Learning and Teaching Conference 2023 Abstracts Book

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# Day One

## Video Presentations

### 2A1 Partners in Pedagogy: Using a Feminist, Student-Staff Partnership Approach in the Co-Creation of Online, Postgraduate Teaching Resources

*Tanya Cheadle (University of Glasgow), Abigail Jenkins (University of Glasgow) and Charlotte James Robertson (University of Glasgow).*

Feminist, student-staff partnerships (SSPs) reconceptualise learning as a collaborative and reciprocal process, challenging existing power hierarchies and creating opportunities for agency, empowerment and leadership within traditionally underserved student populations (women, LGBTQ+, BIPOC, first-generation) (Acai, Mercer-Mapstone, Guitman 2019; Mercer-Mapstone, Mercer 2017; Cook-Sather 2018).

This paper reports findings from a 2021-22 LTDF project, in which students and staff from a range of disciplines (Gender History, Information Studies, Museum Studies, Film & Television Studies) used a feminist, SSP approach to co-create teaching resources for the core course of a new, online MSc in Global Gender History. The project was led by two PGR students (Charlotte James Robertson, Dr Abigail Jenkins), who were mentored by a member of staff (Dr Tanya Cheadle). Six PGT students participated as pedagogical consultants, providing feedback at key stages of the course development (Claire Dobson, Lucy de Groot, Elena Jones, Aoibhinn Cunningham Smyth, Hannah Speed and Ashley Thompson). Project co-applicants in Information Studies, Museum Studies and Film & Television Studies also provided valuable input (Dr Adele Redhead, Dr Katherine Lloyd and Dr Lisa Kelly), with collaborations pursued with external partners including Glasgow Women’s Library, the Burrell Collection, Glasgow Zine Library, Moving Image Archive, and Our Story Scotland.

The project was successful in its key objectives. A diverse range of online course material was generated, including podcasts, filmed interviews, filmed case studies, pre-recorded lectures and textual overviews. In addition, a template was created for an inclusive and accessible Moodle page, which will be used across all courses in the new, online MSc programme. The project was run using a genuinely collaborative process, with multiple perspectives sought at three team meetings, in which draft course materials were pre-circulated for review. The PGR student leads developed skills in postgraduate and online pedagogy; the creation of video, audio and textual media; web design; time and project-management; and working with internal and external partners. The PGT student participants developed skills in postgraduate and online pedagogy, with involvement also prompting them to reflect on the value of collaboration and of learning from other students as well as staff. The project as a whole – and the new, online PGT course - benefitted substantially from the diversity of perspectives, including from students, staff, and internal and external partners. A key challenge faced by the project leaders was timescales; working in partnership takes time, and additional funding from History was required to complete elements of the filming and to make progress on the design of the Moodle page.

Student feedback on the module including the new course materials will be sought when the online MSc Global Gender History launches in September 2023.

### 2A2 Student-staff co-creation of equality and diversity focussed curricular teaching resources

*Sharon Sneddon (University of Glasgow), Nana Sartania (University of Glasgow), Emma Little (University of Glasgow), Niall Holden (University of Glasgow), Joshua Hewitt (University of Glasgow), Euan Robertson (University of Glasgow) and Rachel Bolwell (University of Glasgow).*

Introduction One of the University of Glasgow’s strategic objectives is to ensure ‘resources available for education and research are appropriate for a world-class university', and ‘appropriate mechanisms are in place to deliver sustainable improvements’. As such, the Undergraduate Medical School regularly revises learning resources and the quality of these is monitored via feedback from staff and students. Reflecting on this feedback, one of the improvement strategies was to review case-based learning (CBL) material ensuring greater compliance with the University’s Equality and Diversity (E&D) principles. One other pledge the University makes is that academic departments should work in partnership with students; this way each has a voice and a stake in curriculum development. It allows students’ perspective to be incorporated into the study material. Co-creation of the curriculum has the potential to serve the University’s Quality Assurance (QA) processes and create opportunities for students to share their point of view and insights with staff in order to improve learning and teaching.

Methods As part of a Student Selected Component (SSC) module, a group of Year 3 students reviewed and updated case-based learning material to be compatible with Equality & Diversity (E&D) principles as well as the University of Glasgow’s ethos on inclusivity.

Results / Discussion Students worked in partnership with staff on reviewing CBL resources and updating these according to the latest E&D guidelines. As well as gaining experience of creation of teaching resources, students were able to reflect on issues of E&D and how these are dealt with in educational material and in medical practice.

Conclusion This project allowed students to gain a comprehensive understanding of how teaching resources are created and quality assured. The students gained a deeper understanding of E&D issues and perceptions in Medicine and were empowered to take ownership and develop teaching resources for CBL sessions.

### 2A3 A student-staff partnership scheme focused on co-creating a decolonised statistics curriculum

*Nicole Miheso (University of Glasgow), Xiangge Lai (University of Glasgow) and Donald Reid (University of Glasgow).*

Decolonising the curriculum is a crucial part of curriculum design in higher education and part of the University of Glasgow’s Learning and Teaching Strategy. Here we will present the work of a student-staff partnership to decolonise the statistics curriculum within the Life Science degrees with specific focus on Eurocentrism and anti-discrimination, with practical examples of how this has been integrated across degrees. This includes an evaluation of student views and experience of decolonising the curriculum, which highlights a range of student perceptions and the importance of working with students when developing this area. We will share our recommendations to others going forward and our experience of this partnership scheme by summarising our toolkit for dissemination. Our partnership students will also share their experience of this scheme. It is valuable and key that students have a voice in co-creating a decolonised curriculum and further opportunity to evolve the curriculum via feedback.

### 2B1 Improving equity of access to Medical School - perspectives from a new foundation year access to Medicine programme

*Aileen Linn (University of Glasgow), Alison Browitt (University of Glasgow), Eilidh Ferguson (University of Glasgow) and Louise Miller (University of Glasgow).*

The Undergraduate Medical School at the University of Glasgow is committed to the development and retention of a diverse community of medical students reflective of the wider society which they will eventually serve. In 2017, the medical school successfully obtained funding from a Scottish government initiative centred around widening participation and providing equitable access to medical school. As a result, the Glasgow Access Programme (GAP), a bespoke gateway to medicine access programme was designed to deliver an academically supportive and stimulating learning environment providing students with a comprehensive training and development of the professional and academic skills required to study medicine. The programme was aimed at school leavers and those enrolled on widening participation access to medicine college courses, who are resident in Scotland in SIMD20 postcodes, care experienced or from a remote/rural background, students with a refugee or asylum seeker status were also eligible to apply. During the 2017-2019 academic sessions, 43 students were enrolled onto the programme. A research project was completed which focused on working in partnership with widening participation medical students that had completed GAP and transitioned on to study undergraduate medicine. The project developed an evidence base of authentic experiences from the student’s viewpoint as they transitioned through first year medicine and adjusted to the demands of studying medicine. Using focus groups, the student participants highlighted potential areas of development to support students on their learning journey as they transitioned from high school to GAP and then as they transitioned from GAP to undergraduate medicine. The presentation will focus on supporting widening participation students transitions to higher education and strategies introduced to GAP and undergraduate medicine to support widening participation students’ retention, success and wellbeing in the undergraduate medical school and will highlight challenges that still need to be overcome.

### 2B2 “It definitely geared me up”: Academic and study skill development and Access to Higher Education students’ experiences of transitioning to undergraduate study

*Felicity Cawley (University of Glasgow).*

Explorations of student transitions to university have long noted that help in developing academic skills and preparation for higher education learning modes form a vital part of a successful transition (Tinto, 1987; Briggs, et al., 2012; MacFarlane, 2018; van der Zanden et al., 2018). Both the Scottish Widening Access Programme (SWAP) and University of Glasgow in-house Access to Higher Education (AHE) courses are designed to provide a route into higher education. As such, both programmes place an emphasis on academic skill development as part of the curriculum. SWAP courses have formalised this with their compulsory ‘SWAP Prep for HE’ module whereas the University of Glasgow’s AHE courses simply state participants will develop the “academic and study skills that will set you up for future success” during their studies. (University of Glasgow, 2022)

As part of a recently completed master’s dissertation, nine former Access students were interviewed on their experiences of transitioning to undergraduate study. Identified in these conversations was an emphasis on the opportunities Access courses had given students to acquire, practice, and develop their academic and study skills before they transitioned to higher education. Interviewees noted that SWAP courses “geared me up” and AHE courses put them “on an equal footing” when entering first year. However, further analysis of students’ experiences suggests that there is a difference in the experiences of SWAP and AHE students’ academic and study skill development, which is important when considering the role of these courses in preparing students for undergraduate study.

This presentation will further explore the differences in Access students’ experiences, focusing on the acquisition and development of academic and study skills during their Access programmes. In doing so, this presentation will discuss the higher levels of preparedness articulated by former University of Glasgow AHE students versus the feelings of shock and being overwhelmed expressed by former SWAP students. This exploration will raise questions around the efficacy of Access courses in preparing students for higher education, as well the implications for students’ transitional experiences. As an educator who works in both AHE and undergraduate programmes, this presentation will also touch on the implications of these findings for the ways in which Access programmes are structured and conceptualised as routes into higher education as well as the way in which former Access students are regarded and considered within the undergraduate classroom.

### 2B3 Breaking down barriers to access: A case study in widening participation and accessibility directly from further education.

*Peter Moult (University of Glasgow) and Emma Reid (University of Glasgow).*

Widening participation and increasing opportunity in higher education has improved over recent years through better partnerships with further education colleges which produce direct entry routes into second and third year of university courses. The Life Sciences portfolio of degrees within the College of Medical, Veterinary and Life Sciences has partnered with several local further education colleges to offer a direct route into the second year of our degrees. In order to facilitate this transition, we offer a 6-week summer school where college students are provided the opportunity to come onto campus and experience the higher education environment, by attending lectures, laboratory practicals, and small group teaching sessions.

Feedback acquired from students on this programme, and also from college students accessing similar courses at other Universities (Abertay University & Edinburgh Napier University) tells us that an often overlooked barrier to access is being able to physically attend these transition courses. This demographic of students typically has an increased median age, an increased burden of caring responsibilities and an increased proportion come from MD20 or MD40 areas of Scotland. This often means less time and reduced means to be able to travel to another campus whilst still studying at college.

During the pandemic, we were forced to move the Life Sciences HNC articulation course online for two years. Data shows us that during this period there was greater engagement by a larger number of college students. Furthermore, feedback from the students told us that they liked the online provision because it was “more flexible”, “more accessible” and allowed them to access the content around their other commitments. They also felt “more supported” by academic staff who were able to have “more contact” with them online than they would normally receive in person. Since the pandemic restrictions have been lifted, we have adopted a hybrid model for this articulation course with the majority of content delivered online, but with a day of activities on campus to give those who are able, the opportunity to experience being on campus and participate in face to face activities.

Here we will present data on engagement and outcomes for students on our Life Sciences HNC articulation course over a four-year period, comparing a fully on campus experience, with fully online and hybrid models. Alongside the data we will present a range of testimonies from students who have experienced each model over this four year period. We will further compare this with similar provision across two post-92 Universities (Abertay and Edinburgh Napier) who run similar access courses and have adopted similar models but have a larger cohort of direct entry students. We will demonstrate how this approach is built on our response to the pandemic, promotes, encourages, and enables a more pervasive engagement with the course, thereby maximising the benefits of learning technologies and creating blended learning approaches that work effectively to increase student participation and engagement.

### 3A1 ‘I felt as if I was there’ - can Virtual Reality (VR) enhance students’ learning experience of immunology teaching?

*Kirsty McIntyre (University of Glasgow), Genevieve Stapleton (University of Glasgow), Leighann Sherry (University of Glasgow), Claire Donald (University of Glasgow), Simon Milling (University of Glasgow), Robert Nibbs (University of Glasgow), Gillian Douce (University of Glasgow), Imants Latkovskis (University of Glasgow) and Neil McDonnell (University of Glasgow).*

Immunology, the study of the body’s immune system, is a challenging topic for undergraduate students who often find it difficult to conceptualise and recall. Immunology teaching in the undergraduate medicine (MBChB) course has traditionally been delivered via didactic lectures and problem-based learning.

Virtual Reality (VR) technology is posited to offer an immersive environment that encourages active participation with the subject matter. At the University of Glasgow, investment into VR technology was driven by a 2017 VR Teaching Ideas competition, to which a ‘Battling Infection’ simulation was pitched. Development of the bespoke simulation was completed as part of Project Mobius, an Innovate UK-funded project, in collaboration with industry partner Sublime Digital (now Project Edify, https://www.edify.ac/). Development costs for ‘Battling Infection’ are estimated at £40k.

The aim of this study is to investigate how VR can be used to support student engagement with challenging subjects, like immunology, and therefore support learning and greater understanding in that subject. We implemented the custom ‘Battling Infection’ simulation using VR technology with head-mounted displays and hand controls for 330 medical students in academic year 2022-23.

Students enter the VR simulation in the human intestine, whereupon they discover an infection caused by the bacterium Salmonella. Their task is to select the appropriate immune response to effectively eliminate the infection, visiting different parts of the body (lymph nodes, bloodstream) as they do so.

Prior to attending the VR simulation, students completed an online pre-lab activity, hosted on Lt online physiology software (https://www.adinstruments.com/lt). The pre-lab activity contained short questions and information about general concepts related to Salmonella infection.

After the in-person VR task, students were invited to complete a voluntary subjective learning experience exit survey.

A high proportion of medical students took part in the survey (233, 71% of cohort). For most medical students (131/233, 56%), it was their first experience of VR. Feedback described the experience as ‘immersive’ and ‘realistic’: “I felt like I was actually in the body and could explore and see what was happening”. For students, the interactivity “put [the] learning in context”, echoing findings of previous studies (e.g. Fabris et al, 2019). Furthermore, students self-reported that the VR simulation enhanced their understanding of the immune response (198/223, 89% agreed or strongly agreed).

Negative comments related to the location (at the University’s VR lab in Partick Burgh Hall) and the short length of the experience (~15-20 minutes per student).

The next phase of the study will explore the experiences of undergraduate life sciences (BSc) students (n= 265), who will complete the same VR simulation and be offered the opportunity to complete the survey in March 2023. We aim to explore students’ perceptions of the VR simulation from the two cohorts and examine differences or similarities between each.

### 3A2 Parasites, Posters and Patisserie: Increasing Parasite Awareness in Veterinary Undergraduates with a Collaborative Symposium

*Louise Anderson (University of Glasgow), Kim Hamer (University of Glasgow) and Katie Denholm (University of Glasgow).*

In this short presentation we would like to describe a one-day interactive live event held at the Garscube campus which was implemented primarily to improve our students’ knowledge. However, by adding elements of independent learning, groupwork, peer-review, and creativity (academic and culinary) for students; together with the palpable enthusiasm of staff, external clinicians and industry partners, participants found this a stimulating way to develop key professional skills in a positive collegiate environment. The aim of the recently implemented spiral curriculum of the 5-year Bachelor of Veterinary Medicine and Surgery (BVMS) Programme is to revisit topics and themes throughout the course and thereby deepen knowledge. However, a number of clinical staff were finding that when students reached their final year, there were significant gaps in the practical application of knowledge in key areas, with one such area being parasitology. In order to increase students’ understanding of the diagnosis and management of parasitic disease in the key species, we held a one-day symposium on campus for the two cohorts that comprise the Clinical Phase of the BVMS Programme. A variety of internal clinical and research staff agreed to be involved and external speakers were invited from industry and other research institutions to deliver content. A blended approach was chosen for the delivery of two Keynote lectures (available live, recorded and live-streamed) and then students could choose, from 8 options, two interactive live workshops delivered by industry and external clinical practice partners, enabling students to learn from and network with knowledgeable veterinary professionals. In addition to developing independent research skills, teamwork, communication and collaboration are valuable attributes for our graduates and map directly to the Royal College of Veterinary Surgeons (RCVS) Day One Competences. With this in mind, a team-working group Poster competition was incorporated into the formative curricular modular Continuous Assessment Task (CAT) for both cohorts, culminating in a display of these posters during the symposium. With staff supervision, senior peers reviewed junior peers’ posters which were then judged by industry guests. Finally, with mental wellness being high on the agenda for all healthcare professions, none more so than the veterinary profession (Bartram and Baldwin, 2010), an extra optional creative element of a “Parasite-Themed Bake-Off” competition was opened to staff and students. There is no doubt that the remarkable creativity of contestants in this less-academic component allowed our students to relax and unwind, and helped to contribute to excellent student engagement and a highly positive experience for all involved.

### 3A3 The Impact of using Virtual Reality Lessons to Teach Microbiology Online

*Fiona Macpherson (University of Glasgow), Claire Donald (University of Glasgow), Nicola Veitch (University of Glasgow), Andrew Judge (University of Glasgow), Christopher Carman (University of Glasgow), Pamela Scott (University of Glasgow), Sonya Taylor (University of Glasgow), Leah Marks (University of Glasgow), Avril Edmond (Dizzyfish), Imants Latkovskis (University of Glasgow), Nathan Kirkwood (Edify) and Neil McDonnell (University of Glasgow).*

Virtual Reality (VR) is gaining increasing interest as an educational technology which can be integrated within Higher Education teaching. The University of Glasgow (UofG) has been working with leading immersive technology company, Edify, to embed tailored VR applications as part of a variety of subject disciplines. Within the life sciences, this is beneficial for delivering complex skills training and overcoming significant pedagogical boundaries encountered in traditional teaching environments, such as associated safety concerns and restrictive equipment costs. During the COVID-19 pandemic, this collaboration provided teachers with a virtual training platform from which to remotely lead classes within true-to-life 3D environments through Zoom or other applications. We developed the Disease Diagnostic VR app which was implemented within the Junior Honours Molecular Methods (MM) course. Using a combination of lectures, computer tasks and laboratory-based practical sessions, students gain experience of cutting-edge molecular biology techniques, whilst acquiring fundamental knowledge and theory of the life sciences. It is the largest practical course offered within the life sciences at UofG and is delivered to both undergraduate and postgraduate students. As a result, the MM course caters to students studying a range of degree specialisms with varying backgrounds in molecular biology. To accommodate the COVID-19 restrictions during the 2020/21 academic session, the MM team developed an interactive virtual learning environment (VLE) within Moodle, comprised of topic-specific worksheets, videos, quizzes and learning science simulations. These activities covered a range of techniques from identifying genetic mutations by polymerase chain reaction (PCR), to diagnosing infected patients using quantitative PCR (qPCR). Students were provided with structured access to the activities in the ‘Moodle book’ split into 5 chapters to be completed over 5 consecutive days. The Disease Diagnostic VR app was included on the fifth day to further support the student’s understanding of the processes involved in qPCR. We were granted ethical approval to investigate if VR technology influenced the student learning experience by comparing VR delivered by-proxy to traditional and less immersive online teaching methodologies. Our study consisted of 76 students randomly allocated into two groups; the test group, who experienced the VR incorporated within the 5-day Moodle lab book, and a control group working only with the interactive online lab manual material. Participants completed questionnaires before and after these tasks. Our results indicate that although there is no observable difference in learning outcomes between the 2 groups, students in the VR-test group consistently rated their learning experience more favourably than the control group. In addition, student confidence in practical skill elements was also greater in the test group compared to the control. While research into the effectiveness of VR for teaching and learning has been expanding recently in education and psychology literature, this area of research is still in its relative infancy. Hence, examining the effectiveness of VR within Higher Education is an important and timely topic that will not only inform future practice but further the frontiers of a vital and evolving field of research.

### 3B1 From Method to Practice: Evolving research methods learning to student-centered active learning

*Jo Ferrie (University of Glasgow) and Miriam Snellgrove (University of Glasgow).*

In the social sciences, the apprenticeship model of doctoral research is not collaborative. It operates in traditional structures governed by supervisors who guide their student re-producing firm hierarchies of knowledge. Students report their experience to be alienating, impacting on well-being. We position the research methods courses that underpin doctoral research as part of the problem, and champion a move away from method/skill-oriented ‘research methods’, taught to large (200+) interdisciplinary classes: to ‘research practice’ that evolves provision to include action-oriented learning experiences that better replicate what researchers 'do' (Ferrie et al, 2022). This paper will argue that for students to develop as autonomous learners, they must first be taught and given space to practice engaging with difficulties in their research as properties of doing difficult research, rather than problems with themselves (often understood as imposter syndrome or internalizing failure). This paper examines ambition, excellence and curiosity in this context and critically engages with using, as educators, our experiences of failure, fallibility and vulnerability as pedagogical devices. In short, we must evolve our approach to student-centred learning by first humanizing ourselves, exposing our researcher practice in very different ways to the clean, linear and without complication version of ‘doing research’ taught through textbooks and journal articles. We will present examples of transforming methods curricula and exposing the emotional labour inherent in knowledge production to demonstrate: some failures are structural; vulnerability (and humour) is the keystone for empathy and building rapport with participants; and fallibility is a given, where research cannot be ‘perfect’. We will outline how in exposing our limitations as researchers we can co-produce and create collaborative solutions transforming the ways in which research is both taught and done. Such an approach challenges the ways methods is taught at doctoral level, stressing the need for the messy, creative and risky spaces that students and teachers need to inhabit. We recognise that this is time consuming and unappreciated work, but argue that such transgressive spaces (hooks, 1991) remind us of alternative ways to learn and do knowledge.

### 3B2 Developing a principled skills development credit-bearing course

*Bob Morrison (University of Glasgow) and Ide Haghi (University of Glasgow).*

A new credit-bearing course for international PG students at the University of Glasgow has been developed for the School of Critical Studies by the English for Academic Study unit in the School of Modern Languages and Cultures. The principle aim of the course is to develop internationals students’ skills for seminars and assignment writing, needs identified by academic staff on the applied linguistics programme to support participation on PGT programmes. To meet these needs, the course design incorporated experiential learning theory, so that students undertake a series of activities that involve selecting and reading texts, discussing these, and writing about them. Students are supported through two-week cycles of reading, discussion, and writing while considering strategies and evaluating the effectiveness of these. With each two-week cycle, students build on and develop skills from previous cycles in a spiral syllabus (Macalister & Nation, 2020). With a course structured to enable skills and strategies to be revisited and revised, content and learning and teaching approaches also align with needs and the PG context. Because of the time-intensive nature of full-time PG study, reading is selected by students from their reading lists from other courses. This is time effective, connects explicitly to other courses, and creates opportunities for students to consider their strategies for selecting (and rejecting) texts to read. Classroom and out-of-class group work is integrated into the course with tasks designed around collaboration. Student are assigned to groups for out-of-class tasks and in class are re-grouped away from out-of-class partners. Research indicates engaging in out-of-class discussion positively impacts on willingness to communicate inside class (Jamalifar & Salehi, 2020), while classroom discussion includes sharing task findings in productive collaborative dialogues, checking understanding, and acknowledging and critically engaging with other perspectives (Gillies, 2019). Stages within the materials scaffold discussions, and the ongoing collaborative element has the potential to result in ‘friendships [and] learning outcomes [that are] highly sustainable and [lead] to many other student activities’ (Spiro, 2014, p. 80). A further innovative component of this course is the integration of successful student exemplars from other applied linguistics courses. Students collaborate in class to analyse and evaluate these as they examine the work of successful peers. Engaging in successful peer exemplar analysis focusses attention on the presentation of ideas, academic conventions, and how the writer can add commentary, including aspects of criticality. Displaying criticality in written work was added to the course in response to students’ requests when the course was originally piloted, and is examined in three cycles. Given the range of lecturer experience within teaching teams, these exemplars also offer lecturers exposure to the target level of successful student writing on specific courses (Price, 2005). This presentation will provide an overview of the cycles with examples of the various components, and explain how each cycle built on the previous ones to provide a sense of progress to course participants. The presentation will share ideas of how international students and others from non-traditional backgrounds might be supported in their studies through skills development activities.

### 3B3 Face-to-face, online or independent study? Factors influencing student choices of study mode in hybrid-flexible learning

*Gayle Pringle Barnes (University of Glasgow).*

Face-to-face, online or independent study – why do students choose to access learning activities through particular study modes? This presentation explores students’ choices in ‘hybrid-flexible’ (Beatty, 2019) provision to develop academic writing skills. Students can choose to access each writing topic through one of three different modes: (1) face-to-face (on-campus) classes; (2) online (Zoom) classes; or (3) fully asynchronous, interactive activities designed for independent study. All three options are designed to lead to the same learning outcomes and students can switch between study modes as they choose. These modes have been selected to provide students with maximum flexibility to access learning activities on or off campus, synchronously or asynchronously.

The presentation will report on survey responses from 86 taught postgraduate (PGT) students engaged in co-curricular classes and activities on disciplinary writing in Social Sciences subjects. Quantitative and qualitative data was analysed to explore why students choose to learn through each of the three modes of study. Key findings include: differences in motivation between those attending face-to-face and online classes; and a tendency for the independent study resources to be used as revision aids rather than stand-alone materials. I will also reflect on my experience of designing and delivering hybrid-flexible content and will share examples of materials development from the different modes of study.

As blended learning becomes the ‘new normal’ (Buhl-Wiggers et al, 2022), students increasingly experience both on-campus and online provision. This brings opportunities but also potential challenges for both students and teaching staff (Lomer and Palmer, 2021). The University of Glasgow’s (2021) Learning & Teaching Strategy emphasises the need to ‘support[…] engagement with blended learning opportunities’. Exploring students’ choices around hybrid-flexible access can enhance our understanding of how best to support and promote engagement with the multiple study modes through which blended learning can be realised.

### 5A1 Developing graduate attributes by engaging students with SoTL

*Colette Mair (Univeristy of Glasgow).*

The University of Glasgow have identified key attributes that capture qualities students should develop throughout their studies to thrive after graduation. These align with the attributes specified by the Industrial Advisory Board within the School of Mathematics and Statistics which include key attributes such as critical thinking, effective communication, collaboration, adaptability, and ethical awareness which align with the Learning and Teaching Strategy focussing on students’ professional and skills development.

During the 2021/22 and 2022/23 academic sessions, honour level statistics students were offered a handful of scholarship focused level 4 projects: Teaching Excellence - investigate the level 4 statistics student perspective of teaching excellence within the School of Mathematics and Statistics; Student Boredom - investigate factors associated with boredom among level 4 statistics students within the School of Mathematics and Statistics; and Graduate Employability - investigate the level 4 statistics student perception of employability after graduation within the School of Mathematics and Statistics.

The projects provided students with a unique opportunity to engage with the ethical approval process within the College of Science and Engineering, communicate with students in order to engage them with the survey, and adapt to the responses received with respect to the statistical methodology. These are unique features, in comparison to other projects on offer to level 4 statistics students, where students typically would be presented with a known data set and asked to perform a statistical analyses.

The results from the projects were interesting in themselves. The 2021/22 Teaching Excellence project found that only 59% of students identified critical thinking as useful, and 66% of students identified team projects as not useful. Interestingly, 60% of students rated challenging content as a good or the best property of a lecture, and 89% of students rated problem-based learning as either a good or the best property of a lecture. To the contrary, only 52% of students valued further reading into a topic. A key theme was how students defined teaching excellence, with ‘the best lecturers being the ones that best prepare students from the exam and not necessarily ones that inspire you in the subject’. Key results from the 2022/23 Graduate Employability survey include identifying future student career aspirations, with all students describing a career in industry with data science and finance the most commonly described fields. Students were asked what skills they thought would help them get employed and what skills they develop during their programme of study that they thought would help them. Students identified communication, awareness in the field, professional skills and the ability to learn new things as key skills they will need in future employment. Interestingly they identified statistical knowledge and programming as skills they have developed through their programme of study, posing the question if students view skills they believe are important and the skills they have learned during their studies to be different.

During this presentation, I will discuss how scholarship activities can better prepare students for their future career ambitions and most importantly help students develop their graduate attributes.

### 5A2 Careers lab in L1 life sciences: introducing student awareness of developing skills throughout their university career

*Fiona Stubbs (University of Glasgow), Mary McVey (University of Glasgow) and Nicholas Rudzik (University of Glasgow).*

Students in L1 think that preparing for life after graduation is too early, however the graduate labour market is competitive and employers are viewing extracurricular achievements of equal importance to those of academic study. With the university’s L&T strategy 2021-25 recognising continual professional development as an important aspect of the student experience, a skills programme is a solution. Currently among the main skill gaps reported by employers in the ‘ISE skill report 2022’ are presentation skills, time management and writing skills. The Bright Network’s report ‘What do graduates want 2022-23’ outlines the mismatch of student perceptions of what graduate employers want most in candidates as being high grades as opposed to what employers’ value as skills in communication, problem solving and leadership. According to ‘Handshake careers 2032 – The Final Chapter’ report, the pandemic impacted students’ ability to get experience and knocked their confidence and drive with a result in less connection with careers support. This backs up the need for dedicated timetable space to focus on this area. Students struggle to engage with standalone sessions when no academic staff are present, (Veitch et al., Access Microbiology, 2022). The project aims to work in partnership with academic staff and provide equality of opportunity for all L1 life science students irrespective of time available, resources and social capital. For the first time in 2022/23, 2 labs, 3 hours each in duration, are dedicated to focusing on skill sessions. The logistics of teaching all 778 L1 life sciences students in a workshop style session meant delivering a total of 18 sessions involving the MVLS careers manager, 5 academic teaching staff and 28 graduate teaching assistants. The 1st semester session was structured as follows. Students carried out pre-lab research exercises looking at the Bright Network and ISE reports, mentioned above. In class, the students were made aware of the top skills employers look for in graduates and then in groups tasked to match cards with skills names and their definitions. They then carried out an audit of skills they are confident in versus those to work on, which led to discussion of where these skills could be developed, supported by guest speakers from the science-based societies. They then produced a skills-development action plan, reviewed job descriptions and learned how to write a one-page CV using a template and a professional email to a familiar context. This works links to a new MVLS skills award to be launched in Jan 2023. The success of these sessions will be evaluated both quantitatively and qualitatively and findings presented. The 2nd semester session is being designed around reflecting on progress and use of peer-to-peer support. The combination of these sessions will provide a unique offer in the university of 6 hours dedicated skill support for all L1 life science students The aim is to equip students to gain a greater understanding of themselves and what they have to offer and to empower them to take ownership of their career journey and evaluate progress.

### 5B1 Using a group podcast and policy brief to support sustainability literacy, communication and teamwork skills: Insights from undergraduate students

*Paulina Navrouzoglou (University of Glasgow), Lovleen Kushwah (University of Glasgow) and Geethanjali Selvaretnam (University of Glasgow).*

Sustainable environment is taking centre stage in government, organisational and Higher Education policy. The need to embed sustainability literacy in our students is widely recognised as expected by Business School accreditors. The undergraduate honours level course in Environmental Economics embeds sustainability, which is the focus in this study, where a novel assessment method enhances students’ sustainability literacy as well as develop important graduate skills. We will explain the design of this assessments and its effect on student experience. The students worked in groups of four who were randomly allocated. Most of the groups had students from different nationalities. Although this is an opportunity to develop multicultural skills, it can also pose challenges. They worked together over 7 weeks, which allowed them ample time to develop various skills related to working with people they don’t know – finding each other’s strengths and weaknesses, complementing and supporting each other, persuading, listening, cooperating, resolving differences etc. The group task was in two parts – podcast production and written policy brief – so that the group skills gained in the first part could be built upon. First, the students had to produce an interview podcast which exposes an urgent environmental problem requiring the Ministry of Environment’s attention. This assignment will develop students’ environmental awareness, sustainability literacy, team working skills, time management, persuasive arguments and effective communication as well as creating a podcast. After group creation, colleagues from LEADS discussed the benefits of groupwork while student interns shared tips from their past experiences. Preparing a podcast is a new type of assessment for the students. They were given some training and guidance about creating podcasts. They could book quiet spaces and audio recorders. Some excellent podcasts were created by the students, showcasing their ability to master valuable skills. There were some submissions which showed the students lacked confidence in communicating with their team members and engaging the audience. Preparing an appropriate style and content of presentation, presenting clearly and engagingly, timing and editing the recording are some of the important aspects. The policy brief complements the podcast to propose to the Minister how to resolve the environmental problem presented in the podcast. The students can showcase their ability to work together to produce a policy brief which is short, clear and effective. This is different from traditional essays and designed to develop a valuable skill in writing short briefs which fight to grab the attention of someone who is busy. This assignment will develop students’ problem-solving and written communication skills. Finally, the students submit an individual reflection about their experience and complete a short survey. Writing a reflection on one’s experience has many benefits to learning. An important research question is what did the students learn by working on this project which was designed in this way? Student’s responses will be analysed using appropriate research methods. Some Likert questions will be analysed quantitatively while open ended questions will be through qualitative methods. The results will be presented at the conference.

### 5B2 Embedding communication, teamwork and reflection skills in introductory physics courses

*Peter Sneddon (University of Glasgow), Sarah Croke (University of Glasgow) and Emma Caldwell (University of Glasgow).*

Skills development is a key component of any science degree. Graduates should have experience and confidence in working collaboratively with peers, being creative, tackling problems, researching topics and enhancing their ability to self-evaluate and have confidence in themselves and their work. This is why all of these appear in the University of Glasgow’s Graduate Attribute framework. This presentation details a scheme that has been introduced to the introductory physics course at the University of Glasgow: The Physics Communication Project. This sees students working in teams to create, and present, an Outreach Poster, suitable for a senior-school age audience. They select a topic from their course curriculum, and over the course of three weeks explore this to create their poster. They then present this poster to an audience of peers, and complete a self-reflection task to explore their actions. Funded by a University of Glasgow SOTL grant, the Project has been evaluated in 2022-23. Students have reported a boost in their confidence in working in teams and presenting, as well as other skills being developed/improved. They also found it an invaluable chance to get to know, and work with, their course mates.

In this presentation we will detail the content of the Communication Project – importance of outreach, researching a topic, how best to present work, the importance of self-reflection – and we will also discuss the results of the evaluation. The key skills that the Communication Project tackles will be discussed – teamwork, problem solving, research, presentation. We intend to show that the Project has a positive effect on the participants, is an effective means of improving students’ skills. And whilst this particular example is based in physics, the approach we will discuss could be equally well applied to any discipline.

## Digital Posters

### 1 Shaping graduate teacher identity: A model for the training and support of GTA skills development and graduate attributes

*Pamela Campbell (School of Geographical and Earth Sciences, University of Glasgow), Elisabeth Alice Lacsny (School of Geographical and Earth Sciences, University of Glasgow) and Hannah Mathers (School of Geographical and Earth Sciences, University of Glasgow).*

In the School of Geographical and Earth Sciences (GES) Graduate Teaching Assistants (GTAs) are crucial to our teaching community, where they are responsible for delivering practical classes (labs and tutorials) across early years' (Level 1 and 2) undergraduate programs. In these spaces, GTAs act as near-peer role models for both undergraduate and postgraduate cohorts. Consequently, investment in the support and training of GTAs has an important knock-on effect on the quality of learning and community creation throughout the school.

Increasing professionalisation of GTA roles, as facilitated by both the shift to fixed term contracts and through emphasis in the UK Professional Standards Framework (UKPSF), has prompted a positive shift in the profile of GTAs within the Higher Education (HE) sector. However, wider GTA-impacting issues around casualisation of contracts (Rawat and Meena, 2014; Young, 2006), lack of training (Austin, 2002), detachment from the development of module content (Pearson, 2018), and hierarchical departmental culture(s) (Watson, 2018; Zotos et al, 2020) remain concerns across the University and wider HE.

We believe it is imperative that GTAs are supported and mentored to feel confident, respected, and valued as teachers and facilitators of learning. The GTA support and progression structure in GES is key to developing confidence and independence for an evolving teaching practice. Development is enabled through engagement with our teaching identity framework, where guidance and training are tailored across three stages of GTA maturation: ‘hatchling’, ‘fledgling’ and ‘on the wing’ (Mathers et al., 2021). The University of Glasgow Graduate Attributes are embedded in our approach, promoting ‘career learning’ (Watts, 2006), which aims to build awareness of transferable skills, and empower student and GTA voices within the community of practice.

Here, we present our graduate teaching identity framework as a transferable model for professional training, underpinned by both the UKPSF and the University’s Graduate Attributes frameworks. Our three-tiered interdisciplinary model aims to support GTAs through a trajectory of teacher identities, embedding transferable skills and graduate attribute development at each stage, in addition to core pedagogical and teaching skills. Our findings drawn from two data sets (including Mathers et al., 2021) from past and current GTAs between 2019-2021, demonstrate how our framework supports ‘career learning’ and recognised attainment of selected UofG graduate attributes. We also outline some of the challenges and limitations of our model, which include the casualisation of contracts, the integration and visibility of GTAs within the department, and a lack of funding for in-house training.

### 2 Steps towards positive change in the geosciences: inspiring Girls into Geoscience Scotland

*Pamela Campbell (School of Geographical and Earth Sciences, University of Glasgow) and Amanda Owen (School of Geographical and Earth Sciences, University of Glasgow).*

Underrepresentation of women is well documented in the geosciences (Mattheis et al., 2022; Pico et al., 2020) with geoscience subjects being recognised as some as the least diverse of all STEM fields (Mattheis et al., 2022; Gonzales & Keane, 2020). Due to a lack of geoscience curriculum and exposure in schools across Scotland, there is an increasing responsibility of geoscience departments to enhance the recruitment and retention of students, particularly for young women and underrepresented groups (Sexton, et al., 2018). Creating a welcoming environment and addressing the negative preconceptions of geoscience is key to promoting change.

The School of Geographical and Earth Sciences (GES), University of Glasgow, is home to Girls into Geoscience (GIG) Scotland, a branch of the UK-wide grass-roots initiative launched in 2014. It aims to increase the visibility and inclusivity of geosciences as a subject for young people (ages 14-17) to study and pursue careers (Fisher, 2020). The events bring together high school pupils (S5 & S6), the GIG Scotland team consisting of members from GES (from PhD students to professional staff), and women from industry, government bodies, and across academia to highlight and promote the roles geoscientists play in our society. The first GIG Scotland event took place in 2019, consisting of interactive talks, hands-on workshops, and a visit to the Hunterian Museum. As a response to the pandemic, online UK-wide events took place in 2020-21 with GIG branches from Scotland, Plymouth, Wales, and Ireland collaborating to deliver inspiring speakers, workshops, and virtual fieldtrips, providing an insight into the wide variety of exciting careers and opportunities available in the field.

We present insights into the positive impacts of GIG Scotland and virtual GIG events from participant survey data (2019-2021). We share contributions from a current GES postgraduate student who attended the event prior to undergraduate study, as well perspectives from attendees and GIG Scotland staff across GES involved in the events. Through this, we reflect on the importance of female role models in addressing gender imbalance in the geosciences. Planning for a hybrid GIG Scotland event in 2023 is currently underway, with hopes that these initiatives continue to stride towards positive change in the geosciences.

### 3 Self-reported barriers to participation of women and non-binary undergraduates in physics

*Sarah Croke (University of Glasgow), Catriona McAllister (University of Glasgow) and Caroline Muellenbroich (University of Glasgow).*

Across STEM subjects, at all stages of their education and professional careers, women are consistently underrepresented [1]. Referred to as the “leaky pipeline”, the issue of representation grows worse further along the educational or career path [2-4]. In physics, the reasons and proposed solutions for the leaky pipeline have been discussed for decades, yet any achieved successes exist only within a limited scope, as evidenced by recent statistical reports [5,6]. Further, barriers to participation can be exacerbated for those belonging to more than one minoritized or marginalised group, and gender equality initiatives are increasingly considering intersectional inequalities to provide a more nuanced picture [7]. CUWiP, the Conference for Undergraduate Women and nonbinary Physicists, aims to encourage and support women and non-binary physicists to persist with studies and careers in physics related fields [8]. The conference has run annually in the UK since 2015 and in 2022 it was hosted jointly by the Universities of Glasgow and Strathclyde. The conference was planned and organised by a team comprised of undergraduate students, PhD students and staff. Here we present the demographics of the applicant pool. Where UK-wide data is available we have found that marginalised groups are over-represented in the sample compared to the UK undergraduate physics student population. We note in particular the relatively high proportion of applicants identifying as LGBTQ+. We further present a statistical analysis of the reasons given by applicants for wanting to attend the conference in their personal statement. Analysis of the personal statements showed a correlation between applicants who reported experiencing a male-dominated environment and identifying barriers to participation. We have also found a correlation between the number of barriers reported by applicants with the number of axes of marginalisation identified with, indicating the need for an intersectional approach in diversity and inclusion initiatives. Students consistently highlighted the impact of engaging with role models and employers, career options and networking opportunities at a crucial stage of their undergraduate education. This is especially true for students looking to stay within academia and pursue a PhD. For many students they are still one of only a handful of women or non-binary students on their course and conferences like CUWiP is their only opportunity to build shared characteristic peer networks to support their well-being and retention in the field. This dataset gives a unique snapshot into the experiences of physics students belonging to marginalised groups, and barriers to participation identified by these students. We hope that this data can provide insight into the barriers faced by minoritised genders studying physics, while demonstrating the perceived need for both the event, and for a focus on inclusivity and intersectionality allowing physics educators to support and reinforce current efforts to improve diversity and inclusion in physics.

### 4 Why not write your dissertation in the industry? A case study of industry-based projects for business school PGT students

*Buhong Liu (University of Glasgow).*

Writing the dissertation is necessary training for business school PGT students. Traditionally, PGT students should consider their dissertation topics and write proposals for approval. During the summertime, PGT students will work on their dissertations under the supervision of academic staff within the departments or schools. Nowadays, we have seen other industry-based opportunities. The UK is developing the FinTech industry and many firms, including big names like J.P.Morgan and Citi and start-ups, are encouraging PGT students to do their research in the industry. The author was working in a FinTech Start-up and supervised several industry-based dissertation topics. We will use it as a case to show the benefits and risks. In general, the author believes that developing industry-based dissertation projects are beneficial for universities, financial firms and business school PGT students.

### 5 Understanding how the presence of an instructor in online videos can influence learning under high cognitive load

*Jamie Murray (University of Glasgow).*

The pandemic has resulted in significant changes to modern teaching practice. One such change is the increase in online content delivery – breaking down traditional synchronous lectures into more manageable bit-size asynchronous online videos. Exactly how online videos should be presented to maximise student learning, however, is currently a subject of debate. In this study, we explore how the presence or absence of the lecturer presented in the video influences learning and perceptions of learning when material is cognitively demanding. Specifically, participants were presented with two short 10min statistics videos – one video teaching students about the chi-square test and another video on the t-test. Participants were randomly assigned to either the present condition (where a video of the lecturer’s face was located in the upper right of the content video) or the absent condition (in which only the voice of the lecturer is heard but no visual of the lecturer is presented). We measured both intrinsic and extrinsic cognitive load, multiple choice performance (a short test to measure knowledge acquisition), situational interest in the videos, enjoyment of the material, and the learner’s competence for learning (i.e., confidence in what they have learned). We predicted that when students experienced a video as cognitively demanding (high cognitive load), the presence of the lecturer would be distracting and divert attentional resources away from to-be-remembered information. Our results revealed that, on average, students rated the t-test video as more cognitively demanding (high cognitive load) than the chi-square video (low cognitive load) but only when the lecturer was present in the video. No differences in perceived cognitive load were observed when the lecturer was absent. Interestingly, the presence of the lecturer under high cognitive load resulted in poorer multiple-choice performance compared to the low cognitive load video, reduced student enjoyment, and were less confident of the content they had just learned. By contrast, no such differences were observed when the lecturer was absent (voice only). Differences in student learning between the present and absent conditions were observed even when situational interest in the video content was equivalent across experimental conditions. Overall, the data suggests that the presence of the lecturer within online videos can impair learning of cognitively demanding material. Furthermore, the presence of the lecturer when the learning experience is cognitively demanding can also make the learning experience less enjoyable and reduce student confidence in what they have learned. The results suggest that lecturers should carefully consider when to present themselves within online lecture videos to maximise student learning.

### 6 Physics Theory in Simple English

*Claire Neilan (University of Glasgow), Pedro Parreira (University of Glasgow) and Luke Marshall (University of Glasgow).*

This poster concerns a project carried out in the School of Physics and Astronomy to write a series of simple English guides to each of the experiments carried out in the non-Honours undergraduate Physics labs. These guides include an overview of the theoretical underpinnings of each experiment, and of the analysis involved and common sources of errors, written with minimal assumption of prior Physics knowledge. They were made available to the demonstrators for the beginning of the 22-23 session.

The aim of this project was to improve the quality and consistency of marking by ensuring that postgraduate demonstrators shared a common understanding of the experiments, and of what should be expected of student lab reports. A secondary aim was to better equip the demonstrators to use simple, colloquial language when discussing the experiments with undergraduate students lacking a strong prior understanding of Physics. In addition to improving the student experience of marking and feedback, this allows the demonstrators to develop their teaching skills.

To evaluate the effects of making the theory guides as demonstrator resources, lab grades from the 21-22 session were analysed based on the change in student grades between lab sessions, and those changes separated into two populations based on whether each student was marked by the same demonstrator, or by different demonstrators. This analysis was then repeated for lab grades from the 22-23 session. A comparison of the datasets shows that marking has become more consistent since the introduction of the theory guides as demonstrator resources.

### 7 Coding in undergraduate physics labs - misconceptions or real barriers?

*Yuliyan Savchev (University of Glasgow), Caroline Muellenbroich (University of Glasgow) and Pedro Parreira (University of Glasgow).*

As part of the accreditation requirements for a physics degree, students will need develop their computing and IT skills in a variety of ways, including their ability to use appropriate software such as programming languages and packages. Not surprisingly, undergraduate physics degree students are introduced to computer coding at some level in their laboratories. They are expected to develop a basic understanding of coding and be able to utilise the skills they have learned in other aspects of their lab work throughout their time at university. However, not all students have the same previous experience or views regarding the applicability coding; for some it is a completely new concept whereas others may have skills acquired from other courses or from earlier education. Similarly, to some students coding is merely something required during labs, for others it is an essential skill with a direct influence on their employability. The aim of the project is to explore the barriers students experience or perceive to exist when it comes to learning to code. These have different origins and range from socioeconomic, to differences in perception, to diverse contextual issues which all in turn influence the level of engagement when learning to code.

This research is carried out as part of an undergraduate final year physics project which broadly examines undergraduate students’ attitudes towards coding. It will involve surveys distributed to students as well as a number of focus groups. It is intended that outcomes of this research and project will give an insight into students’ learning approaches to coding and allow for improvements in future teaching of programming within undergraduate physics laboratories.

### 8 Can sensory and cognitive loads be reduced to support student transition to HE through the use of an interactive virtual orientation resource?

*Linnea Soler (University of Glasgow), Smita Odedra (University of Glasgow) and Peter Stockwell (University of Glasgow).*

Access to Opportunity may be fostered, or hindered, even before a student physically sets foot in a new learning environment. Through the judicious and creative use of technology, we may be able to support the transition to Higher Education, thereby widening the participation of students who may otherwise not feel comfortable with making this critical decision to take this step and embark upon the path to Higher Education.

This transition from school to first year undergraduate studies is challenging for many students and student anxiety in new teaching environments is prevalent across all subjects, especially those requiring practical/clinical work or the use of unfamiliar equipment. This can be a daunting experience, leading to heightened anxiety, and a diminished learning experience, even before entering the laboratory.

Here, we continue our research into how, and if, these barriers can be reduced through the creation and use of bespoke interactive lab e-maps. We extend the focus of our work to include not only the impact of cognitive load but also the impact of sensory load for incoming students. Therefore, through a careful combination of media and technology, we strive to recreate both the visual and audio landscape of these new environments.

This, a student-staff collaboration, seeks to address these factors through creation of an interactive laboratory map for our Synthesis-1 laboratory. In addition to allowing students to virtually explore the laboratory space, with 360° interactive images, and explanations, there are sections dedicated to potential sensory triggers. An audio landscape is recreated as well as time-lapse footage of various aspects of the labs, some from first point-of-view. As well as showing the physical layout of the lab environment (including the different experiment stations, waste disposal areas, and emergency exits), interactive hotspots give students further explanations of the equipment and compounds.

It is hoped that provision of detailed information of the lab environment, prior to entry, will help reduce the cognitive load that is associated with lab learning: adjusting to a new physical environment, safety issues, recognition of equipment, where to dispose of items, where to clean, where to get help, and simply, where to find the lab itself. Provision of videos and sound-clips may also help to address some anxieties related to sensory overload.

First-time visitors are able to use the tour to virtually locate the School of Chemistry on the campus and the lab within the School. Furthermore, locations of building facilities (such as toilets and lockers) are also included. By involving a student in the creation and evaluation of this resource, we aim to tackle real issues faced by the students and to ease the transition process for future cohorts.

Along with a demonstration of the e-map and embedded resources, we will share our findings from our evaluation of this resource and the impact on the student experience. We envision our findings will influence transition support across disciplines, taking into account both the cognitive and the sensory impacts on students.

### 9 Multidisciplinary research as a gateway to transferable skills in undergraduate labs

*Alix Weir (University of Glasgow), Caroline Muellenbroich (University of Glasgow), Claire Neilan (University of Glasgow) and Pedro Parreira (University of Glasgow).*

Laboratory work is an integral component of physics education as it allows for the development of a wide range of competences in transferable and physics-specific skills. Here we report on the rationale and development of Project Work in undergraduate physics labs. The objectives of project work are two-fold:

First, it introduces students to a much broader set of transferable skills than typically found in undergraduate courses like Physics 1. Examples of transferable skills explored in project work include 3D printing, calibrating sensors, soldering wires, circuit building, sketching using vector graphics packages, using programming to plot and analyse data, as well as choosing and configuring social platforms to share files and develop their communication skills effectively.

Second, it gives students the perfect opportunity to plan, execute and report the results of a lengthy and detailed independent investigation. It enhances problem-solving and investigative skills while allowing students the freedom to manage their research independently. In other words, working in larger teams, students will be fully involved in the decision-making process regarding most aspects of their project.

Project work is our approach to multidisciplinary research, common at the doctorate level and an integral part of larger research institutions like CERN or NASA, but underexplored in undergraduate labs. We will present preliminary results focusing on the perception that undergraduate students have regarding transferable skills and how Project Work can help with their development. Although recently implemented, early indications suggest that Project Work is a remarkably effective way to incorporate transferable and physics-specific skills to an undergraduate cohort, that now more than ever, so desperately needs them. It is intended that outcomes of this research project will provide an insight into students’ perceptions and allow for improvements in future implementation of Project Work within undergraduate physics laboratories.

# Day Two

## Workshops

### 8A Experiences of Team Based Learning in a Widening Participation Foundation Year Access to Medicine Programme

*Aileen Linn (University of Glasgow), Eilidh Ferguson (University of Glasgow) and Louise Miller (University of Glasgow).*

The Glasgow Access Programme (GAP) was established in 2017 as a new widening participation (wp) access to Medicine foundation year programme, designed to support first time entrants to higher education who did not meet the academic requirements for direct entry to Medicine, GAP aims to support students during their transition to higher education while also providing them with the skillsets required to succeed on the undergraduate medicine degree programme. When designing the Fundamental skills in Medicine module, team-based learning (TBL) was incorporated into the teaching strategy as it provides a framework for a student-centred active learning approach aligning to the University Learning and Teaching strategy. As a foundation year medical degree a key requirements for curriculum design was alignment with the GMC outcomes for graduates (2018), however partaking in a TBL session enables students to develop many of the University of Glasgow graduate attributes, encouraging the development of transferable teamwork skills that enables students to become confident, effective communicators and experienced collaborators, while also developing their critical thinking skills and enhancing their assessment literacy. Both students and staff are required to prepare in advance as a TBL session typically involves students completing an individual readiness assurance test, e.g., 10 multiple choice questions, completed on Moodle. A team readiness assurance test, using the TEAL rooms, students worked together to complete the same quiz again, encouraging peer learning. At this stage staff have an opportunity to identify issues with understanding concepts being delivered and can consolidate student understanding during a short presentation. Students then participate in an application of knowledge, for GAP this is an applied clinical scenario where students are assessed in a different format, using short answer questions. The approach encourages students to develop a deeper understanding of the teaching delivered during lectures and to identify gaps in their knowledge, providing them with continuous feedback on their approaches to learning. The GAP TBL approach has developed the core principles of TBL further to expand student skills development, incorporating a requirement for students to prepare MCQs on Peerwise in advance, encouraging active learning skills. Also, a TBL session typically concludes with a reflective component, where students are encouraged to discuss the development of their individual academic skills and how to improve their effective teamwork skills, setting goals in their reflective diaries. Students are also encouraged to peer evaluate the contributions of other team members and provide feedback on areas for development. This workshop will provide participants an opportunity to learn more about the TBL process, take part in a TBL session, identify opportunities for student skills development that will support students during their transition from high school to higher education, while encouraging graduate skills development that can be applied from a level one programme onwards. Participants can hear from a student’s perspective on their engagement with TBL as an active learning approach and can ask questions from both staff and students involved in this active learning teaching approach.

### 8B From Students to Leaders: A Peer Learning Workshop by Students for Practitioners

*Aleix Vecino (University of Glasgow), Máté Kedves (University of Glasgow), Qiyue Wang (University of Glasgow), Emily Menger-Davies (University of Glasgow), Charles Burns Gutierrez (University of Glasgow) and Aida Khalil (University of Glasgow).*

Peer learning is central to our ability to ‘promote, encourage and enable more pervasive engagement with student-centred active learning approaches’ (L&T Strategy, 2021). SLD’s Peer Learning team works to increase opportunities and further embed peer learning culture across the institution. We have created partnerships with the most established PAL and mentoring schemes across the University and are working to pilot new projects in key subject areas. We have also been advocating peer learning across the institution, as well as advising and facilitating dialogues across projects to promote best practice. Our work brings together established best practice from across the sector, alongside a solid framework from the scholarship of learning and teaching (e.g., Barnard et al., 2018; Dawson et al., 2014).

This student-led workshop offers practitioners an interactive introduction to the fundamental principles of peer learning. Our team will adapt and use elements from our bespoke Leader Training, which has been co-designed by academic staff and students, to create a one-hour session where attendants will be able to engage with some of the techniques and resources of peer learning.

Participants will discuss the general benefits for students, and the possibilities and advantages of implementation within Schools and subject areas. Utilising a flipped format, several digital resources, and exploiting the possibilities for active learning provided by the facilities of James McCune Smith Learning Hub, the workshop demonstrates the potential of peer learning to be at the forefront in delivery of the University of Glasgow’s Learning and Teaching Strategy.

### 8C Evaluating Skills Attainment & Competency to Support Student Confidence & Awareness: Scaffolding a VLE-based Skills Tracker in Life Science Undergraduate Degrees

*Laura McCaughey (University of Glasgow), Lesley Hamilton (University of Glasgow), Kirsty Maciver (University of Glasgow), Rachel Aitken (University of Glasgow) and Anna McGregor (University of Glasgow).*

Direct observation of practical skills attainment has been shown to have clear benefits for learning, increasing student confidence and improving the student experience (Seery et al 2017). Professional accrediting organisations, such as those in medical and veterinary programmes and the Life Science-specific Royal Society of Biology, require such direct assessment methods to document competency levels and demonstrate attainment of learning outcomes for individual students (Richard et al. 2006; Ohn & Norcini 2007). However, reviews of skills observation methods identified barriers to their application, particularly related to large cohort sizes and anxieties from being observed (Khanghahi & Azar 2018). Methods such as peer-observation of skills (Seery et al 2017) or scoring rubrics (Chen et al. 2013) have been tried, but issues related to time constraints and consistency of feedback still persist. With the help of two student co-facilitators, we present a framework that can break down those concerns while still providing the benefits and objectives of this approach; our framework delivers a time-efficient and effective implementation of formative direct skills assessment that could be widely adopted regardless of cohort size or discipline. We will include initial evidence for its use during practical laboratory sessions of the core School of Life Sciences second-year undergraduate courses, which range in size from 175 to 630 students.

This workshop will consist of a 15-min introductory presentation outlining framework construction and scaffolding into courses, including the tools involved, consultations with staff and students and the final approach taken, followed by a 20-min supervised work session during which participants will be given the opportunity to create a list of the key discipline-specific skills for a particular course and then reflect on how those skills connect with course Intended Learning Outcomes and University Graduate Attributes. Different disciplines may focus on different aspects of the coursework, so lists could be formed from practical, transferable or methodological skills, whichever are most pertinent to the course and discipline. Finally, the session will conclude with a 15-min hands-on demonstration of embedding these skills lists in course Moodle sites and a 10-min summary from the student perspective, given by the student co-presenters. By the end of this workshop, participants will have learned how to scaffold a skills checklist within their coursework and gained an understanding of lessons learned from its initial implementation.

Aligning with Pillars 1 & 3 of the Learning & Teaching Strategy, this work presents a significant and easily adoptable approach that allows students to recognise the skills acquired during their degrees, as the first step in building a portfolio of experience related to their future careers. Although based around practical skills in a scientific discipline, the framework and approach taken are highly transferable across disciplines and easily embedded within course VLEs. Given the importance in articulating specific skills when applying for future positions across academic and non-academic career paths, this innovative, yet simple and time-efficient approach could dramatically support students in their transition from university into the workplace, facilitating access to opportunity regardless of background.

### 9A Co-creating self-advocacy skills with neurodivergent students

*Melea Press (University of Glasgow) and Nils Coe (University of Glasgow).*

Neurodivergent students have barriers accessing opportunities that are far greater than neurotypical students. The University of Glasgow has many support structures in place to help ND students access opportunities and flourish. Supporting neurodivergent (ND) students identify their strengths and weaknesses, and the kind of support they need will create lasting benefit to them. Building a community of staff who can support this process and help develop co-created self-advocacy plans will foster to opportunities across a more diverse student body.

• Self-advocacy is beneficial for neurodivergent students at all stages of their educational journey and beyond • A clear understanding about strengths, weaknesses and needed support will build agency in ND students • Faculty and staff must develop skills to support ND students in identifying strengths and weaknesses • Faculty and staff must develop skills to co-create ND self-advocacy plans

This workshop will focus on developing self-advocacy skills in neurodivergent students. One barrier to accessing opportunities for neurodivergent (ND) students is navigating the systems and applications that come before the actual experience. That is, ND students may be missing out on opportunities because the barriers to identifying and organizing them may be too high. One way to reduce these barriers is for ND students to be able to express the support they need. This workshop will focus on methods to support students to identify their own strengths and weaknesses, and to co-create a self-advocacy plan that allows students to identify and ask for the support they need.

This workshop has been developed with neurodiversity advocates, neurodivergent students, teachers and young people, and a neurodiversity change management trainer.

This workshop addresses the purpose stated in our Learning and Teaching Strategy by developing students to ‘fulfil their academic potential and contribute in the fullest way possible to culture, society and the economy throughout their lives’. Further, it demonstrates our values in facilitating inclusive policies and practices that promote student and staff wellbeing. The workshop itself is an opportunity for students and staff to develop skills and personal insights together, and co-create self-advocacy plans that will benefit ND students long-term.

Who is welcome to attend: Students and staff members who feel this workshop would useful in supporting ND people in their lives

What to expect: Participants should expect to work in small groups or in pairs, to share their personal experiences, to explore their own strengths and weaknesses, and to work collaborate with others to co-create a self-advocacy plan.

Workshop program: • Framework of a self-advocacy plan (5 min) • Subjective strength and weakness assessment (10 min) • Co-creative self-advocacy plan (25 min) • Discussion (20 min)

Outcomes: Development of self-advocacy skills, and ways to support self-advocacy in ND students, experience co-creating across students and staff

### 9B Course mapping to engage, inform and empower students

*Jessica Bownes (University of Glasgow).*

The University of Glasgow Learning and Teaching Strategy has committed to transforming curricula and tasks us to “Articulate a programmatic approach to assessment and learning – clarifying where learning builds on prior study, how assessment operates across core courses, and where key discipline-specific and transferrable skills are developed and demonstrated” (University of Glasgow, 2021). In response to this, we present and demonstrate a new online teaching tool that facilitates the mapping of knowledge and skills gained via individual courses in any subject to wider contexts, such as a degree programme, assessments, and career options. Working through the six-step process results in a personalised map and an analysis of what can be learned from the links between courses and the contexts. The tool can be used either by students at the beginning of a course to help embed intended learning outcomes and graduate attributes and increase engagement with course content, or by staff in the course design and review process.

Among many benefits, curriculum concept mapping has proved to be a positive influence in encouraging staff collaboration (Uchiyama & Radin, 2009), can be useful in reviewing and improving teaching approaches, and can help students to make useful connections between course content across the curriculum (Hay et al., 2008). By guiding students through our course mapping tool, staff will help students to identify which of the graduate attributes they are developing well, and where they might further develop their skills.

### 9C The XXXX Game

*Louise Sheridan (University of Glasgow).*

The workshop will explore the XXXX Game, which is an interactive teaching activity that can be used to promote the development of critical thinking and critical discussion skills in students. The Game was initially developed to be used online during the global pandemic but it transfers easily to any classroom setting. The game incorporates elements of Theatre of the Oppressed (Boal, 1993), which provides participants with the chance to examine key issues related to any topic through improvisation, as well as Ethical Dilemna Story Pedagogy (Rahmawati et al., 2021). The XXXX Game can be used to teach students about any topic, and enable them to critically engage with key concepts and explore scenarios to further deepen their understanding. For the Game, all participants are assigned with a range of characters that relate to the topic and invited to participate in character, without revealing their identity. This workshop will teach participants how to use the game and will enable them to take part in a taster activity.

### 11A Make null results great again: A tutorial of equivalence testing

*James Bartlett (University of Glasgow) and Sarah Charles (Nottingham Trent University).*

The dominant statistical approach in many disciplines is null hypothesis significance testing and using p-values to make decisions. Despite its dominance, there are common misconceptions in what you can conclude from p-values, including believing you can accept the null hypothesis based on a non-significant finding. As practitioners in the scholarship of learning and teaching, it would be valuable to conclude whether an intervention or teaching mode has an effect or not. After briefly presenting the results of a review into how common misconceptions in interpreting non-significant findings are within psychology learning and teaching, we will provide a tutorial on equivalence testing. This technique allows you to support there was no effect or relationship by creating boundaries of effects that you would find practically or theoretically meaningful. The workshop will include a demonstration of equivalence testing and provide self-directed learning material on how to perform equivalence testing using the statistics software R.

### 11C The efficacy of two different types of exams

*Geethanjali Selvaretnam (University of Glasgow) and Wenya Cheng (University of Glasgow).*

The HE sector is exploring innovative assessment methods as substitutes for traditional exams and essays. Assessments must be effective in assessing ILOs, promote learning, and practically possible to administer. These are in line with the University of Glasgow’s Learning and Teaching Strategy. In the workshop that we are applying for, we will introduce two assessment methods we have tried and discuss their pedagogical merits and challenges. The first type of exam allows students to discuss with their peers in groups before writing their own answers while the second type of exam only allows students to refer to any reading materials (i.e. open book exam).

Participants in this workshop will have the opportunity to explore how these two types of assessments can be applied in their courses in different settings (online vs. in-person) and discuss current practices, challenges and possible solutions. As a prompt for discussion, we will first share the design and findings of the two types of in-course exams in an undergraduate economics course in 2019 which aimed to encourage deeper learning and reduce stress during preparation and assessment. Exam questions were designed with emphasis on information synthesis and problem-solving rather than memorisation, which are more appropriate to assess student achievement of relevant intended learning outcomes and development of graduate attributes such as subject specialist, investigative, and independent and critical thinkers. (The learning outcomes and skill development possibilities are in line with UoG’s L&T strategy)

We evaluate the efficacy of these two exam types in terms of student performance, student preference, and the advantages and disadvantages of the two exams from students’ perspectives. Student feedback was collected through anonymous questionnaires immediately after each exam, and data was examined using quantitative method and thematic analysis. While there is no statistically significant difference in the grade distributions of the two exams, it is evident that students prefer these two exam formats to closed-book exam. The group discussion session has received mixed reviews. Group discussions help students to brainstorm ideas, clarify questions, and formulate arguments, but clearer instructions are required in terms of expectations and logistics. The practice and findings shared will be useful to the Learning and Teaching community, especially for colleagues who are interested in using discussion as a learning tool.

In the workshop, participants will be given the opportunity to think of the assessment they wish to carry out in these formats and design suitable questions. They will discuss in groups whether the design of the assessment will achieve the learning outcomes and possible challenges. We will be available to share our experience and thoughts. The discussion is based on our findings reported in <https://doi.org/10.56230/osotl.5>.