Fostering independent animation learners through an inclusive, scaffolded pedagogy

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Abstract

In United Kingdom (UK) higher education (HE), there are systematic challenges to integrating theory with practice and thus supporting learners to become confident and self-motivated professionals in the creative industries. The pedagogical issues that we are addressing aim at creating independent learners in animation practices throughout our student body. This case study profiles our inclusive approach to education across three levels: on a micro-level, we present a personalised approach to tutorials and feedback; on a meso-level, we developed targeted instruments for dissertation support; on a macro-level, we refined our curriculum to become more integrated, scaffolded and inclusive.

Our multi-layered support strategy embraces individual student voices, tacit knowledge and the sense of 'mattering'. Specific focus is given to students with additional learning needs. Our paper illustrates the success of our student-centred approach. Our method yielded significant results including the 100% success rate of our graduates. By imparting this scaffolded personal support approach, we intend to make our teaching and support practices more accessible to other educators.

Keywords: Case study, dissertation writing, creative arts, inclusive pedagogy, creative industries, design

Introduction

Our aim is for all our students to become confident independent learners, ready to tackle professional problem-solving in the creative industries through integrating theory with practice. Historically, the BA (Hons) Animation programme at the University of Greenwich, along with other programmes supporting the creative industries, was challenged to integrate fully theory and practice. Time constraints and confidence issues militate against students' gaining authentic ownership of in-depth research and practice (Todd *et al.*, 2004). These are systematic challenges; as Ramsden states, universities *"handle each individual student the same way, even though we know for certain that they operate in different ways"* (1992, p. 101). As Mann *et al.* (2021) note, shifting from traditional problem-based learning (PBL) to practice-based education (PBE), in which students simultaneously work and learn, is helpful, but does not fully meet the United Nations (UN) Sustainable Development Goals (SDG), specifically SDG 4 (inclusive education), and SDG 5 (gender equality). The animation profession (and it is not alone) experiences several equality challenges (please see appendix for further details) and needs the development of an inclusive pedagogy to overcome them. The purpose of this study is to present: 1) the inclusive approaches we implemented in our programme to address

structural challenges through better scaffolding, better integration of theory and practice and a more targeted approach to feedback; 2) the tangible results these interventions yielded. We addressed structural issues simultaneously, by making a series of interventions: within the broader macro dimension; at the meso-dimensional layer, through imbricated development of research and practice across modules; within the more granular micro-layer of individual personalised support. Here, we present 1) the synthesis of our multi-layered approach and 2) a blueprint for neighbouring disciplines.

Our inclusive approach

We developed our inclusive approach to integrating research and practice across five calendar years; it is the outcome of a process of refinement and carefully scaffolded calibration, on the basis of the work of Dickson *et al*., (1993) who described scaffolding as *"…the systematic sequencing of prompted content, materials, tasks, and teacher and peer support to optimize learning"* (Dickson *et al*., 1993, cited in Larkin, 2001, p.30).

Conscious of challenges relating to representation and inclusivity, we aim to impart an awareness of students' sense of social identity (Bliuc *et al*., 2010). Through our briefs, presentations by role models, and such pedagogic actions as undergraduate research projects and extracurricular activities, we support the students' sense not only of 'belonging' (Freeman *et al*., 2007) within the university, but also of 'mattering' as individuals (Dixon and Tucker, 2008). To fulfil these aims, our approach has concentrated on individual and personalised learning and on dissertations, as one of the challenges in their curriculum. Authentic learning is central to the BA (Hons) Animation vocational course, which offers 1) embedded-in-industry practices such as problem-solving, project management and collaborative workflows and 2) a creative industry context involving industry role models and practice-based activities. It has been designed to emphasise tacit knowledge through a focus on active learning (Nelson, 2013; Sousa and Mangas, 2024), co-creation, collaboration and inclusivity. Particularly, this leads to students' acquisition of learning skills across 'know-what, know-why and know-how' competencies (Nelson, 2013).

Figure 1. Example of an inclusive undergraduate research project by the BA (Hons) Animation: 'Our Kid from the North of the South of the M1 River' 20241

The notion of tacit knowledge may be traced back to Plato and Max Weber (Gascoigne and Thornton, 2013) and it was first formulated by Polanyi (2009); it has been the focus of pedagogical research ever since. We want students not only to recognise this tacit and embodied knowledge (Mitchell *et al*., 2022; Shogo 2011; Taylor, 2017), but also to gain confidence in it:

> *"Creative arts research is often motivated by emotional, personal and subjective concerns; it operates not only on the basis of explicit and exact knowledge but also on that of tacit and experiential knowledge" (Barrett 2007, p.115).*

A particular focus is on inclusivity, diversity and equality throughout the curriculum: contextual thinking about animation as an agent of change is encouraged through the power of storytelling. Our student body is highly diverse and reflects the student body of the University of Greenwich, where more than two thirds of students are from global majority backgrounds (University of Greenwich, 2022). A culture of equality, diversity and inclusivity is enshrined in the University of Greenwich Student Charter (University of Greenwich, 2024). This charter is

[1] Consent for use of this image has been sought and approval has been given

shared with students from day 1 in ‘Welcome Week’ and translates into undergraduate research projects and exhibited artefacts (figure 1).

The Faculty of Liberal Arts and Sciences and the School of Design and Creative Industries emphasise a multi-dimensional approach encompassing the programme and its modules, as well as individual student needs and students’ sense both of mattering and belonging to an academic community of learning. This case study illustrates well-established research, to which it adds a highly integrated application (Owusu-Kwarteng, 2019).

Macro-level: a scaffolded, inclusive curriculum

Historically, the BA (Hons) Animation degree concentrated on the technical and design aspects of animation by offering optional modules. This approach focused on skills development rather than a holistic approach to personalised learning. The difficulties students have with the connectivity of options to their core learning has long been recognised (Chan, 2016).

As a programme team, we implemented a clear, structured and effective scaffolding of our modules that is easily understood by our students. The BA (Hons) Animation course now profits from a clear focus on storytelling, experimentation (Taberham, 2022; Wells, 1997) and spatial animation. 3D and 2D animation are two key pillars of the curriculum. Through programme revalidation and module changes, we streamlined the programme: modules are interwoven horizontally across the year as well as supporting each other vertically, with learning outcomes building directly on each other. The team's development of the programme led to our highlighting the flexibility of the programme, including students’ opportunities to exercise independence within the structure.

In year 1, learning skills are developed across modules that are horizontally integrated. ‘Hard’ technical skills in animation are balanced with ‘soft’ collaborative skills, which are vital to the creative industries. A technical 3D modelling module is supported by skills developed in storytelling and experimental animation modules: camera, observational drawing and communication. This makes students’ learning more inclusive, by broadening their understanding of what animation can be.

In year 2, animation and storytelling skills extend what has been acquired at level 4. The modules ‘Visual Effects Principles’ and ‘Games Design Principles’ include an employability focus and address industry needs and standards; process-based learning from both these modules feed into other modules and vice versa, for example by integrating 3D animation, compositing and real-time animation.

In year 3, students decide on their own foci in modules, enabling them to build on their previous learning: in the sixty-credit capstone Animation Research Project, student-led learning combines theory and practice. In complementary modules, students emulate the workplace environment. Mentoring sessions, portfolio reviews and live briefs – in which students receive industry support and develop their showreels and portfolios – enhance employability.

Meso-layer – dissertation writing

At a meso-level, many of our students lack recent experience in academic essay writing when reaching level 4. Because of their focus on practical skills development, students tended not to engage. We questioned the approach to essay writing by framing it as means of informing practice, so as to enrich their animations.

Pedagogical research (University of Greenwich, 2024) has led to the institutional practice of inclusive teaching and, in our own case, a pedagogic approach based on experimental animation. Experimental animation is frequently characterised by an emphasis on process, making, materiality and aesthetic enquiry (Smith and Hamlyn, 2018). Our approach helps students to explore their own means of creative expression. In addition, we shifted the focus to nurture those students with the greatest academic support needs. Thus, with the assistance of the external examiner, we integrated the relevance of research for practice and academic writing skills throughout the programme, to enhance students' learning.

We teach the researching and structuring of visual portfolios alongside analytical writing skills. Within each module students create a visual portfolio. We provide guidance to students for their creation of a predominantly visual portfolio that consolidates what they have learned and actively used to enrich animation; we stress the importance of clear headings and visual layout and, early on, provide advice about the size of images and how to caption them, as well as about the size of sections. At level 4, in both terms 1 and 2, portfolio submissions form part of coursework submissions. These include a total of 500 words across these terms. Students appreciate this visual, inclusive approach to research.

At level 5, we then prepare BA Animation students directly for dissertation writing. The contextual review of 1,500 words is structured in a similar way to the dissertation that is due the following year, but with less than half of the word count required for that. We designed the contextual review to help the students reflect on their practice and on the relevance of their work to society. Students tend to be ready for a challenge at this point. The structure of these coursework submissions is modelled on academic journals, including theory and literature reviews, research into methodology and writing on practice. This primes students for level 6.

At level 6, dissertations are usually passion projects and therefore provide a challenge for students to take an academic standpoint in their writing. The dissertation is the longest and most heavily researched piece of writing that they undertake in their undergraduate studies.

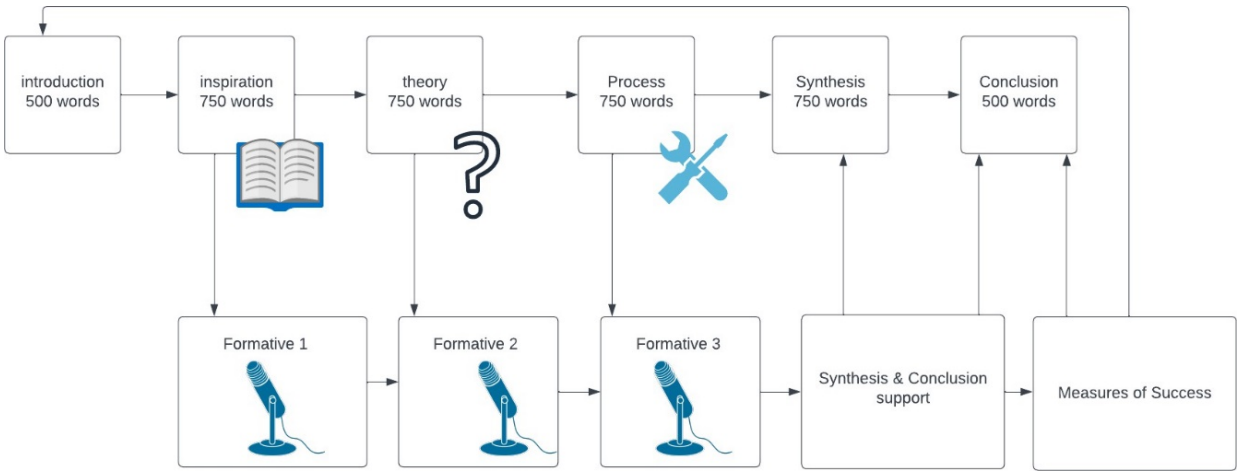

Figure 2. Dissertation scaffolding

Our intervention is underpinned by active learning through integrating research with practice, which is embedded in the dissertation: theorising is triangulated with research and practice-based development through a tightly integrated structure (figure 2). This has led to significant positive results, specifically among our global majority students, as BA Animation students outperformed other programmes last year.

Micro-layer: closing the feedback loop through personalised academic tutorials

We recognised that, at level 6, students' productivity during inclusive learning depended on the degree of their personal confidence in their own ideas, skills and knowledge, and so we set about developing highly personalised tutoring to deal with the challenge of overcoming the cohort's variable levels of confidence. To confront this challenge, we developed a highly personalised approach to tutoring. Research suggests that there is strong evidence of the importance not only of giving feedback (Winstone and Nash, 2016), but of constantly evaluating how well the students, especially those with greater learning needs, are receiving feedback and acting on it.

Our intervention consists of a continuing series of tutorials – in the form of a 'feedback cycle' (figure 2) – which are complementary to this scaffolded structure: we use digital tools to achieve accurate feedback loops (European Commission, 2020). A logbook ensures that all students are seen at regular intervals and we add written feedback to the Moodle online repository (via OneDrive) after each tutorial. The teaching team (two to three tutors) cycles through the cohort by spending around twenty to thirty minutes in discussion with each student, looking at work produced to that point and providing feedback on it.

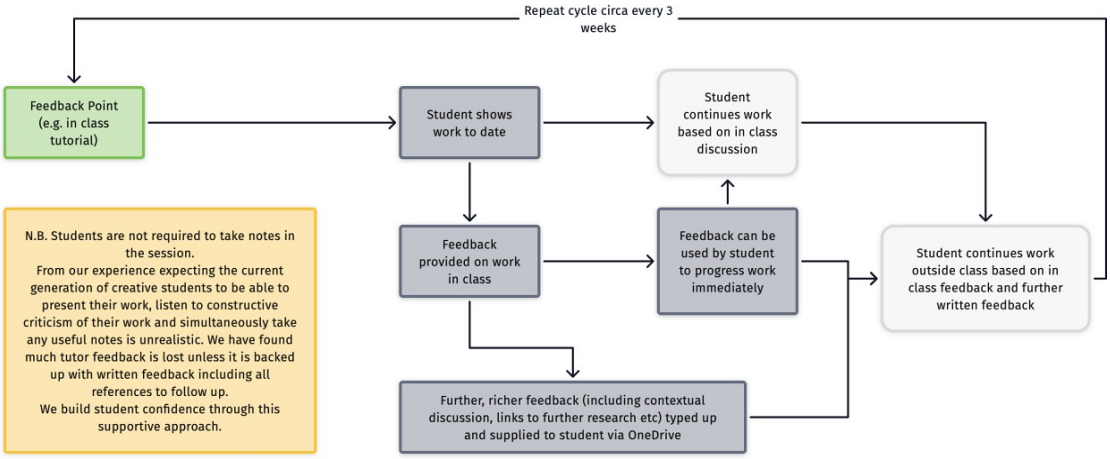

Figure 2. Feedback cycle for the level 6 capstone project 'Animation Research Project'

Tutors write up the discussion and provide further contextual information, add links to further research and suggest next steps for the student to consider. On account of the student cohort size, we normally see students every three weeks; this cycle provides enough time for students to develop further work for discussion in their next tutorial.

The outcomes of our approach

To assess the success of our approach we captured student success across quantitative and qualitative data points. Quantitively, this included student retention data, progression and National Student Survey (NSS) statistics, as well as student results at module and programme levels. Qualitatively, we obtained testimonials from external examiners, students and graduates and written records from student cohort feedback, minuted meetings and module evaluations. We gauged our level of success by comparison with the outcomes of previous years, using school and faculty-wide data. Student successes are also borne out by festival submissions, publications and conference presentations.

On a macro level, attempts to streamline the programme have yielded high results: the 2.1 and 1st honours for our global majority students for this programme stand at 80% (ILPA 2023). As the programme became clearer, the level of NSS student satisfaction with teaching increased from 81% in 2023/24 to 86% in 2024/25. Both qualitative and quantitative feedback support the idea that our programme changes (which emphasise a highly scaffolded and well-integrated approach) resulted in a higher degree of student engagement and student success.

At the annual graduation show, students present their work within a public-facing exhibition. This celebratory strategy instils a degree of criticality, as students present work to potential future employers and industry leaders, as well as to friends and family. This sharing of research outputs encourages students to reflect on their own practice as holding a value that reaches beyond academia.

On a meso-level, dissertation writing skills have continuously improved across previous years. While students reported worries about dissertation writing during committee meetings and via the Student Voice, the NSS results illustrate the effectiveness of our strategy: NSS scores for 2024/25 show that 100% of students felt that students' opinions were valued by staff.

In practice, we have seen students who would have struggled to write a dissertation achieve very good results. Graduation rates at level 6 remained at 100% for two years in a row. We have helped students to develop analytical, written self-expression. In our experience, this is a skill that comes naturally to very few; constructing an argument needs to be taught. This skill enhances life chances, is truly transferable and helps to improve communication about their own work and general confidence.

On a micro level, a stepped, scaffolded approach to learning through one-to-one tutorials and a clear learning plan tailored to student needs ensured that students with additional learning needs would not feel left behind. The importance of personalised support has been evidenced by national festival presentations, including the BFX Festival, and international festivals such as International Short Film Festival in Naples and CAFF in Hawaii.

Efforts have now resulted in measurable student success: students and graduates, supported by teaching staff, have jointly made submissions to international conferences, including ACM Siggraph and EVA London Conference. Such events have boosted student confidence in publishing.

Our approach is inherently inclusive, by championing individual learning needs and celebrating students' individual strengths and passion for animation. As a result of this focus on individual and inclusive learning, our global majority students [2] are outperforming the school average by 35.8%.

Evaluation

The authors acknowledge that further pedagogic research – to collect more data through questionnaires and focus groups and from other cohorts – may yield more insights. We have attempted to tackle existing challenges, but is a work in progress, and we are mindful that there are limitations to our approach and we try to improve it year on year.

Given the structural inclusivity challenges that the animation industry encounters, we need a profound and broad response across multiple aspects and facets. Our case study demonstrates a successful, holistic strategy to student-centred learning and our macro-meso-micro approach uniquely supports an inclusive pedagogy within a programme that makes authentic learning central.

On a macro level, the streamlining of the programme, combined with embedding academic writing and visual research and analysis over the duration of the degree, is key. We challenge students to connect theory actively to their practice and their tacit knowledge (Sousa and

[2] These are global majority students (not just international students) global majority, n. meanings, etymology and more | Oxford English Dictionary

Mangas, 2024). Through iteratively presenting their work, students learn from their tutors and peers, reflect on and communicate the value of their practice (Chan, 2016). We use online systems to maintain up-to-date and accurate individualised feedback loops (European Commission, 2020).

This has resulted in more clarity for the students and a higher degree of engagement. Integration of learning outcomes both horizontally and vertically have directly affected students' skills development. On a meso level, academic writing is best seen in the context of active learning as iterative and practice-focused. Academic staff, through well-documented, and highly personalised continuing feedback, emphasise the importance of critical thinking, and visual argumentation. On a micro-level, a feedback loop – which involves constructive and inclusive feedback tailored to personalised needs by focusing on individually relevant tasks and understanding – is immediate and iterative (Theobald, 2020).

Our approach resulted in a measurable improvement in students' perception and sense of mattering. 'Mattering', a term introduced into academic debate by Rosenberg and McColough (1981), has been linked to a sense of purpose, identity and performance (Becker, 2024; Dixon and Tucker, 2008). The students' increase in confidence can be seen in the number of student-led publications – from no academic papers at all to a total of thirteen publications in recent years. Students embraced research as part of their practice, and presenting at conferences added to their sense of professionalism. Entering their films into festivals had a similar effect. Examples of the wider peer community of learning enhanced students' motivation to thrive and join in within opportunities beyond the programme (Freeman, 2008). Our approach to authentic learning evidently leads to students' perception of mattering.

Our insights into student success and graduate outcomes are underpinned by evidence collected over five years. Sharing our approach with other programmes across faculties has taken place across NSS best practice groups and within the Greenwich Curriculum Framework. We recommend the application of these principles of scaffolding and a personalised approach to inclusive learning, across the macro-, meso- and micro-layers, to ensure a granular and substantial improvement of the student experience. Current graduation rates on the BA (Hons) Animation point to the relative success of this strategy. As a blueprint for individualised learning, this 'scaffolded personal support' could help to inspire similar pedagogic approaches beyond the field of animation teaching and learning.

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Appendix: Structural inequalities in the animation Industry

A challenge of inclusivity persists within the animation industry globally. Ninety-three per cent of the animation workforce are graduates (Animation UK 2025). Structural issues affect female animators and animators from global majority backgrounds disproportionately, especially in senior roles. A study by the Annenberg centre reveals a glass ceiling: only three per cent of animation feature film directors are women and only five per cent of animation feature film producers are women of colour (Smith, Choueiti and Pieper, 2019). Further challenges to our diverse student body include: a lack of role models (Starz 2022, Hughes *et al*., 2017); diverse representation in the animation industry, which has long suffered from systemic imbalances, bias and discrimination (UK Screen Alliance, 2019)