Student Engagement in Learning

A QAA Cymru Collaborative Enhancement Project by:

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Executive Summary

In May 2021, a team from Bangor University (BU) and Grŵp Llandrillo Menai (GLIM) was awarded funding from QAA Cymru to undertake a collaborative enhancement project exploring student engagement. The funding awarded by QAA Cymru was specifically for two postgraduate research students to undertake the literature review strand of a wider project.

A scoping search had found that the term 'student engagement in learning' was used very widely but could be broadly defined in terms of students' positive involvement in programmes through active participation and interaction at the class level. Despite considerable activity in the field, a wide-ranging review found that the proportion of well-designed studies was modest (less than 2%). These were defined in terms of:

- clarity of pedagogical approach, research context and intervention
- clear information on methods, including sample and measures of success
- good research design and coherence between research question(s), methodologies, methods, and data analysis processes
- clear reporting of data
- explicit implications and recommendations
- transferability of the findings.

Good pedagogical practice in the field was reported and related to inclusive participatory pedagogies, culturally inclusive teaching, flipped classrooms, work-relevant and 'real-world' learning, co-operative or group learning, problem-based learning, project and inquiry approaches, simulations and innovative assessment (including self-assessment and co-assessment). The scoping review undertaken for this study also identified a body of reviews and theoretical work that pointed to the importance of disciplinary differences in student engagement, the potential role of individual motivators and under-researched aspects, such as the role of social learning.

Discussions at BU and GLIM identified specific institutional priorities around exploring the role of social learning and invigorating the post-pandemic learning community alongside a focus on student perceptions of successful interventions or support for their success and continued study. Accordingly, the team formulated the following groups of research questions:

- What factors drive student engagement across cohorts, and are there disciplinary differences?
- What are students' experiences of group and individual learning? What factors support retention and progression? What factors might support social learning? How do these differ across disciplines and cohorts?
- How might we define a high-quality intervention in student engagement? What is the focus of this work? How does it compare with the previously reported good practices?

In order to address these questions, we designed a rapid research project which comprised three strands:

- mapping the data landscape: profiling the engagement of students in timetabled events by using existing business reporting and attendance monitoring
- conducting focus group interviews across all three colleges at BU and in GLIM in order to explore issues relating to retention and a sense of community in addition to social learning, learning styles and experiences of blended learning

- developing a definition of ‘good-quality’ intervention in student engagement and conducting an evaluative review of well-designed interventions to support student engagement.

Digital Profiles

A number of sources of routine data for 2020-21 were explored to understand factors driving engagement. In the case of GLIM, this included students’ use of the virtual learning environment (VLE), attendance at meetings (Google Meet), timetabled events and module-specific posts. Data triangulated for BU included attendance at timetabled events and individual views of lecturers using lecture-capture software. In all these cases, a clear picture of high initial engagement during the first few weeks of teaching, followed by lesser peaks immediately prior to assessment was found. This was the case across programmes and disciplines and, while differences in the extent of online provisions were found across schools, these varied considerably within BU colleges, potentially masking disciplinary differences behind management direction and practices. The results strongly indicate that student attendance and engagement with learning materials is driven by initial orientation and assessment.

Focus Groups

Focus groups were conducted with five groups of students across each of the three colleges at BU, with a follow-up interview in the College of Human Sciences and one well-attended session at Grŵp Llandrillo Menai. A total of 32 students participated. Thematic analysis of the recorded interviews was conducted and produced the following broad findings:

- the strongest motivator for engagement in learning appears to be contact with other students, particularly when students chose to create informal groups
- across all groups, contact with other students enabled students to commit to their learning
- peer support (for BU students) and peer and staff support (GLIM students) was particularly important in addressing uncertainty in exam revision and in promoting retention and progression
- while students at BU felt that formal group work taught them important skills, it was felt to be challenging, partly due to different learning styles and motivations. Students did not see the benefit of assessed group work
- GLIM students viewed optimum conditions for engagement as being a triangle of individual motivation, lecturer support, clarity and encouragement and students’ individual responsibility for their learning. Engaged lecturers were seen as catalysts for this process, and building trust and demonstrating respect for students was essential for the process to begin
- BU students across disciplines emphasised the importance of the university recognising individual differences and preferences in learning styles (such as independent or participation-focused, steady participation or bursts of study towards the end of a module). Students perceived that the university should consider these differences so that students could interact with those engaged in similar patterns of learning and interaction.

Evaluative Literature Review of High-Quality Interventions

Discussion among the team established the quality criteria used above with the addition of journal impact factors (more than 1.0) as the measure of high-quality interventions. We used search terms relating to interventions, higher education, student engagement and aspects of engagement such as attainment, retention, belonging and learning styles. Using the bibliographies of key reference sources and the databases of major UK pedagogical institutions, such as the Higher Education Academy (HEA), Higher Education Access Tracker (HEAT) and Advance HE, we identified other potential high-quality interventions.

A total of 956 items were initially collected. After applying the exclusion and quality criteria, including publication in the last 20 years, 118 items were selected. As we sought to identify interventions to be used in further enhancement work, theory-focused papers and other literature reviews were excluded.

Seventy-six items were used in the review. These were primarily conducted in the US, UK and EU. Of these, just under half focused on classroom interventions, such as assessment and feedback techniques, active learning interventions, the development of critical thinking and the use of flipped lectures and simulation learning. Studies on group learning primarily used mandatory approaches to group work, but some used a peer-to-peer approach. Interventions in online and blended learning also represented a significant group. These explored the effects of online-only delivery, mostly on attainment, but also the use of parallel online tasks and social interaction on attainment in blended or in-person teaching. Interventions using student self-reflection were used in the context of improving student performance but also, in some cases, to raise awareness of students' learning styles and their effective use to support successful learning. A further group of studies explored the effects of the staff-student relationship on attainment but, in some cases, inclusion. Finally, we found a group of studies identifying students at risk of low attainment or non-completion through user analytics and delivering pedagogical support, for example, through personalised feedback.

Conclusions

Based on all three strands of the work completed, we offer the following conclusions.

- Innovations in assessment and feedback may have a major impact in terms of producing more consistent engagement with learning events and core materials.
- Informal social learning is perceived by students as being fundamental to confirm learning, test ideas and deal with uncertainty. These relationships need to be nurtured by institutions but may also be successfully supported virtually.
- Different structures support student engagement and social learning, with the role of the lecturer, for example, being more significant in a smaller institution.
- The literature on student engagement continues to focus primarily on lecturer-led initiatives, but studies of group-based approaches indicate a greater interest in students' roles.

Next Steps

1. We will develop a toolkit on evidence-based interventions to support a range of potential institutional needs, such as addressing retention, progression, student performance, satisfaction, belonging and co-production learning communities and retention in blended learning.

2. We will submit a group conference presentation focusing on aspects of the review and focus group data on social learning.

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Overview

1 Student engagement in higher education has become a major focus of strategic initiatives in higher education (HE) in Wales and across the UK. While early initiatives in engagement often focused on increasing student satisfaction, good-quality interventions in engagement are used to improve metrics, such as student completion, attainment and retention (McFarlane and Tomlinson, 2017).

2 In May 2021, Bangor University (BU) and Grŵp Llandrillo Menai (GLlM) submitted a bid to explore student experiences of engagement in learning during 2020-21 and to identify well-designed interventions to support their enhancement work across a range of issues broadly related to engagement.

3 This report provides an overview of progress achieved in the first six-month period, partially by using funding from QAA Cymru. It focuses primarily on the evaluative literature review of interventions to support student engagement that will form the basis of a toolkit for further interventions to be reported in March 2022. The final section makes recommendations for further areas of study and outlines the next steps in this project.

Introduction

4 In response to QAA Cymru's invitation to Members to develop the first Collaborative Enhancement Projects for Wales, the BU project undertook a wide-ranging scoping study of studies on student engagement (Davies, 2021). The review found that the field was exceptionally broad, but the proportion of high-quality, successful interventions reported was modest, with a major review, which initially found 21,000 potential sources, considering only 273 after applying quality criteria (Evans et al., 2015). Most publications made assumptions concerning the value of class participation on performance and retention. Key findings from this scoping search were shared with the Wales Quality Network in January 2021 (Davies, 2021).

5 Research on student engagement was found to focus on active and experiential learning and primarily explored the effects of these practices on student perceptions of teaching, primarily in terms of student satisfaction (Evans et al., 2015). Nonetheless, a minority of studies sought to link active or experiential learning initiatives to outcomes such as higher attendance and retention rates, examination and degree results and graduate destinations (Evans et al., 2015).

6 While engagement initiatives have frequently lacked rigour in their design, there is clear evidence of what impactful engagement looks like (Kuh, 2008). Evans et al. (2015) identified the importance of engaging students centrally in their learning. For Evans et al. (2015), successful engagement has a number of facets: providing students with access to real-world opportunities, promoting critical self-reflection, ensuring advanced access to course materials, presenting concepts through adaptive strategies and promoting authentic and integrated assessment and feedback reflecting deep, subject-specific learning. The scoping review provides an overview of some of these interventions.

7 The scoping review also highlighted new understandings of student learning, focusing on the potential role of learning communities and students' own agency, choices and motivations in directing their learning in addition to potential disciplinary differences (Gourlay, 2015; 2017; Kahn, 2017; Zepke, 2013). The review concluded that students' own perceptions of good learning, the role of social learning and the wider institutional environment need to be explored further.

Institutional Fit and Research Design

8 BU and Grŵp Llandrillo Menai have a strategic partnership which includes sharing pedagogical best practices. Following guidance and timelines provided by QAA Cymru and the Wales Quality Network, the institutions sought to work together to develop relevant research questions to explore in the first phase of this study.

9 Each institution discussed what strategic needs, aspirations and emerging trends could be addressed through a wider programme on student engagement and considered how to address these within the scope of this project.

10 At BU, the switch to blended learning during the 2020-21 academic year opened a debate about the role of group learning and the balance of individual and social aspects of learning.

11 During early 2021, the BU Students' Union conducted six focus groups as part of the Student Futures Commission. While some aspects, such as the provision of recorded lecturers, were successful, findings from these focus groups indicated that the lack of social interaction had an impact on student learning. Findings suggested that students often depended on informal interaction with peers for motivation, sense checking and in order to put challenges into perspective (Undeb, 2021). Focus groups conducted as part of ongoing quality assurance processes, such as audits and their validation, also suggested that students were much more aware of their responsibilities for their individual learning and were eager to discuss a return to invigorated social learning during 2021-22 and afterwards.

12 In 2018-19 and 2019-20, a majority of students studying HE courses at Grŵp Llandrillo Menai were aged over 23, and a substantial proportion (32%, 31%) were from disadvantaged localities (GLIM, 2021a). These demographic factors coupled with caring and professional responsibilities impacted student continuation and success in their studies. In response to these challenges, the HE Strategic Plan Review & HE Development Plan for 2021 prepared by GLIM includes the following target:

> 'Increase HE recruitment, retention, attainment and progression to employment or further study, for groups who are under-represented in higher education' (GLIM, 2021b, p. 3).

13 Accordingly, through this project, the Grŵp sought to identify factors in social learning contributing to student retention and progression.

14 BU has conducted innovative work on identifying at-risk students. The Bangor Engagement Metric, encompassing attendance at scheduled teaching and tutor contacts, is able to predict students at risk of failing a year with 97% accuracy from week three of a full semester (Gray and Perkins, 2019). Building on this work, BU is in the process of establishing a collaboration with JISC to develop its user analytics with a view to supporting student retention. The partnership will comprise technical and consultancy collaboration aimed at further developing BU's Learning Analytics capacity using the current Bangor Engagement Metric and also producing codes of practice governing its use. BU's current use of learner analytics primarily seeks to support student retention and student achievement. A future programme of work around learner analytics for well-being is also in discussion. GLIM also has a suite of user analytics-based interventions for students and well-developed support systems.

15 We reflected on the criticism of much engagement activity as being based on an over-emphasis on individual learning and were aware of its reliance on insufficiently evaluated research as indicated by the scoping search (Davies, 2021). We were also mindful

of the suggestion made that disciplinary differences might be significant. Accordingly, the team established the following three objectives for the first six months of this project:

- to provide a broad overview of students' participation in virtual and in-person events at both institutions and their use of learning materials to describe patterns across the year
- to use focus groups to explore students' experience of group and individual learning and factors supporting retention and to explore elements that might be used to create optimal conditions for social learning
- to identify a corpus of high-quality interventions designed to address aspects of student engagement and describe their focus and compare this broadly to those identified by Evans et al. (2015).

16 Leads from both institutions submitted a proposal in response to the QAA call for Collaborative Enhancement Projects in May 2021 and were awarded £4,000 to employ an experienced researcher to work alongside the BU project lead on the literature review.

Methods and Results

Digital Profiles

17 This study triangulated routine data to establish patterns of engagement with learning activities. We examined VLE activity by programme at GLIM and also collated the data overall. We examined data from Google Meet and Active Classrooms and examined posts created in relation to queries on specific modules. A consistent picture emerged from the VLE views, which showed peaks of engagement during the initial three to four weeks followed by a decline and, following cross-checking, what we were able to establish as second or third peaks of engagement around mid-term or final assessment. Data from Google Meet and Active Classrooms showed a less pronounced picture, which followed the same contours around initial orientation to the course and assessment preparation. No patterns in student engagement were seen in the volume of posts created; however, staff engagement was focused around the initial three weeks and particularly around final assessment dates.

18 In the case of BU students, we triangulated data from an in-house attendance app with individual student views of lecture capture software. The BU lecture capture statistics were sorted by JACS code to provide profiles by subject, by school and by college to enable us to explore potential disciplinary differences in student preferences. Broadly speaking, the lecture capture data indicated peaks in engagement driven by assessment. Some subject areas had low uptake due to the use of other platforms. Other, mostly vocational, areas had low uptake of lecture capture, suggesting that students in these fields had a preference for live, in-person delivery and did not rely on lecture capture for revision purposes. Some areas with substantial transnational partnerships, where students remained in their home countries during 2020-21, provided a substantial amount of recorded lectures and supplementary material, providing a bank of resources. These were well-used throughout the year.

19 Differences in provision of lecture capture were more marked within colleges than across them, suggesting that disciplinary differences were less salient than management practices at school level. BU used an engagement app based on attendance at scheduled sessions and tutor meetings. It showed patterns consistent with those above, with early participation falling off after the initial three- to four-week period across schools and colleges, recovering to around a half-way point. In contrast to the pattern evidenced by the VLE data, participation did not recover again to initial or mid-course peaks during the approach to final assessment.

20 Broadly speaking, the data profiles suggest that engagement, as understood by access, use of materials and attendance at synchronous or recorded sessions, is driven by initial orientation to the course and by assessment. Modifying the assessment structure, potentially through micro-assessment, peer- or self-assessment, might thus produce more consistent engagement with core material and teaching.

The Focus Group Study

21 Focus groups were used to examine student experiences of blended learning (BU) and distanced in-person learning (GLIM). Reflecting the focus of the BU contribution to the Student Futures Commission and the critique of the focus on individual students in the scoping review, focus groups were used to explore students' motivations for learning, the extent to which social learning was useful and what aspects were useful. In the case of GLIM students, we explored which factors supported them in their studies and enabled them to continue when facing difficulties. Alongside these concerns, we also asked students to reflect on experiences of individual learning, which naturally also focused on the effects of the switch to blended learning in the case of BU students. Finally, we explored how social learning practices might be strengthened and who should be responsible for that.

22 A total of five focus groups were held with an average of six participants per group between June and October 2021. Focus groups at BU were arranged for each of the three constituent colleges as a broad proxy for discipline, with a follow-up focus group in the College of Human Sciences. Only one focus group was held with GLIM students; however, this was well attended (N=10 participants). Most participants were based at the main HE hub at Rhos on Sea. Students were studying a range of disciplines in arts and humanities. Across groups, some participants preferred not to state their gender, but gender parity appears to have been reached. Only two mature students participated. However, these participants were forthright in their contributions. A Welsh-medium group was convened at BU but was cancelled due to participant unavailability.

Context

23 All groups were asked to evaluate their learning experiences. All four college groups at BU referred to a positive learning environment. Those from STEM subjects valued the approachability and flexibility of staff, the learning resources, including the library, and the location. The quality of lectures and their interactive nature was felt to be engaging by students in the College of Human Sciences group. Staff and students in STEM subjects were believed to be passionate about their subjects, and students from the same group felt they were provided with ample resources in good time. Students across BU groups had struggled with focusing on online lectures during the pivot to online learning and found some to be very long. Experiences of long days watching lecturers and working on assignments were universal but seemed to be most marked in STEM subjects. Some experiences of isolation and boredom were also shared.

24 The GLIM group emphasised the quality of student support and the approachability and helpfulness of lecturers. Some cited individual difficulties solved by college staff and, while non-responsiveness of teaching staff was reported on one course the previous year, this had been addressed. All participants felt their learning was well supported and their voice was attended to. Students at the main HE hub and some others described a sense of belonging to a valued group of HE students within a larger community.

Motivations to Study

25 Students across all groups reported that having conversations about work with other students helped support their learning. Many referred to a sense of camaraderie in the

face of the pandemic but also in response to challenges in their learning. An exception appears to be mature students across groups, who preferred to engage with staff or use online resources to deal with any uncertainties. Students in the arts and humanities group reported that seeing other students in their field doing well was important to them.

26 Students in human sciences also mentioned being motivated by exceptional lecturers who were knowledgeable and committed to their learning. Conversely, students in STEM subjects pointed out that lecturers who did not explain the subject clearly or explain why it was relevant to the module or a professional context reduced their motivation to read around the subject. Wider statements, such as 'community motivates' and 'friends motivate each other' were also made by students in this group. There was a sense that social contact with staff, peers, friends and the wider student community (through societies) was a powerful motivator in itself.

27 Students in arts and humanities subjects were also motivated by assessment, 'getting the grades to get the goals', such as gaining entry to a particular master's course. Students in human sciences felt that their focus had become more limited – aiming to pass the next assignment rather than the module or programme or to start their professional lives. One student suggested that they were in 'survival mode' due to the pandemic. Nonetheless, there was a consensus among students in human sciences that students needed to be motivated by a deep interest in their subject.

28 Students in STEM subjects cited the assessment design as a motivator in some cases. Tasks such as designing games, building robots and other tasks requiring applied and contextual knowledge were cited as enabling students' creativity ('if it's an original idea, then we invest in it').

29 Having structured teaching and goals (such as early assessment points and clear reading in advance of flipped classrooms) was also perceived to help motivate students. Having extracurricular activities alongside study was also felt to be helpful by the arts and humanities group.

30 Students in the GLIM group, including mature students, were motivated by the awareness of the support available to them from staff and by close contact with other students within small groups.

What Is Social Learning Used For?

31 BU students in STEM subjects reported that they thrived in informal work with others and found it helpful to vocalise and test their ideas. They also felt that they remembered information better having discussed it and could gain new and valuable perspectives on problems from others, particularly those with different skills and specialist knowledge. BU students in STEM subjects struggled with examination preparation due to a sense of uncertainty ('it feels like it's about what you don't know'). Informal and formal group discussion was felt to reassure them that revision was worthwhile and could be focused on specific areas. The same group valued the shift to flipped classrooms and lecturers during blended learning as a means to use the formal space to bounce ideas off each other in addition to their lecturers.

32 Participants in the GLIM group who had formed informal networks used them to share perspectives and ideas and to check if they had understood things. A cohort within that had created a WhatsApp group to share and test ideas during the course of the semester. Students sought to make connections with their field – particularly in the case of small specialist courses, such as art. When no peers with specialist knowledge were available, discussions with others, such as family members, helped students organise their thoughts and offered fresh perspectives.

33 Mingling and meeting other students was regarded as an important part of learning by students in arts and humanities subjects and was felt to enhance formal group interaction in seminars. For students in arts and humanities and human sciences, informal discussion challenged their assumptions and stopped them from developing ‘tunnel vision’. In common with the groups above, informal discussion was used to bounce ideas off others and helped students gain a more comprehensive understanding of an area.

34 GLIM students returned to their positive experiences of small group teaching that they felt enabled more comprehensive discussions and exchange of ideas within the classroom. For a mature student, the swift return to in-person teaching was also a key element in engendering a sense of connection and confidence, particularly in relation to asking the lecturer questions to check comprehension, activity and discussion.

35 The group did not necessarily represent people who had faced difficulties that might have led them to withdraw or fail to progress. We did not ask about experiences using formal mechanisms that support retention at GLIM. Nonetheless, one participant who had faced family difficulties referred to the support and encouragement of her lecturers, and her subsequent success was attributed to this positive interaction. In general, participants described a small, informal community where help could be obtained from several sources: tutors, lecturers, other staff, peers and practitioner-contributors. Some students sought advice from lecturers who had taught them the previous year if they felt more comfortable doing so. The small size of the community and the sense of shared purpose appeared to be central to the students’ sense of belonging (‘we’re a tiny hub of people all in the same boat’), and this identity may also represent an important factor in keeping students engaged.

36 Students in arts and humanities subjects at BU reported positive views of seminars and felt that discussion with others both challenged and confirmed (‘solidified’) their knowledge and enabled them to ask better questions. While engaging in seminars had been more difficult during remote learning (particularly when students did not use the camera or used the chat box rather than speak), the group felt the balance of teaching should move from lectures to seminars. In addition to enabling students to understand an issue in more depth, seminars were felt to create a sense of community (despite being mostly remote in the semester prior to the interviews). Students reported being inspired by others with similar interests and gaining a sense of shared progress from seminar discussions.

37 Experiences of formal group learning were very different. All groups reported that assessed group work was exceptionally difficult to manage (‘manic and last-minute’, according to a STEM participant). All groups also reported that it generally entailed an imbalance of effort, with a leader or manager shouldering the majority of the work. Possibly reflecting an emphasis on several disciplines in some key subject areas, students in human science subjects felt that formal group work was useful when the participants brought divergent skills to the task. Nonetheless, while students in the arts and humanities and human sciences groups reflected that formal group work taught them skills in communication and listening and an appreciation for a diversity of learning styles and different strengths, which was evidenced in thoughtful discussion, they maintained that formal group work should not be assessed. All student groups emphasised the value of the university understanding differences in learning styles in terms of some students’ preferences for intensive bursts around deadlines or across a module or in terms of individual or participatory learning. The differences and the distinct work patterns they produced were felt to be a challenge in the context of assessed group work but were perceived to be an authentic element of diversity that should be considered in course design. Differences in learning style were also cited as a reason to maintain student access to online materials during blended learning: the popularity of Panopto (lecture capture software) among some students and the preference among some students for online participation and the use of the chat.

The Role of Independent Learning

38 We initiated a discussion of independent learning in order to test some suggestions arising from the scoping search, specifically that students in arts and humanities subjects might place a greater emphasis on individual reading or individual work on artefacts. Given the pivot to blended learning at BU, 'individual learning' took on a much greater salience during 2020-21.

39 BU students in arts and humanities subjects focused largely on note-taking from online lecturers. These were believed to add to the basic knowledge which was provided by slides. Online delivery enabled students to concentrate on the content, take detailed notes offline and listen to some sections again. Students felt notes should be readable and free of the jargon that lecturers might use for ease of use later. This process was felt to be time-consuming and sometimes overwhelming, particularly when lectures were two hours long as they had been prior to the pandemic.

40 Some students from STEM subjects followed a similar process of listening to live or recorded lectures, taking notes from additional material not on the slides and checking them. While arts and humanities students struggled with too much material, some in the STEM group and in the human sciences group felt insufficiently supported by online lectures ('it feels like you're teaching yourself at times'). Students in human sciences subjects noted that lectures were memorable when they related to 'real life' and had practical examples. Students found it hard to remember 'being talked to'. Other issues were the use of chat for questions and the lecturer's ability to gauge whether students were following.

41 Students at GLIM were very aware of expectations of independent learning, particularly at Level 4, but also in the transition to Level 5. Independent learning was seen as being an essential component of the HE experience. Nonetheless, participants described the impact that poor communication from a lecturer had on their confidence and, hence, on their motivation to learn independently. One participant, whose experience had been mostly in self-directed learning, contrasted independent learning with collaboration but recognised that for most students at GLIM, each element supported the other.

42 In the case of all groups, including GLIM, discussion about individual working returned to considering the role of an informal group. For example, students in arts and humanities subjects referred to finding other students in the library or study spaces and discussing their understanding of a given lecture with them. This helped confirm that they had understood the content correctly. The same group noted that they would speak to students in different courses about more general issues, such as note-taking.

Strengthening Social Learning

43 Students across all BU groups valued study spaces as a resource for informal peer discussion and motivation. Study spaces had been kept open at BU, and this resource was used heavily by the students we interviewed for informal learning (checking one's understanding), motivation and to combat isolation. Study spaces may be equally useful online. At GLIM, where in-person teaching was disrupted but resumed sooner, WhatsApp or Facebook groups had become viable as ways to supplement the face-to-face community.

44 In terms of ensuring the right conditions were in place to support social learning, we found a variation in views across sites. GLIM students felt that the lecturer was a key instigator of students' engagement and referred to the need to create a relationship of trust, support and mutual respect with students (for example, through responding to key emails) and closing the feedback loop ('It's paramount. You've got to have the right people in the right place in the institution or you don't have that level of motivation among students'). While there was consensus in support of this view, students also emphasised the need for

students to develop the right attitude to learn and find their own motivation. Engagement was catalysed by the lecturer but would only be achieved among motivated students.

45 The picture among BU students appears to emphasise the belief that individual differences (for example, in learning patterns or in-person or online delivery) should be understood and accommodated by the university for more flexible learning delivery following the pandemic. While this last point may appear to undermine the sense of a single community within a module or programme, providing a number of ways to interact with an existing course may create technologically enabled communities of choice, in which students choose to interact in the mode that is most appealing to them.

Overall Conclusions from Focus Groups

46 These focus groups sought to understand the role of social learning and to identify factors that support retention at GLIM. We also sought to map the next stages towards developing sustainable conditions for social learning. Key findings relating to motivators for learning (and continuing to learn), the nature of the interaction and the value it has in participants' eyes are provided below. Indications of productive next steps are also suggested.

Motivators and the Nature and Evaluation of Social Learning

- The strongest motivator for engagement in learning appears to be contact with other students, particularly where students chose to create informal groups.
- Among GLIM students, staff played a key role as motivators for engagement but finding one's own personal motivation was also essential.
- Students felt that their goals had become more immediate – passing the next assignment in the module rather than earning a degree, acquiring a new body of knowledge or professional status.
- Across all groups, contact with other students enabled students to commit to learning and deal with uncertainty.
- Peer support (for BU students) and peer and staff support (GLIM students) was particularly important in addressing uncertainty during exam revision.
- The close-knit HE community at GLIM provided multiple opportunities for advice and support when students experienced difficulties, and one-to-one support from lecturers was particularly highly valued and played a role in the continuation of at least one participant.
- Whenever students talked about individual learning, they moved very swiftly to talking about informal group learning. There was a feeling that it helps to be 'in it together'.
- While students at BU felt that formal group work taught them important skills, it was felt to be challenging, partly due to different learning styles and motivations. Students did not perceive a benefit to them in undertaking assessed group work.

Developing Student Engagement Through Social Learning

- Social learning spaces were essential to facilitate informal learning and helped motivate BU students.
- Physical spaces had been successfully augmented by virtual groups in the case of at least one cohort at GLIM.
- An awareness of the diversity of platforms and modes of supporting social learning was important.
- GLIM students viewed optimum conditions for engagement as being individual motivation, lecturer support, clarity and encouragement, and students' individual responsibility for their learning. Engaged lecturers were seen as catalysts for this

process, and building trust and demonstrating respect for students was essential to beginning this process.

- BU students across disciplines emphasised the importance of the university recognising individual differences and preferences in learning styles (such as independent or participation-focused, steady participation or bursts of study towards the end of a module). Students perceived that the university should consider these differences so that students can interact with those with similar patterns of learning and interaction in the course of their assessed studies. Students perceived the value of contrasting styles but in delineated skills-directed contexts.

Discussion of Focus Group Data

47 The positions above, voiced by BU and GLIM students across disciplines, are supported by empirical work that uses a social identity approach to understand student learning. For example, Bluic and colleagues (2011) explore the relationships between a strong student social identity, positive perceptions of the learning community, shared approaches to learning, and academic performance.

48 In preparation for this work, we discussed the potential of supporting communities of practice (CoP) in our institutions (Lave and Wenger, 1991). While CoP are concerned with learning, they usually seek to build a base of shared knowledge over time for the use of group members. The motivations for social learning described here relate to individual student success and, accordingly, relate to a community of interest (Henri and Pudelko, 2003).

49 Students' use of social learning to confront uncertainty through testing ideas, checking comprehension, gaining practical tips and dealing with exam stress is also reported by Kahn et al. (2017). They suggest that additional ways need to be found to strengthen peer-to-peer social relations in HE and focus on triggering a sense of uncertainty by initially posing problems in a formal learning context. Complex problems – such as homework – might be used to initiate informal group discussions and students' self-reflexivity as they begin to be aware of who among their peers may be able to help, how and through what medium. This approach might lend itself well to GLIM, given the initial role of engaged lecturers in catalysing the social learning that is described above.

50 Suggestions that BU should understand and accommodate the diversity of learning styles among its students can also be seen in the context of social identity as learners build a social identity around those similar to them (Wenger, 2010). Accordingly, differences in patterns of interaction, for example, those that choose to contribute very late (albeit intensively) or who prefer not to contribute to discussions, will dilute the identity of a social learning group. The suggestion that students following the same module should follow different deliveries or timescales is unsurprising in the context of change in HE as a result of the pandemic and plans to develop flexible learning at BU. It may suggest credible ways to consolidate the social learning approach, and it certainly suggests the need for co-production in developing flexible learning.

The Evaluative Literature Review

51 The scope and scale of publications in student engagement and the poor quality of much reporting may be a hindrance to those seeking a relevant solution to challenges they face. While the research team was interested in specific aspects of retention, social learning and retention mindful of the need to support relevant interventions across the field of engagement and the range of institutional needs relating to engagement, we undertook an evaluative literature review to identify good-quality, successful interventions in engagement and describe their focus in order to create a reliable resource for ourselves, our own

institutions and others. Following discussion within the team, we used quality criterion developed by Evans et al. (2015) as the initial basis for selection. These are explained below.

- Pedagogical clarity - (i) the specific pedagogical approaches being used, (ii) has impact been considered and what is being evaluated for impact, (iii) what are the context requirements and issues?
- Methodological transparency - clear information provided about, for example, methodology; methods; nature of sample and size; nature of intervention; and how effectiveness of pedagogy on student engagement has been measured.
- Methodological congruence - coherence between research question(s), methodology, methods and data analysis processes.
- Evidence-based (i) practice is supported by data, including reliability and validity measures; (ii) an account of what measures have been used; (iii) number of measures, timescales and students involved; (iv) data-collection focus (self-report; student/lecturer perspectives).
- Accessibility of findings - are implications and recommendations from the study explicit?
- Transferability - do the findings have applications in other situations beyond the immediate discipline?

52 As this work was constrained by time and resources, we combined searches of databases and snowballing in a systematic but rapid review (Papaioannou et al. 2010). Initially, we searched using the Educational Resources Information Center (ERIC)[1] search engine for peer-reviewed articles and, considering those based on the findings of the 2015 review, we made an early decision to break down student engagement into interventions in HE relating to attainment, retention, belonging and learning styles. These terms were input into ERIC.

53 We identified 415 possible sources at this point. Abstracts and titles that were not relevant to HE were then discarded. We considered the quality of sources (impact factors over 1.0) and their date of publication (usually in the last 20 years or definitive earlier studies), leading us to identify 121 relevant items. All items were then scored based on their relevance, determined by the quality criteria above but also by their location as we sought to explore HE systems comparable to Wales.

54 Second, we used a snowballing technique to identify relevant studies in four key sources: Evans et al. (2015), Thomas (2012), Trowler (2010) and the original project proposal. Of 515 items in the bibliographies, 49 were selected as being relevant to the topic.

55 Finally, we conducted a database search of major UK pedagogical institutions, including the HEA, HEAT and Advance HE. We identified a further 26 items as being relevant and scored them as described above.

56 In summary, a total of 956 items were initially collected. After applying the exclusion criteria, 118 items were selected. As the purpose of the review was to identify interventions to be used in further enhancement work, items that were not classified as ‘empirical research’ were further excluded. We have retained these as a resource for future stages of this programme, but no systematic reviews or theory-focused articles are discussed in this review.

[1] ERIC is an internet-based digital library of education research and information sponsored by the Institute of Education Sciences (IES) of the US Department of Education. ERIC provides access to bibliographic records of journal and non-journal literature from 1966 to the present. NCEE Projects: Education Resources Information Center (ERIC)

57 Seventy-six items were identified to be used in the review. In terms of the geographical location, the largest group of studies was conducted in the USA (29.5 items, including a dual study with Germany) followed by the UK (22 items), the EU (12.5 items, including the dual study with the USA) and Australia (11 items). One study conducted in Ghana was included, as it provided a useful model for the introduction of blended learning.

Focus of interventions

58 Of those 76 high-quality interventions, just under half (44%) focused on teaching and learning methods. These related to areas such as feeding forward, iterated assessment and feedback and active-learning techniques. They also focused on developing higher-order thinking skills alongside new technologies, flipped lectures and simulation learning. Around one in five studies focused on group learning, and around one in five focused on blended or online learning. Around one in 10 studies investigated the interaction between students and academic staff (Table 1). Other, less developed, areas of focus were interventions for students at risk, students' well-being, co-production and learning styles.

Table 1. Summary of intervention types and details.

Intervention Type	Details	N	%
1. Classroom interventions	Classroom teaching strategies	6	7.9
	New digital tools	3	3.9
	Visual teaching methods	2	2.6
	Flipped lectures	3	3.9
	Simulation learning	3	3.9
2. Group learning	Learning through group activities	15	19.7
3. Online and blended learning	Online learning	9	11.8
	Blended learning (online and on campus)	5	6.6
4. Interaction with academic staff	Various interactions with academic staff	7	9.2
5. Self-reflection	Students' self-reflection	4	5.3
6. Student support	Students at risk	5	6.6
	Student well-being	5	6.6
7. Others	Others	4	5.3
	Investigating students' learning styles	2	2.6
	Co-teaching	2	2.6
	Practical academic skills	1	1.3
Total		76	100

Intended outcomes and evaluation of interventions

59 Out of the total 76 items, more than half (43 studies) described interventions that aimed to increase student attainment. A significant group of interventions focused on increasing student retention, belonging and well-being (17 studies). Other interventions were to increase classroom interaction (14 studies), increase student perceptions of teaching quality and to improve the quality of assessment (Table 2). Some research specifically focused on the effectiveness of teaching (nine studies).

60 More than half of the studies measured the effectiveness of intervention by using a survey method (51%) primarily to explore student perceptions. These were often used alongside interviews. More quantifiable measures used were student attainment (32%), pre- and post-tests and retention rates.

Table 2. Summary of intervention outcomes and evaluation of interventions.

Intervention purposes	
Improved attainment	43
Enhanced retention (also belonging or well-being)	17
Increased classroom interaction	14
Student perceptions of teaching quality	14
Assessment-related (for example, feedback)	1

Intervention measurement methods	
Survey (including student perceptions)	39
Attainment	24
Interview	19
Test (including pre- and post-)	8
Retention	4
Attendance	2
Others (for example, informal feedback, individual reflection, blog posts, logbook entries)	8

Classroom Interventions

61 Classroom teaching interventions refer to interventions mainly developed by HE teaching staff and applied in the classroom. This group of interventions primarily sought to improve student attainment. Interventions in this group included student-led tutorials to facilitate active learning (Hayton, 2019), the provision of feed-forward (Walker and Hobson, 2014), iterated assessments and feedback (Morrell, 2021) and other active-learning techniques (Goldburg and Ingram, 2011). They also included interventions focused on the development of higher order thinking skills, such as connecting specific topics to wider learning goals (Carroll and Harris, 2021) and the use of written learn units (Bahadourian et al., 2006).

62 Some studies applied new digital and visual learning tools, such as a digital audio intervention (Nortcliffe et al., 2009), interactive mobile learning (Bruce-Low et al., 2013) or the use of electronic voting systems (King and Robinson, 2009). Similarly, Frederking (2005), Auman (2011) and Ke et al. (2020) introduced video-based simulation to enhance student performance and increase satisfaction (Frederking, 2005), classroom participation (Auman, 2011) and to explore key elements to develop simulated classrooms in the future (Ke et al., 2020). Further interventions sought to implement visualisation-based learning through computerised animated visuals (Aldahmash and Abraham, 2007), 3D models (Estevez et al., 2010) and virtual reality (VR) (Ke et al., 2020).

63 A further group of interventions used flipped lectures, requiring that students engage with recorded content in advance of in-person sessions and use that time to pose their own questions (for example, McLaughlin et al., 2013; McQueen and McMillan, 2020). Student attainment, grade point average (GPA) and student surveys exploring perceptions of the intervention were used to evaluate effectiveness (McLaughlin et al., 2013). End-of-module evaluations and an analysis of students' participation in questions was also used to assess student perceptions of the intervention and student participation (McQueen and McMillan, 2020).

64 A small number of studies also explored students' learning styles (for example, Li et al., 2018; Edwards et al., 2019), while a final group investigated approaches such as co-teaching (Scherer et al., 2020) and team-teaching (Minett-Smith and Davis, 2020).

Group Learning

65 Group learning was a widely used intervention method. Armstrong et al. (2007) explained the importance of co-operative activities in allowing students to consolidate their knowledge through discussing content with their peers. Some interventions required students to work collaboratively in groups to complete activities such as problem-solving tasks during lectures and worksheets during tutorials (for example, Cavanagh, 2011; Herrmann, 2013). Postholm (2008) discussed an intervention which required students to collaboratively complete tasks and write a topic paper, the grade of which contributed towards their final grade. To ensure students worked together as a group, all members of the same student group got the same grade. It sought to increase classroom interaction through not only encouraging but requiring group work as a means of assessment. Herrmann (2013) also reported on an intervention that used group learning to increase classroom interaction. When it came to tutorials, students were placed in random ad hoc groups in which they had to complete worksheets together and explain their ideas to the class.

66 While many studies discussed the importance of group-based activities (for example, Huitt et al., 2015; Armstrong et al., 2007; Cavanagh, 2011; Persky, 2012; Herrmann, 2013; Postholm, 2008; Egelandsdal and Krumsvik, 2015; Deeley, 2014) or group discussion (for example, Habib, 2007; Skinner, 2009), others emphasised the role of student-led sessions (for example, Duah et al., 2014; De Backer et al., 2015; Terui et al., 2021; Baldry, 2017). For instance, Duah et al.'s (2014) intervention not only encouraged weekly group-based activities but also a tutorless environment in which students took responsibility for their own learning.

67 The effectiveness of the interventions was evaluated using a range of measures. Armstrong et al. (2007) reported on the extent to which co-operative learning sessions increased students' GPAs and test scores. Duah et al. (2014) also compared students' test scores from a first-year module with their test results of a post-intervention examination. Cooper and Cox's (2007) technique covered a much shorter period of time, with students completing five problems individually, followed by five or more problems in a collaborative group and then five or more individually, testing whether the collaborative work increased individual test scores. Huitt et al. (2015) and Persky (2012), however, compared the students' grades with other students to measure effectiveness. While Huitt et al. (2015) compared the examination scores and overall course grades of the experimental group with a control group, Persky (2012) compared the students' examination grades to the cohort from the previous year. In addition, intervention research often applied surveys and interviews.

Online and Blended Learning

68 A substantial group of studies, roughly equal to the encompassing group work interventions, was concerned with online and blended learning. Shah and Barkas (2018) evaluated access to online materials provided through a VLE on student attainment and attendance. Leese (2008) explored the effects of the completion of weekly online tasks on classroom interaction and measured effects through student surveys and focus groups. Similarly, Sheeran and Cummings (2018) investigated the course-attached Facebook groups as a way to increase student engagement, and Christie and Morris (2019) focused on the use of individual blogs to reflect on weekly lectures and online forms of assessment. The effect of introducing massive online open courses (MOOCs) on self-reported engagement and patterns of engagement, including retention, was explored by Wintrup et al. (2015) while de Freitas et al. (2015) focused on the quality of teaching through MOOCs alongside retention. Similarly, interventions using web-based video learning (for example, Admiraal, 2014) and web-based peer feedback (for example, Simonsmeier et al., 2020) have been explored in relation to the quality of student learning on a specific task and improvements in students' 'academic self-concept'. Similarly, alongside a larger programme of exploratory work, Masika and Jones (2016) introduced the website 'Studentfolio' to combine online and

in-person learning by requiring students to record reflections of milestones related to academic and social achievements, for example, settling in, socialising, team skills development, assignments and presentations. The intervention's success was evaluated through students' self-reported experiences, which were generally positive. Students did not find that self-reflection on the social aspects was as valuable as self-reflection on their learning.

Interaction with Academic Staff

69 A further group of interventions aimed to improve student learning through encouraging greater interaction between students and staff. For instance, Bowman (2020) focused on attainment through exploring an intervention in which tutors assisted students in collaboratively establishing specific and appropriately challenging goals. To analyse the effectiveness of this intervention in improving attainment, the participants' first semester GPAs were compared to their GPAs in the second semester.

70 Some interventions focused on interaction in the classroom. Baumber et al. (2019) asked students and teachers to co-create the curriculum, while Robinson et al. (2019) explored the benefits of students and staff completing a 'get to know you' survey. The survey allowed the students and staff in the intervention group to learn what they had in common with one another based on similar survey responses. To measure the effectiveness of the intervention, the students' perceptions of their similarity to their instructors was explored through a six-item scale. Students' GPAs and final scores across experimental and control groups were also referenced.

71 Other interventions used inquiry methods to understand student and teacher relationships (for example, Hu et al., 2008; Jones and Masika, 2021). Chelberg and Bosman (2019) explored the benefits of teachers asking historically under-represented students about their experiences and providing academic mentoring to increase the attainment of these students. The effectiveness of the intervention was assessed through a survey in which students reflected on the mentoring experience. Cook-Sather et al.'s (2018) research developed 'Advocating Diversity in Higher Education', an undergraduate course seeking to affirm diversity and foster a sense of inclusion among students within and beyond the course in order to enhance retention.

Self-Reflection

72 This group of interventions encouraged students to reflect on their experiences, often for the purpose of attainment, by writing (for example, Van Herpen et al., 2019), discussing (for example, Boscolo et al., 2007) or being interviewed (for example, Batchelor, 2006). Batchelor (2006) offered students a space to discuss their learning experiences and provided a structure in which students could devise solutions to the challenges they faced in their learning. The effectiveness of interventions was measured by comparing pre- and post-intervention scores on well-established measures (for example, Boscolo et al., 2007; Macaskill and Denovan, 2013). Macaskill and Denovan (2013) described an intervention whereby students' character strengths were assessed and fed back to them together with advice on how to use their character strengths to develop their study skills. The study involved group discussion on the application of character traits, iterative self-reflection in different contexts and goal setting and was found to have a positive effect on self-efficacy and autonomous learning.

Student Support

73 Interventions designed to support students had two distinct foci: identifying students at risk and enhancing student well-being. Most studies in this category sought to promote student belonging and well-being. For instance, Ceyhan et al. (2019) explored the SUSTAIN programme, developed for student retention, which consists of a range of interventions, including faculty mentoring, community building activities, career awareness activities, peer-

led team learning, experiential and work relevant learning and a student forum. They found positive effects on retention and students' self-reported sense of support. Interventions to identify and support students at risk included early alert systems (Villano et al., 2018), early academic advice and counselling (Zhang et al., 2014), student success courses (Beasley et al., 2020) and learner analytics and early performance feedback (Espinoza and Genna, 2021). In this last case, learner analytics were used to identify at-risk students who then received early, personalised feedback. In a second linked intervention, medium- and low-risk students received generic messages encouraging their engagement in the course. Positive impacts on retention and performance within the module were reported for both intervention groups.

74 Various methods related to student well-being were found, such as cognitive counselling (Strepparava et al., 2016), an emotional development program (Schoeps et al., 2020) and a resilience and coping intervention (Houston et al. 2017), alongside internet-based mindfulness training programmes and an e-intervention to increase mental health literacy among international students (for example, Messer et al., 2016; Clough et al., 2020).

Discussion of Literature Review

75 The literature review found that high-quality interventions focused primarily on classroom interventions, such as participative approaches, assessment and feedback techniques, active learning interventions, the development of critical thinking and the use of technologically enhanced learning, flipped lecturers and simulations. The primary outcome measure used across studies was improved student performance, student surveys were popular as a means to evaluate success primarily in terms of student perception but also in some cases behavioural and attitudinal changes. Two large groups of papers reported on group work and interventions using blended or online learning and other learning technologies and classroom interventions. Most of the interventions using group work mandated co-operation through the assessment of a shared task and, in some cases, a shared grade. However, some peer-to-peer interventions were also included in this group. Interventions using a blended learning approach tended to report on the effects of online-only delivery on attainment, the use of additional online tasks and the effect of parallel online engagement on courses taught in person. A further group of studies examined staff-student relationships and primarily explored their impact on attainment, with some interventions also exploring effects on inclusion. Further groups of studies explored the effects of self-reflection through various means on student attainment. Studies reporting intervention in student learning include some interventions, effectively using learner analytics to identify at-risk students in order to provide enhanced support.

Conclusions

76 This study sought to describe patterns of student engagement with learning opportunities and core resources to understand the social aspects of learning and factors perceived to support retention – and to collate well-designed interventions across the field of student engagement.

77 The analysis of a range of routine data sources across BU and GLIM strongly indicated that initial orientation and preparation of assessment are the major drivers for student engagement, with timetabled events, access to teaching materials and the use of messaging. Discipline-specific patterns in the provision and use of resources were obscured by school-based differences at BU. This analysis strongly suggests that assessment-led approaches, for example, more iterative assessments, might have a considerable impact on student participation in teaching events and use of core resources.

78 The focus group study indicated the importance of informal social learning for students at BU and GLIM. Discussion with peers was used to check understanding, trial new ideas and interpretations and to help confront uncertainty and overwhelming challenge – particularly around examinations. BU students emphasised the value of social learning spaces to facilitate this interaction, and at GLIM, where the lockdown had been shorter, physical spaces had been supplemented by virtual groups. Both groups of students emphasised the value of the sense of community around their course. At GLIM, this was focused primarily on staff support, particularly one-to-one support from lecturers, which was seen as a major contributor to success and retention. BU-based students across most disciplines, but particularly STEM and human sciences, emphasised the value of the peer-to-peer community and felt it needed to be invigorated and supported following the pivot to blended learning. GLIM students perceived that student engagement was initiated by committed staff who created strong relationships of trust and accountability with their classes. However, students' personal motivation and commitment was also perceived to be essential in creating a 'triangle of engagement'. Among BU students, engagement was seen as a more horizontal relationship among peers. BU-based students were very aware of different learning styles and preferences and felt the university should understand and cater to these through flexible, technologically enhanced delivery so that students could develop more effective informal communities of interest with peers whose preferences were similar to their own.

79 The wide-ranging review of engagement literature conducted in 2015 reported on interventions, reviews and theoretical work relating to student engagement. The high-quality pedagogical work cited related almost entirely to lecturer-led interventions. These included authentic and real-world learning, problem-based and inquiry-based learning, innovative assessment and participatory and inclusive teaching. Reflecting those findings, this review found the majority of high-quality studies examined aspects of classroom practice, such as participative approaches, assessment and feedback techniques, active learning approaches and the use of technologically enhanced learning. However, studies of group work also represented a significant proportion, as did studies of student experiences of online and blended learning with another group of studies exploring staff-student relationships. Given the findings of the interview study in relation to student-initiated social learning and the ambivalence towards assessed group work among BU students together with their preference for flexible learning, these interventions require further consideration in order to identify ways to support flexible, technologically enhanced learning and sustainable social learning to develop 'communities of interest'. Classroom interventions, including enhanced feedback, self-reflection and participative approaches and those in a smaller group reporting on staff-student interaction, may be particularly suitable to enhance the lecturer-initiated triangle of engagement at GLIM and to support performance and retention, particularly around what can be a challenging transition to Level 4.

80 During the next phase of this study (to 31 March 2022), we will conduct a deep dive into the high-quality interventions and organise them according to the institutional problem they can be used to address. A simple visual toolkit and an account of key studies will be produced and shared as a resource for a range of studies across retention, performance, student belonging, community, well-being and inclusion.

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Appendix: Table showing good-quality interventions in student engagement included in the analysis

Author	Date	Title	Journal	Academic	Location	Theme
Huitt, T.W., Killins, A. and Brooks, W.S.	2015	Team-Based learning in the gross anatomy laboratory improves academic performance and students' attitudes toward teamwork	Anatomical Sciences Education	Medicine	USA	learning in groups
Cooper and Cox	2007	Improving Problem Solving with Simple Interventions	New Directions in the Teaching of Physical Sciences	Chemistry	USA	learning in groups
Armstrong, N., Chang, S-M. and Brickman, M.	2007	Cooperative learning in industrial-sized biology classes	CBE- Life Sciences Education	Science	Europe	learning in groups
Cavanagh, M.	2011	Students' experiences of active engagement through cooperative learning activities in lectures	Active Learning in Higher Education	Education	Australia	learning in groups
Duah, F., Croft, T. and Inglis, M.	2014	Can peer assisted learning be effective in undergraduate mathematics?	International Journal of Mathematical Education in Science and Technology	Mathematics	UK	learning in groups
De Backer, L.; Van Keer, H.; Valcke, M.	2015	Promoting University Students' Metacognitive Regulation through Peer Learning: The Potential of Reciprocal Peer Tutoring	The International Journal of Higher Education Research	Education	Europe	learning in groups
Persky, A.M.	2012	The impact of team-based learning on a foundational pharmacokinetics course	American Journal of Pharmaceutical Education	Pharmacy	USA	learning in groups
Terui et al.	2021	A Student-Driven HIV/PrEP Communication Intervention Using a Modified Social Network Strategy	Journal of American College Health	Health	USA	learning in groups
Herrmann, K. J.	2013	The Impact of Cooperative Learning on Student Engagement: Results from an Intervention	Active Learning in Higher Education	Political Science	Europe	learning in groups
Habib, B.	2007	Breaking the Ritual: Getting Students to Participate in Discussion-based Tutorials in the Social Sciences	HERDSA	Social Science	Australia	learning in groups
Postholm, M.B.	2008	Group work as a learning situation: a qualitative study in a university classroom.	Teachers and Teaching: Theory and Practice	Research methods	Europe	learning in groups
Egelandsdal, K., Krumsvik, R.	2017	Clickers and formative feedback at university lectures	Education and Information Technologies	Psychology	Europe	learning in groups

Author	Date	Title	Journal	Academic	Location	Theme
Deeley, S. J.	2014	Summative co-assessment: A deep learning approach to enhancing employability skills and attributes	Active Learning in Higher Education	Multiple	UK	learning in groups
Skinner, E.	2009	Using Community Development Theory to Improve Student Engagement in Online Discussion: A Case Study	ALT J Research in Learning Technology	Management	UK	learning in groups
Baldry Currens	2016	Cathedrals Group project report: Learning from best practice in peer learning and mentoring	HEA	N/a	UK	learning in groups
Chelberg, K. L., Bosman, L. B.	2019	The Role of Faculty Mentoring in Improving Retention and Completion Rates for Historically Underrepresented STEM Students	International Journal of Higher Education	STEM	USA	interaction with academic staff
Bowman et al.	2020	The Impact of a Goal-Setting Intervention for Engineering Students on Academic Probation	Research in Higher Education	Engineering	USA	interaction with academic staff
Hu, S., Kuh, G.D. and Li, S.	2008	The Effects of Engagement in Inquiry-Oriented Activities on Student Learning and Personal Development.	Innovative Higher Education	Multiple	USA	interaction with academic staff
Cook-Sather, A., Des-Ogugua, C., Bahti, M.	2018	Articulating identities and analyzing belonging: a multistep intervention that affirms and informs a diversity of students	Teaching in Higher Education	Social Science	USA	interaction with academic staff
Jones, J., Masika, R.	2021	Appreciative inquiry as a developmental research approach for higher education pedagogy: space for the shadow	Higher Education Research and Development	Social Science	UK	interaction with academic staff
Robinson, C. D., Scott, W., Gottfried, M. A.	2019	Taking It to the Next Level: A Field Experiment to Improve Instructor-Student Relationships in College	AERA Open	Multiple	USA	interaction with academic staff
Baumber et al.	2020	Learning together: a transdisciplinary approach to student–staff partnerships in higher education	Higher Education Research and Development	Bachelor of Creative Intelligence and Innovation	Australia	interaction with academic staff
Van Herpen et al.	2020	A head start in higher education: the effect of a transition intervention on interaction, sense of belonging, and academic performance	Studies in Higher Education	N/a	Europe	self-reflection
Boscolo, P., Arfe, B., Quarisa, M.	2007	Improving the Quality of Students' Academic Writing: An Intervention Study	Studies in Higher Education	Psychology	Europe	self-reflection
Macaskill, A., Denovan, A.	2013	Developing Autonomous Learning in First Year University Students Using Perspectives from Positive Psychology	Studies in Higher Education	Psychology	UK	self-reflection
Batchelor	2006	Becoming what you want to be	HEA	Multiple	UK	self-reflection

Author	Date	Title	Journal	Academic	Location	Theme
Dickfos, J., Cameron, C. and Hodgson, C.	2014	Blended learning: making an impact on assessment and selfreflection in accounting education	Education + Training	Accounting	Australia	blended learning
Moore and Gilmartin	2010	Teaching for Better Learning: A Blended Learning Pilot Project with First-Year Geography Undergraduates	Journal of Geography in Higher Education	Geography	Europe	blended learning
Gray and Tobin	2010	Introducing an online community into a clinical education setting: a pilot study of student and staff engagement and outcomes using blended learning	BMC Medical Education	Medicine	Australia	blended learning
Masika, R., Jones, J.	2016	Building student belonging and engagement: insights into higher education students' experiences of participating and learning together	Teaching in Higher Education	Business	UK	blended learning
Antwi-Boampong, A.	2020	Towards a faculty blended learning adoption model for higher education	Education and Information Technologies	Computer Science	Africa	blended learning
Admiraal, W.	2014	Meaningful learning from practice: web-based video in professional preparation programmes in university	Technology, Pedagogy and Education	Multiple	Europe	online learning
Simonsmeier et al.	2020	Peer Feedback Improves Students' Academic Self-Concept in Higher Education	Research in Higher Education	Psychology	Europe	online learning
Wintrup Wakefield Davis	2015	Engaged learning in MOOCs: a study using the UK Engagement Survey	HEA	Multiple	UK	online learning
Wintrup Wakefield Morris Davis	2015	Liberating learning: experiences of MOOCs	HEA	Multiple	UK	online learning
Christie, H. and Morris, N.	2019	Using assessed blogs to enhance student engagement	Teaching in Higher Education	Science	UK	online learning
de Freitas, S. I., Morgan, J., Gibson, D.	2015	Will MOOCs transform learning and Teaching in Higher Education? Engagement and course retention in online learning provision	British Journal of Educational Technology	Science	Australia	online learning
Sheeran and Cummings	2018	An examination of the relationship between Facebook groups attached to university courses and student engagement	Higher Education	Psychology	Australia	online learning
Shah and Barkas	2018	Analysing the impact of e-learning technology on students' engagement, attendance and performance	Research in Learning Technology	Engineering	UK	online learning
Leese, M.	2008	Out of Class--Out of Mind? The Use of a Virtual Learning Environment to Encourage Student Engagement in Out of Class Activities	Journal of Educational Technology	Multiple	UK	online learning
Hayton, J. W.	2019	Helping them to help themselves? An evaluation of student-led tutorials in a higher education setting	Journal of Further and Higher Education	Sports Sciences	UK	classroom teaching

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Walker, S., Hobson, J.	2014	Interventions in teaching first-year law: feeding forward to improve learning outcomes	Assessment & Evaluation in Higher Education	Law	Australia	classroom teaching
Morrell, L. J.	2021	Iterated assessment and feedback improves student outcomes	Studies in Higher Education	STEM	UK	classroom teaching
Goldberg and Ingram	2011	Improving student engagement in a lower-division botany course	Journal of the Scholarship of Teaching and Learning	Science	USA	classroom teaching
Carroll K., Harris, C.	2021	Using a Repetitive Instructional Intervention to Improve Students' Higher-Order Thinking Skills	College Teaching	STEM	USA	classroom teaching
Bahadourian et al.	2006	The effects of learn units on student performance in two college courses	International Journal of Behavioral Consultation and Therapy	Education	USA	classroom teaching
McLaughlin et al.	2013	Pharmacy Student Engagement, Performance, and Perception in a Flipped Satellite Classroom	Pharmaceutical education	Pharmacy	USA	flipped lectures
McQueen and McMillan	2020	Quectures: Personalised constructive learning in lectures	Active Learning in Higher Education	Science	UK	flipped lectures
McLaughlin et al.	2014	The flipped classroom: A course redesign to foster learning and engagement in a health professions school	Academic Medicine	Pharmacy	USA	flipped lectures
Frederking, B.	2005	Simulations and student learning	Journal of Political Science Education	Political Science	USA	simulation learning
Auman, C.	2011	Using simulation games to increase student and instructor engagement	College Teaching	Education	USA	simulation learning
Ke, F., Pachman, M., Dai, Z.	2020	Investigating educational affordances of virtual reality for simulation-based teaching training with graduate teaching assistants	Journal of Computing in Higher Education	Teacher training	USA	simulation learning
Nortcliffe et al.	2009	Students using digital audio interventions to enhance their learning experience	N/a	Engineering	UK	using new digital tool
Bruce-Low et al.	2013	Interactive mobile learning: A pilot study of a new approach for sport science and medical undergraduate students	America Journal of Physiology	Sports Science	UK	using new digital tool
King, S.O. and Robinson, C.L.	2009	“Pretty Lights” and Maths! Increasing Student Engagement and Enhancing Learning through the Use of Electronic Voting Systems	Computers and Education	Engineering	UK	using new digital tool
Aldahmash, A.H. and Abraham, M.R	2009	Kinetic versus static visuals for facilitating college students' understanding of organic reaction mechanisms in chemistry	Journal of Chemical Education	Science	USA	visual teaching

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Estevez, M.E., Lindgren, K.A. and Bergethon, P.R.	2010	A novel three-dimensional tool for teaching human neuroanatomy	Anatomical Sciences Education	Medicine	USA	visual teaching
Espinoza, P., Genna, G. M.	2021	Hi, I Want to Talk to You About Your Progress: A Large Course Intervention for At-Risk College Students	Journal of College Student Retention: Research, Theory & Practice	Multiple	USA	student at risk
Zhang et al.	2014	An examination of the impact of early intervention on learning outcomes of at-risk students	Research in Higher Education Journal	Business	USA	student at risk
Villano et al.	2018	Linking early alert systems and student retention: a survival analysis approach	Higher Education: The International Journal of Higher Education Research	Multiple	Australia	student at risk
Ceyhan et al.	2019	The Socialization and Retention of Low-Income College Students: The Impact of a Wrap-Around Intervention	International Journal of Higher Education	STEM	USA	student at risk
Beasley et al.	2020	The Development of an Academic Engagement Intervention for Academically Dismissed Students	Innovative Higher Education	Multiple	USA	student at risk
Strepparava et al.	2016	Cognitive counselling intervention: treatment effectiveness in an Italian university centre	British Journal of Guidance & Counselling	Multiple	Europe	student well-being
Schoeps, K., de la Barrera, U. Montoya-Castilla, I.	2020	Impact of emotional development intervention program on subjective well-being of university students	Higher Education: The International Journal of Higher Education Research	Health	Europe	student well-being
Messer et al.	2016	The Effects of Internet-Delivered Mindfulness Training on Stress, Coping, and Mindfulness in University Students	AERA Open	Multiple	USA and Germany	student well-being
Clough, B. A., Nazareth, S. M., Casey, L. M.	2020	Making the grade: a pilot investigation of an e-intervention to increase mental health literacy and help-seeking intentions among international university students	British Journal of Guidance & Counselling	Multiple	Australia	student well-being
Houston et al.	2017	Randomized Controlled Trial of the Resilience and Coping Intervention (RCI) with Undergraduate University Students	Journal of American College Health	Multiple	USA	student well-being
Scherer et al.	2020	CoTeaching in Higher Education: A Case Study of Instructor Learning	Journal of Effective Teaching in Higher Education	Ecological agriculture course	USA	co-teaching
Minett-Smith, C., Davis, C. L.	2020	Widening the Discourse on Team-Teaching in Higher Education	Teaching in Higher Education	Business	UK	co-teaching

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Li, J., Han, S., Fu, S.	2018	Exploring the relationship between students' learning styles and learning outcome in engineering laboratory education	Journal of Further and Higher Education	Engineering	USA	investigating students' learning styles
Edwards, D. J., Kupczynski, L., Groff, S. L.	2019	Learning Styles in Problem-Based Learning Environments: Impacts on Student Achievement and Professional Preparation in University Level Physical Therapy Courses	International Journal of Higher Education	Physical therapy	USA	investigating students' learning styles
Wintrup et al.	2015	Purposeful partnerships and practices: an international education collaboration in global health	HEA	Occupational Therapy	UK	others
Grier-Reed, T., Arcinue, F., Inman, E.	2016	The African American Student Network: An Intervention for Retention	Journal of College Student Retention: Research, Theory & Practice	Multiple	USA	others
White et al.	2016	Adopting an active learning approach to teaching in a research-intensive higher education context transformed staff teaching attitudes and behaviours	Higher Education Research and Development	Pharmacy	Australia	others
Vitae	2012	Using PRES to enhance the experience of postgraduate researchers	HEA	Multiple	UK	others
Mellor et al.	2015	Troubled Transitions Into College and the Effects of a Small Intervention Course	Journal of College Student Retention: Research, Theory & Practice	Liberal arts	USA	others

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