Student feedback on aspects of curriculum design for blended learning environments to promote a 'sense of belonging'

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ABSTRACT

CONTEXT

A strong 'sense of belonging' is a known predictor of student academic engagement and success. Students worldwide have been impacted by the uncertainty brought about by the COVID pandemic, reporting that they feel 'isolated, abandoned, depressed'. This disruption to usual teaching modes has diminished opportunities for social engagement amongst students, and with their teachers, intensifying the need to encourage students' belongingness as being ever more important. It is incumbent on academics to create inclusive learning environments that address students' disconnection with peers, subject content, and staff, thereby fostering a 'sense of belonging'.

PURPOSE OR GOAL

In attempting to answer: "How can we build a 'sense of belonging' for students through an inclusive curriculum design in a blended learning environment?" through an extensive literature review, we found that much research is "still in its infancy" and further investigations are needed. We decided to survey our Masters' course work students for their perceptions and insights of the teaching – learning ecology of content delivery, technological affordances, assessment, and feedback in a blended environment with a special focus on aspects that promote inclusion.

APPROACH OR METHODOLOGY/METHODS

In our methodology, we took a threefold approach: Firstly, we relate the design of a survey instrument guided by strategies discovered through our literature review amongst the empirical accounts of attempts to foster students' 'sense of belonging" and inclusion. Secondly, we report on the responses collected by the survey across several subjects in Masters' coursework programs. Finally, we have collated and synthesized the feedback with our recommendations.

OUTCOMES

Based on the collected survey responses from students on their learning experiences across 7 subjects in Semester 1, 2022 in dual modes of learning, an in-depth data analysis was undertaken with the quantitative data collected. The paper reports on the analysis and its implications.

CONCLUSION AND RECOMMENDATIONS

Our results highlight student voices on their perceptions of belonging and inclusion in their blended learning environments. Our findings provide *four* recommendations that could enhance students sense of belonging through an inclusive curriculum design in blended learning environments. They include: (1) revision of tutorial materials and activities to incorporate more practical aspects, especially in blended synchronous environments; (2) re-examination of the support provided by the technology used in blended learning environments, looking to improve interactivity between groups; (3) ensuring that all forms of assessment are aligned to improve student learning outcomes, and provide feedback that is timely and constructive; and (4) exploration of different modes of feedback, particularly for online and on-campus students who experience a feeling of being less included.

KEYWORDS

sense of belonging, blended learning, Community of Inquiry

Introduction

Educational research has shown that students who feel included and experience a 'sense of belonging' with their learning communities are more engaged in their studies and have greater academic successes (Molyneaux et al., 2017; Yorke, 2016). Recognizing this, many higher education institutions have adopted 'whole of institute' approaches to encourage student engagement and social opportunities within learning environments, thereby improving retention rates and students' progressions (Hughes & Spanner, 2019; Molyneaux et al., 2017; Scobie & Picard, 2018; Wilson et al., 2018). One of the major upheavals of the COVID pandemic has been the reduction in opportunities for social engagement amongst students, and for students' interactions with their teachers. With the United Nations (2021) reporting that nearly 1.6 billion students worldwide feel "isolated, abandoned, depressed", it is ever more important for academics to strive to improve students' learning experiences through a curriculum which is more inclusive and helpful in promoting a "sense of belonging". This is particularly true for students participating in blended learning environments, where interactions between classmates and with their instructors, on and off-line, are facilitated electronically.

In this paper, we define blended learning as encompassing combinations of teaching practices that enable equitable and flexible learning for all students, including blended synchronous learning (BSL) sessions where remote students participate in face-to-face classes by means of rich-media synchronous technologies (Bower et al., 2015); along with on-campus deliveries and asynchronous online learning environments. In their recent review of synchronous blended/hybrid learning, Raes et al. (2020, p. 286) concludes that much research is "still in its infancy" and they encourage further investigations to discover meaningful affects and to discern scalable approaches. In our literature searches for answers to 'sense of belonging' through an inclusive curriculum design in a blended learning environment, we could not find targeted analyses of best practice designed to build students' sense of belonging through inclusive curriculum design for synchronous blended learning, as opposed to asynchronous electronic learning. However, we uncovered various pre-COVID reports of empirical efforts attempting to create more inclusive classrooms (Delahunty et al., 2014; Delaney & Brown, 2018; Osei-Kofi et al., 2004; Pearson et al., 2019; Sathy & Hogan, 2019). Seen in these instances and reflected in a broad collation across 13 U.K institutions undertaken by Yorke (2016), the degree to which a student engaged was influenced by their gender and age, whilst their 'sense of belonging' was impacted by ethnicity and circumstantial disadvantage. This further underlines the importance of inclusion for every student and the need to devise strategies and approaches that build a 'sense of belonging'. So, we ask "*How can we build a 'sense of belonging' for students through an inclusive curriculum design in a blended learning environment?".*

In this study, we decided to survey our Masters' coursework students for their insights into differing aspects and practices within their subjects that helped to foster a 'sense of belonging' and make them feel included. Partly in response to COVID, subjects were being offered in mixed modes (on campus, online, and hybrid, synchronous and asynchronous) where students could opt into any, some, or all learning environments. Therefore, their perceptions on aspects of content delivery, technological affordances, assessment, and academic feedback within these differing learning environments would be a helpful assessment of strategies that promote inclusion, which in turn, would help to guide future curriculum design. This paper describes the survey design, its administration, and subsequent data collation of student responses. Finally, we discuss our findings, and offer *four* recommendations moving forward in the Blended learning environments.
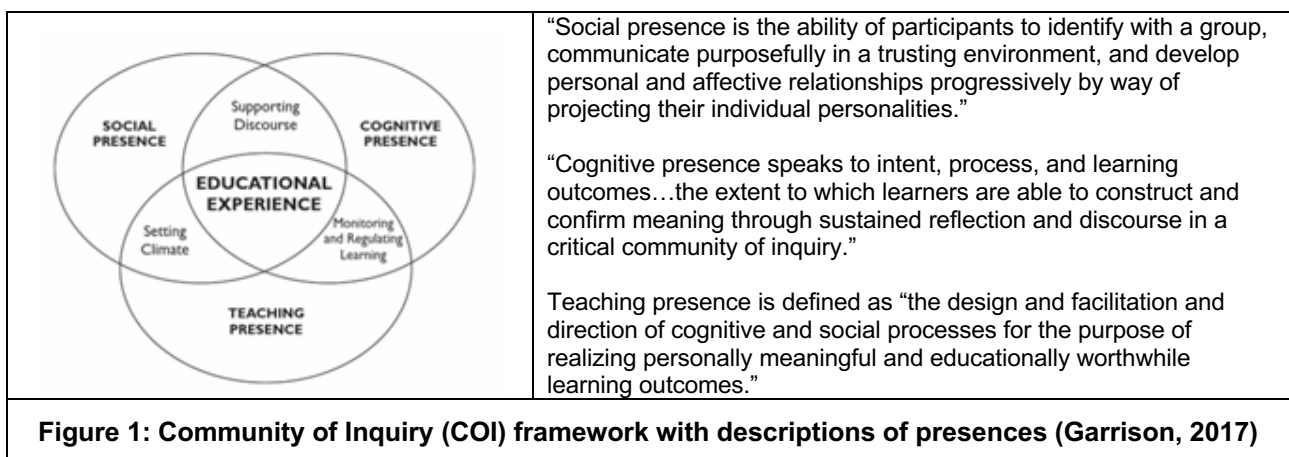
Method

In designing a suitable survey instrument, several important aspects were targeted. The survey needed to gauge a respondent's current sense of belonging with their learning environments before seeking appraisals of various teaching strategies and differing curriculum deliveries. In addition, it needed to illicit opinion on the materials, the roles played by tutors and lecturers, and the appropriateness of differing learning settings. Timed for a mid-semester release, the survey would

consist of sets of statements for students to assess on a Likert scale, from strongly agree to strongly disagree, plus two questions requiring short freeform text responses. The survey would be attempted anonymously and voluntarily, and its completion expected to take less than ten minutes. To facilitate this, the survey was drafted as an online form with access gained through the learning management system site for each subject with permission from the subject coordinator.

To decide statements for survey inclusion, we collected a pool of candidate items by first seeking definitions of belongingness, looking for its measures, and evidence of its impacts, particularly in online and blended learning environments. Metzger & Taggart (2020, p. 231) describe "Belongingness is a psychological construct characterized by value, fit, and meaningful engagement in person-to-person, small group, and larger social contexts" pointing out the usefulness of Malone et al. (2012)'s widely adopted General Belongingness Scale (GBS), a 12-item survey to validly measure a person's achieved belongingness, rather than their need to belong. More specifically, Spencer et al. (2020, p. 199) define student belongingness as the degree to which students "feel accepted, respected, included, and supported by others in an academic setting". They used Yorke's (2016) 16-item Belongingness Engagement and Self-Confidence Survey (BESS) to gauge a student's sense of belongingness with their institution, their perceptions of academic engagement, and their overall self-confidence.

Secondly, we noted the interview and survey items of others used in their assessments of interventions designed to create more inclusive classrooms (Bower et al., 2015; Cunningham, 2014; Cureton & Gravestock, 2019; Fuchs et al., 2021; Goldwasser & Hubbard, 2019; Metzger & Taggart, 2020; Pavlidou et al., 2021; Zydney et al., 2020). Amongst these, and other approaches employed to bolster students' 'sense of belonging' and wellbeing, we saw some strategies referencing Garrison's well-known Community of Inquiry (COI) framework (Garrison, 2017). This oft-cited framework places a student's educational experience at the confluences of their social and cognitive presences with the teaching presence, as seen in Figure 1. As the COI framework incorporates meaningful intersections between the social and cognitive presences with teaching presences, it has frequently been used to explain empirical practice, pre-COVID, particularly for online or blended learning, where actors may be in different physical locations (Spring & Graham, 2017).

"Social presence is the ability of participants to identify with a group, communicate purposefully in a trusting environment, and develop personal and affective relationships progressively by way of projecting their individual personalities."

"Cognitive presence speaks to intent, process, and learning outcomes…the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry."

Teaching presence is defined as "the design and facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes."

Figure 1: Community of Inquiry (COI) framework with descriptions of presences (Garrison, 2017)

To assist in deciding our survey statements from the collected pool, we decided to adopt a COI perspective to categorize possible candidates as to the presence, or intersection of presences they addressed. For example: *The lecturers and tutors set clearly defined expectations, including the assessment requirements* related to a student's cognitive presence and its intersection with teaching presence, whereas, *The lecturers and tutors are enthusiastic in their deliveries*, is strongly associated with the teaching presence. By using these classifications, we ensured that all aspects of a student's educational experience would be targeted by the survey statements. Further to capture a 'sense of belonging', statements sourced from the GBS and BESS tools were added, for example, *Considering all the materials, staff, and interactions with classmates in this subject, they made me feel like an outsider*.

A series of discussions between the authors refined the survey into a set of 29 statements and two short answer questions: *What aspects of this subject were the most helpful for your learning?* and *What would have improved your learning experience in this subject*? The 29 statements were arranged into groupings querying the teaching approaches, resources and platform used, and evaluations of the entire learning experience. The final full version of the survey is available by contacting the primary author of this paper.

To illicit representative survey feedback, student cohorts undertaking lectures and tutorials in on-campus, Blended Synchronous Learning (BSL), and online modes were sought. Identified were six subjects in Masters' by coursework programs (in computing, software engineering, information systems, and information technology) and one large undergraduate cohort in a foundation computing subject within programs at a large Australian University. The chosen subjects offered a spectrum of blended learning situations - encompassing combinations of learning approaches and teaching practices that included: BSL sessions, live streaming and zoom options; on-campus and asynchronous online learning environments - labelled dual learning environments. Subsequently, the survey was promoted in classes to students requesting their voluntary responses.

Results

Opening in late April 2022, the online survey engaged 291 students undertaking one of the selected seven subjects. Upon survey closure three weeks later, most statements had recorded between 130 to 140 complete responses with students self-identifying their delivery mode as on-campus (n= 44) or blended synchronous learning (BSL, n=19), or online, (n=74) separately for their lecture and their tutorials. As each statement had been classified using a Community of Inquiry perspective, the results have been collated according to social, teaching, and cognitive presences as defined in Figure 1. The responses pertaining to social presence, S, its interactions with teaching (S&T), cognitive presences (S&C) and all three presences (S&T&C) are presented in Table 1. The results for teaching presence, T, and its interactions with cognitive presence (T&C) are listed in Table 2, while Table 3 records responses for cognitive presence, C. All statements have been labelled with the presences they address followed by their survey question number, for e.g., S2 indicates the social presence is addressed by the second question in the full version of the survey. For all statements in each table, the percentage of complete responses in agreement (agree and strongly agree, shaded green), the corresponding percentage of disagreement (disagree and strongly disagree, shaded white), and neutral (neither agree or disagree, shaded orange) responses for all instruction cohorts is given for lectures and tutorials. Note: statements shaded grey were negatively orientated statements used in part for checking validity of responses (Dueber et al., 2021).

In the COI framework, social presence is a measure of how students confidently identify with a group, so the degree to which students feel a 'sense of belonging' is best gauged by the responses presented in Table 1. There, most students felt included in their subject (S28) and accepted at the University (S25), feeling supported by the teaching team (S11, S&T6) in lectures and tutorials responding that they did receive a welcoming and helpful introduction in their subjects (S&T1). They found that the materials and teaching study resources enabled opportunities for interaction and engagement (S&C13), supported by the platform that helped facilitate professional learning relationships between the lecturer and online groups (S&T18). Students had a self-belief in their own skills and abilities (S&C23), which was reflected in their confidence to participate online and offline environments (S26, S&T4). Along with these overall impressions, there were some inconsistences between responses of the three cohorts.

Firstly, blended learning students often had stronger levels of agreement than other students, in that, they felt included (S28), supported (S11), welcomed (S&T1), and more strongly of their confidence to participate online and offline (S26). Reflecting this, for the negatively framed statement (S24), BSL showed stronger disagreement than others that they feel like an outsider. However, BSL students appeared to have a lower level of confidence than others in own abilities and skills (S23). In their tutorials, BSL students were not as confident as others participating in online discussions and activities (S&T4), and in their summative statement responses, there was some discord that

their experience was overall good (S&T&C29). Secondly, for many statements in Table 1, on-campus and online groups often responded similarly, with both cohorts recording slightly more positive responses in their tutorials than in lectures for the same statements. On-campus students in lectures disagreed more strongly than others that they felt supported (S11), and in tutorials and lectures had fewer responses than others that the platform that helped facilitate professional learning relationships between the lecturer and online groups (S&T18). Thirdly, excepting BSL tutorial students, for statements of inclusion and acceptance (S28, S25) up to a quarter of all students recorded neutral responses with on-campus students recording more neutral responses in feeling like an outsider (S24), and that the materials provided opportunities for interaction and engagement with others (S&C13), while online students were unsure of their confidence participating on and offline discussions (S26).

Table 1: Social presence responses as % agreement, % disagreement and % neutral

Social presence (S)	% Agreement						% Disagreement						% Neutral					
	On-campus		BSL		Online		On-campus		BSL		Online		On-campus		BSL		Online	
	L	T	L	T	L	T	L	T	L	T	L	T	L	T	L	T	L	T
S11_ OVERALL, felt supported by team	82	89	95	86	82	83	14	7	0	0	7	7	4	4	5	14	11	10
S28_feel included in subject	68	75	84	86	69	68	9	5	5	14	11	10	23	20	11	0	20	22
S25_feel accepted at Uni	66	66	69	72	68	69	14	7	5	14	9	9	20	27	26	14	23	22
S26_confident to participate online/offline	76	77	83	100	70	70	10	7	11	0	7	9	14	16	6	0	23	21
S24_feel like an outsider	28	20	5	14	32	34	51	58	74	72	50	50	21	22	21	14	18	16
S&T1_ welcoming & helpful introduction	89	93	100	100	92	93	4	3	0	0	1	1	7	4	0	0	7	6
S&T6_ approachable & supportive	81	86	100	100	81	84	7	7	0	0	8	6	12	7	0	0	11	10
S&T4_ confidence in online discussion & activities	72	75	74	57	77	78	9	4	5	14	8	9	19	21	21	29	15	13
S&T18_ platform helped in building relationships	64	63	72	72	69	75	18	15	17	14	11	9	18	22	11	14	20	16
S&C13_opportunity for interaction	68	68	79	86	68	70	11	4	0	0	11	12	21	28	21	14	21	18
S&C23_ self-belief in skills and abilities	82	77	79	71	86	91	4	5	5	0	3	2	14	18	16	29	11	7
S&T&C29_OVERALL, good experience	73	75	74	57	73	75	11	7	5	14	8	7	16	18	21	29	19	18

Teaching presence relates to the design and facilitation of the instruction program, ensuring the learning environment fosters the social and cognitive growth of students. Student appraisals of the teaching presence, T, and the intersection with cognitive presence, are seen in Table 2, noting the

overlap of teaching and social presences is given in Table 1. All students responded strongly that their lecturers and tutors were enthusiastic in their deliveries which helped to stimulate interest in the topics (T2), and that they set clearly defined expectations and assessment requirements (T9), with blended learning students recording the highest percentages for these statements in lectures and tutorials. Over half of each cohort felt that they had been left to their own devices by the teaching team (T5), with many students recording neutral responses for this negatively orientated statement.

Regarding the intersection of teaching and cognitive presences, the cohorts were in general agreement for most statements. Students responded positively that the materials and resources were accessible (T&C15), and the set assessments helped guide learning and build understanding (T&C10). However, on-campus and BSL students in tutorials were not as positive, with more disagreement, about the set activities improving or deepening their understandings (T&C8), that the expectations were clear to do well in the subject (T&C21), and also that overall, the materials and study resources were interesting and engaging (T&C16). For many statements, online students responses align with those on-campus, particularly regarding relevant and constructive feedback (T&C7) reporting less agreement, some disagreement, and more neutral responses than BSL students. Also, all groups showed ambivalence that the platform and technologies used were interactive and engaging (T&C19) with many neutral responses recorded additionally, even though access was not the issue(T&C15). The final statement of Table 2 shows students' preferences for a 'live' lecture presentation over a recording (T&C20), where the many undecided students were the on-campus and BSL lecture students.

Table 2: Teaching presence responses as % agreement, % disagreement and % neutral

Teaching presence (T)	% Agreement						% Disagreement						% Neutral					
	On-campus		BSL		Online		On-campus		BSL		Online		On-campus		BSL		Online	
	L	T	L	T	L	T	L	T	L	T	L	T	L	T	L	T	L	T
T2_ enthusiastic deliveries	93	93	100	100	92	93	2	2	0	0	1	1	5	5	0	0	7	6
T9_ defined expectations & assessment	82	86	95	86	80	81	7	5	0	0	5	4	11	9	5	14	15	15
T5_ left to own devices	51	54	63	57	64	66	30	23	11	29	15	12	19	23	26	14	21	22
T&C7_relevant, constructive feedback	64	70	79	86	69	68	11	11	10	14	8	7	25	20	11	0	23	25
T&C8_activities promote deeper understanding	73	80	84	72	80	81	11	7	5	14	5	4	16	13	11	14	15	15
T&C10_assessment builds understandings	93	89	94	86	87	91	5	6	0	0	4	2	2	5	6	14	9	7
T&C16_OVERALL, materials interesting & engaging	70	79	84	72	84	82	9	7	5	14	3	3	21	14	11	14	13	15
T&C19_platform interactive & engaging	61	64	68	72	64	65	14	13	16	14	12	10	25	23	16	14	24	25
T&C15_materials enable flexible access	81	81	90	86	92	92	7	6	5	14	1	2	12	13	5	0	7	6
T&C21_expectations were clear	68	76	89	71	76	79	16	9	0	0	11	9	16	15	11	29	13	12
T&C20_preference for live lecture	66	64	63	57	53	54	9	9	5	0	15	15	25	27	32	43	32	31

The extent to which learners internally construct knowledge through activities, discourse and reflection relates to cognitive presence. Student responses to statements addressing this presence are listed in Table 3. Students found that the materials were thought provoking (C12) and the platform and technology easily accessible and navigable (C17). Most students agreed that teaching staff provided useful hand problem solving activities (C3), except in BSL tutorial responses, where more than half of the cohort gave a neutral response. High neutral responses are also seen when students were asked if the demands of the subject were challenging (C22), noting the highest agreement was from students in BSL tutorials, despite the same students disagreeing that they had difficulty with the workload (C27).

Discussion

In attempting to answer: *"How can we build a 'sense of belonging' for students through an inclusive curriculum design in a blended learning environment?* we took a Community of Inquiry perspective focussing on the social, teaching, and cognitive presences to better understand our students' educational experience at the intersection of all presences in blended learning environments.

Table 3: Cognitive presence responses as % agreement, % disagreement and % neutral

Cognitive presence (C)	% Agreement						% Disagreement						% Neutral					
	On-campus		BSL		Online		On-campus		BSL		Online		On-campus		BSL		Online	
	L	T	L	T	L	T	L	T	L	T	L	T	L	T	L	T	L	T
C3_ hands-on problem-solving activities	80	87	74	43	77	75	2	2	0	0	4	4	18	11	26	57	19	21
C12_thought provoking	70	82	79	71	85	78	9	5	0	0	3	6	21	12	21	29	12	16
C17_Canvas useability	81	82	83	83	87	88	7	4	11	17	5	6	12	14	6	0	8	6
C22_challenging demands	48	55	56	83	52	47	20	18	5	0	16	15	32	27	39	17	32	38
C14_poorly constructed	21	18	5	0	21	23	65	67	74	57	64	64	14	15	21	43	15	13
C27_difficulty with workload	30	36	37	29	31	29	50	43	47	57	46	47	20	21	16	14	23	24

It is known that students feel a sense of belonging when they have a positive experience in their learning environment (Molyneaux et al., 2017; Wilson et al., 2018). This involves feeling included and accepted and having meaningful engagements with teaching teams and peers alike. Our findings suggest that overall (as shown in Table 1), most students in blended learning environments are satisfied with their learning experiences. Representative of our students' feedback is the summative statement on their overall experience where most students (over 70%) across on-campus, BSL and online environments agreed that they had a good learning experience. In particular, we found that over 70% of the student felt included in their subject communities and felt supported by their teaching teams (over 80%). To note was around 65% of students felt accepted at the university. This slightly lower response is understandable as it provides a larger perspective across the university sector, particularly when there are restrictions for on-campus engagement due to COVID and its impact on international student arrivals into the country.

Our findings also suggest that the BSL cohort often responded more positively and sometimes unanimously than on-campus and online students, especially in their interactions with the teaching teams, (as shown in Table 1). However, in their tutorials we observed a different trend. Their feedback contrasted with their other responses for social and teaching presences. Closer scrutiny on why students in the BSL tutorials seemed less positive is related to aspects of the cognitive presence. While students were generally happy with their social interactions with the teaching team, sometimes that's not enough to engage with students in blended classes. We found that they and on-campus groups pinpointed the need for activities in tutorials to improve and promote deeper understanding about the content.

Further, our findings highlight that students on-campus seemed to be satisfied about the hands-on problem-solving activities that were conducted in their classes (both lectures and tutorials). On the other hand, it appears that BSL and online students desire for more hands-on activities and engaging materials and study resources. Also, highlighted in the responses from students was a strong need for social support to improve their confidence in online discussion and activities. To address these student needs, especially for the BSL and online groups, there is a dependence on technology such

as live streaming and Zoom as a media to support student engagement with the resources and encourage social interactions amongst peers. Freeform responses to the survey short answer questions suggested that Zoom software could be used over the assigned platform to improve interactivity between groups in the blended classroom. This implies that technology must have features that promote discussions among peers, something that live streaming is limited to. As a way of addressing these issues, we recommend:

Recommendation 1: Review and revision of tutorial materials and activities to incorporate practical examples, and provide opportunities to help students build peer relationships particularly through online discussion and activities.

Recommendation 2: Re-examination of the support provided by platform and technology used in blended learning environments, looking to improve interactivity between groups.

Our study shows that assessments and constructive feedback are key aspects to enhancing student learning experiences and creating a sense of belonging for them. We note that online and on-campus students' concerns relate mostly to aspects of social presence - feeling less included, being desirous of more opportunities for interaction in their classes and underlining the need for ongoing and constructive feedback from the teaching team. We strongly believe that adopting the above recommendations 1 and 2 will assist these cohorts. Additionally, we add:

Recommendation 3: Target all forms of assessment ensuring that they are aligned to student learning outcomes, and that the provision of feedback is timely, purposeful, and constructive.

Recommendation 4: Explore different options to feedback using a multiple layered approach that include: (1) automated and immediate feedback using technology; (2) meet teaching team on a one-on-one basis; (3) provide continuous feedback via discussion forums and during lectures.

It is important to realise that some statements registered higher than an average number of neutral responses, sometimes for statements eliciting opinion on the preference for 'live' lectures and on negatively orientated statements such as students being 'left to their own devices' and 'feeling like an outsider'. A reason for this higher-than-average number of neutral responses could be student indecision on aspects of how they feel about workloads and the challenging demands of the subject. In each of these cases, the ambivalence is noted but the proportion of agreement versus disagreement is more insightful.

Future works

By seeking our student voices on their 'sense of belonging' in their blended learning environments, and viewing their responses through social, teaching, and cognitive presences lens, we have arrived at a set of recommendations to improve curriculum design, delivery and assessment and foster a positive learning experience for all. The recommendations came from feedback from different groups, but we hope their adoption will help to improve a 'sense of belonging' for all cohorts of students. This work is a step towards a goal of establishing a framework of practical teaching strategies for an inclusive curriculum design that might support both academics and students alike. Our future work involves focus groups, creation of a framework for inclusive curriculum design, and evaluation of the framework through observations into Canvas subject web pages.

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