether the scaffolded approach could be taught as a skill for students to use going forward. In other words, by explaining to students how the big task was broken down into smaller steps, the scaffolding would be used beyond the specific content, as a transferrable skill, rather than simply the instructor's tool.

It is very important to underline that where the structures of assessment differ, as in our case between formative and summative assessments, instructors cannot take students' understanding of the links for granted. Rather, these links need to be explicitly explained and highlighted. We can take this conclusion further: students need clear guidance to see the links between different assessments within the same module and between modules. This issue of assessment literacy and the ability to interpret the feedback for future tasks is particularly challenging for large cohorts, where individual conversations with students require more extensive resources. However, the approach we propose is, at least in part, scalable. The explanations of links can be provided at a cohort level, within recorded or live materials.

More generally, students could be explicitly guided to look for and analyse the links between different assessments and tasks, particularly at higher levels of study. This type of reflection should be encouraged, rather than expected, especially at the entry level and for students from different educational backgrounds. Finally, we believe that these findings can be further extended and experimented with, to achieve longer-term effects with a focus on students' transferable skills and assessment literacy.

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Benefits and challenges in teaching civic leadership

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Abstract

As universities reappraise their civic responsibilities in the 21st century, the role and value of education in addressing global challenges is a central and under-explored part of this debate. This paper examines the development of a taught Year in Civic Leadership to reflect upon benefits and challenges for educators, stakeholders, and students. We argue that, unlike conventional internships, devoting time and resource to combine placements with reflective and empathetic practice produces students who become effective changemakers. Moreover, civic learning opportunities have longer-term institutional benefits in building resilient and impactful networks with stakeholders, increasing the university's civic impact.

Introduction

At the start of the 20th century, many universities – including the University of Birmingham (UoB) – were established as civic institutions to serve the educational needs of the areas where they were based. However, since their inception, and adapting to the challenges of the post-war educational landscape, many of these institutions have seen their civic rationale diminish as they negotiated the challenges of rising student numbers and the pressures of new research agendas. Nevertheless, at the beginning of the 21st century, and pressured by significant shifts in work patterns and student expectations, universities have been revisiting their role as civic entities, beginning a much-needed reappraisal of the role educational institutions play in creating mutual benefits for the academy and wider society (Grant 2021, Goddard 2009, Scott 2019). This paper argues that universities need to fully embrace the benefits of a civic-facing education, making it a central component of the curriculum, to offer their students the education they need to flourish in new labour markets.

In 2009 Goddard published a provocation for NESTA – the National Endowment for Science, Technology and the Arts – highlighting a number of challenges to universities, arguing that, “all publicly-funded universities in the UK have a civic duty to engage with wider society on the local, national and global scales, and to do so in a manner which links the social to the economic spheres” (*Reinventing the Civic University*, p. 4). Crucially, he argued that we need an institutional response: beyond individual academic staff and projects, embracing teaching and research alike, and involving everyone in higher education – students, academic staff, and support staff. His provocation urged universities to develop their strategies to effectively work with stakeholders and the wider society to address the needs of all parts of the UK. To achieve this, he argues that civic engagement should become a guiding principle for the organisation and practice of research and teaching, with appropriate resourcing to do so.

There are also pressures to adapt to changing demands in the job market. Butcher (2015) points out that 70 per cent of graduate employment opportunities are now subject-blind; universities therefore need to be more aware of the expectations of the job market by building competencies and skills into the curriculum. To borrow Scott’s (2019) formulation, we need to develop graduates who are ready not just for work today, but for future forms of employment. We need *work ready plus* graduates “being not only competent (able to use set professional skills and knowledge correctly under set conditions), but also being capable (having high levels of personal, interpersonal and cognitive intelligence)” (2019, p. 2). In Liberal Arts and Natural Sciences (LANS) at UoB, a radically interdisciplinary degree programme, we have reflected on these challenges. By building on our experiences in developing innovative problem-based learning experiences in our core modules (e.g. Year 1 “From Research to Policy”) we introduced a credit-bearing placement Year in Civic Leadership (YiCL) for our Year 3 students.

In the last two decades, the HE sector has recognised this need to (re)embrace social responsibility as part of a wider civic university agenda to engage with surrounding communities and demonstrate socio-cultural value to their locality as well as responding to new work patterns (Grant 2021, Guiffré & Ratto 2014, Larrán Jorge & Andrades Peña 2017,

Ostrander 2004). It has become a priority for universities to enhance the student learning experience by creating, for example, civic engagement (hereafter CE) learning opportunities which utilise practice- and problem-based approaches to education. These approaches aim to develop enterprising and professional skills that are transferable, while at the same time making classrooms more inclusive and accessible to students from less privileged backgrounds.

While questions of employability and inclusion are often addressed separately, with different teams and people (careers specialist, outreach and student engagement teams, or academic staff for example) working on them, they are two sides of the same coin. They can complement and strengthen each other to create a meaningful, impactful civic education. A key competency to push forward both objectives is the development of change-making capacities: becoming self-reliant, an effective communicator (and listener), capable of operating in different team configurations, while remaining critical, open, flexible and risk-embracing. To become leaders, students need to develop their ability to understand the communities, institutional contexts, and systems they 'operate' in, how to introduce new voices, identify power dynamics at play, and their own and others' position in these systems (Elmuti *et al.* 2005). Leadership here, means "accepting responsibility to create conditions that enable others to achieve shared purpose in the face of uncertainty" (Ganz 2010).

The publication in 2019 of a report by the University Partnerships Programme (UPP), recommended that greater efforts be made to strengthen the connection between universities and their location. It warned that, without a clear and measured civic strategy, universities risk being civically engaged without truly being civic institutions, and as such fail to recognise what their 'local' impact is. More recently, Grant (2021) built upon these interventions, providing a challenge to the current foci of 21st-century universities. He argues in *The New Power University* that we are at a point in time where institutions need to move away from the demands of research and teaching excellence which form the core of many metrics that institutions are held up against. Instead, universities should place social responsibility at the core of their everyday practice to frame their civic agenda. To achieve this, universities should move beyond older civic models of 'anchor institutions' with their material loci in a set geographical location, to one where the university draws upon its wider

networks and partnerships to articulate its civic impact at both the local and the global level. This requires new approaches to both education and research that facilitate open innovation, citizen science, a focus on service learning that embraces community, two-way learning, and networked entrepreneurship. Academic staff should consider their impact beyond the academy and, more importantly, not just in economic terms. Crucially, we should celebrate the qualitative impact that external scholarship can have on the communities we are part of (Goddard 2009). We believe that placing civic leadership at the centre of a pedagogy which encourages changemaking is one of the ways in which meaningful engagement with communities beyond the academy can be achieved.

Post-pandemic opportunities

Many UK HE institutions are reaffirming their commitment to civic engagement through formal Civic Agreements, and via re-conceived statements of civic ambition. For example, Queen Mary, University of London's *Our Civic Agreement: Opening the Doors of Opportunity to East London and Beyond* (2016) has reframed its approach to civic engagement to embrace wellbeing, placemaking and life-long learning amongst other pledges. Likewise, the University of Birmingham (UoB) has recast its commitment,

“As a civic university, grounded in the communities around us, we will be central both to shaping and responding to these changes. We will provide a model of how a global university can create meaningful change in the world.” (UoB 2030 Strategy)

The COVID-19 pandemic set back the CE agenda in many institutions, but also heightened an awareness of the role that higher education more widely plays, and should play, in both local and global communities. We argue that it is now the right time to reimagine HE's leadership role in relationship to its CE. As impactful institutions, universities should be using their knowledge, skills, motivation, and values to make a difference to the civic life of our communities (Ehrlich 2000). The pandemic has forced universities to reconsider and embrace a skills agenda that was already emerging before lockdown. There is an opportunity for universities to address the challenges of 21st-century education that brings an emphasis on identifying and learning to embrace 'wicked' problems, move confidently

across disciplinary boundaries, and broaden student and staff agency beyond the academy.

How do you develop students as changemakers? How do you bring in external stakeholders in an impactful way? This is a recent development and educators still feel quite overwhelmed in getting CE learning opportunities off the ground. This is particularly the case given CE's focus on open learning processes, without fixed outcomes. CE provides challenges to all three groups involved – students, educators and stakeholders. Students need to shift their personal perspective – from a more instrumental individual approach to being more community-driven and collaborative. For educators it is a question of resources (time and staffing, professional support) given that CE can be time intensive, requiring continuous scaffolding efforts and communication. Stakeholders, meanwhile, are often unfamiliar working with university timescales, expectations, and different professional terminology. These challenges are not always sufficiently acknowledged by universities (Annette 2010).

To enable students to be changemakers we need to create a placement model that moves beyond the typical internship, which simply gives experience of a role and its involved tasks, to one embracing continual reflection, empathy and capacity building. This requires an appreciation of the challenges in developing sustainable networks with community partners. This demands institutional courage, embracing the bottom-up nature of connecting with multiple external stakeholders, where the benefits of these partnerships may not become tangible until later. Alongside this we highlight the need for adequate resourcing (both in teaching time and stakeholder liaison) to build partnerships with long-lasting benefits for students, stakeholders, and educators alike. In the following section, we will show how combining placements with the teaching of leadership and changemaking provides one way of addressing this agenda.

Year in Civic Leadership: a case study

The introduction of a Year in Civic Leadership (YiCL) has created a way in which we can develop our students as effective changemakers. This is an optional year of study which blends a year-long placement with a community stakeholder – be that a responsible

business, non-governmental organisation, charity, or any other partner in the third sector – alongside specialist teaching in leadership and changemaking. This is supported by continual authentic assessment as well as reflective practice.

Students develop leadership skills while co-creating projects with local stakeholders that have civic impact in their respective communities. Projects have included leadership weekends to empower women suffering from domestic abuse (with *WAITS*) or young girls from less privileged areas in East London (with *Skaped*), strategies to diversify theatre and arts audiences (with *BE Festival*), evaluation tools to measure the success of eating disorder programmes (with *TasteLife*), online teaching resources (with *Play Action International*), and biodiversity measurement tools (with *BlueSkies*). By engaging with real world problems, students produce tangible outcomes for both themselves, and their partners. In doing so, students are able to develop leadership and entrepreneurial mindsets in an authentic and applied situation, while at the same time recognising themselves as members of a larger social fabric and considering social problems to be partly their own (Ehrlich 2000).

Therefore, the year enables students to pick up professional skills (self-reliance, agile project management, effective communication, team working) essential to succeed in any workspace, whilst they also develop their moral compass as they reflect on the importance of values during the placement experience. They become socially responsible and active citizens.

The YiCL embraces self-regulated, experiential, and problem-based learning as “competencies that cannot be taught, but have to be developed by the learners themselves. They are acquired during action, on the basis of experience and reflection” (UNESCO 2017, p. 10). Encapsulating the full 120 credits needed for a year of study, with the weighting equally divided between taught and project components, the learning process is split into three stages, following Bandura’s (1994) model of ‘forethought’, ‘performance’, and ‘self-reflection’. Students develop their project during stage 1 (Civic Engagement/ ‘forethought phase’). During Stage 2 students acquire the skills and value recognition needed to implement their project (Civic Leadership/ ‘performance phase’). Stage 3 gives more room for reflection and the creation of a public narrative, making project outcomes accessible to a wider audience (Civic Impact/ ‘self-reflection phase’) (Bandura 1994). Each stage is

complemented by workshops and learning activities in collaboration with the Birmingham Leadership Institute and Careers Network. In an ongoing formative process, students produce a project proposal, report, and communicate main takeaways in a policy brief and presentation at a public impact event at the end of their placement. Through the development of a public narrative, students make project outcomes accessible to a wider audience of community stakeholders, therefore actively contributing to place-shaping by sharing best practice of their co-created project.

The students' ability to organise their placement work time (c.18 hours/week) allows them to do some other part-time work or undertake caring responsibilities. Moreover, the programme appears to be an attractive opportunity for students from diverse backgrounds whose lived experiences often relate to the values and objectives of many of these community organisations, such as *WAITS* in Birmingham or *Skaped* in East London. Within the first two cohorts (2021-23), 4 out of 10 students and 5 out of 12 applicants had a non-white heritage.

Student feedback has been very positive to date. The benefits of "proper work-life experience" were emphasised by all the students' feedback questionnaires, working on authentic and meaningful challenges as well as having a positive impact on the communities their organisations are engaging with. One student commented: "I have enjoyed the opportunity to work in a local organisation; it's been really valuable to have the placement and see how they take action locally". By conducting research into a social issue and the surrounding policy environment, students often engaged with various quantitative and qualitative methods of primary data collection, thereby gaining valuable experience in preparation of their final year independent research projects and making them more confident to move beyond the (often) desk-based dissertations.

Stakeholders have benefitted as well; focused student projects allowed them to explore new areas of their community engagement work. Arts charity *BE Festival* was able to conduct research on how to diversify its audience; Ethical Produce Company *Blue Skies* gained a biodiversity tool to use with its partners in Ghana to improve its sustainability; and a local Women's charity, *WAITS*, was able to develop a leadership weekend to help

empower its staff and clients, to name but three examples. A *Blue Skies* representative commented: “we have benefited from having a talented, enthusiastic and committed individual who has been able to dedicate time to research and develop a new tool for us that we would otherwise not have had the resource to do ourselves.” We like to believe that the YiCL left a lasting impact on our external partners, and local communities, with a positive, tangible benefit from the students’ work.

Finally, it has also been a very rewarding experience for educators and facilitators. The YiCL allowed us to see our students grow into their role and develop a community project in which both they and their placement organisations took immense pride. The necessary scaffolding to ease the uncertainty of such a placement experience and alleviate any anxieties amongst the students meant that staff saw the students on a regular basis; connecting them to students in a way they had not experienced before. Of course, this level of care is time-intensive and involves giving up a familiar level of control seen in regular timetabled sessions in our normal teaching delivery, as students and partners co-create their projects in an organic fashion. This type of educational activity requires a willingness and ability to respond (quickly) to the unexpected – unforeseeable challenges to both students and local stakeholders – and adapting to their time frames and horizons.

What have we learnt?

The key question addressed here is how we enable students to have a social resonance beyond the academy, thus meeting the aspirations of a civically-engaged university. In LANS, this placement year has created a way in which we can develop students to be effective changemakers; blending placement with a local stakeholder alongside specialist teaching in leadership (provided by LANS and UoB’s Birmingham Leadership Institute), and continual authentic assessment resulting in a project report and policy brief. In assessing the YiCL, we can identify tangible impacts that the programme has had on students, stakeholders and educators alike. It has highlighted ways in which civic values can be developed and fostered through teaching and learning, which help empower students as effective civic actors. Key to this is the role of experiential learning and co-creation in a structured, reflective context, allowing students to engage with and address the real-world problems faced by stakeholders and their clients.

For students embarking on this learning journey for the first time, placements can be a daunting prospect; requiring time for them to develop their own voice and confidence in taking responsibility. To do so, students need to be guided in developing an open mindset to leadership, to be able to operate in an authentic and applied situation. This is something that takes time to develop as the students build their own capacity and confidence in changemaking and using it in effective ways. By placing regular and structured contact points in the programme, the teaching team are able to provide reassurance, challenge and support as the students learn to use their nascent leadership skills. The value of these points in the programme have become apparent when students have encountered particular moments of challenge in their placement, such as unspecific tasks, initial vagueness of their project, or worktime pressures. Regular catch-up meetings also allowed the timely discovery of communication deficits between students and placements which as a result could be addressed.

Through learning, and then applying their developing leadership skills to projects co-created with local stakeholders, students are able to engage with real world problems and produce tangible outcomes for both themselves and their partners. Moreover, the YiCL has built a network of community partners for UoB who have developed (lasting) trust in student abilities and are keen to continue this work in other frameworks as well e.g. the final year research project and shorter placement opportunities, which is an additional institutional gain.

Authentic and reflective assessment enables learners to develop key skills in changemaking, design thinking, and reflective practice. By challenging their own values and assumptions, they are given a mechanism through which to evaluate and then extend their own expertise to the wider community. Above all else this impact relies on partnership. Stakeholders need to be able to see a benefit from these partnerships in return, in terms of a tangible output and no overt demands on their worktime. For those operating in the third sector, there is often a challenge to capacity for developing future facing projects, and the use of co-creation and authentic assessment provides a civic engagement opportunity that offers mutual benefit for student and stakeholder alike.

Conclusion

Teaching a programme such as YiCL provides a wide range of educational opportunities, the impact of which is not found in conventional forms of delivery. By confronting the students with real life situations allied to continuous and empathetic reflection, we are able to see them grow in confidence. By placing themselves in a situation where they are 'learning by doing', having to navigate real world challenges, and building confidence to get their voices heard in the placement setting, students often encounter moments where self-assurance is lacking, and teaching staff need to help guide and build resilience. For educators this creates a unique set of challenges in regard to both time and response. Unlike most forms of delivery, or conventional placement teaching, civic leadership provides key skills in changemaking, which requires a higher level of small group and tutorial support, coming with a time implication if it is to be delivered effectively. With students working off-campus in a placement, the delivery of set contact points, and timely responses to problems are shaped by the rhythm of placement partners and their work practices, which often runs counter to the academic calendar. This requires the educator to have a flexible approach to time and create space in the academic week where they can respond, sometimes at short notice, to student or placement partner queries. Such an approach, although resource-intensive, has the longer-term benefit in building resilient and impactful networks with stakeholders. This type of teaching is scalable in a gradual fashion, and is already being offered beyond LANS to the wider university as an intercalated year. Likewise, our approach provides a framework for other disciplines to incorporate similar learning into their programmes in different ways. However, to offer this kind of opportunity more widely requires institutional support in terms of investment in staffing time and capacity, alongside resourcing to manage recruitment of placements. Therefore, backed by sufficient resourcing, civic education requires an appreciation of the challenges and benefits of embedding CE learning opportunities more widely in the curriculum within an articulated civic engagement strategy. In this way, implementing a civic facing education demands the same agility and openness from universities that these learning experiences require from the students themselves.

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Teaching students to learn from feedback: a narrative review of best practices for educators on essay-based assignments for improved feedback literacy

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Abstract

Essay-based assignments form a large part of undergraduate-level teaching, especially in the humanities and social sciences. Reviewing and providing feedback on these types of assignments can take considerable time and effort for an educator, which makes it very disappointing when some students struggle to know how to utilise this feedback for their future improvement. In this narrative review, I posit that a lack of engagement with, and ability to learn from, feedback is something that we are able to change. Fundamentally, student engagement with feedback and the way we as educators provide this feedback are not always compatible. Understanding this disconnect can lead to improvements in the way students engage with and subsequently learn from our feedback. This paper has several recommendations for educators: first, that it is important to teach the students how to engage with feedback and learn from it, as well as to establish a dialogue with students about it; and second, that any feedback given to the students must have a very clear goal-directed instruction on how a student can take any comments and apply them to their future assignments. These practical suggestions should help the educators enhance their students' ability to engage with feedback, leading to better learning and educational attainment.

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Introduction

Essay-based assessments are a large part of student learning at university level, especially in the humanities and social sciences. As educators, we recognise the need for timely and

useful feedback that allows students to reflect on their writing and to improve for the next time. Nevertheless, it is not always clear what useful feedback entails, especially for students. In this narrative review, I aim to collate some practical advice from studies in higher education institutions that can help us improve our professional practice.

There is much literature around the benefits of peer feedback (e.g. Kerman *et al.*, 2022; Latifi and Noroozi, 2021). However, this review will focus on the feedback that a practitioner provides to their students regarding aspects of their performance on an assignment. Ilgen and Davis (2000) introduce a model in which they explain that feedback is designed to close the gap between the existing level of skill/knowledge and the desired level. The aim of any feedback is to have a targeted, constructive effect on a student's future academic performance, which is essential for educational attainment and improvement on the course. In addition, feedback provided by the practitioner can either motivate the student to close the gap between the current performance and the desired level, or cause the student to lose motivation and abandon the task entirely (Ilgen and Davis, 2002).

Feedback is often not read, engaged with, or understood by students (Ellery, 2008), and some researchers studying student engagement have found that there is a lack of clarity of understanding among students of what we mean by good engagement (Buckley, 2018). Nevertheless, this is something that can change, and improving educator feedback literacy can lead to an improvement in student feedback literacy and educational attainment as a result (Carless and Winstone, 2023). In this narrative review, I set out to collate the existing studies and recommendations that stem from them to offer practical suggestions on how to formulate feedback that students will be more likely to engage with and learn from.

Feedback and student engagement - what do we know?

As essay-based assessments are a common way of assessing students within universities worldwide, especially in the fields of humanities and social sciences, there is an ongoing need to discuss the way we as educators give feedback. In a questionnaire conducted by Higgins, Hartley and Skelton (2002), they found that 97% of students indicated that they usually read the written feedback they receive, and 82% of the students claimed to "pay close attention" to feedback. Moreover, 80% of students agreed with the statement that

feedback they receive is useful. The finding that students are eager to engage with feedback they receive is replicated in many studies (Hyland, 2000; 2003; Weaver, 2006), although some studies (Crisp, 2007) found that as many as 39% of students (out of 51 in the study) only spend 5 minutes or less reviewing their feedback. In educational literature, ability to engage with feedback is often referred to as feedback literacy.

Carless and Boud (2018) define feedback literacy as "the understandings, capacities and dispositions needed to make sense of information and use it to enhance work or learning strategies" (p. 1316). They argue that feedback literacy is not simply about being able to receive feedback, but about being able to use it to improve one's learning. Boud (2013) argues that feedback literacy is an essential skill for lifelong learning. He suggests that universities should create a culture of feedback where students are encouraged to seek and use feedback to improve their learning and "feedback is given and received openly, honestly, and constructively" (p. 26).

Therefore, giving feedback is a worthwhile activity. However, the form that it takes can greatly influence student engagement. For example, Carless and Boud (2018) found that students often report that they are not satisfied with feedback provision, which is backed by an extensive analysis of student NSS scores (Bell and Brooks, 2018). We know that students want to engage with feedback, but they might not find all forms of it as useful: Dawson *et al.* (2019) discovered that what students think good feedback is may be quite different from staff perceptions of this.

It is important to keep motivation in mind when giving students feedback (Harlen, 2006), especially because student emotions can shape the way that students engage with it (Värlander, 2008). Most importantly, because the aim of giving feedback to students is to facilitate their improvement from one assessment to the next, feedback can either motivate the student to improve or make them disengage from the task (Ilgen and Davis, 2002). Additionally, assessment stress and anxiety are common experiences among university students. A study by Bruffaerts *et al.* (2018) found that 22.5% of college freshmen reported experiencing high levels of stress, and 15.6% reported experiencing high levels of anxiety. Boud and Falchikov (2007) argue that emotion is an integral part of the assessment process,

and that it can have a significant impact on student learning. Therefore, it is important to stay mindful of student emotions when thinking about feedback (Boud and Falchikov, 2007; Winstone and Carless, 2019).

Back in 1987, Hounsell explained that there might exist a disconnect between student perceptions of what is expected from them and staff understanding of a good essay and academic discourse, which could form a big part of the feedback literacy gap. Riddell (2015) surveyed 68 first-year undergraduate students in English and found that 74% were unsure what is required of them to do well in an assignment. Students struggle to engage with feedback because they are often unable to "read between the lines" of what the assessor is asking them to improve on (McCune, 2004), possibly because they are unclear on how they can meaningfully engage with the assessment criteria. Engaging with feedback can often form a part of a "hidden curriculum" (Cramp, 2012), which is a phrase open to interpretation, but often refers to some expectations of the students' learning that are implicit (Orón Semper and Blasco, 2018). Engagement with feedback might not be a skill that students are familiar with, especially among the "non-traditional" students (Cramp, 2012). This issue could be a main reason for the disconnect between the level of feedback the tutors believe we provide and the usefulness the students see in it.

This gap may be at the heart of the difficulty that some students face when trying to make sense of their feedback (Sharif and Zainuddin, 2017). Blair and McGinty (2013) recognise the difficulty of communicating written feedback, and explain that the tutor's comments may often be misunderstood by students. Norton and Norton (2001) found not only similar results, but also that the discrepancy between expectations of students and staff may increase in the third year, possibly because the students have not yet adjusted to the increased complexity of what the assessment criteria are asking them to do.

Once we recognise the need to address this gap, we need to think about the most effective ways to close it. Blair and McGinty (2013) suggest the use of feedback dialogue, i.e. a conversation between students and teachers about the nature of feedback. Defeyter and McPartlin (2007) claim that engaging students in a discussion about the purpose of assessment and feedback helps to make students motivated and engaged in both the

assessment and the feedback. Engaging in a dialogue with students around how to engage with feedback and what to expect from it can be very beneficial to both students' motivation to engage with feedback (Värlander, 2008) as well as learning that comes from it (Dowden *et al.* (2013). Dowden *et al.* (2013) also suggest addressing the expectations of the coursework as well as engaging with feedback at the very beginning of the course, thus creating an active dialogue with the students from the very start.

While some staff share a view that students only want feedback that will get them a higher grade (Swann and Arthur, 1999; Molesworth, Nixon and Scullion, 2009), the majority of students (71%) claim to be at university for the joy of learning and becoming better (Higgins, Hartley and Skelton, 2002). However, many students do not understand what is expected of them to get a high grade in assignments and what they are being judged on (MacLellan, 2001). This disconnect is likely to exacerbate the difficulties of engaging with feedback if students feel that they get comments relating to aspects of their work that they do not perceive as relevant. This finding highlights the need to engage in dialogue with students over assessment criteria as well as skills on how to engage with feedback.

It is especially important to engage in the feedback dialogue early in the course (Dowden *et al.*, 2013). Helping students engage with feedback early might greatly help their ability to learn from the comments they receive, but there are some aspects around the form that feedback takes that can make a big difference to student engagement with the comments. This was studied by Higgins, Hartley, and Skelton (2002), who interviewed 19 students across two institutions and obtained 94 responses to a questionnaire which asked about the students' experiences of what makes feedback helpful. They found that students perceive feedback negatively if it does not provide enough information to be helpful, if it is too impersonal, and if it is too general and vague to be of any formative use. Weaver (2006) conducted interviews with 44 students and also found that feedback was seen as unhelpful if it was too general or vague, and lacked suggestions for improvement. In addition to this, Weaver noted that focussing on the negative and being unrelated to the assessment criteria was deemed unhelpful by students.

Hyland (2000) analysed six case studies in a mixed-methods longitudinal project and found that students were looking for feedback that would help them learn how to write other assignments better, rather than help them 'fix up' their current assignments. Similar findings were found in the qualitative study by Chokwe (2015), who argued that feedback should be understood more in terms of 'feedforward', and any feedback should help students improve their future assignments.

All these studies indicate that to help students learn from the feedback they receive, the comments need to engage with what the students should do better next time, rather than what they did badly on a current or past assignment. Students are not as good at connecting the dots as tutors believe them to be (McCune, 2004), and greater care should be shown when giving feedback to ensure that the directions for change are clear. Additionally, a study by Ellery (2008) showed that additional guidance on how to improve in the future can be given verbally to the whole class. This, in addition to improving comprehension, can be tied to the concept of timeliness in delivery of feedback.

Studies consistently report that for feedback to be effective, it needs to be delivered in a timely manner (Ellery, 2008; Higgins, Hartly, and Skelton, 2002; Rust, O'Donovan and Price, 2005). However, this is not easy to achieve with growing student numbers and increasing staff workloads. Ellery (2008) notes that feedback can be delivered in verbal form to the whole group and can be quite efficient. On the other hand, such an approach can be less popular with students (Orsmond, Merry and Callaghan, 2004), and many believe the comments do not apply specifically to themselves and tend to ignore them. Nevertheless, if the conversation about learning from feedback was started early in the course, that effect might be mitigated.

Malecka, Boud, and Carless (2022) argue that feedback literacy mechanisms can be embedded within the curriculum through a variety of teaching strategies, such as: providing students with clear and specific feedback on their work; teaching students about different types of feedback and how to use them; giving students opportunities to practice giving and receiving feedback to their peers; and creating a classroom environment where students feel comfortable seeking and using feedback.

To summarise, the literature suggests that staff should not assume that students arrive at university with the necessary skills to understand and engage with feedback in the ways it is intended, and that greater care should be taken by tutors to explain how feedback should be approached. Additionally, the comments that students receive on their essay-based assignments should clearly indicate how they can apply the comments to future assignments. Consistently introducing the concept of engaging with feedback early in the course may enhance the students' ability to learn from it, and it in turn can form part of university culture, changing the students' attitudes towards learning from feedback.

Practical recommendations for feedback practices

Winstone and Carless (2019) argue that feedback is one of the most powerful influences on student achievement, yet it is difficult to implement productively within the constraints of a mass higher education system. They explain that it's important for educators to design feedback processes with the learner in mind, helping them develop their own self-assessment skills as well as give feedback which is mindful, specific, and actionable.

There are several recommendations for educators of all levels that deal with essay-based assignments for university-level teaching. Firstly, setting clear expectations of how to learn from feedback can help students engage with it better. Although Crisp (2007) suggests that students do not spend more than 15 minutes looking at the feedback they receive, students themselves believe that they engage thoroughly with it (Higgins, Hartley and Skelton, 2002). Many students may not be aware of the purposes of assessment (MacLellan, 2001), making it important for the educator to address the assessment criteria and the purpose of formative as well as summative assessments at the beginning of the course (Dowden *et al.*, 2013). As noted above, it is helpful to engage the students in the assessment criteria and feedback practices at the beginning of the course (Defeyter and McPartlin, 2007).

Secondly, any feedback that students receive must be goal-directed. It is not usually sufficient simply to tell a student where they have gone wrong - misconceptions need to be explained and improvements for future work suggested (Higgins, Hartly and Skelton, 2002). Judgmental statements that allow no room for manoeuvre (e.g., 'good report', 'fails to

answer the question', 'poor effort') are seen as unhelpful and, particularly if critical or dismissive, can cause anger or hurt, resulting in students becoming unreceptive to tutor comments (Lea and Street, 2000; Weaver, 2006). Following Weaver (2006), it is clear that students understand the importance of receiving criticism, but to be perceived as useful, feedback needs to offer concrete suggestions for improvement. Without that, students may perceive feedback as damaging to their self-esteem and disengage from the course altogether (Ellery, 2008; Ilgen and Davis, 2002; Young, 2000). Instead of telling the students what they have done wrong, it is important to tell them what they can do better instead. For example, it is worth replacing 'do not use passive voice' with 'use active voice'.

Thirdly, it must be clear to the student how feedback is not only relevant for a particular assessment, but also to their future learning. In a similar vein, comments should not focus solely on spelling and grammar. Fostering 'higher order' critical skills may have more long-term educational value (Higgins, Hartly and Skelton, 2002), and the use of Generative Artificial Intelligence (GAI) in helping students improve their grammar and syntax might support this. It is imperative for students to know how they can connect feedback to future improvements to effectively engage with the comments they receive (Orsmond, Merry and Callaghan, 2004; McCune and Hounsell, 2005). Consequently, feedback should not only aim to assist students in completing a similar task successfully at some stage in the future but ideally should also be transferable to other tasks that they might be expected to undertake.

Fourth, in line with the recent advancements in GAI tools, I suggest exploring their use in universities. The literature around the use of GAI in writing is in its infancy, but overall, it indicates that GAI writing applications are still a long way off from being able to evaluate critical writing elements such as originality, fluency, creativity, and argumentative strength (Gardner 2021; Jia *et al.*, 2022; Srivastava *et al.*, 2020). However, due to considerable recent advancements in natural language processing, studies consistently show that these applications are quite good at catching syntactic, lexical, and stylistic errors (*ibid.*). Ensuring free university provision of GAI to students, such as *Revision Assistant* and *TurnItIn Draft Coach*, could lead to a levelling of the playing field for students studying in a foreign language as well and leave tutors to spend their time and effort on giving 'higher-level' feedback, rather than correcting errors in writing.

Conclusion

Essay-based assignments are widespread in many universities around the world and, as such, constitute a large proportion of assessment practice in higher education, especially in the fields of humanities and social sciences. Ultimately, the aim of any university programme is to teach students skills and knowledge, and the aim of assignment feedback is to help students learn and get better at a task.

However, the skill of learning from the feedback provided and knowing how to apply the comments to future assignments, also known as feedback literacy, formulates an example of a hidden curriculum. There may be a disconnect between how useful the tutors believe their feedback is and the ability of students to engage with it and use it. Therefore, this narrative review suggested some practical evidence-based practices that anyone can use.

The suggestions are centred around teaching the students how to engage and learn from feedback, starting the dialogue early, and formulating comments around what needs to be done to improve rather than what is currently lacking. Engaging students in the right way could increase their motivation to improve their writing and in turn, lead to higher educational attainment.

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Example of practice: accessibility statements for inclusive education

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Abstract

This paper provides an example of practice that outlines the benefits and challenges of creating School or Department level accessibility statements related to digital and online content, and the principles that can be followed when creating them. Like all methods of improving accessibility, there is no one-size-fits-all statement, but through demonstrating one possibility, this example will assist colleagues and other teaching professionals to create an accessibility statement that caters to their needs.

The discussion is informed by the results of a staff and student evaluation of accessibility statements issued by the School of Chemical Engineering and the School of Metallurgy and Materials at the University of Birmingham. These Schools issued accessibility statements to show their commitment to accessibility, create open dialogue around students' varying requirements, and explain the accessibility features/limitations of their teaching and learning resources.

Activity and context

Accessibility statements are an increasingly common way for organisations to show their commitment to accessibility, create dialogue about user requirements, and provide information about accessibility features of their resources and activities. These statements have been defined as “a contract with your Web site’s visitors that provides an important aid in site navigation and demonstrates your commitment to universal design” (Providenti, 2005). Furthermore, according to the W3C Web Accessibility Initiative (2021), accessibility statements are useful to “show your users that you care about accessibility and about them, provide them with information about the accessibility of your content, demonstrate commitment to accessibility, and to social responsibility”.

In higher education, where large amounts of resources are housed online (e.g., in Virtual Learning Environments [VLEs], recorded video content, and shared files), creating an accessibility statement which focuses on, but is not limited to, digital accessibility is a useful way to respond to these challenges, while setting standards and expectations of both staff and students.

In this project, the aim was to set our accessibility standards within the wider context of Universal Design (Mace *et al.*, 1996) and more specifically Universal Design in Education (Burgstahler & Cory, 2010; Burgstahler, 2009), and as described by Fiell (2019): “The concept of universality in design has been subject to different interpretations over the years, but it is fundamentally about creating a solution that can be used by as many people as possible” (p. 40). The subtle but all-important difference between the terms ‘accessibility’, ‘inclusivity’ and ‘universality’ is addressed in May (2018), who indicates that, while Universal Design might evoke an “elusive sense of perfection”, the combination of these three terms serves to highlight the “ultimate goal”. So, while accessibility and inclusivity embody the “practice of going up the mountain”, “Universal design, by contrast, implies that reaching the summit is the true goal”. This is the perspective being taken here.

In the UK context, Accessibility Regulations of September 2018 (Central digital and data office, 2018) state that a website must be “perceivable, operable, understandable and robust”, and must include an accessibility statement. This does not mean that accessibility statements at module, programme or School level are mandated, but there are many benefits to providing localised versions. At the University of Birmingham, two Schools – Chemical Engineering and Metallurgy and Materials – implemented School-level accessibility statements for the 2022-23 academic year. These comprise two documents: a student-facing statement outlining the principles of accessibility that the School is committed to, and a staff-facing statement which focuses on resources and guidance to assist them in adhering to the accessibility requirements, thus also helping to increase buy-in and long-term support for the initiative. The impact and operability of these statements were evaluated through student and staff surveys.

In practice, accessibility statements are an overview of online and classroom resources and how content is organised online. They function to highlight what the School or Department is doing and will do to provide accessible resources and, where there are areas that may fall short in terms of accessibility, the steps being taken to address them. The statements include contact information and specific information about pedagogy and aim to create transparency and open dialogue with students by explicitly acknowledging different accessibility needs while also allowing for discipline specificity. In the long run, accessibility statements also provide an opportunity to move the perspective towards Universal Design for learning as a goal (Burgstahler and Cory, 2010; Cumming and Rose, 2022).

Conversely, there are significant challenges to consider. The foremost challenge is that any strides toward improving accessibility—beyond merely drafting an accessibility statement—necessitate a dedicated investment of time and effort. A prime example is the verification of captions for lectures and all other recorded materials. To ensure the accuracy of captions and transcripts, they must be manually reviewed, which is a time-consuming process. Nonetheless, research consistently shows that a large proportion of people who do not describe themselves as having a hearing disability prefer to use captions when watching videos (Ofcom, 2006; Youngs, 2021).

Technical difficulties also occur, particularly when dealing with complex images or mathematical formulas and graphs. Moreover, the implementation of accessibility statements faces its own set of challenges. One of the most common is garnering sufficient commitment from staff to address the afore-mentioned issues and to acquire the necessary skills and experience to manage them effectively. Additionally, managing communication and setting appropriate expectations for students are tasks that are not easy to navigate.

Methodology

This study aimed at investigating issues related to the creation and publication of the statements through the analysis of staff and student surveys in relation to them. Staff surveys were conducted online, with slightly different methodologies, among teaching staff in the Schools of Chemical Engineering and Metallurgy and Materials during the academic year 2022-23. In Chemical Engineering, only module leaders (a total of 34

members of academic staff) were invited to complete the survey (through the survey tool provided by JISC): 13 responses were received for semester 1 and 19 for semester two, for a total of 64 (out of around 100) modules concerned. In Metallurgy and Materials, the survey was opened to all staff members and received 10 responses overall, out of 40 academic members of staff. Data were collected through MS Forms.

The two surveys were almost identical, with quantitative questions accompanied by optional free text windows and a final free text question for any additional comment. The Chemical Engineering survey additionally asked for the module(s) led by the respondents to be indicated and whether the respondents had completed the Accessible Educator course. The students in both Schools were all invited to complete the same survey, distributed through MS Forms, but were asked to indicate which School they belonged to. They were asked whether they had seen the accessibility statements and how they felt about them, with an option to provide further comments in free text. 26 students responded for Metallurgy and Materials (out of around 600, i.e. around 4%) and 28 (out of around 1000, including PGT and PGR, i.e. around 3%) for Chemical Engineering. Although the response rates were low, the data provided important first steps in this process and useful insights into how the accessibility statements are perceived and might be used.

Results and discussion

Staff survey

Figure 1 below shows the results of the staff surveys organised by semester 1 and 2 for Chemical Engineering (CE Semester 1, CE Semester 2) and comprehensively for Metallurgy and Materials (MM).

The first set of data concerns the percentage of lectures being captured with the lecture capture system employed by the University (Panopto). The second whether Canvas pages are checked for accessibility with the internal accessibility tools and the third whether this was done for Microsoft documents. The fourth is concerned with the correction of captions in recorded material. Finally, the fifth set of data reports whether images and charts within the courses published on Canvas are accessible.

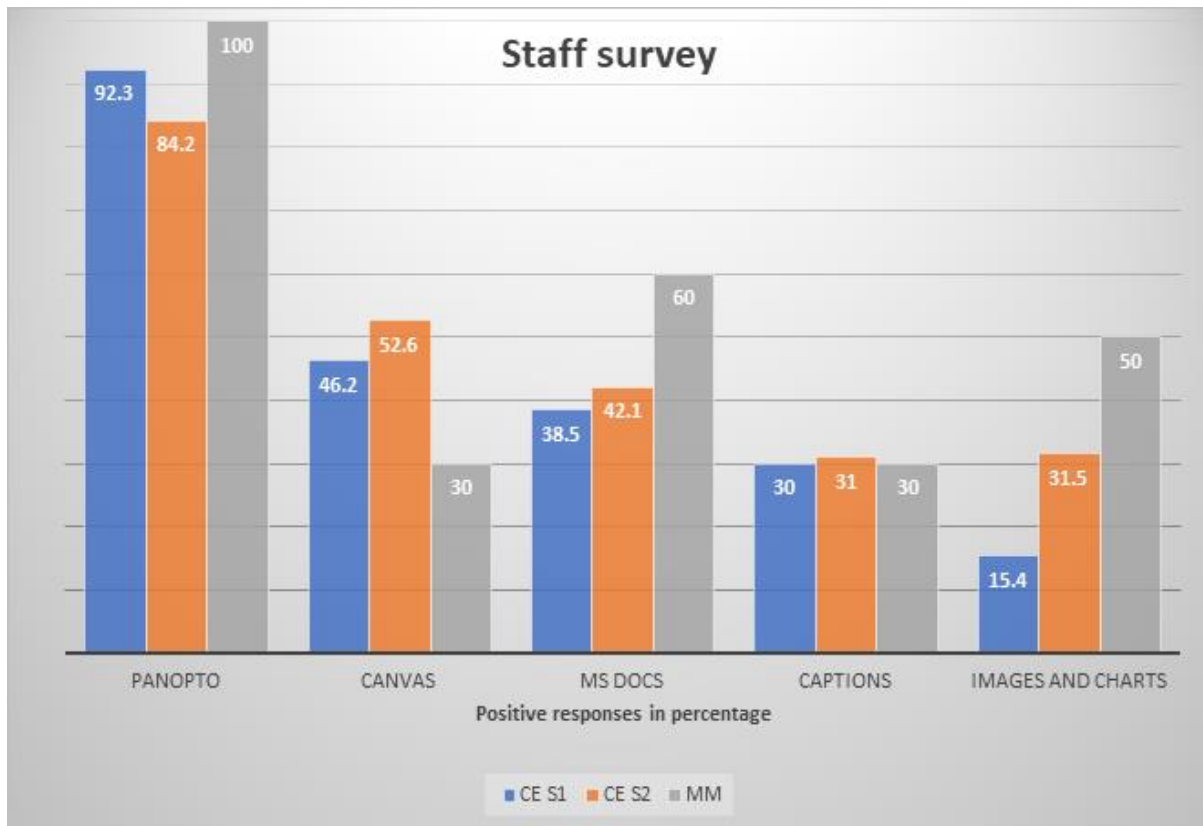


Figure 1: summary of selected results from the staff survey

The most positive outcome in terms of accessibility is certainly the recording of classroom delivered lectures, which is declared by the respondents to be close to or at 100%. This is also due to the legacy of the COVID-19 online teaching period, where most lecturers had produced prerecorded lectures or were recording the live online lectures. As one participant explains, “lecture recordings (developed over the past years) have been made available”. Other participants pointed out that some teaching and learning events do not lend themselves to being recorded, such as seminars and small group work and that occasionally technical issues impede the recording, such as the recording not being available from visualisers or Panopto “failed to record”.

The data regarding the checking of accessibility on Canvas pages shows that this feature is significantly less used than the lecture recording. The percentage of positive answers is particularly low for the School of Metallurgy and Materials (30%), but this could also be due to the fact that the respondents in this Department are not the module leaders: as one

respondent put it very clearly, “To be honest, I don’t know; hence put no. The module lead may well check all Canvas pages on the modules that I am involved with.”

On the other hand, accessibility checks for self-standing documents is higher for Metallurgy and Materials respondents than for Chemical Engineering, although there is a positive trend showing between semester 1 and semester 2. Quite a few respondents mention that they do not know how to do accessibility checks or have recently found out.

The checking of captions of recorded materials – an important part of making said recordings accessible – is the aspect that presents the lowest numbers of positive responses. This is not surprising as this activity is both difficult and extremely time consuming. Several respondents highlight this, by saying, for example, “It is TERRIBLE [sic] time consuming [emphasis in the original]”, and “This would take an extreme amount of time to do so”. As one of the respondents commented, “If this is required, we should be provided with professional support to do it”. A few respondents mention that they provide lecture notes in support of the recorded materials.

In terms of technology, no concerns were raised regarding the software, but several participants mentioned that the hardware in the lecture rooms would occasionally not work properly, especially the microphones. This of course is linked to the overall quality of the recordings, but also specifically to the captions, which are poorly captured by the automatic systems when the quality of the audio is less than excellent.

In terms of general attitudes towards accessibility, a few participants also mentioned that such interventions would be conducted further to student requests but are not pursued in the absence of such requests. For example, one participant mentioned that “I am generally more reactive in this space, if a student ask will look into it” and another, along the same lines, “if I had a student with a RAP [Reasonable Adjustment Plan,] I could do this”. This is certainly a positive attitude, but it does not go quite far enough as to make the teaching and learning experience accessible to as many students as possible before they encounter an obstacle.

Several participants have expressed interest in training on these topics and have indicated that their attitudes and practices could change if training were offered and available on the topic of accessibility in general and specifically on how to assess and improve it. In terms of accessibility training, in any case, 13 members of staff in Chemical Engineering have said that they had completed the online Accessible Educator course in Semester 1, with 19 others in Semester 2, which is a very positive trend in itself.

Student survey

In Chemical Engineering, students have been offered an opportunity to comment on the statements in their preparation phase through the Student Voice events, but no comment was provided through this route.

Subsequent to the accessibility statements being published, they were shared with the students through email and announcements on Canvas and a survey was opened for all students in both Schools regarding their knowledge and attitudes towards the statements. The student reactions to the accessibility statements (AS), as captured by the survey, were largely positive. 46% of respondents had seen the statement and 61% felt positive about their School having an accessibility statement. Moreover, students were positive about the quality of the documents, suggesting that they were “well-reasoned and thought out” and that “everything stating on the statement is clear and ok for me”. In terms of the general approach to the issue, a student mentioned that “It shows that the school has considered accessibility, hopefully moving towards equal opportunity for all students”, which is one of the intents of the statements as a “contract” (Providenti, 2005).

However, several students also comment that the accessibility statements do not concern them. One student explains it well: “I haven’t been in a situation where I felt I lacked access to resources to overcome educational challenges”. This perception mirrors the view from staff that accessibility issues are best dealt with in a responsive manner, based on needs emerging, either from students with a RAP or students making a specific request. As highlighted above, we take the view that Universal Design for Education (Burgstahler, 2009) is a broader and more effective perspective, considering environments and tools “to be usable by all people, to the greatest extent possible, without the need for adaptation or

specialized design” (May, 2018). While it seems logical for staff members to take a reactive approach to accessibility requirements, due to the need to economise time and effort in the short run, in the long run a more proactive approach would both minimise the negative impact of accessibility difficulties for students who need support or adjustments – and would have to ask and wait for said adjustments to be made - and also improve the quality of the learning experience for all students, in line with the principles of Universal Design for Learning. This relates also to the existence of hidden and/or undisclosed or temporary disabilities, which are not well served by ex post interventions (see for instance Grimes *et al.*, 2017).

Finally, students highlighted the need for more visibility/advertisement of the statements as some could not find them even after they were directed to these statements in the relevant communications and within the survey introductory text. Students also commented on the technical difficulties they encountered in the recordings, such as poor audio and incomplete/imperfect captions, and on the increased workload for lecturers related to accessibility and showed concern on whether measures were being taken “to mitigate this or compensate for it”.

Conclusions and recommendations

Creating School-level statements allows a department to demonstrate how accessibility is embedded in their teaching philosophy. Over time, this willingness to be demonstrably open and to proactively address differences among students can hopefully boost student recruitment, and may well help often homogenous, traditional institutions further diversify their student population.

For successful implementation, accessibility statements require buy-in from all stakeholders, lecturers and students in particular. However, we have found that misunderstandings still exist and they tend to weaken efforts to enhance accessibility in teaching and learning. For instance, some staff believe that accessibility only concerns individuals with specific learning needs or that student concerns should only be acted upon when they request support or particular adjustments. As highlighted above, this is in contrast with the principle of Universal Design for Learning and would tend to hinder progress rather than facilitate it,

especially because accessibility issues would need to emerge before action is taken, while a better approach is to lower barriers in anticipation of possible issues.

In connection with this, we also found that extensive and targeted communication is useful and effective to share knowledge and to gain support for the implementation of accessibility statements from members of staff and students alike. We noticed a difference, for example, in staff engagement with the survey between the two Schools: this could be due to the more personalized and direct approach used in Chemical Engineering, where the project was discussed explicitly in staff meetings and individual emails were sent to concerned members of staff. In contrast, communication of this initiative to staff in Metallurgy and Materials was done mostly remotely through email. In terms of student participation, more direct communication might be more effective in engaging students in the process.

Next steps for the Schools involved will focus on raising the awareness of the accessibility statements across the School communities, providing further training and guidance for staff and using the data gathered in this exercise to campaign budget holders for better equipment and the necessary time and resources to accomplish more ambitious goals, in the areas highlighted above (captioning and overall quality of the audio/video recordings, accessibility of web pages and documents, delivery of teaching and learning content) as well as increasing awareness in the University community.

Note: All staff and student surveys were voluntary and anonymous, and participants were informed that the results would be disseminated in order to improve practice.

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