Current Challenges, Innovative Practice and Student Experience in Physiology Education

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Abstracts

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**SA01**

Use of data to initiate targeted interventions to address ALL awarding gaps

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The University of Salford is home to a diverse community of learners, with a large percentage of students from minoritised communities, low socioeconomic backgrounds and many whom declare a disability. The Biomedical Sciences programme holds a particularly high proportion of minoritised students, many from low-income backgrounds and the first in their family to go to university. There is a link between these aforementioned factors, imposter syndrome, progression, and employability. Our approach to supporting social mobility is based upon the graduate capital model, which states that employability does not simply relate to obtaining a ‘good degree’ but requires consideration for the many forms of graduate capital including social, psychological and identity capital. Over the last few years the academic team have developed a range of career mentoring schemes, redeveloped tutorial modules to embed employability and developed an annual careers festival in collaboration with the library, careers services and external partners. These provisions have been complemented by the co-creation of a range of exciting extracurricular projects with students, such as TED-style competitions, a student magazine, general interest reading book clubs and much more. These innovative changes, primarily implemented during the pandemic have brought about a real positive culture change. Evidence indicates a positive impact of these activities on student engagement and graduate outcomes.

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**SA02**

Create your own card game to enhance student engagement

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Who hasn’t played a card game of some type? Happy Families, Snap, Rummy, Poker, Cribbage, Bridge or maybe you’re into Pokémon, Yu-Gi-Oh, Hero Realms or Uno. They can be played on your
own (Solitaire) or with many others (Five Crowns), live or online. Why are card games so universal? Because they’re usually easy to understand and easy and quick to play, but they also provide an enormous range of challenges and allow us to develop strategies and practice those in a safe environment.

More than this, card games can be used to actively engage students with learning. Whether self-generated ideas, flash cards, attribute cards, grouping, ordering, dynamic case studies or strategy games, cards offer a solution and an opportunity. So, in this presentation, I want to take you through the basics, illustrating a range of potential uses and giving examples appropriate to physiological studies. There’ll be time at the end for questions to help you identify how each level could be applied in your own classroom.

References


SA03

Using authentic learning experiences and simulations to enhance employability

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Authentic learning experiences and simulations are an established approach to healthcare education known to prepare students for the world of work. A recent study showed that 93% of employers believed that biomedical science graduates failed to meet employability requirements due to lack of practical and technical skills (Hussain and Hicks, 2022). Whilst placements can bridge these gaps, opportunities are limited and unpaid, restricting accessibility. Organising careers events and collaboration with The School of Health and Society, external employers, the Careers and Enterprise team and key stakeholders has enhanced the curriculum content to meet the needs of employers.

Development of the mentorship group, Biomedical Science Careers Support at the University of Salford has enabled successful career development for students. Collaborating with The School of Health and Society, the implementation of an interprofessional education event will be embedded into the curriculum. A recent project involving the introduction of Pathology specimen reception and blood transfusion simulations, allowed students to practice workplace skills, while enabling aspects of the profession to be taught that would otherwise have been impossible to teach. Introducing scenarios coupled with authentic workplace dilemmas including health and safety, quality, and problem solving, not only helps satisfy degree accreditation, but facilitating reflection also feeds into
a requirement for HCPC registration and continuous professional development. Related to this, the Biomedical Science mentorship group has also introduced the trial of a ‘portfolio club’. Here students were supported by the teams IBMS portfolio verifier to begin collecting evidence towards their IBMS Registration Training Portfolio. The impact of these activities has already been demonstrated, for instance 100% success rate with placement applications for those students who engaged in this extracurricular club. Data collected from surveys from participants and feedback from employers forms an evidence base to demonstrate the success of authentic learning experiences and improving employability. The added value of academics from professional backgrounds and cross University collaboration can be expanded to encompass further areas of biomedical science and healthcare careers, with progression to include patient contact and pre-placement professionalism training. These authentic learning experiences and simulations can be sustainably integrated into various areas of the curriculum to bridge the skills gap and improve employment opportunities to all graduates.

**SA04**

Enhancing employability: The value of both embedded and extracurricular skills development programmes

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Work experience is highly desired by employers, and without it some graduate job opportunities remain inaccessible. At Manchester Metropolitan University, our large cohort of Biomedical Science students find gaining ‘relevant’ experience presents considerable challenges, including a lack of paid positions to financially support themselves, and the highly competitive limited opportunities available. Despite this, Career Readiness survey data showed that over 95% of undergraduate students in the Department of Life Sciences were seeking work experience, but less than 30% seeking a placement year.

Work-integrated learning including employer led live projects, case-based scenarios and applied skills labs embedded within formal curricula, supports undergraduate student learning, skills development, and enhances employability. Graduate employability can be further enhanced by extracurricular skills development programmes and experiences tailored to expand knowledge and application of skills beyond the curriculum, providing valuable ‘work experience’ opportunities.

In 2019 we pioneered the Life Sciences ‘Live Labs’; a week-long, employer-led work placement providing students with the opportunity to develop and evidence these graduate workplace skills with branded recognition of their achievements. Four years of successful on campus ‘Live Labs’ in collaboration with external practitioners has provided valuable work experience for a large cohort of students. Engagement each year has exceeded expectations, reflecting the value placed on work experience by students and graduate employers. Feedback from students and staff has been
consistently and overwhelmingly positive for enjoyment, skills development, and perceived enhanced employability.

The project has faced numerous challenges along the way, but the impact on both student satisfaction and employability metrics has seen the successful expansion to other departments, and the development of shorter curriculum embedded work integrated learning activities, providing greater accessibility of these valuable skills development programmes by larger number of students.

SA05

Embracing diversity: Increasing diversity in our student population and offering opportunities in the curriculum to share and learn from (their) different perspectives through local and global challenges

Charlotte Haigh

1 University of Leeds, UK

In this presentation an overview of the approach from the School of Biomedical Sciences at the University of Leeds to diversify the student population on our courses will be presented. This will include some ideas of outreach events that have been run both directly from the School but also at University level. Contextualised offer making to applicants, as well as approaches to meet office students metrics around widening access will be considered and the impact this has had on the cohort mix of the current year 1 students in the School. Finally developments in the design of the curriculum, to meet new benchmark statements whilst offering all students to learn from each others perspectives within a team working module will be discussed. The focus being on developing recommendations to support local and global challenges in healthy ageing, with scaffolded support starting the move towards embracing diversity in the curriculum.

SA06

Old dogs and new tricks: Teaching bioscientists to embrace change

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In 1945, 15 years before the first instructional computer was developed, Vannevar Bush wrote the essay ‘As We May Think’ – a work, often described as visionary, that predicted many technological advancements that we now take for granted. These include ideas similar in concept to those of the Internet, hyperlinked text, digital voice transcription and the storage of learned knowledge in an online encyclopedia. Despite the prescient nature of the essay, the impact of such advancements on how we educate, both inside and outside the classroom, is not explicit.
In the modern-day UK higher education system, bioscience lecturers are expected not only to teach inside the lecture theatre but also to develop digital content, often opened via links within a navigable virtual learning environment. Lessons can be synchronous, taking place face-to-face in labs and classrooms, or delivered virtually and accessed simultaneously by students in different countries. Alternatively, learning may be delivered asynchronously and accessed via resources shared amongst a student cohort. Methods of assessment include podcasts, blogs, infographics and e-portfolios in addition to more traditional modes such as essays and multiple-choice exams. Advances in generative artificial intelligence are causing teachers to re-evaluate approaches to evaluating written work.

This presentation provides a brief history of technological advancements and how they have impacted teaching, with a focus on bioscience disciplines. It will use historical examples of how educators needed to adapt to the use of technology to demonstrate best practices regarding student learning, inclusivity and employability. Finally, it will open discourse on how, should educators have the prescience of Vannevar Bush, they can prepare for change so that new technology can be adopted in an appropriate and beneficial manner.

References


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C01

Virtual reality blood identification. An immersive introduction to blood transfusion

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Virtual Reality (VR) has become a valuable educational tool in medical and nursing training. VR headsets immerse users in realistic simulations, facilitating experiential learning [1]. Various studies have demonstrated its effectiveness in specialist skills and knowledge acquisition, with users expressing enthusiasm for the medium [2, 3, 4]. NHS Blood and Transplant has pioneered the development of VR transfusion training.

The virtual reality (VR) NHS Blood and Transplant Blood Identification App is a self-directed training package, designed primarily for undergraduates and recent graduates in the areas of biomedical science, medicine and nursing, to introduce the importance of correct blood group identification. The VR application shows learners the process of correctly identifying the blood group, and the consequences of administering a transfusion following incorrect blood group identification, emphasizing the relationship between blood group identification processes and patient safety. This is a repeatable learning experience, with different scenarios, that enables learners to practice the procedure outside of a physical laboratory, giving the opportunity to fail in a risk-free environment, with no risk of patient harm.
This package has been successfully integrated into NHSBT transfusion courses, Master’s degree courses, and as part of outreach programmes, and has been well-received by doctors, scientists and patients alike. NHSBT is now making it available to secondary schools and colleges to inspire careers in transfusion science, and to universities to promote the vital role of transfusion, and foster interprofessional learning. The longer-term aim is to produce a suite of transfusion training packages, aimed at different audiences.

Acknowledgments

Make Real - Immersive Learning Specialists

References


C02

Creating change makers: The challenges and opportunities afforded by capstone projects

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Physiology educators globally are increasing recognising the transformative and translational potential of capstone projects, introducing them alongside traditional undergraduate and Masters research projects, to better prepare learners, through their projects, for the diversity of careers they go onto.

The implementation of capstones raises questions and also concerns. Are we creating opportunities that provide the workplace experiences and competencies required by our graduates? What are the challenges faced by educators, and their solutions to these? Answers that are fundamental to driving forward change across the Sector.
Surveys were undertaken of School alumni from the last five years, of Physiology and the broader Biosciences educators globally, and of educators across the University of Leeds (where the implantation of capstones by all disciplines is a strategic objective).

Alumni identified research and experimental/technical competencies as the main competencies developed in their projects whereas in the workplace, the focus was communication, data analysis, leadership, business and digital literacy competencies. The challenges faced by educators across all disciplines were similar, structural, process or organisational barriers, or alternatively, those under a broad theme of attitudes/behaviours (change management, comfort zones/expertise, resistance to change).

This study has demonstrated the mismatch between experiences and competencies developed through projects, and those required in the workplace. By better tailoring our project provision, we can better prepare learners for the workplace. The challenges faced by educators across disciplines are similar, their solutions are applicable to others. We are creating a “Challenges and Solutions” resource to support educators globally in implementing capstones into their programmes.

References


C03

Are paramedic students able to meet the NICE CG109 recommendations for identification of ECG abnormalities requiring onwards referral in patients who experience transient loss of consciousness?

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INTRODUCTION: The NICE CG109 Guidelines for transient loss of consciousness (TLOC) [1] specifies skills for healthcare workers (e.g. paramedics) who first attend such patients, which includes a list of ECG patterns that warrant referral for further investigation.

AIM: To estimate how well ECG educational results conform to published guidelines, especially how well rare disorders related to sudden cardiac death (e.g. the Brugada sign) are recognised compared to easily recognised ECG patterns such as ventricular tachycardia (VT).

METHODS: 130 year 3 paramedic students, currently enrolled in 15 UK university courses that grant degrees in paramedicine, and who have studied both the ECG and TLOC, completed an online multiple-choice survey that included 20 ECG traces representing clear versions of 16 abnormal patterns and 4 normal patterns. Participants were asked to identify the pattern (7 options, including
“None of the abnormalities in this list”), rate how confident they were in their interpretation (1-5 scale), and to state whether they would refer the patient/ECG onward.

RESULTS: 130 of 183 year 3 students completed the survey. As expected, VT was the most recognised pattern, and premature ventricular contractions along with sinus bradycardia were well recognised. A STEMI pattern was the second-most recognised and referred pattern. As predicted, Brugada sign, ventricular pre-excitation (WPW) and right ventricular hypertrophy were significantly less well recognised.

CONCLUSIONS: There is a mismatch between CG109 standards and student performance on rare or difficult to recognise ECG patterns. The standards and the learning outcomes for these degree courses need to be harmonised.

References

C04

Three years of boosting student employability through SciComm summer

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In the biomedical and biomolecular sciences (BBS, including physiology) at Newcastle, approximately 30 students each year secure competitive placement year positions between second and third year, thanks in large part to the wealth of employability-boosting extracurricular activities that enhance their CV. Throughout the COVID pandemic and since, such opportunities have become more limited, and particularly inaccessible for international students and those from under-represented backgrounds. To provide more equitable access to graduate capital-boosting opportunities, we developed a fully-remote 3-week summer project for first year BBS students (including from our Malaysian sister campus) centred around science communication; a skill highly desired by employers.

The project centres on recently published articles from the University’s Press Office, with students communicating related science in a range of formats. Application to the project is open to all first-year BBS students by CV and cover letter, and students are then split into groups with each assigned a different paper. Students complete a range of communication-focused assessments for different target audiences, with skill-support sessions delivered by academic and other University staff.

Three iterations of the project have completed to date (65 participants). Self-assessment skill surveys matched to Newcastle’s Graduate Framework were circulated before and after each iteration; students reported an increase in 17/18 skills (mean increase of 8-points) and 39% secured placement year positions in the following academic year.
Feedback has been overwhelmingly positive. The project has wide applicability, presenting an easily adaptable format to boost graduate capital and skill development across disciplines particularly for under-represented students.

Acknowledgments

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C05

Use of Objective Structured Practical Examinations (OSPE’s) to assess physiology student practical skills and professional competencies

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We have developed a range of Objective Structured Practical Examination (OSPE)'s as a form of authentic assessment in physiology. These are assessments of theoretical, practical and problem-solving skills at multiple stations which are frequently used to evaluate clinical practical skills. Although non-clinical disciplines rarely use this successful assessment style, we adapted this format to formally examine a wide range of communication, ethics, numeracy, graphic interpretation and science laboratory practical skills. This approach helps to prepare students for final year research projects and also enhances graduate attributes and employability skills. It is easy to involve a wide range of staff in the exercise and we can adapt stations/tasks to suit needs of different disciplines and skills.

Over the last ten years, we have evolved this assessment modality to help us better assess skills that are perhaps not the usual focus of our teaching e.g. time management, citizenship, communication with the public etc. We have also used this form of assessment as a way of getting students to reflect upon their strengths and weaknesses at the start of the Honours year so that they have time to enhance their portfolio of skills in time for job applications and graduation.

We report our experiences and plans to further adapt the stations to reflect the needs of employers, but also to help students articulate their skills and experiences more effectively.

C06

What volume is Ryan Reynolds? Teaching integrative physiology through film.

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Frequently, physiology is taught on an organ system basis. While this is a logical way to teach the subject, it may prevent students from learning about physiology as a complex, integrated science and result in a lack of confidence to combine information from multiple modules to understand general problems in physiology. Here, I describe my experience of teaching a module in Integrative Physiology to students in the final year of a 4-year degree programme at Trinity College Dublin. I use a problem-based learning approach whereby general topics in physiology are set, students are assigned into groups to research the relevant literature, and subsequently deliver presentations of their results with immediate instructor feedback. The module aims to encourage students to discuss difficult concepts in physiology while reinforcing basic knowledge, to encourage self-directed learning and to provide an opportunity to develop research and communication skills. In recent years I have asked students to critique films and tv shows through the lens of physiology. Films such as ‘127 Days’, ‘Titanic’ and ‘Buried’ contain scenarios that allow for an exploration of multiple aspects of physiological function and introduce an element of fun to the module. Such framing of scientific scenarios in the context of film has been used successfully in younger groups and in the general public [1, 2]. So why might we need to calculate the volume of Ryan Reynolds? Well, how else are physiologists supposed to determine if he could really survive 90 minutes in a coffin underground in the movie ‘Buried’?

References


C07

Technology-enhanced learning in physiology through digital game-based non-linear storytelling

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There is a growing body of literature highlighting the potential of game-based learning (GBL) in creating immersive highly engaging active learning experiences. Furthermore, advances in digital technology along with the demand for online learning during the COVID-19 pandemic has brought digital GBL to the forefront of innovative teaching practice. Here, I will share some of the digital GBL strategies we have developed to support our physiology teaching. In collaboration with our students, we have co-created a series of choose-your own adventure (CYOA) style games using Twine, an open-source storytelling game engine. Importantly, we have shown that adoption of these game-based learning approaches is highly effective in promoting student engagement, subject
understanding, and learning community. Furthermore, I will also discuss how AI tools can allow educators with little knowledge or experience of game development to create unique and engaging learning experiences for their students.

Acknowledgements

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C08

“Once upon a time…….”: Bringing the workplace to the lecture theatre through immersive storytelling

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Since the early days of humans, we have told stories to one another to pass information and to learn from one another, we are seemingly hardwired to pass information and process it at a higher level if it is told in the form of a story (Landrum et al., 2019). This is not a new pedagogical approach, but it may form an important teaching tool, not only for our students to process information but also to allow our learners to form useful experiences to apply to assessments and in the workplaces they may aspire to (Alterio and McDrury, 2003).

We have previously presented the CAVE virtual environment in which to immerse learners in stories as a pedagogical tool (Bagley et al. 2023, Kime et al. 2023), however with a capacity of ~10 learners, this is not feasible to deliver on scale to cohorts of upwards of 200 learners at each level in our departments. To bring this experience of immersive storytelling in our practice for larger cohorts of learners, we have adapted stories we developed for the CAVE into lecture sessions which can be delivered at scale and allow learners to make decisions in the story, based on their practice knowledge.

In this session, we will provide a live demo one of scenarios we have developed for implementation in our Biomedical Science (n~230 per level) and Adult Nursing (n~250 per level) cohorts to be delivered at scale and provide a short “how to guide” to embed in all subject areas.

References


Kime, A., Darling, A., Peat, A. and Bagley, L. (2023) ’Showcasing the Brooks Virtual Reality CAVE’. In
Assessment of Peer-assisted study sessions (PASS) on 1st year undergraduate attitudes to statistics.

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Research has shown that fear and negative attitudes can be a barrier to student learning and acquisition of knowledge of statistics (Gal et al., 1997; Onwuegbuzie, 2010). Peer learning has been demonstrated to help students gain confidence and reduce anxiety (Stone et al., 2013). This study investigated neuroscience undergraduate student’s current attitudes towards statistics and those prior to university. It also evaluated what influence peer assisted study sessions (PASS) may have on undergraduate student’s attitudes towards statistics.

First year undergraduate neuroscience students (n=43) completed the attitudes towards statistics (ATS) questionnaire (Wise, 1995) at the beginning and end of their yearlong statistics course. Likert scale data from the ATS questionnaire were analysed using descriptive statistics and a 2-way ANOVA. Following the questionnaire all students were invited to a PASS followed by a focus group. Focus group data was transcribed and underwent thematic analysis.

The results showed that attitudes towards statistics were more positive following a yearlong statistics course or a yearlong statistics course plus a PASS. Two Way ANOVA’s looking at differences between student’s attitudes at the beginning and end of the statistics course or between the PASS attendees and the whole cohort were not significant. Qualitative analysis found student learning from their peers to be advantageous and students gained confidence in understanding and use of statistics. This suggests that incorporation of PASS into the statistics curriculum would be of benefit to 1st year undergraduate students especially in helping students to gain confidence and a greater understanding of statistics.

Acknowledgments

Andy Townsend

Paul A Smith

References

Background

Brunel Medical School (BMS) welcomed a diverse cohort of international students from 36 countries in 2022. The MBBS programme emphasises team-based learning (TBL) over traditional lectures, with a focus on active learning methods. TBL consists of four stages: pre-class preparation, individual and team readiness assurance tests, and team application exercises. In BMS, we follow a team-teaching approach in the TBL class, delivered by a scientist educator and a clinician with the classroom managed by a trained facilitator to a class of 100+ students.

Authentic learning, where knowledge and skills are applied to real-world tasks, has been shown to enhance student engagement and prepares them for professional careers. The impact of authentic learning through team application exercises on classroom engagement is a key focus. This method fosters skills such as problem-solving, critical thinking, and application of physiology knowledge to real-world scenarios, promoting student engagement and deep learning.

Method

In BMS, authentic learning includes applying physiology knowledge to clinical scenarios, fostering discussion and debate on diagnoses, treatment plans, and the role of the multidisciplinary team. With the presence of a scientist and clinician in the classroom, this reinforces deep learning by establishing direct connections between the acquisition of scientific knowledge, the limits of scientific understanding and the application of evidence-based medicine.

As students become more comfortable with this learning approach, their engagement evolves, enhancing learning and confidence. Future research will evaluate team engagement with authentic learning using a mixed-methods approach involving qualitative data from students and quantitative
data from the learning platform we use to run TBL lessons, allowing us to further refine the teaching process.

Discussion/Conclusion

TBL supports medical students' professional development through authentic learning to cultivate students who are life-long learners, have an inquiring mind, and are mindful of the needs of patients as individuals, in the context of their unique psycho-sociological backgrounds.

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References


C11

An Interactive Self-Guided Tutorial on Scientific Writing for First Year Students

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Most biomedical science students arriving at university have not previously written essays and have little insight into scientific writing. In Bristol we previously ran large group sessions in a year 1 module to introduce students to scientific writing, focussing on essay writing. This included information on the peer review process and the evaluation of example essays. To improve engagement and encourage students to be active learners we created an interactive online tutorial on scientific writing, using the HTML5 Package (H5P). The tutorial was delivered in an in-person
session in Bristol and offered as an optional activity to a group of first year students at Cambridge, who had previously not had any such training. Within this tutorial, students complete activities such as drag-and-drop, answering questions and rearranging sentences to identify aspects of good scientific writing, including a logical and well supported argument the most appropriate language and correct examples of referencing. The tutorial provides instant feedback that students can revisit when completing coursework or revising for exams. Students were invited to complete a before-and-after survey, with questions relating to confidence in essay writing, understanding of the writing process and use of scientific language. Feedback from students in both institutions was overwhelmingly positive, with a statistically significant increase in feedback scores for all questions following completion of the resource.

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C12

Harnessing Physiology to increase awareness of SDGs & EDI in the lives and learning of Undergraduate Science students.

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The UN recently set out its 2030 Agenda with 17 Sustainable Development Goals (SDGs) which aim to provide a “shared blueprint for peace and prosperity for people and the planet, now and into the future”. In order to increase awareness of these goals and those of the UK Equality Act 2010 regarding Equality, Diversity and Inclusion (EDI; which could be regarded as SDGs on a personal level), we developed an assessment focused on student led research and discussion of how SDGs and EDI relate to Physiology.

Students self-selected a group topic of interest related to SDGs or EDI and investigated its relationship to physiological processes within the body. They then designed and delivered a group poster presentation to their class.

We found that awareness of how SDGs and EDI relate to Physiology increased (pre vs post questionnaires) for 11/17 SDGs but only 1/7 protected characteristics (most likely due to initial high awareness). Free text comments included “I have gained more understanding on how physiological changes are affected by inequality & world issues. I am more likely to educate others on these issues” & “It really has opened my eyes to how physiology can relate so much to the wider world instead of just being a uni topic.”

This simple change to a learning activity has successfully impacted student understanding of how Physiology is related to world and personal peace and prosperity. Future plans will utilise this assessment format as it has brought Physiology to life within our learning community.
Creating Global Change Makers: Inclusive, culturally immersive, transformative Education for Sustainable Development learning experiences

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Higher education should create global change makers; Graduates equipped with social justice experiences and competencies, able to offer solutions to the many complex problems facing humankind. Education for Sustainable Development provides a unique, inclusive vehicle to develop these competencies in our learners, through culturally immersive, community-engaged, experiential partnership learning opportunities. Our approach also embeds equity, diversity, inclusion and decolonisation into all activities.

We have created a transformative structured programme of educational experiences from level 4 to 6, where diverse teams of learners work collaboratively with or for the Community on projects of direct relevance to the Community. Each intervention uses a Design Thinking approach, enabling learners to empathise with stakeholder communities and create appropriate innovative solutions for G-local (think global, act local) and then Global challenges related to UN Sustainable Development Goal 3 (health and wellbeing). This builds to Grand Challenges capstones (alternative to traditional undergraduate research projects), where learners collaborate with learners in Nigeria to create frugal solutions relevant to both Global South and North.

In their own words, our learners’ perspectives on this educational provision are that they “loved it”, and they can see the value of working on societal issues and in diverse teams, as “the integration of different viewpoints led to a more well-rounded project”. We have seen a quantifiable increase in students’ perception of their cultural and ethical awareness by working on real-life issues in a socially engaged context. Our model of Education for Sustainable Development is innovative, transformative, inspirational, and applicable across all disciplines.

Acknowledgments

Charlotte Haigh
Enhancing learning experiences of first-year Sport, Exercise and Health Science and Physiotherapy students through a field-based, residential outdoor education practicum

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3Centre for Trauma Sciences Research, University of Birmingham, Birmingham, UK
4Centre for Human Brain Health, University of Birmingham, UK

Adventure-based experiential learning facilitates active learning, student participation, plus the formation of peer networks and cohesive learning communities [1]. This project aims to examine if an outdoor practicum experienced in first year improves programme-related theoretical understanding and feelings of belonging and community in Sport, Exercise and Health Science and Physiotherapy undergraduate students.

Students attended a 4-day, 3-night outdoor practicum at University of Birmingham’s Raymond Priestley Outdoor Education Centre, Coniston, Lake District in 2022-23 and 2023-24. Each practicum accommodated ≤40 students, with students divided into smaller group (6-8 people) to undertake a range of outdoor and team building activities with an instructor (e.g., canoeing, abseiling, hill walking). Students recorded their heart rate (Polar) during activities. Each morning and evening, students reported their mood (modified 8-item ecological momentary assessment questionnaire) plus their perceptions of the day (free-text questions).

308 first-year students participated (55% of cohort). All students attempted/collected heart rate data. There was high engagement in completing Daily questionnaire packs. Students reported that outdoor activities improved their overall wellbeing, that they enjoyed the personal challenge, and that the practicum improved their sense of community/belonging. Individual and group-level data outputs were shared with students during the practicum and in lectures.

This practicum offers students an opportunity to engage in experiential learning and reflect on theoretical behavioural, and physiological and psychological concepts. Attending students’ feedback has been very positive, with this practicum improving their sense of connectedness. There is a need to identify potential barriers for students choosing to not attend.

Acknowledgments

We would like to thank all the students who participated in this project. We would also like to thank the instructors and staff at the Raymond Priestley Outdoor Education Centre for their expert skills and support. This project was funded by the School of Sport, Exercise and Rehabilitation Sciences, University of Birmingham.

References
C15

Can AI tools be used to support academic writing?

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The rapid development of generative AI such as ChatGPT has sparked concerns around academic integrity and necessitated changes in how we deliver assessments. However, it also presents opportunities to enhance learning. We argue that as AI is easily accessible and here to stay, we should encourage its responsible use to improve the AI literacy of our students, especially given student concerns about their use. Here, we share our experiences of trialling the use of AI to support academic writing on BI20B2 Physiology of Human Cells, a compulsory 2nd year undergraduate medical sciences course with 220 students.

We used ChatGPT to generate academic writing samples for both an online academic writing lesson on Lt and a face-to-face lab write-up tutorial. In the Lt lesson, 95% of students identified which introduction sections were written by AI and 96% rated the example written by an academic as being the strongest. Free-text comments included “Intro 1 [academic] was concise and explained the aims of the report. Introduction 2 [AI] was wordy and irrelevant”. During the tutorial, 86% identified which writing sample was generated by ChatGPT and rated it as lower quality compared with the one written by us (mean scores 2.41/5 vs. 3.81/5 respectively).

Following a discussion around responsible use and limitations, students were permitted to use AI tools to assist with their group lab reports. While only 3.7% (5/135) of submissions acknowledged the use of AI, all groups reported it was helpful. Most used ChatGPT to improve their grammar.

References


C16

Decoding the use of Generative AI in Higher Education Assessments: Understanding Student Utilisation

Tom Gurney¹, Zahra Mohri¹, Vassilis Sideropoulos¹, Zachary Walker¹, Darren Player¹, Flaminia Ronca¹

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As higher education adapts to the transformative potential of Generative AI (Gen-AI), understanding its pedagogical impact on assessments and student skill development is crucial for educators preparing graduates for the AI-driven workplace. This case study aimed to investigate students' attitudes/perceptions in the use of Gen-AI during the assessment process and how students might use Gen-AI when completing a formative assessment.

Through a mixed-methods approach, a questionnaire on Gen-AI attitudes/perceptions was completed (n=97), followed by a Hackathon (n=9) where students completed a formative assessment (writing a literature report on a common health misconception followed by a 10-min presentation). Students were free to use any form of Gen-AI and were evaluated on literature searching, critical appraisal, and communication skills.

Overall, 79% agreed that Gen-AI can be useful to help plan an assessment or check grammar, to help complete a challenging assessment (61%) or when short of time (63%). 56% of responders believed that staff should not be allowed to use Gen-AI to mark assessments. While 75% of responders believed that it was not acceptable to copy output generated by Gen-AI, only 45% considered this to be plagiarism. For the Hackathon, students found Gen-AI helpful for language refinement and information retrieval but recognised limitations in referencing. The combination of Gen-AI and critical thought led to superior assessment outcomes.

Overall, students produced innovative work, but it was evident that human input remains essential for critical thought. Assessments should incorporate a variety of formats, to ensure inclusive and equitable practices, particularly when utilising Gen-AI.

References


C17

Enhancing belonging with programme-level synoptic assessment

Clare Tweedy¹, Alex Holmes¹, Dan Donnelly¹, Charlotte Haigh¹
Sense of belonging and programme identity have been associated with increased student retention, task value, and self-efficacy. Students across several programmes at Leeds (Biomedical Sciences, Neuroscience, and Pharmacology) share a substantial amount of teaching during first year. Focus groups were carried out with current students and the importance of belonging at the programme-level was highlighted, which was largely felt to be missing due to shared teaching.

As part of a period of educational transformation of programmes at Leeds, synoptic assessment was introduced within the school at Year 1. One reason for moving to synoptic assessment was to encourage students to transition from a modular view of learning to a more integrated approach. In Semester 1, students complete synoptic assessment pieces in their broad discipline area. During Semester 2, all students engage with the same teaching material and formative problem-based application of knowledge short answer questions (SAQ’s) during active learning workshops, followed by summative individual SAQ’s. Each assessment piece contains “core knowledge” questions for students on all programmes, followed by programme-specific questions.

To support programme-level assessment, programme meetings and community events were also implemented. Reflections will be presented on some of the opportunities and challenges that have been encountered in implementing programme-level synoptic assessment across multiple modules of teaching, one of which is delivered outside of the school. The impact of this type of assessment is currently being assessed and initial findings will be shared as to whether it plays a role in encouraging student belonging to a programme of study.

C18

Designing an interactive and clinically relevant laboratory teaching session to bridge the gap between histology and physiology in the medical curriculum

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Interdisciplinary integration of the medical curriculum is critical to enhancing students’ learning and experience. However, it remains a challenging process in the early phase of medical education, especially for certain core disciplines such as histology and physiology [1, 2] as they are often taught separately. To address this issue, medical educators at Queen Mary University of London (QMUL) collaborated to produce a joint physiology and histology laboratory teaching session equipped with students' feedback.

After identifying learning outcomes that overlap between physiology and histology, including those developed by the General Medical Council outcome for graduates [3] and the Physiological Society objectives for medical students [4], educators designed an interactive laboratory teaching session. First-year medical students were able to develop core practical and clinical skills during the lab such as obtaining an oral swab and using light microscopes to examine the cheek cell slides after staining. Importantly, students used clinical-grade equipment and instructions to authentically reflect clinical
environments. Within their groups, medical students discovered how histological features support the physiological function of different types of epithelia using a wide range of histological samples.

Interim data suggests more than 80% of students were satisfied/very satisfied with the new lab, with thematic analysis including teamwork opportunities, a fun way to learn concepts, and valuable support from demonstrators. Finally, we created a template to enhance the integration and teaching of physiology, histology, and other disciplines in the medical curriculum at QMUL using an iterative design process that assists in future learning and development.

References


C19

‘The Art of Doing’

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The use of haptic knowledge in teaching Physiology and medicine, with subsequent improvement of communications skills and better patient care (2019), has been advocated for in information-rich syllabuses in subjects allied to medicine. Termed ‘White Space’, mundane repetitive tasks can enable your mind to wander and enable higher thinking (Bloom et al., 2022). However, down-time is often overlooked, ignored or rebuked as a wasted opportunity to learn.

To increase and improve the scope of Physiology teaching for Foundation level Pharmacy students with socially important topics allied to medicine, a series of ‘Doing Through Making’ workshops was created to induce White Space alongside student engagement. Using a blueprint of the successful pilot project with The Royal Botanic Gardens, Kew (Arrigoni & Conway, 2023), the Foundation Pharmacy course syllabus was modified and with development funding from the Physiological Society, the impact of transdisciplinary teaching on the student experience explored.

The workshops, in which students learned to make a book, draw in it and note-take was followed up by a field trip to The Hunterian Museum, London. This new partnership, endorsed in 2023, enabled
students to reflect on important topics in workshops such as inequalities in access to healthcare, the impact of colonialism and the futures of medicine and Pharmacy.

Student engagement improved, demonstrating profound deliberation of the exhibition, reflected in their work, the results of which will be curated in an exhibition in March 2024.

Acknowledgments

The Physiology Society
The Hunterian Museum

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C20

Designing resources for online collaborative learning on a medical programme – the student voice

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The MBChB at Three Counties Medical School (TCMS) is a new graduate entry medical degree, centred around problem-based learning (PBL). The PBL model, with an emphasis on collaborative, student centred, self-directed learning, is widely used in medical education (1). This educational approach has been shown to develop key skills in preparation for practice and students enjoy this style of autonomous, inquiry-led learning (2). However, PBL is different from traditional classroom teaching, requiring resources that support self-directed group learning outside the classroom. Current online resources include narrated presentations, videos, e-books, and forums in subject specific areas. Results of an initial survey (84% response rate) revealed that videos and podcasts summarising medically related information (including physiology), were ranked mostly highly as useful for weekly learning in preparation for PBL. Question banks, flash cards and the ability to practice questions were rated most useful for exam preparation. A total of 29 (out of 32
respondents) customise and make their own study materials. The curriculum areas that ranked highest for inclusion in the development of new online resources were psychosocial, anatomy, and public health. Based on the results of the survey, novel resources will be generated and shared with students via the VLE (Blackboard). The extent to which these resources support student learning will be reassessed at the end of the academic year. By using the student perspective to generate online learning resources to support self-directed learning we hope to create innovative tools that can be shared more widely within the educational community.

Acknowledgements

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References


C23

Video feedback provides a positive experience for students and staff – a case study

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Student evaluation of feedback is a perennial thorn in the side for the School of Biosciences at the University of Sheffield. Building on experiences in the School of Law (1) of using alternative multimedia based formats for student feedback, the current study has evaluated the opinions of Level 3 students on the use of video feedback on a draft submission for a capstone project report or literature review. Following submission, rather than generating written feedback, a video was recorded using Kaltura (https://corp.kaltura.com/). The recording provided a screenshot of the submitted work, scrolling between the different sections, highlighting good practice, and commenting on areas for improvement. The video was shared with students. On average the recording lasted 12 minutes (n=9) for a draft submission of approximately 1000 words. After viewing the video students had the opportunity of a one-to-one meeting to discuss the feedback and how to implement the comments in their final submission. The students were asked to complete an anonymous survey appraising the effectiveness of the video feedback compared to traditional written comments. All the respondents indicated that they found the feedback useful in preparing their final submission. The majority of respondents felt the format was better than receiving traditional written feedback, no one suggested it was worse. Free-text comments from the
respondents emphasised that this approach was beneficial because it allowed points to be elaborated on in more depth than normal, and they could identify precisely which parts of the submission were being referred to.

From the perspective of the staff, making the feedback video took slightly longer than providing written comments, but facilitated a better discussion in the follow up meetings.

The information from the current study follows similar trends to those observed previously in the School of Law (1) and supports the idea that non-traditional approaches to the delivery of feedback can provide a positive influence at an important period.

References


C24

Peer assessment of authentic electronic learning resource and collaborative digital workspace assessments promotes students’ assessment literacy and learning gain in integrated biomedical sciences

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Peer assessment improves student performance and learning gain (1). In a two-term, second-year undergraduate compulsory module focussed on core interdisciplinary problem-based learning (PBL) of integrated biomedical sciences concepts, we have utilised summative peer assessment to improve students’ assessment literacy and to support their learning. Using the Aropä peer review platform to administrate the assessments, we have embedded peer assessment into formative and summative in-course electronic learning resources and collaborative digital concept-map (Mural) assessments. Students initially reported scepticism with the benefits of peer assessment and distrusted the academic judgement of their peers. To address this, we developed a peer-assessor training assessment where tutors assess the students’ grading and assessment feedback provided for four exemplar e-resource assessments. We report on our evaluation of the outcome of this intervention.

Acknowledgements

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The use of case studies in formative activities: a student's perspective

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Teaching and learning styles vary greatly, yet there has been a strong shift towards more student-centred based learning approaches, for both summative and formative assessments. In biomedical education, the use of ‘real life’ case studies as problem-based learning (PBL) activities have not only been shown to have an important role in helping students develop higher level skills and knowledge, but also to improve the overall student learning experience. Ethical approval to conduct this study was gained from Royal Holloway University of London’s Central Ethics Team. A PBL activity was run in a Year 2 (level 5) human physiology lecture by a third year biological sciences undergraduate student. All students enrolled in the module (n=90) were invited to complete a short online survey on their opinions of the activity. The main findings of the study were that students thought active learning was beneficial to their learning, however thematic analysis revealed hesitancy around public speaking and whole class participation. Strategies to overcome this fear of public speaking will be discussed.

References


Student perceptions of traditional and novel anatomy teaching tools

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Anatomy teaching is considered a cornerstone of Sport and Exercise Science programmes, however has a wide array of teaching tools to consider. The present study has compared student perceptions of traditional anatomy teaching tools (cadaveric prosections, Plastic Models, Electronic Resources and Printed Resources) and novel teaching tools (Ultrasound, Muscle Elastics and Muscle Modelling). 28 students from a Sport and Exercise Sciences completed a student perception of anatomy teaching tools questionnaire. Students ranked Cadaveric Prosections, Muscle Modelling and Muscle Elastics as their top 3 tools, while Cadaveric Prosections were consistently rated significantly higher than printed resources and Plastic Models in students’ perception of achieving learning outcomes (P<.05). Students reported difficulties in identifying anatomical structures with Ultrasound, however 70% recommended Ultrasound for teaching learning, along with 67% and 86% for novel methods of Muscle Elastics and Muscle Modelling, respectively. The present study has demonstrated high student perceptions of Cadaveric Prosections for anatomy teaching, however notes that this is not a viable option for all Higher Education Institutions. Muscle Modelling appears as a novel method that is well perceived by students; however, Educators should continually engage with students in relation to the most effective teaching tools.

C27

Curriculum embedded journal clubs as an effective pedagogical tool to enhance academic literacy in undergraduate bioscience students

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Journal clubs are routinely used within academic research institutes and allied health professions to boost critical thinking, data analysis and disseminate knowledge of novel research concepts. These group-based discussions regarding scientific literature aim to develop knowledge, transferable skills and facilitate the sharing of expertise across disciplines. However, they are usually constrained to small defined student groups, with limited reported attempts to deliver journal clubs at scale within the undergraduate curriculum. This study aims to evaluate the efficacy of journal clubs as pedagogical tools and determine if they are translatable into undergraduate curricula.

Student feedback (n=52) was assessed by the completion of an anonymous survey upon completion of the curriculum-embedded journal club (n=147). Pre- and post-session surveys were provided to assess knowledge acquisition (n=130). All questions were scored using multi-point Likert scales.

Most students (78.8%) had a positive experience completing the curriculum-embedded journal club with 86.5% stating they learnt a lot from the session. The majority (78.8%) stated that they preferred this learning experience to typical didactic lectures. Students also stated that it enhanced their confidence (76.9%) and teamwork skills (78.8%), in addition to their understanding of academic writing (92.3%) and critical appraisal of research (84.6%). Further analysis revealed journal clubs have a significant impact on academic literacy knowledge acquisition (P<0.0001). No significant differences were observed when responses were stratified based on socioeconomic parameters.
These data show that journal clubs are a valuable tool for developing key academic competencies that are translatable into the undergraduate curricula of bioscience disciplines.

C28

histo-link! A card game to aid learning

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Histology is the study of the microscopic structure of tissues and organs. To the uninitiated it can be difficult to tell one tissue from another. It is also conceptually difficult as it requires interpretation of structures that are 3D by looking at essentially 2D sections. Because of these interpretive difficulties it is easy for students to become disengaged. Nevertheless, histology is an important discipline, particularly for medical sciences students, as it helps students understand how to relate the structure of tissues to their function and also to have a grasp of normal tissue structure to allow for the interpretation tissue pathology.

At the University of Bristol, we currently use a catalogue of digital slides to teach histology and to encourage engagement of students we have developed a card game, Histo-Link, using our existing digital images. The game encourages players to identify key features of tissues and cells and make connections with the images on other cards. The aim is to demonstrate how the game helps to make histology more fun and introduce a competitive element into student learning. Trials with students have received positive feedback and demonstrate the power of playing a game to enhance learning.

C29

A transformative student learning experience using the virtual human patient simulator in Physiology education

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Introduction:

Physiology education often relies on lectures owing to large classes fuelling student apathy. While quizzes are being used in class to enhance student participation, this still does not bring Human
Physiology lessons to life. In order to make in-class learning more immersive, we used a virtual human patient simulator (vHPS) to study Respiratory Physiology. The effectiveness of simulation-based learning (SBL) was then analysed using student questionnaires.

Method:

Year 1 Physiology students (n=60) studying an undergraduate Biosciences degree, were divided into teams of 5-6 and briefed about a real life case of 9 year old Ella, who died of asthma triggered by air pollutants (coroner’s report 2013) in her neighbourhood. Using the virtual patient, we simulated progressively worsening asthma attacks (mild-severe) and respiratory symptoms. Students interacted with the vHPS to learn about the cardiorespiratory changes leading to death. They recorded changes in physiological data on worksheets. Sounds of laboured breathing during asthmatic attacks were modelled.

Results:

Student evaluations using “Poll Everywhere” analysed the effectiveness of SBL as an intervention in their learning experience and engagement. 95% found SBL to be an excellent learning tool for asthma. 100% found it easier to understand the symptoms of asthma, and 94% recommended its use in future classes.

Conclusion:

The vHPS brought the “WOW” factor into the classroom through its visual display of physiological changes during asthma attacks. The interaction with the simulator made learning immersive, enjoyable and relevant to understanding pollution effects on health (Ella’s law).

SBL has a powerful effect on student learning.

Acknowledgments

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References


Abstract number 244
Supporting life and health sciences undergraduates in experimental design skills for a career in medical research

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Introduction: There is a need for new medical researchers to support the implementation of the 2030 UK biological security strategy. Experimental design (ED) skills are vital to this goal. This study focused on the processes employed in Queen’s University Belfast (QUB) in the teaching of Scientific Methods and Statistics (SMS) undertaken by Human Biology (HB) and Biomedical Sciences (BMS) undergraduates.

Methods: ED teaching methods were reviewed in 2nd year HB and BMS classes using anonymous surveys containing Likert questions scored between 1 (strongly disagree) and 5 (strongly agree) for student perception of understanding & comfort with ED and preparedness for 3rd year research projects that employ these skills. Open questions allowed students to expand on their answers. Focus groups were conducted with 3rd year HB and BMS students, 3rd year project supervisors and module co-ordinators. Content analysis was conducted on open questions and focus group data. Likert scored questions were analysed using ANOVAs and t-tests.

Results: Understanding ED criteria increased significantly from years 1-2 (coinciding with the undertaking of the SMS module), no further increase was found between years 2-3. Student & supervisor focus groups identified application of knowledge in real life challenging.

Discussion: Application of ED is more difficult than understanding the basic tenets of Science given the higher order learning objectives associated with the subject. The ‘clean’ nature of examples used in class may mean students struggle when applying knowledge to real life scientific experimentation. Using ‘dirty’ data sets or gamification could contextualise learning to improve its application.

Acknowledgments

Ethics approval QUB MHLS Rec 19.36v3

C31

Meeting the educational needs of the next generation of healthcare scientists in Scotland

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In 2021 the Scottish Government commissioned a Review to better understand the current healthcare science education provision for Scotland. This Review extended from undergraduate, postgraduate to doctoral level education. A further Scoping Review highlighted a need for wider and more flexible provision of healthcare science education, including that for clinical physiologists.

Further discussion identified the untapped potential to integrate science graduates of all types into the healthcare science workforce, regardless of their initial training qualifications. The Physiological Society’s strategy has also identified the need to strengthen links with other non-academic sectors e.g. Clinical Physiology, and to assist in the provision of career development opportunities.

These initiatives triggered a review of the undergraduate physiology curriculum at the University of Aberdeen, this Review seeks to identify areas that currently align to the training needs of clinical physiologists in NHS Scotland. Our first aim is to meet the requirements of the Practitioner Training Programme by working in partnership with local NHS Clinical Physiology staff. We have also increased our participation in the Foundation Apprenticeship schemes to enable local school leavers better access to healthcare science professions. In addition, in line with our ‘Students as Partners’ ethos, we aim to provide 3 month placements for doctoral students across Scotland to assist us with curriculum mapping and the development of an enhanced curriculum for physiology, neuroscience and sport science students. We describe what has been achieved so far, the main barriers we face, and our long-term aims for the future.

C32

The role of stress in active learning

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This poster will explore the link between stress and active learning and examine how this may impact the mental health and wellbeing of students. The importance of mental health and wellbeing is being recognised both in society as a whole but also within the context of the students within higher education throughout the world. Stress is a leading cause of deterioration of mental wellbeing therefore we will examine the link between active learning within higher education and its role in student wellbeing. To further examine in depth how this may affect different students we will look at the impact on different sexes and on our BAME students.

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Transforming learning: A Game-based approach to enhancing career readiness in physiology education

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The Future Me Challenge Day by Manchester Met’s Department of Sport and Exercise Sciences exemplified the university's commitment to a future-focused curriculum. Rooted in the exploration of authentic professional experiences, this event provided students with a platform to reflect on, and enhance, their career readiness within the context of elite sport. Modelled after Team GB’s multidisciplinary support team, students assumed various roles and engaged in problem-based, inclusive scenarios, simulating Olympic/Paralympic preparation.

Students assumed roles such as physiologist, nutritionist or medic, aligning with their career aspirations. Beyond the primary task of preparing holding camp plans, they engaged in role-specific breakout activities within a simulated ‘Olympic village’, encountering authentic cognitive, physical, and ethical challenges. Aligned with overarching themes of problem-solving and inclusivity, the challenge underscored the Department’s dedication to providing authentic, multidisciplinary
experiences for future sports physiology professionals. Designed to address departmental awarding gaps and bolster employability-related skills, the event highlighted disparities in elite sport by simulating unequal circumstances, fostering peer-learning and empowerment through mixed-group dynamics.

The activities were purposely designed to support student learning and provide opportunities to cultivate career attributes essential for graduate sports careers related to physiology. The event was recognised as institutional good practice for using innovative practice and enhancing student experience in physiology education, and received a nomination for the Student Experience Initiative of the Year Award for highlighting play-based learning and fostering belonging. Physiology educators and career-based colleagues alike would benefit from learning more about using game-based approaches to enhance student engagement and transform career learning.

C34

Investigating factors contributing to student engagement with large group teaching in medicine and life sciences

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Student engagement in large group teaching in STEM higher education is a feature ubiquitously sought after by educators and is thought to be a key predictor of student success. Incorporating active approaches in large group teaching such as problem-based, flipped classrooms, and student-focussed learning are examples that aim to shift away from didactic style and emphasise student involvement in their own learning.

Medicine programmes often offer 3rd to 4th year medical students the opportunity to undertake an independent research project (IRP). We aim to incorporate this student-led IRP with an investigation of student engagement in physiology-related teaching. Specifically, we will investigate pedagogical factors influencing engagement across life sciences and medicine undergraduate students (at FHEQ levels 4-5) in large group teaching across various modules. This will include a combination of project student-led ethnography, surveys, student interviews, and course analytics to gain qualitative and quantitative insight into engagement with existing teaching practices and routes for improvement. For example, using the UK engagement survey (UKES) we will identify facets lacking representation in our cohorts during term, relative to sector benchmarks, and support this with investigative student interviews.

We hypothesise that there will be substantial thematic differences in factors between life sciences and medicine, such as motivation for engagement and preferred methods/frequency of active approaches. Further, this aims to provide project students with an opportunity to explore scholarship related research and contribute to student involvement in the teaching evaluation process. Therefore, we expect that this project may itself, support student voice aspects of engagement.
C35

Improving student confidence and performance via initiatives such as the ‘Feedback Café’

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As teaching staff, we spend a large portion of our time assessing and providing feedback on student work. But how effective is that feedback and does it improve performance and confidence in our students? We have investigated this using our second year Neurophysiology unit as a case study. We have analysed the feedback provided on a summative coursework essay, quantitatively and qualitatively, to see what aspects of feedback are most impactful. We have also trialled a ‘Feedback Café’, where students can bring unclear or brief feedback on their marked coursework and receive in person 1:1 help with deciphering and applying the feedback to their next piece of work. We have collected survey data relating to the Feedback Café, which shows that it improves student confidence and ability to use their feedback and the marking scheme. Using the findings from our case study and the Feedback Cafe, we make some suggestions regarding the delivery of feedback. We also discuss other initiatives within the School of Physiology, Pharmacology and Neuroscience, such as peer feedback, and the creation of an assessment landscape to provide clear landing points for feedback.

Acknowledgments

Our colleagues Sheila Amici-Dargan and Rebecca Pike who set up the initial Feedback Cafe in Zoology
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In higher education (HE), students are encouraged to utilise higher-quality items (e.g. peer-reviewed journals) for independent study and assessment. However, the proliferation of predatory publishers – illegitimate groups that deviate from best practice, lack transparency, and contain false and misleading information – places students at risk of using incorrect and unethical information.

The status of predatory publishers in physiology – and therefore its potential impact upon students in HE – has yet to be explored and therefore this analysis sought to a) quantify predatory journals, publishers, and articles aligned to physiology, and b) identify agreement in detection tools. Two online databases of predatory publishers identified n = 86 predatory journals to explicitly contain the word ‘physiology’ (Cabells Journalytics = 82; Bealls List = 4). These were from n = 53 publishers and contained n=10708 articles. Agreement between lists was high (89%), with 47/53 listed in both sources. In contrast, n = 83 legitimate ‘physiology’ journals were cumulatively found across the Directory of Open Access Journals, National Library of Medicine and PubMed Central – none of which were listed in Cabells or Bealls. Concerningly, two predatory journals claimed the same name as established peer-reviewed publications (Journal of Physiology; Journal of Anatomy and Physiology).

Whilst there is no evidence of explicit infiltration of physiology oriented predatory publishers into established databases yet, the volume of open-access predatory articles aligned to physiology presents an imminent and recognised threat to the validity and integrity of physiology education in HE. This requires awareness and education for staff and students alike.

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C37

Student-staff partnerships in improving assessment literacy and terminology

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Student knowledge, skills, and disposition for assessment increase learning outcomes via confidence building in assessment literacy [1, 2]. Assessment literacy is therefore key to improving student learning and performance, helping with understanding feedback and skill development to benefit future assessment. However, common assessment terminology in coursework documentation and grading schemes can be considered problematic due to inaccessibility of language and ambiguity in meaning.

To help improve assessment literacy and understanding of terminologies across our BSc (Hons) Medical Physiology & Therapeutics (MPT) course, we held a discussion-based workshop with current students (1st Year, n=5; 2nd Year, n=12). All participation was voluntary and consented, with information sheets provided, prior to taking part in various activities designed to capture student knowledge and understanding of common assessment terminology seen in coursework.
documentation. Activities included colour-coding current rubrics, highlighting problematic terms, and providing explanations, and answering feedback cards.

The workshop facilitated development of staff-student partnerships and allowed evaluation of current assessment practices. By working together, we identified common problematic terms (such as ‘reasoning’, ‘reflection’ and ‘critical analysis’) and co-produced an ‘MPT Glossary of Assessment Terminology’ for course-wide implementation. Feedback indicated improved student confidence in understanding assessment terminology; 47.06% of students stated they were ‘very confident’ after the workshop (0% before).

Further impacts are hoped to be seen in student end of module evaluations pertaining to ‘not understanding assessment needs’, increased confidence in assessment, fewer email queries to academics in relation to assessment literacy, improved NSS scores in overall satisfaction and reduced attainment gap across cohort.

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References


C38

5 Questions – Increasing student engagement and consolidation of learning.

Jenny Moran¹

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Finding an engaging activity to consolidate student learning, that is not time consuming either during preparation or roll out, can be challenging. Through the adaptation of a family quiz, a format was developed that both enabled teamwork and enhanced a healthy competitive spirit. Students were split into groups and provided with ‘an answer’ per group, with each then researching and writing questions compatible with their answer. The aim was to design 5 questions graduated by difficulty, starting with the hardest and max points, getting easier as points drop. When all groups completed their question card, the quiz master asked the questions of the other groups, with points awarded relative to the level of difficulty answered correctly. This approach was shown to enhance engagement in the
activity, encourage investigation and research into a key word or short phrase related to a lecture or tutorial session, and was quick and easy to design and carry out. Student engagement was high, with the competitive nature involved within the creation of the best questions leading to an enhanced understanding of the provided answer word or phrase.

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**C39**

**Inspiring curiosity in physiology education through the development of a card game**

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Learning physiology encompasses understanding not only of the individual workings of each bodily system but also their intricate interactions. Within the human body, the synergy between systems is paramount, with many systems reliant on others for optimal function.

A prototype card game, rooted in the concept of an Ecosystem by Genius Games, is being developed collaboratively with students. Each card features unique designs, depicting various structures of anatomy and human physiology. Players need to carefully select and pass cards in turn. The objective is to strategically place cards to construct a functioning human body, with interactions simulating real-world physiological processes and a goal of scoring most points (for example placing red blood cells next to a vein, or oxygen/carbon dioxide molecule next to lungs would score more points). The idea can be adapted to fit more specific physiological systems, such as the heart, liver, or brain. Moreover, each card contains core structural and functional information about specific structures and highlights interrelationships. This strategy fosters inter-personal and cognitive engagement as well as knowledge consolidation. Such collaborative approach ensures that the game resonates with students' learning preferences and addresses their educational needs effectively.

Student involvement in the development process not only fosters a sense of ownership but also ensures the game's relevance and effectiveness in educational settings.