Optimizing Participation with Helpers to Enhance Interaction in a Blended Learning Environment

Hafiz Hanif[1(✉)], Mahizer Hamzah[1], Raja Nor Safinas Raja Harun[2]
[1]Faculty of Human Development, Universiti Pendidikan Sultan Idris, Tanjung Malim, Malaysia
[2]Faculty of Languages & Communication, Universiti Pendidikan Sultan Idris,
Tanjung Malim, Malaysia
mohd_hafiz@fpm.upsi.edu.my

Abstract—This paper aims to design and develop a working prototype of an online platform for blended learning. This platform focuses on enhancing students' online participation through prosocial behavior elements, specifically 'helping'. This study follows the design and developmental research structure, with an innovative take on the design approach. This study utilizes the concept of Helpers found in an organic online community of practice to enhance participation between students in the blended learning environment. Results showed that the combination of social elements embedded in the platform's design and the concept of Helpers helps increase participation among students in a blended learning environment. Furthermore, an interesting observation when the non-Helpers began to take up the role and help others signaled that the concept is fluid rather than strict. This observation potentially opens more opportunities for further discussions and exploration of Helpers' role in a formal online learning environment.

Keywords—online participation, helpers, blended learning environment, prosocial behavior, online learning

1   Understanding today's digital community

It is not uncommon in today's world that each of us is tied to a community or even to multiple communities at any given time. It is ubiquitous to our social presence as another human being. The Internet, an electronic network of computers, allows easier person-to-computer and person-to-person interaction and information retrieval [1] than ever before. With the growth of the Internet and reports of its diasporic dispersion of knowledge, many believe it is a double-edged sword. However, most enthusiasts believe that the low-cost, easily attainable information the Internet provides has benefited lower-income people. In addition, the growing number of research on the social and psychological effects of the Internet [2] support the claims that the Internet is having a positive impact on our lives.

On the other hand, there are concerns that the Internet has widened the digital divide. The Internet has impacted communities, social capital, influenced politics and politicians, affected organizational practices, and raised cultural issues [1] which are unsettling.

People today live in a rapidly developing interconnected global world. This dynamic change is a direct effect of the Internet or what we are making out of it. With the advancement in the method, developers and programmers build the Internet, i.e. from a few static HTML pages and hyperlinks to more complex web applications built around technologies such as Javascript and PHP, more opportunities for more significant dynamic change present themselves.

The underlying reason behind this phenomenon – to communicate, interact, and socialize as part of being in touch is embedded in our instinct. With the advent of the Internet, our social behavior had been augmented into the virtual realm. Whether this augmentation and transfer is a success remains a debate among scholars.

Previous researchers [3], [4] have found that virtual communities of practices are beneficial to facilitate knowledge sharing. Within the scope of this paper, the term 'communities of practice' is perceived as communities where the learning component is central [5]. In the light of legitimate peripherality, learning is achieved through participation – "of both absorbing and being absorbed in the culture of practice" [6]. Thus, facilitation of knowledge sharing through participating in activities between community members is perceived as a learning component of the virtual communities of practice. However, numerous researchers have also described the profound challenge of building and sustaining a true virtual knowledge-sharing community. For example, [7] established their argument based upon diminished participation from an online community despite the technological improvements and support efforts. Similarly, [8] describes the lack of active engagement between members as a significant reason for communities of practice failure. [9] further emphasize that one of the critical factors determining the success and failure of a virtual community lies in its members' motivation to participate actively in community knowledge generation and sharing activities.

Researchers have seen the power that online communities can have and that it can be enormous in terms of membership size and participation rate. Sustained communities often impact their members, including emotional identification and pragmatic gains in various forms, such as providing a solution to a problem and outsourcing the creation of resources and shared knowledge from like-minded people. Online members such as the authors on Wikipedia, the programmers and coders on StackOverflow, the photographers on Flickr, and the open-source community at Github may have benefited from their commitment to the community. Nowadays, we also begin to see a shift in the education sphere, with the Massive Open Online Course (MOOC) take up [10]. However, to sustain MOOCs, a sense of community is needed to complement the more formal learning, hoping to maintain users' interaction and participation. Sites such as Codecademy, Coursera, and Udemy use two-way communication between members for this purpose. The critical issue we are still facing is the age-old problem – participation. Communities will not materialize if there are no members in it, but membership will not grow if there is no interaction in the community to allow new members sign ups.

Scholars have questioned participation in the mediated environment – the psychology behind it, as well as its sociality. [11] were among the earliest scholars to explore communication in telecommunication media, introduced 'social presence'. [12] studied a similar concept earlier under the idea of 'immediacy' in media. Various other scholars took these concepts further to understand the dynamics of human interactions in a mediated environment, especially within the boundaries of online communities.

The Internet has transformed the 'real world' community into the virtual dimension. Robert Putnam's Bowling Alone [13] set a claim that technologies (and their products, including online communities) jeopardize the values and social capital of offline communities by individualizing social life (this in contrast to how people were participating in communities years ago). However, Putnam's belief was criticized for neglecting the potential of the Internet. Through the earlier works of [11] and [12], as well as those who have taken up these ideas, such as [14] [15], and [16], we now have a better understanding of how social presence promotes satisfaction and how a sense of community influences involvement. Rovai, for example, brought up the problem of fostering a sense of community within an educational context, broadening our awareness of the factors that impact community members. We developed a socio-psychological framework to comprehend participation by combining social presence with a sense of community. Although this is a promising start toward understanding the problematic nature of online community engagement, we are still far from concluding that it is a complete solution to the problem.

2   The issue of participation in online learning platforms

With the proliferation of the Massive Open Online Courses (MOOC) and Blended Online Learning practices (for example see [17], [18]), educators still face the age-old problem – students' participation. Many research studies singled out motivation as the primary instrument to elicit a response from students. However, even with models and frameworks such as Knowlton's taxonomy of learning for asynchronous discussion [19], Salmon's five-stage model of teaching and learning online [20], and Preece and Schneiderman's [15], we have yet to arrive at a definitive point where we can say that the model/framework works. With the high dropout/attrition rate, institutions that backed the open educational initiatives, such as Massive Open Online Course (MOOCs), seek solutions to participation. Existing solutions proposed by various scholars often based on intangible motivational concepts, e.g. Gunawardena's social presence and Short, William and Cristie's sense of community. Though helpful, these concepts rendered mixed results in many cases. There have also been many cases reported in the literature of academics that relied on material rewards such as awarding marks and a certain percentage of scores to motivate participation, but this would resort to superficial interactions between students. Nevertheless, research into the psychology of online participation states that helpfulness appears to sustain community. It regulates spirit and trust.

Within the literature on online participation, there is surprisingly little research on the specific issues of helping others online: why people do it, how they do it and with what consequences for themselves. Hammond [21] found 'communicative learners' within early online forums, people who showed greater involvement and took on the role of supporting a group. Various researchers (see [22]–[24]) explored various motivations to participate online. They concluded that the reason to help emerges from a general satisfaction in sharing experiences/ knowledge with others and a belief that one can learn by explaining even if the explanations concern the problems of beginners. Altruism and prosocial behavior are essential, although often founded on an expectation of reciprocity.

Furthermore, a small minority may see providing help as an opportunity to promote their resources, surreptitiously or otherwise. In general, people need to perceive a personal benefit if they continue to volunteer [25]. In other words, volunteers needed to identify with the communities and be cognitively interested in their challenges.

The willingness to help others lies at the heart of any group or community. Through helping each other, members of communities feel a sense of spirit and trust [26] and, arguably, engaged in creating new knowledge [27] in the form of informal, networked learning. However, the means and reasons behind helping others remain an underreported area in the literature.

A reasonable starting point is to consider whether helping others is a natural process; in other words, do humans have a general disposition to cooperate? Aristotle [28] thought that humans were social beings, and that reciprocal help and support were core to community life. This philosophical speculation and the urge to cooperate have cropped up in social anthropology [29] and evolutionary theory. It is striking that reciprocal exchange is a feature found both in earlier communities and highly differentiated societies. Humans encounter other human beings whom they may not meet again. Dunbar & Shultz [30] and Al Mulhim & Eldokhnye [31], among others, has seen a natural limit on group size, or at least the numbers of people one may count on for help.

Nevertheless, humans extend help to many people on the periphery of their lives, including online. Humans help even when little gained, and many scholars, such as Fehr and Gächter [32] and Krush et al. [33], see this as a paradox. Social experiments such as the prisoner's dilemma (see [34]) can throw light on this 'paradox'. However, they are inconclusive about the logic by which we cooperate and that decisions made in real life are never under the artificial conditions of game theory. Helping, both the disposition to help and the context in which help is given, is not a straightforward phenomenon.

3   Prosocial behavior as an online community enabler

Individuals take on differentiated roles in a community; some seem willing to take on 'leadership' roles while others prefer only to read messages in forums [35] or occasionally contribute. In addition, there is a mix of extrinsic and intrinsic issues which affect members' perceptions of that environment (see [36]). A recurring issue is that of

'chicken and egg'. Members of new communities may be willing to provide help, given a level of social presence and a worthwhile pool of community knowledge. However, without their participation, there is little in the way of presence or pooled knowledge in the first place.

Altruism and prosocial behaviors are essential to the birth and sustenance of any online community. Some have reciprocal expectations or see providing help as an opportunity to benefit either financially or in status. In general, people need to perceive a reciprocal profit, often personal and not necessarily material, to continue volunteering – a similar conclusion observed when looking at online groups (see [25]). Trivers [37] presented a model to quantify reciprocal altruism in three different cases, one of which examined assisting people from drowning. He argued that every action has its cost and benefit ratio so that an act of help assumed a later benefit. This cost-benefit concept, along with the idea of the 'cheater'-someone who does not reciprocate help, was used continuously by scholars to explore altruism and reciprocity.

Recent studies have also highlighted that identity and perceived position in a community might contribute to helping behavior. Ma and Chan [38] found that 'perceived online attachment motivation' significantly affected online knowledge sharing behavior. DeSteno [39] in a conceptual paper, suggested that a sense of similarity influenced and enhanced the probability of reciprocal behavior. Pai and Tsai found that sharing behavior depended on members' self-efficacy and perception of community, adding that "members gravitate towards online communities that help them experience well-being by providing opportunities for them to fulfil their autonomy needs" (p. 10).

Several studies have highlighted the gender preferences in helping behavior in the online sphere. For example, Raihani and Smith [40] found that men were willing to donate more when the fundraiser was a female rather than a male representative. Similarly, Wang and Wang [41] found that male gamers were keener to establish relationships and seek emotional support with female gamers.

Methodologically, studies on altruism and reciprocity have often used gaming methods. Two of the most prominently used are the 'Dictator Game' and the 'Prisoner's Dilemma Game'. The former, rooted in experimental economics, is often played by two players assuming the Dictator role while the other becomes the Recipient. The game has many versions, but in its basic form, it starts with the Dictator's decision on splitting an endowment between himself and the Recipient. Though deemed controversial and problematic regarding the 'game' mechanics and the viability of conclusions derived from the evidence [42], this game offers insight into the self-interested economic behavior of individuals. Altruism lies in the Dictator's decision to either include the Recipient in the division of the endowment or ignore him/her. In Prisoner's Dilemma Game, players need to cooperate to attain a lesser punishment, but betraying others brings a more significant reward. A typical response would be to cooperate, but this may change depending on the reward.

With all these, we can begin to see the complexity of altruism. As aptly put by DeSteno [39], people's moral values are different, not only between themselves but also within themselves. He believed that humans could be both altruistic and selfish, and this may depend on context. It is quite possible to imagine that altruism and selfishness sit at both ends of a spectrum. In reflection of the findings stated above, our position on

the spectrum will be affected by many contextual factors. Nevertheless, when exploring the nature of participation in an online community of independent game developers, Hanif & Hammond [43] found the concept of Helpers that may provide a tangible solution to online participation. The concept rooted in the psychological sense of prosocial behavior.

With all the research works discussed so far, only a few studies have focused on integrating what works in open online communities into the structured learning medium that we all have as part of the learning design in our curriculum. Often, we found heightened online participation among students as a direct result of pegging marks onto their participation to motivate students to be engaged in the online discourse set up by the course instructor. There are reports of heightened participation without marks, but this is an underdeveloped area. As mentioned previously, participation, and to an extent, learning in an open online community has been a fluid and self-sustained activity, with minimal to no interruption from the administrators or moderators of the community. This dimension becomes a problem when applied to an existing structured online education system. Findings from numerous research studies signaled that there is a need for teachers or instructors to move the discussions or the online activities forward [44]. However, academics are finding it hard to compensate for the time required to maintain such activities in the light of other managerial and research works. Thus, participation in an online learning environment set up in educational institutions is problematic. To address this issue, the researchers proposed applying the Helpers concept in a learning "community" of students to augment the high participative nature of interaction found in more organic online communities.

4 The study

The study outlines two critical objectives, i.e., (a) to design and develop an online platform that can support students' participation in a blended learning environment, and (b) to determine the usefulness of the Helpers concept to enhance organic participation among students in a blended learning environment.

To design and develop the online platform, the researchers first analyzed the structure of the existing online learning platforms to understand the current functionalities found in those platforms. These functionalities served as the foundational elements in the design of the new LMS. The platforms include a homegrown LMS built by the university, and three other online LMS, chosen for their popularity based on the number of users reported on the web company analysis site – Crunchbase (https://www.crunchbase.com). The analysis comprised User Interface (UI) and User Experience (UX) design, using the heuristic evaluation method based on Molich and Nielsen [45] technique was employed (refer to Table 1). Heuristic evaluation of the user interface involves judging its usability concerning learning. Parameters used in this analysis follow the ten basic usability principles from Molich and Nielsen [45].

Table 1. Checklist for usability in four different LMS based on Molich & Nielsen Ten Usability Heuristics

10 Usability Heuristics	Homegrown LMS	LMSx	LMSy	LMSz
System Status Visibility	√√	√√	√√	√√
System and Real-World Match	√√	√√	√√	√√
User Control and Freedom	√	√√	√√	√
Consistency and Standards	√	√√	√√	√√
Error Prevention		√√	√	√√
Recognition rather than Recall			√√	√√
Flexibility and Efficiency		√√	√√	
Aesthetic and Minimalist	√	√√	√√	
Help Recover from Errors		√	√√	√√
Help and Documentation		√√	√√	√√

Two experts in UI/UX reviewed the four chosen platforms based on Molich & Nielson's checklist. The reports were then checked for their inter-rater reliability (IRR). For this, the agreement among the researchers is high, with 82.5% IRR for all ten heuristic usability elements. Finally, a new learning platform was designed based on the LMS that achieved the highest score in the checklist.
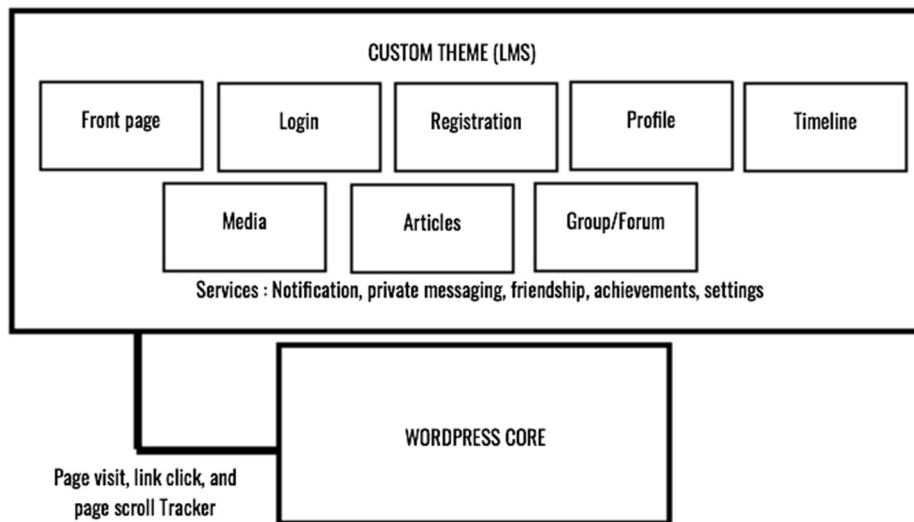

Fig. 1. Overall design and development framework for a custom WordPress theme

The development of the platform utilizes WordPress as the core system. In addition, a bespoke theme was developed based on the functionalities finalized in the heuristics testing phase and the consideration of elements that can augment Helpers and helping behaviors. The final version of the platform consists of various pages, including the

front page, login page, registration page, profile page, timeline page, media repository page, articles page, private massage page, notification page, friendship page, settings page, achievement, and forum page (refer to Figure 1). In addition, custom trackers were embedded in each page to track page visits, link clicks, and page scrolls in numerical values.

Table 2. The helpers' roles (adapted from Hanif and Hammond, 2016)

Five Elements Affecting Helping Behavior	Helpers' Roles
Motivation	You are motivated by the desire to sustain the community. You are motivated by the desire to attain better presence in the community. You are motivated by the desire to create and sustain the shared knowledge in the community.
Modes	You prefer to help both online and offline. You help by pointing the members to shared resources either embedded in the community or those which are available externally.
Preference	You place an importance on proper language used when other members in the community ask for help. You prefer to help those who have carried out a bit of research/ homework before asking for help.
Effects	You learn informally through conversations and examples provided by others. You identity and spirit of togetherness are affected by your activity in the community.
Issues	You are cautious when initiating help.

The study was carried out within one semester (14 weeks) involving 33 students. The students were in Year 3 of their 4-year undergraduate study consisted of seven males and 26 females. To incorporate Helpers in the study, six students (three male and three female) were randomly selected before the start of the semester. They were given early access to the teaching and learning materials intended for the semester, with the instruction to go through them and be proficient enough on the topics to help others for the coming semester. This step was crucial as it established the "knowledgeable others" in the community of learners. On top of early access to the learning materials, Helpers were also inducted into the five roles that affected helping behavior (see Table 2).

These roles guided the Helpers on acting and responding in the community, with room for personalized responses and appropriate actions. A total of five tasks were assigned to the students throughout the semester. These tasks provided a medium on which the Helpers operated, helping other students understand, troubleshoot, and solve any problem. Throughout the study, researchers reviewed the roles played by the Helpers and how their actions impacted the dynamics of participation in the new LMS platform. The usefulness of Helpers was gauged by the impression they left onto other members of the "community". The researchers were also aware that the Helpers might take some time to adapt to their role. Thus, data collection was only initiated two weeks into the semester, giving the Helpers ample time to assimilate to their intended roles. The main task for the Helpers was to provide support for their colleagues and members in the online LMS.

5   Data collection

Even though the study was carried out in a blended learning environment, i.e. the students had face-to-face classes and online discussions on the platform, priority was given to the data and feedback on the activities carried out on the online platform. Even so, the researchers did not exclude the possibility that actions and events during the face-to-face classes may have impacted the online interaction in one way or another.

As depicted in Table 3, data were collected throughout the entire semester, excluding the first two weeks. The process of data collection involves mainly observations and document analyses. These data were collected and interpreted concurrent to the duration of the study, feeding off the previous analyses of data into actions and instructions throughout the whole study. Thus, it was a cyclical process of capturing, analyzing, and implementing data that lasted for approximately 14 weeks.

During observations, activities were recorded in weekly observational field notes. The field notes captured three aspects of interactions found in the community, i.e. 1) the number of open questions, 2) the number of threads/discussions opened, and 3) the nature of responses (tone, pattern, informative). In addition, this information was used to triangulate the other data that were captured throughout the study. For document analysis, a function to track users' activity was also embedded on the platform. This analysis enabled the researchers to observe and look at users' activities at a granular level, including pages visited, links clicked, and scroll events. However, for the interest of users' privacy, tracking of contents in private messages was disabled.

Table 3. Data collection timeline

Tasks	Weeks (1 semester)													
	W1	**W2**	**W3**	**W4**	**W5**	**W6**	**W7**	**W8**	**W9**	**W10**	**W11**	**W12**	**W13**	**W14**
1														
2														
3														
4														
5														

6   Findings

Upon reviewing the activities that happened on the platform, the researchers noticed that the students were engaged in conversations between themselves at multiple spots. They were active on the Timeline page, as well as on private discussion boards and forums. This high frequency of activities signaled that students were more social on the platform. Perhaps they felt a sense of community and togetherness, as often reported by literature as an element that supports participative nature. Based on the statistics taken from the analytics of user activities, users were found to be using functions to view other members' activities frequently. Table 4 shows the frequency of visits, clicks, and scrolls among community members based on the functionalities outlined in the previous chapters.

Table 4 provides a glimpse into the activities that happened on the platform. Although this was a study with a duration of just 14 weeks – a short duration concerning community-building initiatives found in the literature, the level of participation was relatively high. In addition, features on the platform that signify social interactions, apart from the forum and group pages where the discussions on tasks and assignments were carried out, received many visits and clicks. These are the profile page, Timeline page, notification functionality, private messaging service, and achievements page.

Table 4. Users actions analytics against platform features

Platform Features	Users Actions Analytics		
	Visits	Clicks	Scrolls
The front page	156	200	90
The login page	425	514	–
The registration page	45	66	51
The profile page	4152	8523	1256
The main Timeline page	6527	541	859
The notification functionality	547	852	–
The private messaging service	432	219	–
The 'Friendship' functionality	1265	1345	59
The group and forum page	9894	8541	7845
The articles and documents page	234	110	–
The media page	210	258	–
The settings page	162	236	–
The achievements page	730	568	324

Out of 27 members of the community, 21 found that the Helpers helped support their journey to problem-solve issues on their tasks, while the remaining members found that their experience was not as smooth as the others. In particular, the Helpers were helpful when there were other members in the community seeking help. Moreover, the help was given without too much delay and the appropriateness of help, i.e. since the helpers were also their colleagues who happened to know the members' background, the helpers were able to identify appropriate input for issues or problems faced by the other members.

The Helpers were seen as an extension of the lecturer's presence in the online environment. An exciting find is with the development of helpfulness among other members of the community. This feature was seen several times among the non-Helpers in the community, trying to help others. For example, when asked (verbally during one of the face-to-face classes), they mentioned that they were trying to answer others' questions that were deemed accessible or that they have found similar problems previously and had found the solution.

Even though many of the community members had a positive outlook on the roles of the Helpers, some of them were a bit reserved with the idea, coining problems such as the "*work required before being able to ask questions*", and the language used. These issues correspond to the 'Preference' outlined in the Helpers' description (see Table 2).

Some of them had issues when they were told to do a bit of research or their work before coming into the forum or group to ask for help. This issue resulted in the form of

tension between some of the Helpers and the members of the community. There were also instances where the members did not pursue help from the Helpers after being told to do some homework before asking questions. There was also an issue raised when the Helpers asked for queries to be worded appropriately. This issue also resulted in the withdrawal of the member asking the question.

From the online survey distributed among the participants of this research, most of them agreed that the platform was different from the homegrown LMS system. However, it had made an impact on their participation. The factor most frequently mentioned in their comments was the Timeline and the Profile page. These comments signaled that the platform's social features had impacted their participation on the platform. One user aptly said that *"the platform was the awesome ever because its contents with all of the interesting and creative videos that students can use, besides for profile page, were also pretty cool with the information that can be accessed. Thank you!" – A1*.

Another user commented on using the platform as a source of information for learning *"The platform is exciting, not boring and gave me more information about the learning process." – A2*. Other comments were similar to those quoted above, showing an acceptance for the platform's design in benefiting learning and participation.

7 Discussion and conclusion

In the light of the findings described, there are several points worth highlighting. These points include (a) social elements found in a platform's design promote participation, (b) the Helper's concept may help increase participation in a blended learning environment, and (c) the role of the Helpers is fluid and sometimes impactful towards both increasing and decreasing participation.

7.1 Social elements in design

When looking retrospectively, Lave and Wenger's Community of Practice concept played a significant role in understanding interaction dynamics in a community. The concept places members within a cyclical nature of participation [43] where newcomers, entering at the periphery of the knowledge community, gradually move towards becoming the old-timers of the community. The accumulation of a sense of community and shared social identity made members contribute to the community, as observed in this study. Students who were not appointed as the Helpers tried to extend their (virtual) hand for those in need of assistance.

The researchers purposely embedded social structures into the platform's design to leverage this idea and enhanced the concept of community within a practice – in this case, the practice was learning where the community members were all learners who share similar interests. Threading the same line, [46] highlighted the inventiveness and potentials of using social designs in educational platforms to enhance students' learning experience. In addition, there are many learning platforms available online, both for commercial and open, that have incorporated the social-centric design into their platform to enhance users' social presence through embedding elements and functionalities that promote participation.

7.2 Helpers to increase participation

The role of Helpers was seen as both enabler and motivator for participation in an online platform. By definition, their actions and roles were akin to the generic online roles mainly found in forums, and bulletin boards, i.e. moderators, but Helpers were more than just moderators. They were the ones who kept conversations going, prompted users for engaging discussions, and offer help when there were others in need. In a way, Helpers were seen as the extension of the course instructor/lecturer.

Even though Helpers were 'developed' from within the community and were not appointed or hold any official position in the community, the adoption of the concept into a more structured community is seen as the first step into understanding the phenomenon of help in online learning spheres. Furthermore, the concept has shown its potential to be adopted into our existing educational learning structures. Recent studies on participation in classroom settings (see [24], [47]–[49]) found that participation through helping empowers learners to perform individual and group tasks, and that low motivation to participate affect learners' behavior.

7.3 Double-edged sword

The study is set to understand the potential of using the concept of 'Helper' found in Hanif & Hammond [43] in a more structured online learning community. This idea was achieved by mapping the 'Helpers' roles as outlined in their paper onto a group of learners. Although the concept shows promising application, it needs to be adopted accordingly and cautiously. As with the different nature of community applied in this study, problems are bound to happen from the original one. For example, the researchers found that the 'Preference' part of the description of the Helpers was unhelpful. In particular, users of the platform found that Helpers with such preferences hindered learning, acting as a barrier to more productive learning activities or instances. However, the researchers categorized this as a circumstantial element and commented that this results from a difference in culture. This issue may be rooted in the cultural norms of the students. The students might not be familiar with helping without prerequisites.

8 Future research

This study has been carried out on a small-scale sample. Future studies should carry out similar research on a larger scale to confirm the usefulness of the concept of Helpers and the social elements embedded in the design of an online learning platform. A larger pool of samples would mean a richer context to be analyzed and synthesized.

9 Acknowledgement

10 References

[1] P. DiMaggio, E. Hargittai, W. R. Neuman, and J. P. Robinson, "Social Implications of the Internet," *Annu Rev Sociol*, vol. 27, no. 1, pp. 307–336, 2001, https://doi.org/10.1146/annurev.soc.27.1.307

[2] R. Kraut, M. Patterson, V. Lundmark, S. Kiesler, T. Mukopadhyay, and W. Scherlis, "Internet Paradox," *Am Psychol*, vol. 53, no. 9, pp. 1017–1031, 1998, https://doi.org/10.1037/0003-066X.53.9.1017

[3] J. Gammelgaard, "Knowledge Retrieval Through Virtual Communities of Practice," *Behav Inform Technol*, vol. 29, no. 4, pp. 349–362, 2010, https://doi.org/10.1080/01449290903548406

[4] M. Hemmasi and C. M. Csanda, "The Effectiveness of Communities of Practice: An Empirical Study," *Journal of Managerial Issues*, vol. 21, no. 2, pp. 262–279, 2009.

[5] J. S. Sulonen, "Digital Habitats – Stewarding Technology for Communities," *J Community Informatics*, vol. 9, no. 3, 2013, https://doi.org/10.15353/joci.v9i3.3152

[6] J. Lave and E. Wenger, "Situated Learning," 1991, https://doi.org/10.1017/CBO9780511815355

[7] S. Riverin and E. Stacey, "Sustaining an Online Community of Practice: A Case Study," *The Journal of Distance Education / Revue de l'ducation Distance*, vol. 22, no. 2, pp. 43–58, 2008.

[8] S. Borzillo, "Communities of Practice to Actively Manage Best Practices," 2007, https://doi.org/10.1007/978-3-8350-9609-7

[9] A. Ardichvili, V. Page, and T. Wentling, "Motivation and Barriers to Participation in Virtual Knowledge-sharing Communities of Practice," *J Knowl Manag*, vol. 7, no. 1, pp. 64–77, 2003, https://doi.org/10.1108/13673270310463626

[10] M. Hamzah and M. A. Yeop, "Frog VLE (Virtual Learning) in Teaching and Learning: Acceptance and Its Implementation," *Journal of Research, Policy, Practice of Teachers & Teacher Education*, vol. 6, no. 2, pp. 67–77, 2016.

[11] E. B. Parker, J. Short, E. Williams, and B. Christie, "The Social Psychology of Telecommunications," *Contemp Sociol*, vol. 7, no. 1, p. 32, 1978, https://doi.org/10.2307/2065899

[12] A. Mehrabian, *Silent Messages*. Wadsworth Pub. Co, 1971.

[13] R. D. Putnam, "Bowling Alone: America's Declining Social Capital," *J Democr*, vol. 6, no. 1, pp. 65–78, 1995, https://doi.org/10.1353/jod.1995.0002

[14] C. N. Gunawardena and F. J. Zittle, "Social Presence as a Predictor of Satisfaction Within a Computer-mediated Conferencing Environment," *Am J Distance Educ*, vol. 11, no. 3, pp. 8–26, 1997, https://doi.org/10.1080/08923649709526970

[15] U. of Maryland, J. Preece, and B. Shneiderman, "The Reader-to-Leader Framework: Motivating Technology-Mediated Social Participation," *Ais Transactions Human-computer Interact*, vol. 1, no. 1, pp. 13–32, 2009, https://doi.org/10.17705/1thci.00005

[16] A. P. Rovai, "Building Sense of Community at a Distance," *Int Rev Res Open Distributed Learn*, vol. 3, no. 1, 2002, https://doi.org/10.19173/irrodl.v3i1.79

[17] N. Rosman and J. Hamid, "Mastering Programming Concept through Blended Learning: A Case Study," *JICTIE*, vol. 7, no. 1, pp. 52–57, May 2020, [Online]. Available: https://ejournal.upsi.edu.my/index.php/JICTIE/article/view/3725; https://doi.org/10.37134/jictie.vol7.1.6.2020

[18] W. N. W. Ahmad and A. A. Idrus, "TVET Students' Perception towards Online Distance Learning (ODL) during Pandemic COVID-19: Mental Health Perspective," *Special Issue 2021: Evaluation Studies Social Sciences*, vol. 2, pp. 64–70, Sep. 2021, https://doi.org/10.37134/esss.vol2.sp.11.2021

[19] D. S. Knowlton, "A Taxonomy of Learning Through Asynchronous Discussion," *Journal of Interactive Learning Research*, vol. 16, no. 2, pp. 155–177, 2005.

[20] G. Salmon, "E-Moderating," 2011, https://doi.org/10.4324/9780203816684

[21] M. Hammond, "Issues Associated With Participation in on Line Forums—the Case of the Communicative Learner," *Educ Information Technologies*, vol. 4, no. 4, pp. 353–367, 1999, https://doi.org/10.1023/A:1009661512881

[22] M. M. Wasko and S. Faraj, "'It is What One Does': Why People Participate and Help Others in Electronic Communities of Practice," *J Strategic Information Syst*, vol. 9, no. 2–3, pp. 155–173, 2000, https://doi.org/10.1016/S0963-8687(00)00045-7

[23] S. S. Sani, "Postgraduate Students' Experiences of the Online Forum in Myguru2," *Journal of Research, Policy & Practice of Teachers & Teacher Education*, vol. 6, no. 1, pp. 38–49, 2016.

[24] H. Hu, X. Wang, Y. Zhai, and J. Hu, "Evaluation of Factors Affecting Student Participation in Peer-Assisted English Learning Based on Online Education Platform," *Int J Emerg Technologies Learn Ijet*, vol. 16, no. 11, pp. 72–87, 2021, https://doi.org/10.3991/ijet.v16i11.23319

[25] L.-W. Chuang, S.-P. Chiu, J. He, and W.-C. Chu, "Innovation in Design, Communication and Engineering Proceedings of the 2014 3rd International Conference on Innovation, Communication and Engineering (ICICE 2014), Guiyang, Guizhou, P.R. China, October 17–22, 2014," pp. 213–216, 2015, https://doi.org/10.1201/b18737-50

[26] A. P. Rovai and H. Jordan, "Blended Learning and Sense of Community: A Comparative Analysis with Traditional and Fully Online Graduate Courses," *Int Rev Res Open Distributed Learn*, vol. 5, no. 2, 2004, https://doi.org/10.19173/irrodl.v5i2.192

[27] R. M. Palloff and K. Pratt, *Collaborating online: Learning together in community*. Jossey-Bass, 2004.

[28] Aristotle and C. Lord, "Aristotle's 'Politics,'" 2013, https://doi.org/10.7208/chicago/9780226921853.001.0001

[29] D. Johnson and J. Bering, "Hand of God, Mind of Man: Punishment and Cognition in the Evolution of Cooperation," *Evol Psychol*, vol. 4, no. 1, p. 147470490600400130, 2006, https://doi.org/10.1177/147470490600400119

[30] R. I. M. Dunbar and S. Shultz, "Evolution in the Social Brain," *Science*, vol. 317, no. 5843, pp. 1344–1347, 2007, https://doi.org/10.1126/science.1145463

[31] E. N. A. Mulhim and A. A. Eldokhny, "The Impact of Collaborative Group Size on Students' Achievement and Product Quality in Project-Based Learning Environments," *Int J Emerg Technologies Learn Ijet*, vol. 15, no. 10, pp. 157–174, 2020, https://doi.org/10.3991/ijet.v15i10.12913

[32] E. Fehr and S. Gächter, "Altruistic Punishment in Humans," *Nature*, vol. 415, no. 6868, pp. 137–140, 2002, https://doi.org/10.1038/415137a

[33] M. T. Krush, J. R. Pennington, A. R. Fowler, and J. D. Mittelstaedt, "Positive Marketing: A New Theoretical Prototype of Sharing in an Online Community," *J Bus Res*, vol. 68, no. 12, pp. 2503–2512, 2015, https://doi.org/10.1016/j.jbusres.2015.06.037

[34] R. Axelrod and W. Hamilton, "The Evolution of Cooperation," *Science*, vol. 211, no. 4489, pp. 1390–1396, 1981, https://doi.org/10.1126/science.7466396

[35] M. Takahashi, M. Fujimoto, and N. Yamasaki, "The Active Lurker: Influence of an in-house Online Community on Its Outside Environment," *Proc 2003 Int Acm Siggroup Conf Supporting Group Work – Group '03*, pp. 1–10, 2003, https://doi.org/10.1145/958160.958162

[36] M. Paulini, M. L. Maher, and P. Murty, "Motivating Participation in Online Innovation Communities," *Int J Web Based Communities*, vol. 10, no. 1, p. 94, 2014, https://doi.org/10.1504/IJWBC.2014.058388

[37] R. L. Trivers, "The Evolution of Reciprocal Altruism," *Q Rev Biology*, vol. 46, no. 1, pp. 35–57, 1971, https://doi.org/10.1086/406755

[38] W. W. K. Ma and A. Chan, "Knowledge Sharing and Social Media: Altruism, Perceived Online Attachment Motivation, and Perceived Online Relationship Commitment," *Comput Hum Behav*, vol. 39, pp. 51–58, 2014, https://doi.org/10.1016/j.chb.2014.06.015

[39] D. DeSteno, "Compassion and Altruism: How Our Minds Determine Who is Worthy of Help," *Curr Opin Behav Sci*, vol. 3, pp. 80–83, 2015, https://doi.org/10.1016/j.cobeha.2015.02.002

[40] N. J. Raihani and S. Smith, "Competitive Helping in Online Giving," *Curr Biol*, vol. 25, no. 9, pp. 1183–1186, 2015, https://doi.org/10.1016/j.cub.2015.02.042

[41] C.-C. Wang and C.-H. Wang, "Helping Others in Online Games: Prosocial Behavior in Cyberspace," *Cyberpsychol Behav*, vol. 11, no. 3, pp. 344–346, 2008, https://doi.org/10.1089/cpb.2007.0045

[42] N. Bardsley, "Dictator Game Giving: Altruism or Artefact?" *Exp Econ*, vol. 11, no. 2, pp. 122–133, 2008, https://doi.org/10.1007/s10683-007-9172-2

[43] H. Hanif and M. Hammond, "Why and How Do Members Provide Help For Others Within Online Communities?" in *Proceedings of the 10th International Conference on Networked Learning 2016*, 2016, pp. 385–390.

[44] K.-T. Wong and M. B.Hamzah, "Factors Driving the Use of Moodle: An Empirical Study on Malaysian Practising Teachers' Perspective," *JRPPTTE*, vol. 4, no. 2, pp. 15–23, Oct. 2018, [Online]. Available: https://ejournal.upsi.edu.my/index.php/JRPPTTE/article/view/183

[45] R. Molich and J. Nielson, "Heuristic Evaluation of User Interfaces," in *CHI '90: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 1990, pp. 249–256. https://doi.org/10.1145/97243.97281

[46] K. Laeeq and Z. A. Memon, "An Integrated Model to Enhance Virtual Learning Environments with Current Social Networking Perspective," *Int J Emerg Technologies Learn Ijet*, vol. 13, no. 09, pp. 252–268, 2017, https://doi.org/10.3991/ijet.v13i09.8000

[47] J. Öberg and J. Nouri, "Pupils Participation in a Technology-Rich Environment: A Study of Pupil Perspective on Learners' and Teachers' Roles," *Int J Emerg Technologies Learn Ijet*, vol. 16, no. 10, pp. 255–274, 2021, https://doi.org/10.3991/ijet.v16i10.20093

[48] T. J. Fernando, Y. Darvina, S. Y. Sari, L. Dwiridal, and F. R. Rahim, "The Effect of Hots Oriented Worksheets with Barcode Asistant in Online Learning to The Students' Critical and Creative Thinking On Heat and The Kinetic Theory of Gases Learning Topic in Grade XI 1st Harau District Senior High School," *EJSMT*, vol. 8, no. 2, pp. 46–56, Dec. 2021, https://doi.org/10.24036/10679171074

[49] N. Fauzan and S. N. Muhammad, "A Case Study on Brain Based Education and Practices at A Nursery Level: Learning Engagement, Strategies and Principles," *Asian Education Action Research Journal*, vol. 2, no. 1, pp. 51–73, Jun. 2019, [Online]. Available: https://ejournal.upsi.edu.my/index.php/AEARJ/article/view/2545

11   Authors

Hafiz Hanif is a senior lecturer of the Faculty of Human Development, Universiti Pendidikan Sultan Idris, Malaysia. He is currently the Honorary Secretary General for the Malaysian Educational Technology Association (META). He is also serving the industry as the Chief Technology Officer for SiagaX Industries, a technology-driven innovation powerhouse that is based in Cyberjaya, Malaysia. Email: mohd_hafiz@fpm.upsi.edu.my, Website: www.drhafizhanif.net

Mahizer Hamzah is a senior lecturer of Educational Technology at the Faculty of Human Development, Universiti Pendidikan Sultan Idris, Malaysia. He is currently the Deputy Dean of Academic for the faculty and is the Chief Editor for the Malaysian Journal of Education Technology (MJET). Email: mahizer@fpm.upsi.edu.my

Raja Nor Safinas Raja Harun is a professor of languages from the Faculty of Languages and Communication, Universiti Pendidikan Sultan Idris, Malaysia. She is currently the Dean for the Institute of Postgraduate Study, Universiti Pendidikan Sultan Idris. Email: nor.safinas@fbk.upsi.edu.my