Key factors for designing and delivering an effective asynchronous professional learning experience

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Abstract

In this paper, we explore the key factors for designing and delivering an effective asynchronous professional learning experience. This research study was developed with 107 participants in a module of a Postgraduate Certificate in Academic Practice (PGCAP) - a qualification which is offered to new academics at a United Kingdom (UK) Russell Group university, in line with practice at many other UK higher education institutions (HEIs).

The module design was led by a range of factors which the relevant literature deems important for ensuring successful asynchronous online learning design. A questionnaire was created to measure participants' overall perceptions regarding efficiency (learning context, facilitation, tutor feedback, peer feedback) and gains (presence, participation, persistence, connectedness, sense of community, learning experience). Participants were also invited to refer to the extent to which peer collaboration contributed to learning, to how far they felt part of a community on the module and to whether the asynchronous learning approach facilitated learning.

Our results both confirmed and contradicted the positive findings of the literature: respectively, our participants did indeed find that many of the asynchronous design factors led, for them, to successful learning; they also identified some of the factors (e.g., peer feedback) as more challenging. We discuss the results of our study in terms of the effectiveness of this range of factors, considering the specific context of our module; we raise relevant questions about the issues and dilemmas involved in designing and delivering asynchronous learning courses when participants have a dual role as both learners and teachers.

Keywords: Asynchronous, professional learning, course design, student experience

1. Introduction

This paper focuses on asynchronous professional learning within a qualification, the Postgraduate Certificate in Academic Practice (PGCAP), which is offered to new academics at a United Kingdom (UK) Russell Group university, in line with practice at many other UK higher education institutions (HEIs).

The PGCAP is offered to new academic staff who may have limited experience of teaching and supporting learning or for whom the programme may be a condition of probation. It is also open to any other staff who teach at the level of module convener and are engaged in curriculum design. The programme comprises four fifteen-credit modules (level 7) which participants take over the course of two years.

This research study was developed with participants from the final module of the PGCAP programme: *Action (Practitioner) Research* (fifteen credits). This module gives participants the chance to explore ways in which they can use action research to investigate an aspect of their practice. Participants choose a topic and design an action research proposal. The module has been designed to be taught asynchronously because we wanted to introduce participants to this type of delivery and because it is appropriate to the module content. The module was introduced in January 2020 and, at the time of the designing of the module in 2019, the motivation was to introduce participants to a type of delivery that they might not be familiar with and that we thought had very interesting potential for the future. Since then, the asynchronous delivery mode has become even more pertinent, following the changes in ways of working brought about by the COVID-19 pandemic.

In this article, we first present a literature review exploring the most vital factors for successful asynchronous teaching and learning and then offer the results of our study, together with our discussion of the effectiveness of these approaches.

2. Literature review

2.1 Professional learning in asynchronous contexts

During the last ten years, the context of postgraduate teaching development programmes (PTDPs) has been the subject of research into the motivations and experiences of participants, gains at personal level and impact in terms of the quality of teaching and enhancement of the students' learning experience.

Baughan, Lindsay and Parker (2015) identified common themes and missing pieces in terms of evaluating the educational value of PTDPs and concluded that this type of programme tends to offer genuine educational value. Chalmers and Gardiner (2015) confirmed the broad consensus that these programmes have a positive impact on both teachers and students and created the 'Academic Professional Development Effectiveness Framework' to investigate the extent and longevity of their effects on the teachers and the teaching and learning culture of the institutions. Since then, many studies have addressed this topic and some have concentrated specifically on participants. Daumiller *et al.* (2021) focused on academics' motivations and their effect in terms of their own learning engagement and learning gains. Self-efficacy beliefs and conceptions about teaching methodology have been explored by Noben *et al.* (2021), who concluded that participants tend to move from a teacher-centred to a more student-centred conception. Fabriz *et al.* (2021) reported an identifiable change in participants' self-conception and subjective knowledge about teaching and learning. More recently, Muammar and Alkathiri (2022) identified seven factors that may have an influence on the satisfaction of faculty who attend higher education (HE) professional development programmes in teaching: achievement of the programme objectives, appropriateness of the programme topics, appropriateness of the programme activities, duration of the programme, academic developers' teaching skills, appropriateness of the programme objectives and academic developers' skills in discussion management.

The specific context of professional learning in online asynchronous settings is underpinned not only by pedagogy, reflection and agency, but also by technology (Timperley *et al.*, 2007; Moon, 1999). It has enormous potential for meaningful professional development because technologies can bring together motivated and experienced academics and provide opportunities for collaborative learning, reflection, peer feedback and development of communities.

In our study, adopting this asynchronous delivery mode has provided academics from different fields with the opportunity to learn together online, share practices, address concerns and develop research strategies, all in order to improve their performance through reflection and feedback from tutors and peers. This asynchronous approach was new to many. The main challenge was posed by the fact that participants did not have to be together in the same room at the same time and could reflect on the materials and post their work on their own schedule, regardless of when their tutor and peers shared theirs.

Below, we discuss literature relating to the key factors that we identified as relevant to successful asynchronous professional learning and how these elements were deployed in the development and delivery of our module.

2.2 Learning context, presence and facilitation

In the context of our programme, we have promoted the development of structured interactive asynchronous learning, during which participants are required not just to access course materials, but also to respond to other participants. This type of learning context, combined with an online platform, is seen to nurture communities, where social dynamics, interaction and collaboration support joint knowledge construction and where inquiry occurs through intellectual academic interaction (Garrison, Anderson and Archer, 2009).

Interactive asynchronous professional development is defined by Means *et al.* (2010) as an online activity with a time lag between the presentation of instructional stimuli and participant responses involving interaction between participants, between facilitator and participants and between participants and course content. This approach has been regarded as leading to deeper levels of engagement than face-to-face or online synchronous learning (Northey, Bucic, Chylinski and Govind, 2015). According to Garrison, Anderson and Archer (2000), the most meaningful online educational experiences take place through interactions among members of a community of inquiry comprising tutors and participants. This assumption led to the design of their 'Community of Inquiry' (COI) framework that has contributed to the definition of approaches that support learning in an online setting.

The COI framework identifies three forms of '*presence'* which are underpinned by the notions of building relationships and scaffolding learning, which together create a meaningful, collaborative and constructivist discourse necessary for high-level learning (Akyol and Garrison, 2011; Garrison and Arbaugh, 2007). These are: social presence (SP), characterised by a supportive collegial online environment; teaching presence (TP), defined by instructional organisation appropriate to the online environments; and cognitive presence (CP), which is the degree to which learners can construct knowledge through critical thinking and reflection. According to Garrison (2006, p.26) it "*is at the intersection of these three elements that a community of inquiry is created and a collaborative constructivist learning experience is achieved*".

Research has indicated that the COI framework is valid for analysing the different elements of an online course (Arbaugh *et al.* 2008) and some studies also link the framework with student outcomes and/or satisfaction (Akyol and Garrison, *op.cit.*; Shea, 2006; Shea, Li and

Pickett, 2006). However, there is a strong emphasis on the social presence within the framework and other studies have stressed the importance of individuals' attributes and their experience of teaching processes to foster learning (Annand, 2011). Researchers have also contended that the role of individual reflection and engagement by participants is more influential in achieving deep and meaningful learning (Rourke and Kanuka, 2009) or higher levels of learning (Means *et al.*, 2010).

Peacock and Cowan (2016) have pointed out that the contributions to the COI literature do not discuss in detail how the presences function in unison (and with what impact) and have presented an adapted version of the COI framework which was later used to frame specific suggestions for action in accredited courses (Peacock and Cowan, 2019). This revision of the well-known framework focuses on the overlapping intersections of the three presences, which are also known as 'influences': trusting, meaning-making and deepening understandings. According to the authors, "*each influence in learner-directed learning depends significantly on the exercise of the tutor's facilitative role; and each contributes to the development of sense of belonging*" (*op.cit.*, p.71).
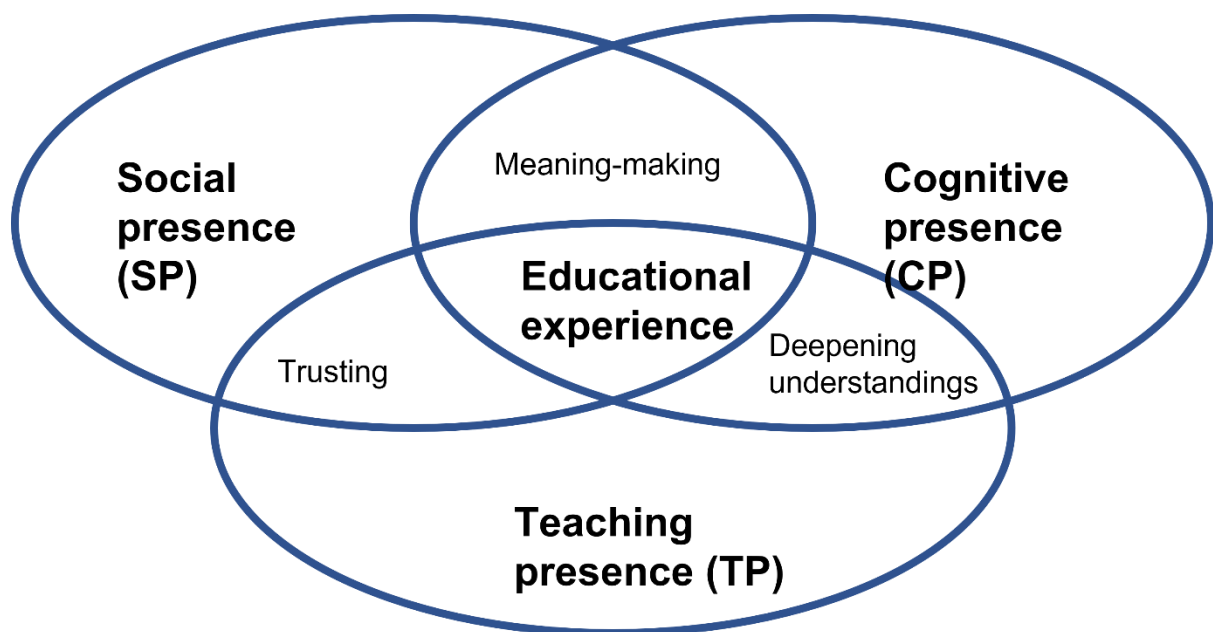

Figure 1. Community of Inquiry model indicating presences and influences (adapted from Peacock and Cowan, 2016, p.272)

The three presences, and particularly the three influences, are relevant in the context of our module because they highlight the professional learning dimensions we intend to develop. As a COI about practice, our participants are invited not only to learn about using action research as a tool for investigating their practice but also to experience a different mode of

teaching and learning. At the same time, they are invited to reflect on their experience as tutors when adopting an asynchronous mode of delivery for their own teaching. This dimension was particularly relevant to our participants in this study, who had to move teaching online owing to COVID restrictions.

2.3 Tutor feedback and peer feedback

We designed our module to include various activities, such as the opportunity to interact with peers on weekly forums about each of the steps of the proposal (weeks 1-5) and, later, to work with a 'critical friend' to provide and receive peer feedback on the proposal (weeks 6-11).

The provision of feedback (both by tutors and peers) is deeply connected to all the areas of presence (and influence). In our study, discussions played a key role and provided a venue for participants to communicate openly and build shared understanding; and for instructors to facilitate the process skilfully. Denoyelles, Zydney and Chen (2014, pp.161-162) argued that educators need to encourage productive, efficient and meaningful discussions that integrate all three presences (Garrison, Anderson and Archer, 2000) and proposed a set of strategies to guide teachers as they design and facilitate online discussions in order to build and support an online community: modelling social presence; using social cues (being more personal or maintaining social norms); selecting discussion prompts that encourage structured interaction and critical thinking while also supporting the specific learning objectives; providing prompt but modest feedback (not only offering expert observation but also encouraging students to take ownership of the discussion, by which student-to-student social interactions may flourish); facilitating purposefully (questioning and assuming a challenging stance to stimulate critical thinking and basing the facilitation on the purpose of the discussion); providing feedback through multimedia – using richer forms of media besides traditional text (for example: audio and video), in order to enhance multiple presences (Ice *et al.*, 2019) – and encouraging peers to facilitate (so stimulating discussion among the group and freeing up the instructor to focus on sharing expert knowledge).

In our module, digital discussion boards ('forums') are particularly relevant. In an online course, these collaborative tools may enhance student learning because they stimulate development of higher-order cognitive processing and critical-thinking skills. In asynchronous contexts, text-based discussion boards may hold the added advantage of a time-lag between postings, with potential for greater reflection and enriched discussion, as is much less likely in face-to-face settings.

Clarke and Bartholomew (2014) created an analytical tool (based on the COI framework) to categorise the types of comments made by instructors and identified more complex profiles of instructor interaction; these can help us to understand what instructors say in discussions and to investigate the relationships between comments and student participation. The authors raise relevant questions about instructors' falling short on cognitive comments (especially challenging, probing, and elaborating) and argue for the use of tools (such as the COI) to help investigate how instructors are negotiating the balance between providing encouragement and probing to levels of deeper learning – both in theory and in practice.

As instructors, we have tried to address this need by adding questions to our feedback comments, so as to probe deeper learning and stimulate critical awareness. According to Bliss and Lawrence (2019), instructors ought to support cognition through peer dialogue and increased learner-content interactions, while also building social presence and encouraging learner-learner interactions in order to enhance the learning experience. We sought to draw on these strategies in facilitating our asynchronous course and to remain aware of the importance of facilitation in an effective learning experience (Muammar and Alkathiri, 2022).

In our module, discussion boards constitute the main context for peer feedback opportunity: participants are invited to act as critical friends and offer supportive observations – in relation to the assessment criteria – about their peers' action research projects, thus helping to promote reflection, deeper learning, and the development of critical thinking skills (Boud, 2001; Nicol, Thomson and Breslin, 2014; Sadler, 2010). As a result of this intervention, we have noted improvement in time spent on task, enhanced engagement with the course content, as well as faster responses and more personal responses in the forums. Furthermore, this sharing of responsibilities helps to compensate for the fact that the instructor cannot reach everyone at once. Participants may, by such activity, develop a greater sense of accountability, autonomy and self-regulation, which in turn can enhance participation and engagement and increase social presence (Ertmer *et al.*, 2007; Liu and Carless, 2006; McConlogue, 2015). Finally, in the context of professional development, participants can share their professional experiences and learn from each other in a collegial way. The role of the tutor is paramount as a catalyst and moderator and trust amongst peers plays a significant role in promoting opportunities for effective peer feedback (Lynch, McNamara and Seery, 2012; Topping *et al.*, 2000).

2.4 Participation and persistence

We have discussed above the dimensions of presence which relate to the COI framework and their relevance in establishing an effective professional learning context. However, participant presence is also a vital element of a successful asynchronous professional learning experience in relation to the levels of participation and persistence of course participants. While the factors discussed above are predominantly external to participants, there are also important internal factors which govern the success of the learning experience. These are, of course, much more difficult to influence through curriculum design and teaching strategy, but having – and making explicit to participants – an awareness of the issues can be a useful approach.

Differences in engagement of participants has been noted as a key challenge in professional education (Miers *et al.*, 2007). Waterston (2011) investigated how diverse levels of participation in an asynchronous online professional course affected those involved, finding that those who took a greater part in online forums had a more positive attitude to collaboration before the start of the course. Greater engagement during online discussion also led to more involvement and interaction with course tutors (Evans *et al.*, 2014; Waterston, 2011). Studies looking at HE more broadly have also demonstrated a positive relationship between participation levels and student achievement in asynchronous courses (Song and McNary, 2011; Zhu, 2006). The measure of participation in these studies is often the number of forum posts made, the number of logins or the number of posts read. However, other studies have found no such relationship (Song and McNary, *op.cit.*; Picciano, 2002). Kent *et al.* (2016, p.118) argue that differences in 'instructional and pedagogical designs' and moderators' approaches may be the explanation. In our study, it is relevant to acknowledge the fact that participants are familiar with the virtual learning environment we use (Moodle) because they use it for their own teaching and learning activities.

This debate within the literature highlights the close interconnection of the different factors at play in the effectiveness of asynchronous learning experiences. However, it is clear that course participants' levels of participation and presence in the online environment, influenced by their pre-existing personal attitudes towards online collaboration, also have a bearing on the learning experience. For the purposes of this study, we will focus on participants' perceptions of how much they gained from taking part in the various course activities and how important they found this participation.

Level of participation is also closely related to the issue of persistence. Carr (2000) found that levels of persistence are much lower across HE distance-learning courses compared to face-to-face provision, with between ten and twenty per cent higher dropout rates. Rovai (2002a) argues that building a strong sense of community in distance learning is a key means of addressing the lower levels of persistence, but also of enhancing commitment, cooperation and collaboration (*op.cit.*, pp.320-321). These findings for distance-learning education are relevant here as the asynchronous teaching and learning course under review takes place online and with participants at a distance.

2.5 Connectedness, sense of community and learning experience

The notions of connectedness and sense of community are also crucial considerations within the context of asynchronous learning. They imply the existence of a group with common interests or goals underpinned by feelings of belonging, duty and shared learning experience. In the context of professional learning, the phrase 'community of practice' (as defined by Lave and Wenger, 1991) has come to represent the notion that the collective subject becomes the source of agency and knowledge and that the process of learning is therefore at once social and cognitive. Lave and Wenger postulate a close relationship between knowledge, the technology of practice and the culture of that practice. As they say: '*a community of practice is an intrinsic condition for the existence of knowledge, not least because it provides the interpretive support necessary for making sense of its heritage*' (Lave and Wenger, *op.cit.*, p.98).

In the case of an asynchronous learning experience, a group shares knowledge and inquiry in order to pursue cognitive and practical interests. As pointed out by Rovai (2002a), community is what people do together and share, but not how or where they do it, so emphasising the role of mutual interactions and collective behaviour directed toward a common goal, i.e., a shared learning experience (Dale, 2017).

Establishing mutually reinforcing relationships is essential to cultivating participants' sense of community. Moore and Kearsley (1996) argue that the quality of interactions among participants and the instructor relates less to geographical separation and more to the degree of flexibility in the structure of a course, the degree of dialogue and interactions that take place within it (participant to participant, participant to content, and participant to tutor), and the degree of learner autonomy. Similarly, the COI framework discussed above views the learning experience as arising from the interaction of the three presences (Swan, Garrison and Richardson, 2009) with the interactions between all actors playing an essential role

throughout the entire process. However, Fuller (2022), who studied the same context in which our study took place, argued that the sense of community can be established more successfully within synchronous delivery modules with webinars than in asynchronous modules.

By being part of a supportive community, participants can engage in dialogue and reflection and develop their sense of connectedness. Learning communities enable knowledge to be co-constructed rather than merely acquired (Shea, 2006; Shea, Li and Pickett, 2006). In an effective learning community, participants: take responsibility for not only their own learning but also that of their peers; nurture and trust one another; and experience a more active learning experience (Rovai, 2002b). Moreover, the development of this sense of community is proven to benefit perceived learning, course satisfaction, engagement and persistence (Rovai, 2002a).

As will be discussed below, these key themes and literature have informed both the design and delivery of our module and the data collection tool we developed for this study.

3. Methodology

This study intends to answer the following research question: *Does an asynchronous teaching and learning approach facilitate effective professional learning?* Our study deployed an online questionnaire administered through the Microsoft Forms platform to ensure the security and anonymity of data (no identifying information was collected). We used a mixed-methods approach with both quantitative (questionnaire with answers using Likert scales of efficiency and gain) and qualitative data (open-ended questions about personal experiences and perceptions). We followed a convergent parallel approach (Creswell, 2014), which proved to be beneficial, considering the limited time available for data collection and the fact that both quantitative and qualitative data are valuable in understanding the issue. Data were collected at the same time, analysed separately and then compared in the analysis and interpretation of results.

The questionnaire measured participants' overall perceptions regarding:

efficiency:
- learning context
- facilitation
- tutor feedback
- peer feedback

gains:

- presence
- participation
- persistence
- connectedness
- sense of community
- learning experience.

The design of our questionnaire was inspired by the factors identified in the literature review above, as well as the model for creating quality online learning environments developed by Shea *et al.* (2005a). When designing the sections about learning context and learning experience, we considered the learner roles, knowledge-building, assessment, community and the various forms of 'presence.'

The sections of our questionnaire in which we articulated the concepts of presence, participation, persistence, connectedness and sense of community were designed with the factors that influenced the development of a sense of community among distance learners identified by Rovai (2000). In our case, the factors involving student-instructor ratio, social presence and instructor immediacy, collaborative learning, group facilitation and self-directed learning were particularly relevant.

Drawing on the subsequent body of research and scales designed by Rovai (2002, a,b,c) we also identified a set of items that could help us explore the role of perceived cognitive learning, connectedness and persistence. In terms of teaching presence, the design of the 'facilitation' section of our questionnaire considered the six indicators identified by Garrison and Anderson (2003) as well as the items from the 'Teaching Presence Scale' developed by Shea, Li and Pickett (2006).

The use of five-point Likert scales facilitated participants' reflection in terms of efficiency and gain and allowed the identification of mean values and the comparison of perceptions.

Participants were also invited to answer three open-text questions about the extent to which (1) peer collaboration and learning contributed to learning, (2) they felt part of a community and (3) the asynchronous learning approach facilitated learning. Approval was obtained from the institutional Research Ethics Committee to conduct the study and informed consent was obtained from all participants prior to data collection.

3.1 Participants

The study was open to all 107 academics who participated in the programme (January 2020 January 2021 – three cohorts), thus representing the target population. This was a convenience sample based on the lists of participants available. The invitation to participate was sent by email and an information sheet was attached. The email to faculty introduced the research topic and provided information about the purpose and significance of the study. The link to the online survey and open-ended questions was contained in the email. Submission of responses indicated consent to participate.

A total of thirty-five academics (32.7%) returned the questionnaires, of which 74% were from QMUL, 20% from other HEIs or the NHS (6%).[1] The majority of the respondents were from the faculty of science and engineering (43%) and had between two and five years of experience teaching in HE (51%).

3.2 Data analysis

In line with mixed-methods convergent parallel research design, statistical analysis of quantitative data was performed separately from qualitative thematic content analysis. The quantitative data was analysed using SPSS through descriptive statistical analyses. The open-text responses were analysed, with the themes emerging and identified in the first instance by each member of the team and then compared, discussed and refined by the research team. This iterative process allowed the identification of themes to address the issues embedded in the research question (Lincoln and Guba, 1985, Corbin and Strauss, 2008, Creswell, 2012). The themes that emerged from coded data were used to create this case study.

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[1]Course participants include clinicians who are employed by the National Health Service but who teach on medical or dental degree courses.

Institution	QMUL - 26 (74%)
	Other external institution – 7 (20%)
	NHS – 2 (6%)
Disciplinary area	Science and engineering – 15 (43%)
	Medicine and dentistry – 13 (37%)
	Humanities & Social Sciences – 7 (20%)
Years of experience (teaching in HE)	less than 2 years – 6 (17%)
	2-5 years – 18 (51%)
	6-10 years – 6 (17%)
	11-20 years – 5 (14%)

Figure 2. Breakdown of respondents' institution, disciplinary areas and years' experience of teaching in HE.

4. Results and Discussion

Following the separate analysis of quantitative and qualitative data from our questionnaire, results were then merged, but respecting both analyses and the categories and themes identified. Average responses to the Likert scale questions were calculated (n= 35). Figure 3 shows the order of highest to lowest score on the Likert scale of 1-5 (Strongly disagree / Disagree / Neutral / Agree / Strongly Agree) of the key factors in effective online learning which we are considering.

Results indicated that the most successful elements of participants' experience were tutor feedback (4.65), learning context (4.32) and sense of community (4.28). The most challenging aspects for our respondents were facilitation (3.98), peer feedback (3.94) and connectedness (3.90).

Relevant Areas	Mean values
Tutor feedback (tutor's comments in forums and assignments): Immediacy and timeliness of the feedback, feedback received (clear and constructive comments) and feedforward received (clear guidance on how to use the feedback provided)	4.65
Learning context: Materials and resources; announcements and check-in communications; activities, group size; student-instructor ratio	4.32
Sense of community: Learning collaboratively; sharing common interests and values; receiving peer feedback and providing peer feedback	4.28

Presence, participation and persistence: Participating in course activities; participating in forums; replying to posts; keeping up-to-date and meeting deadlines	4.26
Learning experience: Developing your sense of purpose in order to meet your needs; enhancing self-directed learning; promoting knowledge-building and creating opportunities to apply learning in practice	4.21
Facilitation: Defining the tasks or activities; setting deadlines; encouraging, acknowledging, or reinforcing student contributions; setting climate for learning; drawing in participants and prompting discussion; seeking to reach consensus or understanding and assessing the efficacy of the process	3.98
Peer feedback: Feedback received from other participants	3.94
Connectedness: Trusting the group; depending on the group; feeling confident; receiving support; providing support	3.90

Figure 3. Mean values for the factors considered to evaluate the experience of participants.

4.1 Tutor feedback (and facilitation)

Feedback from the tutor was regarded as the most successful aspect of the course and, when referring to the role of the tutor, participants mentioned that tutors were "*always timely with feedback, positive and constructive*" and "*the feedback provided by the tutor was very helpful.*" These findings should be regarded as particularly relevant if we revisit the work of Peacock and Cowan (2019), who stressed the need to promote collegially supportive and facilitative tutor-learner relationships. In some cases, however, the predominance of the role of the tutor was mentioned, with many participants relying on these interactions ("*Most of interaction, however, was between tutor-student*") and not so much on the peer feedback opportunities. This may be explained by the fact that the 'official' peer collaboration activities were completed only in weeks 6 to 11 and until then most of the interaction was conducted in the forum, with weekly replies from the tutor to the posts. In this earlier phase, peer collaboration was encouraged but was not a formal course activity. In terms of facilitation, one important point to consider was the time involved in creating, engaging, monitoring and providing individual tutor feedback on a weekly basis, especially for a larger group. Designing and maintaining 'teaching presence' (Garrison, 2006) and structuring and leading all the

activities in a constructive, collaborative and sustained manner involves what Garrison, Anderson and Archer (2000, p.5) called an effort to achieve the "*purpose of realizing personally meaningful and educationally worthwhile learning outcomes*".

In this context, it is relevant to see that 'facilitation' represented one of the most challenging elements. This element is deeply connected to the asynchronous mode of delivery. The approach to facilitation is particularly different from synchronous contexts and participants seem to appreciate the opportunity to interact directly with the tutor. In our case, emails were used to respond to queries, answer any questions about the activities or simply to catch up on participants' progress. However, we feel that much more can be done in this context and have identified this as an area for improvement. As Peacock and Cowan (2019, p.78) say, in their recommendations for action in accredited courses (based on the revision of the original COI framework), in order to promote trusting, meaning-making and deepening understandings (referred to as influences), "*tutors should converse enthusiastically with learners, as with individuals, about what they are doing, and in doing so, they will emerge as people with whom learners can identify and trust and in whose programs they can feel a powerful sense of belonging*". Moreover, as found by Muammar and Alkathiri (2022), tutors' skills in discussion management is seen as one of greatest influences on the satisfaction of faculty members who attend HE professional development programmes in teaching.

When referring to the links between asynchronous delivery and their learning, some respondents suggested "*introducing perhaps one or two synchronous learning activities to promote a stronger sense of community.*" Peer feedback was also seen by participants as one of the more challenging elements of the course and, when reflecting on the connections between peer feedback, collaboration and learning, many participants mentioned that they relied on relationships they had already developed with peers in previous modules or from the same faculty.

Overall, participants appreciated the contribution of peer collaboration in their own learning, finding it "*provided useful guidance to improve [my] teaching practice and plans.*" Others mentioned that they "*really liked commenting on other people's work and getting feedback from peers on* [mine]." These opportunities to interact with their peers and share views and concerns with their critical friend were regarded as a very positive feature of the module: "*Really liked the use of having a 'buddy'. Using the forums to read about how my colleagues were approaching their AR project was very useful. Also liked when we had to comment on another colleague's work who wasn't our critical friend.*' Some participants found these opportunities for peer collaboration led to "*deeper learning*" and allowed them to "*develop*

higher-level of thinking, oral communication, self-management, leadership skills and increased [-] *responsibility."* These reflections align with findings in the literature relating to the use of peer feedback and promotion of reflection, critical thinking and deep learning (Boud, 2001; Nicol, Thomson and Breslin, 2014; Sadler, 2010) Significant impacts in terms of engagement were also mentioned ("*It did help me engage with some assignments better*") and one participant even came up with the notion of "*Re-enforcement*" ("*having to explain to someone else's your view point or a concept re-enforced the concept. Made the process more fun too. The learning wasn't dry as a result, but anchored in day-to-day activities*"). Again, this is in line with existing literature which found a connection between peer feedback and engagement, including such connection within a professional learning context (Ertmer *et al.*, 2007; Liu and Carless, 2006; McConlogue, 2015).

In some cases, however, participants did not find peer collaboration to be useful because they were able to complete assignments independently; their topic was distinct from many of the key themes their peers were worked on and the comments they received were, for the most part, general. When providing peer feedback, participants mentioned that pressure and the lack of discussion and reflection did not make their contributions particularly useful to their peers. It is these aspects of peer feedback and collaboration which seem to have resulted in the lower overall rating for this area. This more challenging dimension of peer feedback is less explored within existing literature but, in our case, these reflections can be interpreted as evidence of the gains associated with participating and engaging in the programme. Indeed, studies exploring the effectiveness of this type of programme have pointed out gains in terms of the development not only of self-efficacy beliefs (Daumiller *et al.*, 2021) but also of self-concept and subjective knowledge about teaching and learning (Fabriz *et al.*, 2021).

4.2 Learning context: adopting an asynchronous approach

The learning context was regarded as the second most successful element in terms of the participants' experience. When asked about the impacts of studying asynchronously, respondents noted that the flexibility offered by this mode of delivery was a facilitator of learning. Our participants are busy professionals, and the asynchronous delivery meant they could complete the tasks at their own pace or when they had more time. One participant even reported having used this experience in this module in personal teaching practice: "*the asynchronous learning approach set up by this module is a role model for my teaching practice in the year 2020-2021. Due to Covid-19 pandemic, all content has to be online. I adopted the asynchronous learning approach of this module in my modules for science and engineering students*." In this context, Noben *et al.* (2021) have, in fact, concluded that

participation in professional development training contributes to academics' moving from a teacher-centred to a more student-centred conception.

Other participants mentioned the level of commitment and discipline this approach required: "I kept up to date (more or less!) during the semester week by week in order to be prepared for each session. The asynchronous nature required more commitment and discipline to keep on top of work." The interconnection of these factors and their impacts in terms of participation and persistence play a key role in the effectiveness of asynchronous learning experiences. As found by Rovai (2002), in order to address lower levels of persistence and enhance commitment, cooperation and collaboration, there should be a clear investment in building a strong sense of community. Indeed, the sense of community, collaboration and support have also been identified by respondents as highly relevant to the learning context, with one participant mentioning social interactions as a "luxury" and another one referring to a "trade off between the asynchronous nature of the course - which allows us to study in our on time […]- and the synchronous and more community based approach." As pointed out by Moore and Kearsley (1996), the quality of the interactions among participants and the instructor needs to be considered when planning the degree of flexibility in the structure of a course, the degree of dialogue and interactions that take place within it and the degree of learner autonomy.

4.3 Sense of community (and sense of connectedness)

The sense of community was regarded as the third highest gain (4.28) (higher than that of connectedness with 3.90 - lowest scoring element). While personal connectedness is a key element of a community of practice (Lave and Wenger, *op.cit.*), it seems that in this situation participants distinguished between 1) the professional exchanges and community which was established through asynchronous interactions and 2) the personal relationships and connections which fall under 'connectedness'. A dichotomy between these two dimensions is clear in the way participants responded to our open-text question about feeling part of a community. Most participants who responded to this question did not seem to feel part of a community ("*Although it's reassuring to know others are going through the same process, I didn't feel as though I am part of a community*"). Some attributed this to the low level of interaction and the lack of opportunities to work together, while others just felt that it was not their 'thing.'

A number of participants mentioned interactions with colleagues they knew from previous modules on the programme, something that seems to have promoted the development of a

certain sense of trust – an important aspect of 'connectedness,' although not a sense of community per se. In fact, some participants said that they relied on existing relationships and connections with peers that sometimes led to feeling responsible for the community ("*I knew some of my peers from before so I could check their post for guidance*"; "*we had a good group with key members who were able to encourage and support others. I did not get to meet all the group via the forums but the ones we were in regular contact with became close and supportive of each other*"). When participants responded that they did feel part of a community, they referred to the role played by collaboration and peer feedback ("*the collaboration within the group was efficient and I felt to be encouraged and supported in the learning process*") and to enjoyment, encouragement and support ("*I liked the group. It made it very interesting that we were from different schools, experience, and disciplines*"). These results are consistent with a previous study developed by Fuller (2022) in the same context who concluded that peer feedback, peer learning and collaborative activities within the learning design were crucial for effective development of a community of practice.

Some suggestions to promote the development of the sense of community included the creation of a WhatsApp group or other informal option to communicate.

5. Conclusions

The results of our research will feed directly into future delivery of our asynchronous provision, to asynchronous elements of our mixed-mode online delivery and to training and development of new instructors. However, we hope that they are also of wider use to the academic practice and professional development community. Given our participants' dual role as both learners and teachers, we believe the findings are particularly interesting. Overall, in answer to our central research question, we conclude that an asynchronous teaching and learning approach does facilitate effective professional learning. However, this is dependent on a range of factors related to course design and delivery, as well as on factors relating to participants and their attitudes and approaches.

Reference list

Akyol, Z. and Garrison, D.R. (2011) 'Assessing metacognition in an online community of inquiry.' *Internet and Higher Education,* 14(3), 183-190. Available at: https://doi.org/10.1016/j.iheduc.2011.01.005 (Accessed: 03 April 2019).

Akyol, Z. and Garrison, D.R. (2011) 'Understanding cognitive presence in an online and blended community of inquiry: assessing outcomes and processes for deep approaches to learning.' *British Journal of Educational Technology,* 42, 233-250. Available at: https://doi.org/10.1111/j.1467-8535.2009.01029.x (Accessed: 03 April 2019).

Annand, D. (2011) 'Social Presence within the Community of Inquiry Framework.' *International Review of Social and Distributed Research*, 12(5). Available at: http://www.irrodl.org/index.php/irrodl/article/view/924/1855 (Accessed: 03 April 2020).

Baughan, P., Lindsay, S. and Parker, P. (2015) 'Common themes and missing pieces: the educational value of postgraduate teaching development programmes.' *Compass: Journal of Learning and Teaching*, 7(11). Available at: https://doi.org/10.21100/compass.v7i11.213 (Accessed: 09 November 2022).

Bliss, C. and Lawrence, B. (2019) 'From Posts to Patterns: A Metric to Characterize Discussion Board Activity in Online Courses.' *Journal of Asynchronous Learning Networks*, 13(2). Available at: http://dx.doi.org/10.24059/olj.v13i2.1665 (Accessed: 27 October 2020).

Boud, D. (2001) 'Peer learning and assessment.' In: Boud, D., Cohen, R. and Sampson, J. (eds.) *Peer learning in higher education* (1st ed.) London: Kogan Page Limited, 67–84. ISBN: 9781315042565

Carr, S. (2000) 'As distance education comes of age, the challenge is keeping the students.' *Chronicle of Higher Education*, A39 –A41. Available at: https://www.chronicle.com/article/As-Distance-Education-Comes-of/14334 (Accessed: 04 April 2019).

Chalmers, D. and Gardiner, D. (2015) 'An evaluation framework for identifying the effectiveness and impact of academic teacher development programmes.' *Studies in Educational Evaluation,* 46, 81-91. Available at: https://doi.org/10.1016/j.stueduc.2015.02.002 (Accessed: 30 April 2020).

Clarke, L. and Bartholomew, A. (2014) 'Digging Beneath the Surface: Analyzing the Complexity of Instructors' Participation in Asynchronous Discussion.' *Online Learning*, 18(3). Available at: http://dx.doi.org/10.24059/olj.v18i3.414 (Accessed: 03 April 2019).

Daumiller, M., Rinas, R., Olden, D. and Dresel, M. (2021) 'Academics' motivations in professional training courses: effects on learning engagement and learning gains.' *International Journal for Academic Development,* 26(1), 7-23. Available at: https://doi.org/10.1080/1360144X.2020.1768396 (Accessed: 23 June 2022).

DeNoyelles, A., Zydney, J. and Chen, B. (2014) 'Strategies for creating a community of inquiry through online asynchronous discussions.' *Journal of Online Learning and Teaching*, 10(1), 153-165. Available at: http://jolt.merlot.org/vol10no1/denoyelles_0314.pdf (Accessed: 03 April 2019).

Ertmer, P., Richardson, J., Belland, B., Camin, D., Connolly, P., Coulthard, G. and Mong, C. (2007) 'Using peer feedback to enhance the quality of student online postings: An exploratory study.' *Journal of Computer-Mediated Communication*, 12(2), 412-433.

Available at: https://doi.org/10.1111/j.1083-6101.2007.00331.x (Accessed: 30 October 2019).

Evans, S., Knight, T., Sønderlund, A. and Tooley, G. (2014) 'Facilitators' experience of delivering asynchronous and synchronous online interprofessional education.' *Medical Teacher*, 36(12), 1051-1056. Available at: http://dx.doi.org/10.3109/0142159X.2014.918254 (Accessed: 02 October 2019).

Fabriz, S., Hansen, M., Heckmann, C., Mordel, J., Mendzheritskaya, J., Stehle, S. and Horz, H. (2021) 'How a professional development programme for university teachers impacts their teaching-related self-efficacy, self-concept, and subjective knowledge.' *Higher Education Research & Development,* 40(4), 738-752. Available at: https://doi.org/10.1080/07294360.2020.1787957 (Accessed: 09 November 2022).

Fuller, S. (2022) 'Building communities of practice in distance learning courses for higher education teacher development.' *Compass: Journal of Learning and Teaching,* 15(1). Available at: https://doi.org/10.21100/compass.v15i1.1249 (Accessed: 07 December 2022).

Garrison, R. (2006) 'Online collaboration principles.' *Online Learning*, 10(1), 25-34.

Available at: http://dx.doi.org/10.24059/olj.v10i1.1768 (Accessed: 30 October 2019).

Garrison, R. and Arbaugh, J. (2007) 'Researching the community of inquiry framework: Review, issues, and future directions.' *The Internet and Higher Education*, 10(3), 157-172. Available at: 10.1016/j.iheduc.2007.04.001 (Accessed: 30 October 2019).

Garrison, D., Anderson, T. and Archer, W. (2000) 'Critical inquiry in a text-based environment: Computer conferencing in higher education model.' *The Internet and Higher Education*, 2(2-3), 87-105. Available at: https://doi.org/10.1016/S1096-7516(00)00016-6 (Accessed: 30 October 2019).

Ice, P., Curtis, R., Phillips, P. and Wells, J. (2019) 'Using asynchronous audio feedback to enhance teaching presence and students' sense of community.' *Online Learning,* 11(2).

Available at: http://dx.doi.org/10.24059/olj.v11i2.1724 (Accessed: 07 December 2022).

Kent, C., Laslo, E. and Rafaeli, S. (2016) 'Interactivity in online discussions and learning outcomes.' *Computers & Education*, 97, 116-128. Available at: https://doi.org/10.1016/j.compedu.2016.03.002 (Accessed: 30 October 2021).

Liu N. and Carless, D. (2006) 'Peer Feedback: The Learning Element of Peer Assessment.' *Teaching in Higher Education.* 11(3), 279-90. Available at: https://doi.org/10.1080/13562510600680582 (Accessed: 30 October 2021).

Lynch, R., McNamara P. and Seery N. (2012) 'Promoting Deep Learning in a Teacher Education Programme through Self- and Peer-Assessment and Feedback.' *European Journal of Teacher Education*, 35(2), 179-97. Available at: https://doi.org/10.1080/02619768.2011.643396 (Accessed: 03 April 2019).

Macià, M. and Garcia, I. (2016) 'Informal Online Communities and Networks as a Source of Teacher Professional Development: A Review.' *Teaching and Teacher Education*, 55, 291-307. Available at: https://doi.org/10.1016/j.tate.2016.01.021 (Accessed: 03 April 2019).

McConlogue, T. (2015) 'Making judgements: Investigating the process of composing and receiving peer feedback.' *Studies in Higher Education*, 40(9), 1495-1506.

Available at: https://doi.org/10.1080/03075079.2013.868878 (Accessed: 03 April 2019).

Means, B., Toyama, Y., Murphy, R., Bakia, M. and Jones, K. (2010) *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies.* Washington: US Department of Education. Available at:

https://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf

(Accessed: 03 April 2019).

Miers M., Clarke, B., Pollard, K., Rickaby, C., Thomas, J. and Turtle, A. (2007) 'Online interprofessional learning: The student experience.' *Journal of Interprofessional Care*, 21(5), 529-542. Available at: https://doi.org/10.1080/13561820701585296 (Accessed: 30 October 2021).

Moon, J. (1999) 'Reflection in higher education learning: Working Paper 4.' *Learning and Teaching Support Network.* Available at: https://nursing-midwifery.tcd.ie/assets/director-staff-edu-dev/pdf/PD-%20Working-Paper-4-Moon.pdf (Accessed: 03 April 2019).

Moore, M., and Kearsley, G. (1996) *Distance education: a systems view*. Belmont, CA: Wadsworth. ISBN: 1111520992

Muammar, O.M. and Alkathiri, M.S. (2022) 'What really matters to faculty members attending professional development programs in higher education.' *International Journal for Academic Development*, 27(3), 221-23. Available at: https://doi.org/10.1080/1360144X.2021.1897987 (Accessed:15 January 2023).

Nicol, D., Thomson, A. and Breslin, C. (2014) 'Rethinking feedback practices in higher education: a peer review perspective.' *Assessment and Evaluation in Higher Education*, 39(1), 102-122. Available at: https://doi.org/10.1080/02602938.2013.795518 (Accessed: 30 October 2021).

Noben, I., Deinum, J.F., Douwes-van Ark, I.M., & Hofman, W.A. (2021) 'How is a professional development programme related to the development of university teachers' self-efficacy beliefs and teaching conceptions?' *Studies in Educational Evaluation,* 68.

Available at: https://doi.org/10.1016/j.stueduc.2020.100966 (Accessed: 15 January 2023)

Northey, G., Bucic, T., Chylinski, M. and Govind, R. (2015) 'Increasing student engagement using asynchronous learning.' *Journal of Marketing Education*, 37(3), 171-180. Available at: https://doi.org/10.1177/0273475315589814 (Accessed: 03 April 2019).

Peacock, S. and Cowan, J. (2019) 'Promoting sense of belonging in online learning communities of inquiry at accredited courses.' *Online Learning*, 23(2), 67-81. Available at: http://dx.doi.org/10.24059/olj.v23i2.1488 (Accessed: 30 October 2021).

Peacock, S. and Cowan, J. (2016) 'From Presences to Linked Influences Within Communities of Inquiry.' *International Review of Research in Open and Distance Learning***, 17(5), 267-283. Available at: https://doi.org/10.19173/irrodl.v17i5.2602 (Accessed: 30 October 2021).**

Picciano, A. (2002) 'Beyond student perceptions: issues of interaction, presence, and performance in an online course.' *Journal of Asynchronous Learning Network*, 6(1), 21-40. Available at: http://dx.doi.org/10.24059/olj.v6i1.1870 (Accessed: 03 April 2019).

Rovai, A. (2002a) 'Sense of community, perceived cognitive learning, and persistence in asynchronous learning networks.' *The Internet and Higher Education*, 5(4), 319-332. Available at: https://doi.org/10.1016/S1096-7516(02)00130-6 (Accessed: 30 October 2021).

Rovai, A. (2002b) 'A preliminary look at structural differences in sense of classroom community between higher education traditional and ALN courses.' *Journal of Asynchronous Learning Networks*, 6(1), 41-56. Available at: http://dx.doi.org/10.24059/olj.v6i1.1871 (Accessed: 30 October 2021).

Rovai, A. (2002c) 'Development of an instrument to measure classroom community.' *The Internet and Higher Education*, 5, 197-211. Available at: http://dx.doi.org/10.1016/S1096-7516(02)00102-1 (Accessed: 03 April 2019).

Rovai, A. (2000) 'Building and sustaining community in asynchronous learning networks.'

Internet and Higher Education, 3, 285-297. Available at: https://doi.org/10.1016/S1096-7516(01)00037-9 (Accessed: 03 April 2019).

Rourke, L. and Kanuka, H. (2009) 'Learning in communities of inquiry: A review of the literature.' *Journal of Distance Education,* 23, 19-47. Available at: https://eric.ed.gov/?id=EJ836030 (Accessed: 12 October 2021).

Sadler, D. (2010) 'Beyond feedback: Developing student capability in complex appraisal.' *Assessment & Evaluation in Higher Education*, 35(5), 535-550.

Available at: https://doi.org/10.1080/02602930903541015 (Accessed: 30 October 2021).

Shea, P. (2006) 'A study of students' sense of learning community in online environments.' *Journal of Asynchronous Learning Networks*, 10, 35-44. Available at: http://dx.doi.org/10.24059/olj.v10i1.1774 (Accessed: 30 October 2021)..

Shea, P., Li, C. and Pickett, A. (2006) 'A study of teaching presence and student sense of learning community in fully online and web-enhanced college courses.' *The Internet and*

Higher Education, 9, 175-190. Available at: http://dx.doi.org/10.1016/j.iheduc.2006.06.005 (Accessed: 30 October 2021).

Song, L. and McNary, S. (2011) 'Understanding students' online interaction: analysis of discussion board postings.' *Journal of Interactive Online Learning*, 10(1), 1-14. Available at: https://www.learntechlib.org/p/109405/ (Accessed: 12 October 2019).

Swan, K., Garrison, D. and Richardson, J.C. (2009) 'A Constructivist Approach to Online Learning: The Community of Inquiry Framework.' In: Payne, C. (ed.) *Information Technology and Constructivism in Higher Education: Progressive Learning Frameworks* IGI Global, 43-57. Available at: https://doi.org/10.4018/978-1-60566-654-9.ch004 (Accessed: 03 April 2019).

Timperley, H., Wilson, A., Barrar, H. and Fung, I. (2007) *Teacher Professional Learning and Development: Best Evidence Synthesis Iteration.* Wellington, New Zealand: Ministry of Education. ISBN: 978079032628 3

Topping, K.J., Smith, E.F., Swanson, I. and Elliot, A. (2000) 'Formative peer assessment of academic writing between postgraduate students.' *Assessment & Evaluation in Higher Education*, 25(2), 149-169. Available at: https://doi.org/10.1080/713611428 (Accessed:12 October 2021).

Waterston, R. (2011) 'Interaction in online interprofessional education case discussions.' *Journal of Interprofessional Care*, 25(4), 272-279. Available at: http://dx.doi.org/10.3109/13561820.2011.566647 (Accessed: 03 April 2019)

Zhu, E. (2006) 'Interaction and cognitive engagement: an analysis of four asynchronous online discussions.' *Instructional Science,* 34(6), 451-480. Available at: http://dx.doi.org/10.1007/s11251-006-0004-0 (Accessed: 12 October 2021).