

How Collaboration Maximises the Benefits of Blended Learning in Higher Education

A Case Study on the Implementation
of McGraw Hill's Connect at Brunel
University London



In 2016, Brunel University London introduced their students to McGraw Hill Connect.

This learning platform provided electronic textbook content alongside a suite of digital learning tools to support both formative and summative learning in the classroom and for self-study. Connect is now used by 910 students across four courses. Students report high levels of satisfaction and lecturers report a positive impact on teaching and learning.

This case study outlines:

- The role of collaboration and co-creation
- How a flexible platform can support multiple courses and pedagogies
- The impact on student experience and outcomes

Prepared in partnership with McGraw Hill and Dr Sabrina Tosi, Joanne McPhie and Dr Oliver Gibson, Brunel University London



The pathway to success

Digital learning tools are becoming increasingly important to Higher Education providers as they look to enrich student experiences, either through blended learning or wholly online learning. Brunel University London took a collaborative approach, which combined with a versatile learning platform, has opened up new ways of teaching and had a positive impact on student experiences and outcomes.

Brunel University London is a leading multidisciplinary research-intensive technology university with a mission to bring benefit to society through excellence in education, research and knowledge transfer. They are Teaching Excellence and Student Outcomes Framework (TEF) rated and provide award-winning teaching. In line with their commitment to innovative, research-led teaching, the University have incorporated adaptive learning into their teaching, through McGraw Hill Connect. Amanda Harvey, Deputy Dean (Academic Affairs) for the College of Health, Medicine and Life Sciences said,

“At Brunel, we are committed to providing an outstanding learning environment. We have aimed for some time to introduce new and innovative teaching and technologies to the classroom to enhance student experience and engagement. In the current climate, having digital platforms and tools is crucial to providing an effective learning environment and a number of universities have adopted a dual delivery or blended learning approach for 2020-21 so will need to rely on digital resources. For several years, Connect has been embedded in our teaching and has proven to be an engaging and versatile platform. The benefits of an approach to learning that

includes face-to-face teaching coupled with digital tools is evident in the student feedback and is testimony to successful collaboration across different University departments.”

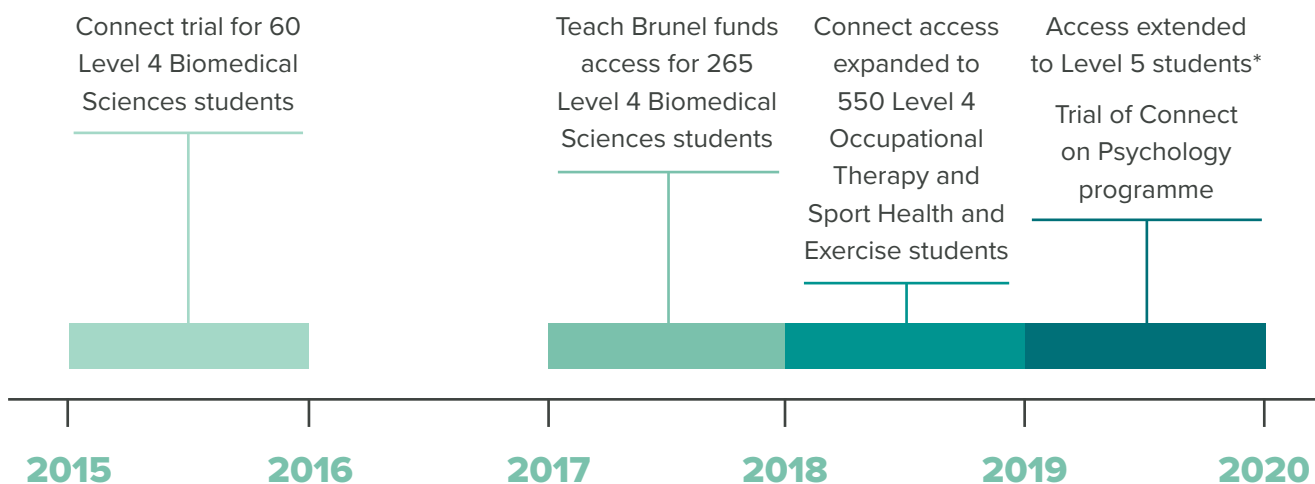
The Biomedical Sciences programme began a trial with McGraw Hill Connect in 2016 to discover the effects of introducing digital tools and a blended learning approach. Since 2016, the use of Connect at Brunel has grown from 60 students to 910, and from one course to four and the University is now considering expanding its use further. Brunel’s unique culture and the collaborative approach allowed it to translate success on a single course into a wider impact across the University.

Milestones

The University took a phased approach in order to assess the impact of technologies and teaching methods at each stage. This allowed the team to build their expertise and to understand how they could support specific needs in the Biomedical Sciences programme and the University as a whole.

Moving forward, the University are considering:

- Additional disciplines
- More Level 5 students
- Additional use of curated texts
- Academic skills and pre-course learning



* Principles of Human Diseases teaching block

Brunel's aims, as stated in their initial project application, were 'to improve the student experience by enhancing their potential to learn and retain information in a dynamic and interactive manner.' To fulfil this aim, we are proposing to adopt Connect, a digital learning tool that uses adaptive technology to tailor interactive learning to the individual student's needs.

Teach Brunel Project Application, 2016

A joined-up approach

Jointly led by Dr Sabrina Tosi, Programme Lead, and Joanne McPhie, Academic Librarian, the project was structured to draw on skills from across the institution, including a student ambassador and the Learning and Teaching Technology department. This broad base approach and the strong teamwork between Sabrina and Joanne made the project robust at every stage, from planning and budget applications to student communication, monitoring effects and testing alternative approaches.

The collaborative approach and involvement of the library facilitated its uptake more widely across the institution, most notably in Sport, Health and Exercise Sciences and Occupational Therapy. An expanded project team including academic colleagues from these disciplines grew and developed the use of the tool.

“Brunel has taken a unique approach. It brought different departments together and allowed us to draw on expertise from outside our usual teams.”

Dr Oliver Gibson, Senior Lecturer in Exercise Physiology

McGraw Hill were part of the team and provided support at every stage of the project, from insights and expertise during the exploration and planning phases, through to staff training, student demonstrations and monitoring.

“We worked closely with McGraw Hill, so collaboratively that our relationship was more of a partnership, a team. They weren’t just providing the technology, they worked with us at every stage - even before we had a business case. They seemed to care that things went well and really fitted what we needed.”

Joanne McPhie, Academic Librarian and Project Co-lead



A tailored solution

The initial project focussed on the undergraduate Biomedical Sciences block Principles of Anatomy and Physiology. The course can be challenging for students transitioning from a school or BTEC environment due to the breadth and depth of its content. It relies on many specific and unfamiliar terms that students must master. As a core component of the undergraduate syllabus, this means student numbers are high, including those who may struggle with this particular kind of study.

The Connect adaptive learning platform tackled these specific issues by providing additional ways for students to engage with the material, before, during and after face-to-face teaching sessions, such as quizzes and multimedia content. This allowed teaching staff to enrich lectures and add structure and feedback to independent study.

As the initiative has expanded, Brunel University London have been able to benefit from the flexibility of Connect, shaping its application around the various pedagogical approaches of the teaching staff and the needs of the students.

“Connect complemented learning in the classroom, worked effectively to enable more active learning approaches and offered dashboards and tools to manage workload and evaluate learning.”

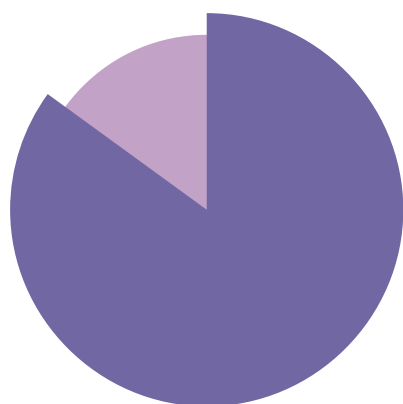
Dr Sabrina Tosi, Biomedical Sciences Programme Lead and Project Co-lead

“It made me think about other techniques for revision.”

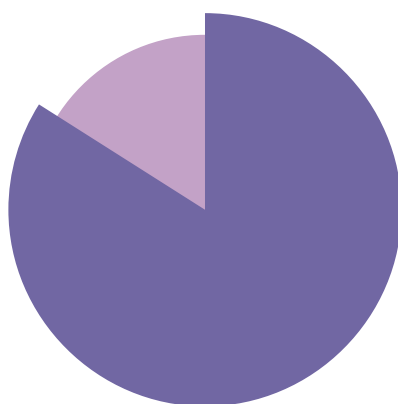
Biomedical Sciences student in near peer session



A clear impact



85% of students reported that Connect enhanced their learning



84% agreed it made it easier to understand the basic concepts

Fig 1: Student Polls, November 2018. 11 Polls, 314 Participants.

Culture

The leadership team at Brunel University London recognises the need for innovation and has created an environment that encourages it. The project was germinated by the University's 'Teach Brunel', initiative.

This was designed to:

- provide advice and financial support for new activities
- disseminate and celebrate success as part of a programme of symposia, publications, and events
- encourage cross departmental engagement

The commitment to research-led teaching influenced the approach of the project team enabling them to explore the potential of Connect to support the wider University, as well as meeting the needs of a specific course.

“We were quite focused and did not try to do everything at once. We began using it one way, then introduced a variation, then expanded. Our goal was to uncover what works and doesn't work for us. It's funded by the University so it's our responsibility to test it and see how we can get the most value out of it.”

Joanne McPhie, Academic Librarian and Project Co-lead

Collaboration

The collaborative approach taken at Brunel University London involved Professional Services, students and representatives from McGraw Hill as well as the academic leads for each subject. This provided a broader skill set for the project to draw from and made every stage of the project more robust, from funding through to delivery and growth. Each academic department implemented the resource to support the specific pedagogy and requirements of their course, while central services within the Library consolidated the knowledge and communicated across the institution.

Academic engagement: Academic lead for Biomedical Sciences, Dr Sabrina Tosi initiated the project. She assessed the relevance of the content for her course and the suitability of the resource for her teaching style. A successful implementation depends on a good fit between the resource and the curriculum as well as a committed academic lead.

As the use of Connect has expanded, each subject lead has been able to evaluate the content. The flexibility of the resource has allowed each academic lead the freedom to meet the requirements of their own course and students, rather than adopting a one size fits all. However, this does require full engagement early on from the relevant academic teams, particularly where multiple staff members are working on a course.

“The most important thing from an educator perspective is using the resource to complement what you are doing. We were able to personalise the resource and make it work for our staff and students.”

Dr Oliver Gibson, Senior Lecturer in Exercise Physiology

University-wide expertise

From the outset, Joanne McPhie, the Academic Librarian for the Department of Life Sciences, was critical to the project. Her expertise in information management and resource acquisition strengthened the planning and implementation of the project. She and Sabrina collaborated on the best approach to Connect; how it would be deployed, tested, incorporated into learning, communicated to students and how support would be provided.

“I think that our approach to collaborative working is one of the strengths of the project.”

Joanne McPhie, Academic Librarian and Project Co-lead

Joanne’s involvement deepened the relationship between the department and the Library and demonstrates the benefits of involving a wider range of staff in education technology projects. She said, “the project has been a great opportunity for me to

be part of the conversation about how we approach teaching and learning. Librarians, and other University Services staff, have a lot to offer in this area. We bring insight and knowledge of new learning technologies, as well as experience of teaching with these types of materials. I have been able to make a real difference in the approach we have taken. I have learned a lot from working with Sabrina, and all the other academics on the project, developing skills that have benefited my role more widely.” The project provided an opportunity to explore how educational technology solutions can be implemented, to assess their impact on students and consider their role in the future of teaching and learning at the University.

As the project team built up knowledge, the involvement of the Library allowed the wider University to benefit from their findings. Joanne championed the initiative. Her broader role and links across the University meant she was well positioned to communicate successes to other departments and to mentor academic leads to help them understand how the resource could be of benefit to them. She shared good practice and encouragement whilst allowing the course leaders to retain ownership of their courses.

“I’m interested in how students interact, use, learn from our resources. Participating in this project and being present in the classroom as students were learning was invaluable. I have been able to take this learning forward when exploring how we might use this tool or others alike across the University.”

Joanne McPhie, Academic Librarian and Project Co-lead

Expert partners

McGraw Hill have considerable experience working hand-in-hand with institutions who use learning resources to enrich face-to-face teaching and blended or online learning. The University were able

to draw on this expertise from day one. From initial meetings with University stakeholders to hands on demonstrations to students, the McGraw Hill team were on hand to ensure that the project was a success.

Co-creation

Although Connect is now funded centrally, it was initially financed by the Teach Brunel fund. There was a student on the team from the outset and her input helped shape the delivery and communication of Connect. The student shared her own experiences with the project team and provided a direct channel to other students.

“We gave the students the responsibility to use the resource and provide feedback so we could justify using it in the future.”

Dr Sabrina Tosi, Biomedical Sciences Programme Lead and Project Co-lead

“Her insights – how she used it and why she found it useful – gave us a deeper understanding of the student perspective and informed the implementation of the programme in terms of communication and in shaping student led sessions.”

Joanne McPhie, Academic Librarian and Project Co-Lead

All students were encouraged to actively engage with the project itself as well as with the resource. First through feedback as they used the resource to study and then later through participating in near peer sessions to pass on their insights and enthusiasm.

The impact of McGraw Hill Connect

Staff reported that it was easy to administer and enabled a variety of teaching approaches. Student feedback endorsed Connect as an engaging way of learning.

At an institutional level, Connect complements the University's vision for digital transformation and near-peer/team-based learning.

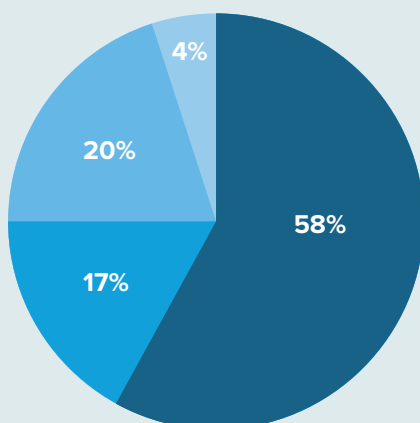
Student feedback was gathered to assess the project's impact on students, for inclusion in proposals for funding and to support evidence-based teaching. Formal and informal methods were used. The following findings are drawn from polls of students studying Biomedical Sciences, Occupational Therapy and Sport, Health and Exercise Sciences carried out in November 2018.

Student engagement

82% of students agreed that Connect is an engaging learning resource

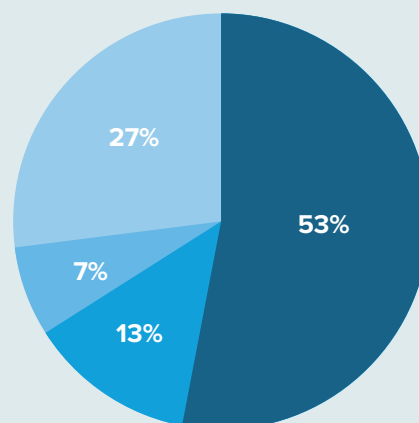
Student engagement with Connect was high, both when assessed by students reporting their frequency of use and by students reporting their perceived level of engagement. More than half (58%) of students reported using Connect every week and three quarters (75%) used it at least once a month. Connect's inbuilt analytics tools allowed teaching staff to identify and contact students with low usage. When students were contacted their engagement with course content increased.

How often are you using Connect?



- Every week
- Once or twice a month
- Now and then
- I'm not using Connect

What aspect of Connect did you find most useful?



- Learn Smart Quizzes
- Animations
- Cadaver dissection tool
- Ebook

11 polls, 314 participants

Fig 2: Students use Connect frequently

Connect is an engaging tool that helps you learn?

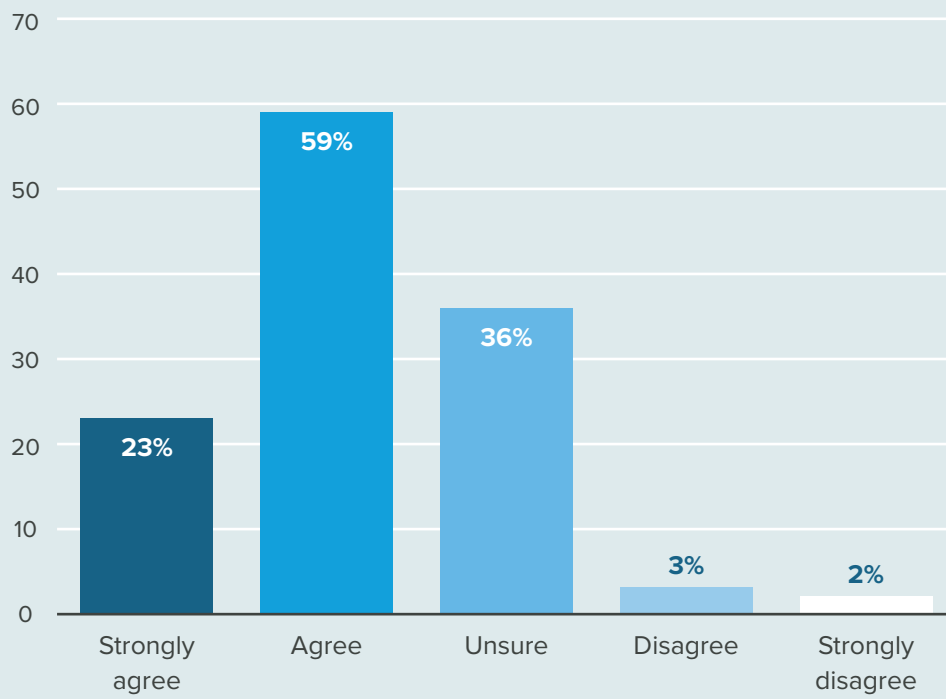


Fig 3: Student engagement levels



Impact on learning and outcomes

The feedback polls indicate that Connect had a positive impact on the students' learning.

85% of students reported that Connect enhanced their learning.

84% agreed it made it easier to understand the basic concepts.

Connect helps you understand the basic concepts of your topic more fully

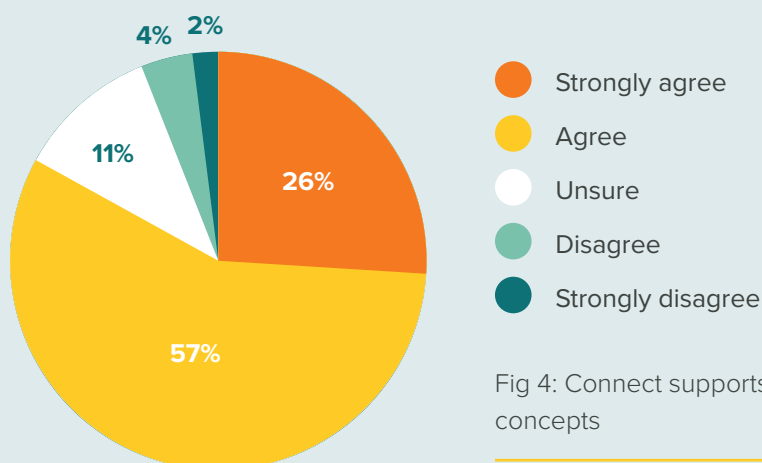


Fig 4: Connect supports basic concepts

Improvements in student outcomes were observed by teaching staff. However, as is often the case with teaching interventions, it is difficult to ascribe causality as Connect was part of a broader change in teaching approach. Programme Lead Dr Sabrina Tosi also reported that she saw an impact on attrition and retention:

“After introducing Connect, we observed a general improvement in students’ performance that resulted in a reduction in attrition and an increase in retention between the first and the second year.”

Dr Sabrina Tosi, Biomedical Sciences Programme Lead and Project Co-lead

Recruitment & positioning

The University used Connect to support recruitment. Applicants, offer holders and parents were given hands-on experience of the platform at Open Days. This positioned Brunel University London as a modern, innovative institution that invests in its students.

We want to show the world we are open minded, happy to embrace technology for our students and invest in their learning.”

Dr Sabrina Tosi, Biomedical Sciences Programme Lead and Project Co-lead

Building expertise

The flexibility of Connect increased the teaching options for staff at Brunel University London, inside and outside the traditional lecture hall. This allowed staff to build on skill sets to teach with technology, to explore new approaches and evaluate their impact on student outcomes. The University’s

collaborative approach drew on students, Library Services and McGraw Hill, as well as educators and academics. This developed a tailored solution and built knowledge and expertise that has been shared across the University.

“It explains complex content in a simple, manageable way. It forces us to learn a topic which is good. The activity was helpful in breaking down information.”

Biomedical Sciences student in near peer session



Teaching and learning in practise

Connect has been applied in various ways across Brunel University London. Discover how two different teaching teams have used it to support their pedagogical approach and student's needs.

Biomedical Sciences

Dr Sabrina Tosi and Joanne McPhie, with academic support from Dr Sara Anjomani-Virmouni and Daniel Goodall

Course: Fundamentals of Anatomy and Physiology 2019-20

- Teaching staff introduce students to Connect with support from McGraw Hill and senior students
- Near-peer student led tutorials provide reinforcement
- Students are set weekly quizzes for pre/post lecture completion
- Connect provides personalised guidance based on a student's performance and level of confidence
- Engagement is monitored. Students who don't engage can be contacted through the system
- Performance is not monitored, and the quiz does not contribute to the final grade
- Videos are incorporated into lectures to reinforce understanding
- Seminar time can now be used for case studies and higher-level learning
- Additional content is available for independent learning and revision

Overall approach

The team established an effective approach to using Connect based on collaboration, trial and reflection. Working together enhanced the robustness of the approach. As academic lead, Sabrina ensured the content and functionality met the needs of the course.

She provided subject knowledge, experience of teaching the discipline, and insights into student learning. As Academic Librarian, Joanne contributed experience of using online materials in learning, as well as new approaches to developing student's information and digital literacy. At the end of each academic term they review the approach, building on their learning from previous experiences.

Quizzes generate curiosity

Each week, students are assigned a quiz from Connect, to complement their pre-lecture reading. Access is via a direct link from BlackBoard Learn, the University virtual learning environment. The quiz encourages further reading. It engages students' interest and makes them aware of their knowledge

gaps, then links them through to related textbook content on Connect.

Engagement levels are tracked by the University (see below), but performance is not: there is no penalty for incorrect answers or skipping questions. Quiz results do not contribute to a student's final grade. Students are encouraged to retake the assignment after the lecture to see how their understanding has improved. Student feedback suggests this approach works.

This encourages the repetition that students need in order to retain the terminology and concepts. They learn in bite-sized chunks before coming to the revision session, well before the examinations.

“The students found it more pleasant than simply reading out of the textbook – it is a user-friendly way of building knowledge. They get curious and they go and explore the part of the text which has the answer.”

Dr Sabrina Tosi, Biomedical Sciences Programme Lead and Project Co-lead

Multi-media enriches lectures

Connect provides material that can be used in lectures and seminars.

At Brunel University London, Anatomy and Physiology Revealed videos are incorporated into teaching, with multiple short videos embedded into the lecture. This reinforces learning and provides students with a variety of ways to engage with the content.

“After explaining a complex topic with PowerPoint slides, I play a video on the same topic to consolidate the learning. This helps because, didactically, you can’t keep students’ attention for more than 20 minutes. It got the students’ attention through a different scenario, a change of voice, the change from static PowerPoint to movement.”

Dr Sabrina Tosi, Biomedical Sciences Programme Lead and Project Co-lead

Near-peer learning

Near-peer learning is a teaching method which involves more senior students teaching, mentoring or coaching junior students. At Brunel, this approach was used to leverage student enthusiasm and experiences from one student group to the next intake. Third year students devised and led introductory sessions for first years. The first years attended in groups of 50, bringing their devices, for a hands-on training session. They were introduced to Connect through a pre-session activity and group activities in the session.

- Ensuring Level 4 students knew how to use Connect
- Providing a safe environment for new students to ask questions
- Understanding the benefits of using Connect through a student lens
- To encourage the engagement and deeper learning that enhances student experience

As well as speeding up the student learning curve, this approach benefited those student-facilitators with an opportunity to develop a range of soft skills that are useful for employability. Joanne described how it gave the project team a clearer understanding of how students were interacting with the resource and how it could benefit them: “The near-peer sessions were one of the most successful ways we got students interacting with the platform. First year students really benefited from getting the insight of students who had already used the tool. The third year student leaders were able to share their experiences of how best to use and revise with Connect, and this was much more meaningful than a lecturer’s recommendation. These sessions were also useful for us to observe and see how students made use of the tool. Often, they surprised us by discovering new functionality!”

Learning analytics

The platform provides analytics, including a simple dashboard which provides insights into how students have interacted with the resource. Sabrina used this information to encourage a higher level of usage. She informed students at their induction that while she was not concerned about their performance in the quizzes, she would be monitoring their level of engagement. “I told them that this is important because I want to see if it is useful and decide how I use it in future. I invested them with the responsibility for next year’s students.”

The team were able to see the overall level of engagement via a dashboard. The ‘At Risk’ Student Report includes a pie chart to identify those students who had not taken their weekly quiz.

When Sabrina contacted them directly in the first year of usage, they responded to her and usage increased.

Attrition rates dropped on the course and have maintained a similar level. Contacting low engagement students resulted in an increase in their engagement levels.

Breakdown by risk

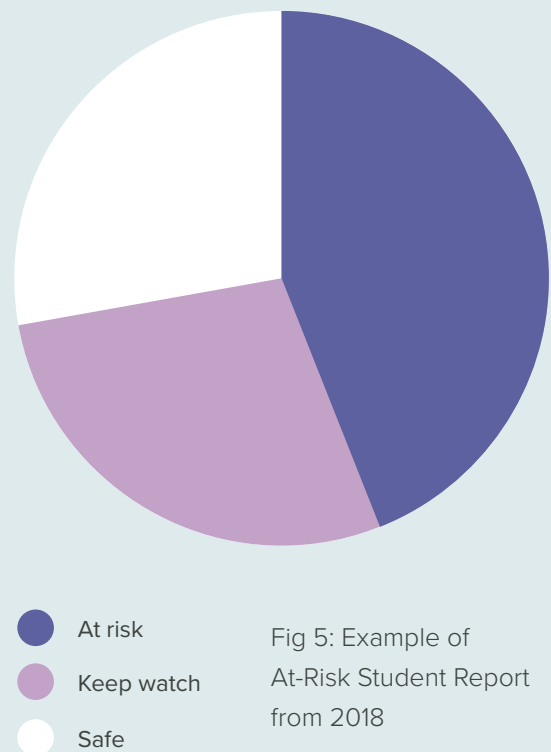


Fig 5: Example of At-Risk Student Report from 2018

Expanding pre-learning in 2020

The Biomedical Sciences team plan to embed more material in Blackboard Learn next term. Study blocks will include access to pre-learning material through the VLE including welcome videos from their lecturers alongside ready-made activities from Connect.

“It is very important that we use digital resources especially those which have been proven successful.”

Dr Sabrina Tosi, Biomedical Sciences Programme Lead and Project Co-lead

Connect increases the opportunities for asynchronous learning. In a traditional, face-to-face teaching scenario, it can be used alongside synchronous teaching to facilitate flipped learning. Students access the content in advance of classes and can participate more actively in class.

For students who cannot be on campus, or periods where face-to-face teaching is disrupted, the platform provides pre-learning material as scaffolding for virtual seminars and lectures as well as interaction and immediate feedback to ensure that students are confident in their learning.

Teaching and learning in practise: sports, health and exercise science

Dr Oliver Gibson, Senior Lecturer in Exercise Physiology, supported by Dr Pascale Kippelen

Course: First year Fundamentals of Anatomy and Physiology, Sport, Health and Exercise Sciences, Department of Life Sciences

This course used the following Connect resources:

- Reading list: eBook chapter relating to each lecture
- Personalised quiz linked to each lecture
- Cohort level quiz taken before and after each Physiology laboratory practical
- 3D cadaver dissection tool used in Anatomy lectures
- Revision aid: Quizzes integrated into Blackboard Learn

Complementing lectures

Oliver explained how Connect is used on the Sport, Health and Exercise Sciences course to complement the students' timetable of lectures and lab practices. "We can use Connect to enrich lectures, for example on the regulation of the cardiovascular and respiratory systems. It helps students visualise how the body works in different activities. They don't have to struggle to match up the words and images, they see it as one process happening in real-time. This speeds up their understanding and makes the process easier to remember."

In anatomy and physiology, students need to understand the complex structures and processes of the human body. These are fluid, multi-layered and integrated with one another, so not well represented by a single static image. Unlike the 2D images in a textbook, Connect offers 3D capabilities so that students can peel back each layer of the body, as in a dissection or examine responses in parallel. They can select a particular layer to view from different angles or view an animation to bring processes to life. They can be used in lectures to help communicate and as a self-study tool.



“If students struggle with content in a lecture, they can watch the video or animation, pause to think about the content, scroll back and re-watch. It provides an alternative explanation.”

Dr Oliver Gibson, Senior Lecturer in Exercise Physiology

Assignments and formative assessment

Students are set a weekly quiz linked to their reading list chapter. The 50 multiple choice questions take students around 40 minutes and can be completed as pre-lecture preparation, or post-lecture to test their understanding. The quizzes ask students about their level of confidence and provide personalised feedback.

There are other benefits for students: “Connect allows us to move away from the assumption that students will do their weekly reading and learn what they need from their textbook. The activities in Connect give the students a more active and personalised experience. The quiz serves as an additional way of engaging with the material and primes the students for the end of year exam. The questions can be shaped to the course, omitting subject areas that aren’t relevant in order to emphasise those that are important for the course or are key building blocks for future study areas.”

Building expertise and learning

Connect will be a useful resource. Following the lockdown and campus closures in early 2020, there will be challenges for incoming and returning students. Some students won’t have engaged with academic study for up to 9 months. Connect provides an opportunity for students at Brunel to get up to speed and re-build their confidence.

“We need to help them bring their learning skills back to the surface and by setting them tasks we can encourage them to get some practice in early. McGraw Hill Connect is user friendly so students can start using it from week one, to identify their strengths and weaknesses and get into a better learning mindset regardless where they are learning from.”

Dr Oliver Gibson, Senior Lecturer in Exercise Physiology

Oliver feels that his experience with Connect has made him better prepared to continue to deliver an engaging learning experience despite the ongoing challenges to higher education teaching.

“We’ll be relying on it heavily in our plans for next year, both on campus and for those students who need to remain off campus. It makes us more flexible. We are fortunate to have had a couple of years of experience with an online resource as a complement to face-to-face teaching. This has given me a feel for what works and what the students buy into. The reality is students are probably going to get a more comprehensive learning experience if digital resources are part of the provision”

Dr Oliver Gibson, Senior Lecturer in Exercise Physiology

Recommendations: Collaboration drives success

The approach taken by Brunel University London allowed the University to benefit from the flexibility of Connect and to refine its application to support their pedagogy and student needs. In addition to the impact on student experience and outcomes, the University also built up digital expertise. This reduces risk, future proofing the University and enabling it to respond to the changing environment.

To understand how your university can work more collaboratively, make sure you are working towards achieving the following:

- A collaborative approach builds the competencies you need to scale up your initiative and transition from a single course to institution-wide implementation. It generates a culture that supports innovation and cross-functional communication.
- Ensure that academic staff are actively engaged from early on in the project, that they are well informed and that their pedagogy is shaping the implementation. Where academic staff work in teams, it is essential to ensure that all staff members are involved, have an opportunity to feed in their requirements and get hands on experience before rolling out to students.
- Work closely with your suppliers. McGraw Hill provides services to support universities from their initial interest through the implementation of a bespoke solution, including course consultation, design and set-up, faculty training, attending first lectures to promote to students as well as, checking-in regularly with faculty to ensure that things are running as they should be and are in line with the objectives of the University.
- Build a diverse project team with a wide range of skill sets and perspectives: Academic Librarians, IT support and Education Technology teams. Learning technology is more robust when it is not an isolated, academic project. This improves planning, communication and deployment.
- Take a student-led approach. Involve students by encouraging them to try out the resource and share their experiences. As students progress, consider using near-peer teaching sessions to allow them to pass on their enthusiasm and tips to the incoming year group.

“I mainly like it because it was different. It was interactive and fun.”

Biomedical Sciences student in near peer session



McGraw Hill Connect

Connect is an online platform integrating ready-made course content with assessment and tools. The platform uses the most established adaptive digital technology to deliver a more effective learning experience for both students and educators across over 90 disciplines.

Since 2010, Connect has helped transform learning for 3.9 million students around the world.

Learn more about Connect:

<https://www.mheducation.co.uk/higher-education/learning-solutions/connect>



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