Flexible teaching responses to evolving student needs in a turbulent world

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Case study for the Royal Society of Biology's Higher Education Biosciences Teacher of the Year award.

Background & Rationale

Young people in the UK are reporting record-low levels of mental health with university students reporting a disproportionately lower sense of personal wellbeing than the wider population (The Prince's Trust 2022; ONS 2022). This has consequences for the students' self-efficacy; the confidence one has in being able to master new tasks as well as their well-being and attainment (Watts & Robertson, 2011). When mental well-being and self-efficacy are low and expectations high (e.g. at the beginning of a new course of study), an individual's emotional resilience and motivation (e.g. to engage in studies), can plummet (Elvira De Caroli & Sagone, 2014). Young people are navigating one of the most turbulent periods in living memory. And at university we expect our students to not just survive this turbulence, but to thrive. To thrive in their studies and in the unpredictable future, helping our students learn resilience and capabilities is as important as disciplinary knowledge.

Lecturer & Student Perspective

As a lecturer, the key strength that I have developed with experience is that I am intuitive and responsive to student needs. The impact of the COVID-19 pandemic on our students was significant and rapid. The pre-university experiences of our students also changed, with data of current students suggesting that our future university cohorts will be more similar to our COVID cohorts than pre-COVID cohorts. If we are to be effective educators both now and in the future, we need to respond rapidly to our changing cohorts. I achieve this by engaging in continual and transparent dialogue with my students, then I innovate and respond to their needs rapidly. For example, by the first semester of the 2021/22 academic year, the impact of the COVID disruption had pervaded most of the student cohort. Specifically, the students had rung three alarm bells for me.

1. In a semester 1 workshop, when asked "Who forms your support network?", the modal answer was [variations of] "No-one/I don't have one" (n=26 students, Edmunds & Gulliver (2021) and Edmunds, Leggett and Lewis, (2022) describe our response strategies).
2. Students were demonstrating very little learner agency, e.g. when in the lab many students struggled to fill in gaps within a set of simple instructions. If the experimental protocol didn't explicitly instruct students to do something, it wasn't done. Rather than having the confidence to consider and make science-based decisions, the students needed precise, explicit instructions to follow; and they didn't ask staff for help.
3. Students had a fear of failure. Rather than trying and failing, many students were opting for inaction and expressing anxiety over "getting it wrong".

Given the disruption to their education, it was not a surprise to see students feeling like this. But "returning to normal" and "doing things the way we've always done them" was clearly not going to meet their needs. If they were going to thrive throughout their degree and enter the post-graduation world ready to face uncertainty and challenge, then they needed a new holistic-comprehensive teaching approach. I questioned and listened to the students, then innovated and responded within the same semester.

Innovation

I have developed my teaching style around being responsive to student needs in real time. Key to this is engaging with the students to uncover their challenges – their known unknowns and unknown unknowns. Gaining their trust for this centres around dialogue, support and authenticity. I provide multiple weekly opportunities for students to anonymously tell me what they are struggling with both

through online weekly seminars and VLE-hosted discussion boards. I also engage with their wellbeing challenges by asking students how they are and allowing them to tell me, anonymously (Figure 1). Figures 1 & 2 show examples of how I have responded rapidly to student challenges with each of these being developed the same week that students shared that they were struggling (Figure 1) and feeling overwhelmed with the workload (Figure 2; Edmunds & Gulliver 2021).

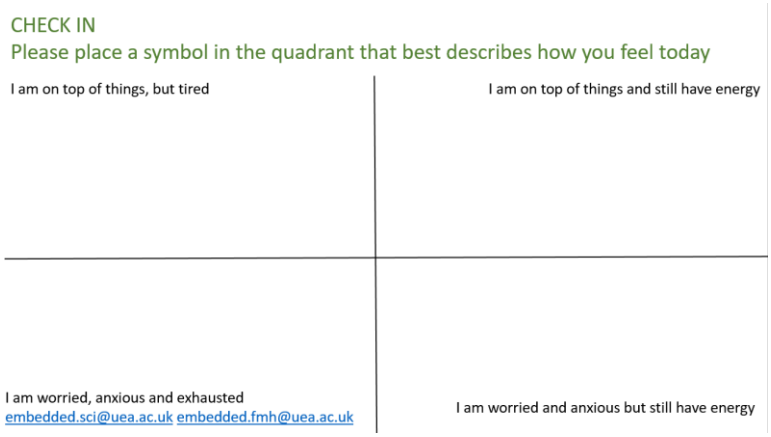

Figure 1. Example check-in slide used at the start of online workshop sessions with students studying on the biology Foundation Year modules at UEA.

Week 9 Check List			✓
Disease & Immunity Learning Strip (*Materials for these are available in Learning strip*)			
Week 9	Lectures	3. Innate Immunity	
		4. Inflammatory Response	
	Enhancement materials		
Workshop *(Attend your timetabled session)*		How to Improve Your Essay Make sure you have the feedback from your formative essay with you	
Summative Assignment			
Check the Summative Assessment folder for details of this assessment			
View resources at the end of Evolution Learning Strip for additional materials on this topic			
Exam Preparation			
Attend your timetabled live Q&A session to get practice MCQs, ask us questions and get help with any troublesome topics			
Make sure you look at the "What to Know" documents that Kelly has posted as an announcement			
Important University Announcement			
At 1:45pm on Friday 20/11 all students were sent an email containing very important information. Please make sure you have read this email by the end of this week.			

Figure 2. Example of the weekly checklists that are emailed out on a Sunday evening for the week ahead, to all students studying on the biology Foundation Year modules at UEA.

Whilst supporting a current cohort, I was confident that the next cohort(s) were going to have similar needs. Working with colleagues from within the university and beyond, I proposed a programme of resources to support students in developing skills to help tackle the above three alarm bells. The resources were focused on i) supporting students to feel a sense of community and belonging and ii) helping students to develop a growth mindset to increase their confidence, resilience and learner agency. The programme is woven throughout their academic cycle, from pre-arrival, through their Welcome Week and into their academic modules.

Pre-arrival

Since 2019 colleagues, students and I have been developing a Transitions Toolkit; a suite of resources built by current students to support incoming students with their transition in to HE, building their

confidence and sense of belonging (Figure 3). The toolkit was adapted for a range of courses and rolled out across the Science Faculty. Student feedback was very positive, for example,

> *"The transitions padlet was great for me when I was trying to figure out what I didn't know and where I could find answers"* (Biomedicine student, 2020/21).

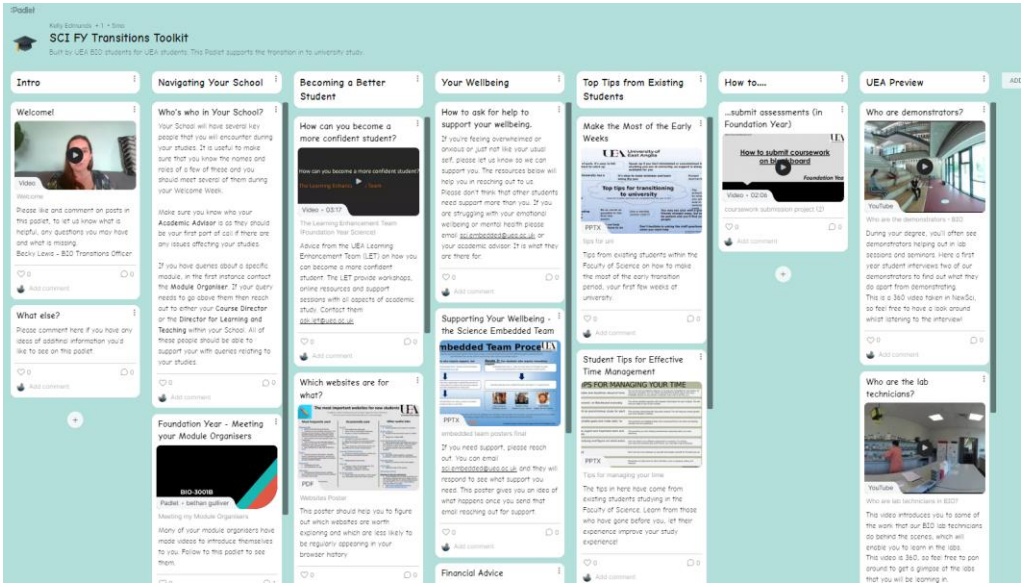

Figure 3. Screenshot of the Transitions Toolkit which was developed as a student-staff partnership for incoming students in the School of Biological Sciences, UEA. The toolkit was presented at ESLTIS 2021 and HUBS SoTL 2022.

In 2022, the Transitions Toolkit was developed into a pre-arrival course 'Preparing for your Biology Studies' delivered via our Blackboard VLE (Figure 4). Once new UG students complete their online course registration, they are automatically enrolled on to the pre-arrival course.

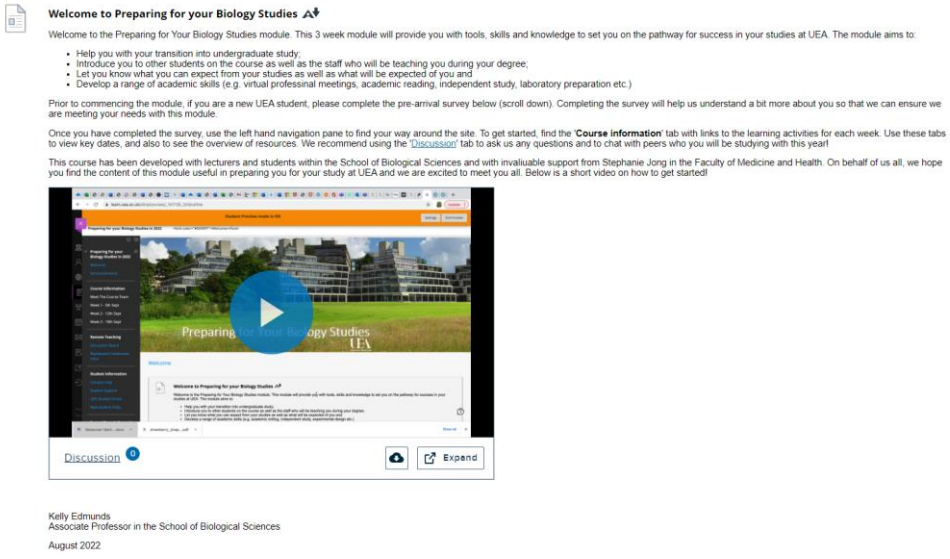

Figure 4. Screenshot of the Preparing for your Biology Studies' pre-arrival course for incoming students in the School of Biological Sciences, UEA.

In total, the pre-arrival course had 6711 hits from 344 active students from 05/09/22 - 10/02/23 (Table 1). Each student spent an average of 1.6 hours engaging with content and engagement continues beyond the initial transition with 95 active interactions in 2023 (to 10/02/23).

Table 1. Summary of the content and engagement (from 05/09/22 – 10/02/23) for the key content areas of the Preparing for your Biology Studies online pre-arrival course run by the School of Biological Sciences at UEA.

Course Welcome	Week 1 Focus – Belonging and Wellbeing	Week 2 Focus – Managing Expectations	Week 3 Focus – Research and Learning at UEA	Course Discussion Boards
2411 hits	664 hits	1096 hits	412 hits	1889 hits
Content	Introduce Yourselves Communities of Learning Your Wellbeing at University Wellbeing Support at UEA Managing Stress Journal Club Time Management UEA Vocab Explained Getting to Know You Survey (123 responses)	Laboratory Preparation Lecture Advice Decoding Assignments Understanding Assignments Writing practice Writing concise sentences Silent Sharing Types of Evidence Two wonder.me-hosted online socials	Changing Sounds of Campus Unpacking Learning Outcomes Making the Most of your Lectures Norfolk's Safe Spaces Welcome Week Timetable	

Students responded well to this new approach to their introduction to the University with 151/181 (83.4%) of students reporting that their introduction to UEA had been positive with the majority of students saying that the most important part of their induction to university had been meeting people and gaining a sense of belonging (Figure 5).

Quotes from students include:
"I felt instantly part of the community and felt comfortable being myself."

"Great meeting new people and making friends, it also gave us a taster of how lectures and lab lessons worked. It defiantly [sic] settled my nerves doing these activities before the course started (I feel more confident now)."

Figure 5. Word cloud of responses given by students in the School of Biological Sciences, UEA, to the question "What was the most important thing that you took away from your introduction to BIO?" (n=169 students).

Supporting Student Growth

Central to the programme was supporting students to develop a growth mindset so that they learn to see challenges and setbacks as opportunities to learn and grow. By encouraging students to develop a growth mindset they become more motivated, resilient and better equipped to handle future challenges.

The growth mindset development aspects of the programme were woven throughout the activities. For example, in Welcome Week (WW) the Foundation Year (FY) students had sessions such as a two-hour hands-on session centred around team building and succeeding through failure. Students worked with unfamiliar peers and participated in activities that encouraged them to experience greater success when working in a team and to see the benefits of achieving a goal by learning through failure. Within ten minutes of the session starting, students were visibly more relaxed and were soon working together to overcome the challenges, sharing in the successes within the session and supporting each other through the failures. Anonymous end-of-session feedback showed 100% of attendees (n=40) found the session helpful, beneficial to their feeling part of a community and recommended it should be offered to all first-year students (which will happen in 2023/24). Of the 15 School-led sessions delivered in Welcome Week, this was the favourite session of 21 % students (7/33 respondents). The second growth mindset-focused session of WW was an Objective Structured Practical Exam (OSPE) that I coordinated where students were assessed on four practical skills from the A-level syllabus. The aim of our OSPE was to determine the practical skills of the new cohort of biological sciences students to identify skills gaps in a low-stakes setting. I presented the session to the students honestly; there was no pass or fail, we wanted to know what skills they possessed already and what skills they need guidance to develop. Following the OSPE, bespoke sessions were added into the academic modules. This session was the favourite WW session of 36 % students (12/33 respondents).

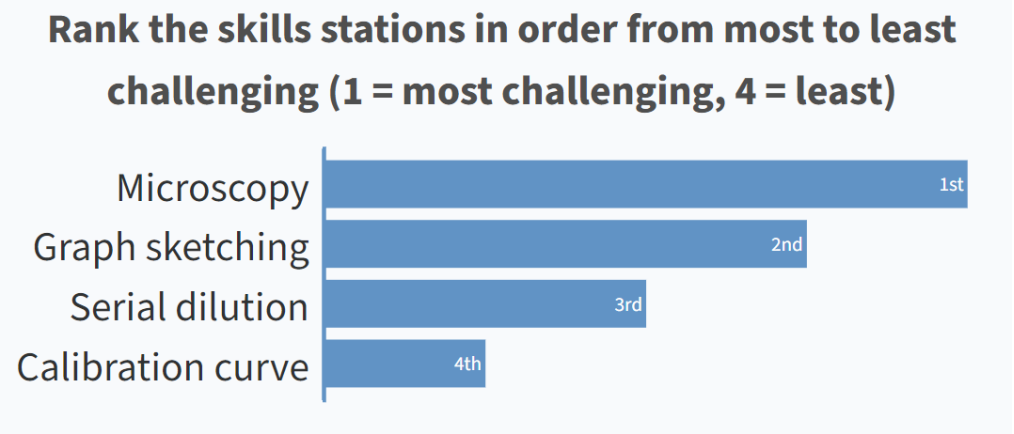

Figure 6. Responses given by students in the School of Biological Sciences, UEA, who had undertaken a four-station Objective Structured Practical Exam (n=30 students).

Following the WW OSPE, I amended several teaching activities scheduled for later that semester to help students improve on the skills that they had identified as being most challenging during the OSPE (Figure 6). These sessions also had the dual purpose of supporting the students to experience low-stakes failure in pursuit of a growth mindset. Sessions were scaffolded with staff support but presented skills-development opportunities for the students whilst balancing the risk of experiencing failure in a low-stakes setting. Examples of how we did this include:
i) deviating from the usual teaching mode of providing the students with a detailed and explicit lab protocol. Instead we adopted a student-centred, inquiry-based approach where students conducted their own research to determine an appropriate methodology, prior to engaging in the laboratory practical and
ii) asking students to enter data on a shared spreadsheet which contains indicative but potentially ambiguous column headings. This encourages decision-making and problem-solving and usually results in failure the first time around as typically (even in a module of >180 students), no students asked for clarification.

Reflections

Students rarely know what they don't know and they don't know what they need for their years of academic study or their post-graduation futures. The whole world has changed recently and none have felt this as acutely as young people. Responding rapidly to support students through this turbulence has been the single greatest challenge of my career so far but I have developed an authentic flexible, responsive pedagogy that will benefit my students through future challenges they may face.

Word count (excluding figure legends and quotes) = 1532

Publications and Presentations

WonkHE article (see here).
THE Campus (see here, here and here, as at 07/02/23, these articles have a combined 1,133 views from 64 different countries, reaching as far as Cambodia, Grenada and Zimbabwe).
The Journal of the Foundation Year Network (see here and here).
The SEDA blog (see here).

Bioscience Teaching Summit (virtual presentation, Sept 2022).
Foundation Year Network Annual Conference (July 2022 and 2021).
HUBS Scholarship of Teaching and Learning (SoTL) workshop hosted by Herriot-Watt University (May 2022).

Enhancing Student Learning and Teaching through Innovative Scholarship conference, **two** posters (September 2021).

Co-organised a HUBS-funded workshop on 'The Fundamentals of Biosciences' which was attended by >50 colleagues working in HE from across >20 different institutions and which generated a collection of articles published by THE Campus (see here, April 2022).

References

Edmunds, K. & Gulliver, B., (2021). Building an oasis of calm in a sea of chaos: supporting students during Covid-19 disruption. Journal of the Foundation Year Network. Vol. 4.

Edmunds K, HC Leggett and R Lewis, 2022. Whatsapp and Campus Trails: Supporting Students Building Peer Support Networks https://www.timeshighereducation.com/campus/whatsapp-and-campus-trails-supporting-students-building-peer-support-networks, published 11/03/2022.

Elvira De Caroli, M & E. Sagone. 2014. Generalized Self-Efficacy And Well-Bring In Adolescents With High Vs. Low Scholastic Self-Efficacy. Procedia – Social and Behavioural Sciences, 141, 867 – 874. Doi.org/10.1016/j.sbspro.2014.05.152

ONS. 2022. Coronavirus and higher education students. Released 21/03/22, available at: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandwellbeing/datasets/coronavirusandhighereducationstudents

The Prince's Trust. 2022. The Prince's Trust Natwest Youth Index 2022. Available at: file:///C:/Users/zff07nhu/Downloads/Princes%20Trust%20Youth%20Index%202022%20DSN5322_FINAL.pdf

Watts, J., & Robertson, N. 2011. Burnout in University Teaching Staff: A Systematic Literature Review. Educational Research 53(1), 33–50. doi:10.1080/00131881.2011.552235.