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Online Peer Assisted Learning: Reporting on practice

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Cover Page Footnote

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Online Peer Assisted Learning: Reporting on practice

Helen Watts, Makis Malliris, and Olivia Billingham

ABSTRACT

Peer Assisted learning (PAL) in-class is well-established and flourishing in higher education across the globe; nevertheless, interest is growing in online versions and is reflected by a number of pilot schemes. These programs have responded to perceived and actual needs of students and institutions; they have explored the available software packages and have begun to create a bank of learning through academic publications, institutional reports, evaluations, and SINET listserv discussions. This paper examines existing online PAL practice from Australia, Canada, the UK and the USA, and focuses on synchronous modes. We discuss (a) the context, mode, and scope of online PAL, and (b) implementation considerations.

Despite some "teething problems" of these pilots we are convinced by the early and so far limited explorations highlighted here that online PAL can make a significant contribution to learners in higher education by improving engagement through the flexibility afforded by the online space.

INTRODUCTION

In this article we explore online peer assisted learning (PAL) pilots, also known as peer assisted study sessions (PASS) in higher education settings, where in most examples second year undergraduates facilitate small group learning sessions with first year undergraduates. PAL or PASS is a well-established, recognised, and a growing study support feature in higher education across the UK and beyond. In fact, Power (2010) reports over 1000 versions in 29 countries. We outline why we believe these online pilots are timely and important, summarise and categorise these pilots and finally, we highlight the learning points or questions raised by the pilots, with a particular focus on our experience at UWE, Bristol. We do not claim to give "how to" answers, rather we seek to raise questions and awareness of this innovative addition to PAL/PASS practice and undergraduate learning.

Early explorers into online versions of peer assisted learning have noted, that "fully fledged peer-assisted learning schemes that are delivered online are currently largely unavailable" (Huijser & Kimmins, 2008, p. 54). The body of research relating to online PAL specifically, rather than e-learning in general, is limited (Huijser, Kimmins & Evans, 2008, p. 54; Beaumont, Mannion & Shen, 2012), albeit "growing" (Evans & Moore, 2013, p.144), both by the number of examples and the sample sizes. Since 2008 the online pilots are a rich source of learning for any PAL programme hoping to expand into online learning.

This article draws on a generous literature on generic online learning or e-learning that addresses the traditional tutor-student teaching and learning

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patterns in terms of the design and delivery of courses with a focus on student-tutor interactions (e.g., Beetham & Sharpe, 2007; Bender, 2003; Perry & Pilati, 2011; Rovai, 2004, 2007; Stephenson, 2001; Weller, 2002; and many others). Much can be learnt by PAL programs from the broader literature. However, this review focuses on peer-to-peer studies in higher education settings and examples that follow a traditional Supplemental Instruction (Martin, Blanc, & DeBuhr, 1982) approach.

In particular we reflect on the critical issues and challenges involved in the implementation of synchronous online PAL programs. This synthesis and critique of the literature affords an opportunity to explore new possibilities for PAL schemes and can contribute to the training and development of online PAL leaders.

By online, we include the full spectrum of interactive media available; that is, spoken, written, audio, and visual. We recognise that technology is developing rapidly and take up by users is swift, affording new possibilities for practice.

In the course of this literature search a number of different terms have arisen to describe the delivery of PAL sessions using computer-mediation, namely, ePAL (Malliris, 2012), OPAL (online peer assisted learning, McLuckie & Topping, 2004; Evans & Moore, 2013; Beaumont et al., 2012), online supplemental instruction (Ng et al., 2009), OPTEN (On-campus/off-campus Peer Tutoring Electronic Network, (Jegede, 2002, as cited in Evans & Moore, 2013), PALS Online (Huijser & Kimmins, 2006), PAL – Online (Davies, 2004), and Course Wizards1 (Sax, 2003). Here we use online PAL as our working term.

Debates about the benefits of in class versus online learning are longstanding. Our purpose here was to explore whether with the developments afforded by synchronous technologies we could provide an equivalent experience, rather than to examine this debate in detail. We would recommend though that PAL organisers familiarise themselves with the debates and the features of both asynchronous and synchronous platforms.

In support of online PAL we note that "technology savvy" students (Windham, 2006, as cited in McLoughlin & Lee, 2008, p. 10) are common in higher education and that online learning, in all its modes, is well established in UK universities; a recent innovation being Massive Open Online Courses or MOOCs. McLoughlin and Lee (2008) advise educators to capitalise on this predisposition to new technology to enhance and develop existing pedagogies. Furthermore, evidence from users demonstrates the benefit and popularity of online PAL (Beckmann & Kilby, 2008; Davies, 2004; Evans & Moore, 2013).

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[1] Course Wizards or "online teaching assistants [whose] duties include tutoring students, facilitating discussions, and locating resources, but their most essential function is to model the role of a successful student [and] provide peers with the benefits of their experience."

Indeed we found online practice is occurring globally and is likely to expand to meet the demand and needs of the "wired" generation. We need to determine how best to support peer learning using online and mobile technologies. It is timely that PAL programmes explore and pilot online versions as a means to offer an equivalent experience to the traditional in class model.

EXISTING PRACTICE OF ONLINE PAL

Online PAL, in both asynchronous and synchronous modes is at a fairly experimental stage (e.g., Malliris, 2012; Pereira, 2012). This said, some initiatives have published their findings in both the scholarly literature or shared their experiences online (via SINET a PAL practitioners' Listserv: http://www.umkc.edu/asm/si/sinet.shtml). Here we attempt to give a brief summary of each initiative, highlighting our own experience at UWE and discuss some learning points arising from these early pilots.

Synchronous Online PAL at University of the West of England, Bristol (UWE)

UWE has a well-established system of in class PAL developed over the last eleven years. With 1,100 PAL Leaders and PAL Coaches (offering an individual, mentoring-style of PAL) it is one of the biggest schemes both nationally and internationally. To meet the growing demands for PAL from increased interest from both students and staff, and the expanding, diverse student population, alternatives to traditional in-class PAL were needed. Integrating online technologies in to the scheme was a way to meet the demand for growth especially with increasing part-time day, block release, and distance learning courses.

Stage One of our Synchronous Online PAL pilot took place during the academic year 2011-12, with four volunteer PAL Leaders and 20 part-time year one undergraduate participants. All the student participants and PAL Leaders were enrolled on STEM (Science, Technology, Engineering, and Maths) courses. The PAL Leaders attended a full briefing about the pilot and a half day training on the software. We used MS Lync collaborative software and data of the sessions that took place was recorded over a 16-week period. Later we subjected the recordings to a linguistic analysis (Henri, 1991; Herring, 2001, 2004) and collected further reflections from student participants and PAL Leaders in two focus group discussions and two individual interviews.

The full findings of Stage One of this pilot are discussed by Malliris (2012) and Billingham and Malliris (2013). Briefly, the linguistic analysis showed in part that 63% of interactions were conceptual, 19% logistical, 13% technical, and 5% social, indicating that the vast majority of talk during the online PAL session addressed academic concerns (Billingham & Malliris, 2013, "Discussion within the online PAL sessions"). Student participants and PAL Leaders reported that despite some teething troubles associated with the platform, they found the technology easy to use and were mostly positive about the experience and further roll-out of the scheme.

Malliris (2012, p. 20) in his conclusion raises several questions following this pilot:

> (1) What is the optimum blend of [in class] and online PAL?; (2) What is an appropriate and effective length of an online PAL session?; (3) What will be the impact of online PAL to the [in class] meetings?; (4) What consideration should be given to the online skills training of the PAL Leaders?; and finally (5) How do we evaluate the efficacy of online PAL schemes?

In Stage Two and Three of our pilot, our aims were to try and address some of these questions, in particular, developing the training offered to online PAL Leaders and through this report on practice to learn more about how others have approached online PAL in other settings. We also concluded that in order to address fully the questions raised from Stage One, a larger and well-resourced study would be needed.

Online PAL practice from across the globe

Alongside the running of the UWE pilot, we explored and drew on the learning from other initiatives. Table 1.0 below summarises the examples we found of online PAL synchronous, asynchronous, and multi-modal schemes. These examples have all been piloted in higher education, or in support of higher education students' learning. The examples are from Australia, Canada, the UK and the USA.

In addition to the examples mentioned in Table 1.0, we found other less traditional varieties of online PAL these are summarised in Table 2.0.

This summary (Table 1.0) of online PAL initiatives, although not comprehensive, as new projects will be in preparation / delivery as we write, demonstrates the versatility of the online environment to support a range of learning needs. Table 1.0 shows that online PAL programs are being customised to the *needs of their users* (Mann et al., 2010), the *context of their institutions* (Davies, 2004), and to *specific courses* (Beckmann & Kilby, 2008). Some of the examples in Table 1.0 do not follow a peer tutoring style (e.g., Mann et al., 2010); however, all the examples use online services to facilitate peer interaction and learning, either *embedded within* courses (Beckmann & Kilby, 2008; Davies, 2004; Sax, 2003), to *supplement* taught courses (Huijser et al., 2008; Malliris, 2012) or to *support* the overall student experience (Mann et al., 2010), all of which contribute to the student learning experience. Institutions need to be aware of the features of each mode, asynchronous and synchronous, and assess these according to their local needs and capacities. Due to space constraints, we are unable to address these points in detail here.

Table 1.0
Online PAL practice examples (synchronous, asynchronous, and multi-modal)

Synchronous online PAL	Examples	Software Package	Description and sample size
Group online PAL to support a blended learning course	University of Guelph, Canada (C. Mathany, personal communication via SINET, June 18, 2013)	Adobe Connect	Synchronous scheduled sessions to support an introductory physics course. Piloted in one module during one semester.
Group online PAL to extend support for campus based undergraduate courses	ePAL, UWE, Bristol, UK (Malliris, 2012)	MS Lync	UWE 2011-2012 on-going. Existing in class PAL leaders volunteered to pilot online PAL in Science, Technology, Engineering and Maths subjects using a linguistic analytic framework. Four PAL leaders, 20 year one students over 16 weeks.
	OPAL, University of Melbourne, Australia (Beaumont et al., 2012)	Adobe Connect	Two modules: engineering systems design and intermediate financial accounting using qualitative analysis. 23 student participants over 12 sessions during one semester. Excluded video.
Supported regional and remote students / UniPASS	Curtin University, Australia (Pereira, 2012)	Blackboard Elluminate and BB Collaborate	Support offered on an Engaging Humanities course aiming to replicate the in class experience. Piloted on one module with four regular participants.
Student-led and self-managed learning / Prolearn	The Open University, UK (Scott, Casteñeda, Quick & Linney, 2009)	Flashmeeting	Providing "symmetrical" support to 100 international animation students independent of formal learning setting. Piloted in one module over six months with an average of 10 students per session. Total of 99 online sessions.
Supported off-campus students / PALS Online	University of Southern Queensland, Australia (Huijser & Kimmins, 2006; Huijser et al., 2008)	1) MSN Messenger and 2) Wimba Collaboration suite	1) Small (three online sessions) positive pilot using instant messaging in scheduled sessions. On (1) economics and (2) data analysis courses with four students participating. 2) Review of a comprehensive synchronous package.

Asynchronous online PAL	**Examples**	**Software package**	**Description and sample size**
Supported a particular student cohort	York University, UK (Mann, Usher, & Devlin, 2010)	An institutional VLE	Pre-course academic and social support for international students via a blog, potential to access 1,800 students. Eight students acted as peer supporters. Timescale and number of sessions unknown.
Linked off and on campus students	Australian National University (Beckmann & Kilby, 2008)	Alliance open-source	Development studies students collaborate between on and off campus locations. Piloted on one course, first delivered in Feb-June 2008. Numbers of participants not specified. Number of sessions not specified.
One to One PAL on a distance (online) course/ PAL-Online	e-College Wales, UK (Davies, 2004)	Blackboard	Pilot mentoring scheme supporting distance 200 students on a BA Enterprise degree. 23 students responded to a feedback questionnaire saying that they had used the online mentoring service. 11 had posted a thread and 12 had viewed the information only. 8138 threads were posted in total, over 15 weeks.
Accompanied online course/ Course Wizards	Mercy College, USA (Sax, 2003)	Not specified	Teaching assistants working with staff and students, to support learning and model the "successful" student. Numbers of participants and modules not specified.
Multi-modal online PAL (in person Synchronous, asynchronous)	**Examples**	**Software package**	**Description and sample size**
Variable Reciprocal Peer Tutoring (VRPT)	University of Illinois, USA (Evans & Moore, 2013)	Email, Skype, Google Docs and other online collaborative platforms	Pilot on one organic chemistry problem-based undergraduate course. Students register as tutors and / or tutees and access or offer support to posted queries via a database facility.

Table 2.0
Open access and embedded online PAL

Open Access Online PAL	**Examples**	**Software package**	**Description**
Ad hoc online PAL	UWE, Bristol (Watts, 2012)	Facebook	Offline PAL leaders use Facebook to supplement scheduled in class PAL sessions for example to decide on topics for the next session by using the "like" facility and to post and answer urgent questions between in class sessions.
Message Boards, Wikis and bespoke asynchronous collaborative areas	2nd and 3rd year veterinary degree programme (Rhind & Pettigrew, 2012)	Peerwise	Asynchronous message boards or wiki's have also been used to deliver online PAL asynchronously where students peer support one another by generating and answering questions. With Peerwise, a question repository is created.
OpenStudy	Online Learning Consortium (formerly The Sloan Consortium), (Ram, 2012)	Bespoke package	Open access PAL where students from any institution and from any location can join and ask and/or offer to answer questions.
Embedded (within the course design) online PAL	**Examples**	**Software package**	**Description**
Reciprocal teaching and learning for Foreign Language Learning	Primary Schools in Scotland and Catalonia (Dekhinet, Topping, Duran & Blanch, 2008)	Blackboard software	Successful trial of online foreign language learning (especially in writing development) with primary school children in Scotland and Catalonia asynchronously
Peer support	Open University, UK (Ferguson, 2010; Thorpe, 2004)	Not specified	Off-campus online only courses used discussion boards; forums; Student-Student and Student-Tutor interaction to support the course structure.

The examples in Table 2.0 also demonstrate the flexibility and wide range of options that online modes afford. Message Boards or wiki's can be embedded (i.e. written into the curriculum) within a course (Rhind & Pettigrew, 2012) or be openly available online, such as OpenStudy (Ram, 2012), an example of open access PAL where students from any institution and from any location can ask and/or answer questions. With OpenStudy, responders are encouraged by the site's code of conduct not to supply answers but to "guide" questioners. However, how this can be moderated with over 150, 000 subscribers is unclear. Concerns regarding the potential for plagiarism have been voiced. Another similar peer-to-peer social networking study site, GradeGuru (Sawtell, 2010), was closed down in April 2012 (De Santis, 2012), raising questions about the validity and integrity of this type of notes sharing sites. Nevertheless, OpenStudy reports positive feedback from a large number of users (Ram, 2012) and a 2011 "Educause survey of 3,000 students [noted that], nearly a quarter of respondents reported using a study network like GradeGuru" (De Santis, 2012). This open, asynchronous model of peer-to-peer support and its potential for collaborative learning warrants further consideration. The Dekhinet et al. (2008) study, although not set within higher education, is nevertheless included in this review, as it demonstrates how a particular skill can be targeted, in this case writing skills, using an online peer mode of learning. This may be of interest, in particular where study skills need development or perhaps in other language based courses, such as translation.

Colleagues[2] who contribute to the SINET (Supplemental Instruction Network) Listserv shared information about online PAL initiatives, ranging from pilot initiatives (e.g., University of Maryland and Curtin University) and established programs (e.g., Capella University, USA), an exclusively online university. Drawing on the empirical practices (outlined in Table 1.0) and the wider literature, we share in the following section some learning points concerning the nature and choices in developing an online PAL program.

LEARNING FROM EXISTING PRACTICE IN ONLINE PAL

We summarise this learning into two themes: (1) Context, Modes, and Scope; and (2) Implementation of online PAL programs. PAL organisers will need to consider these points and apply them to their local context when setting up an online PAL initiative. We have drawn primarily but not exclusively on pilots that have followed the original supplemental instruction (SI) model from the University of Missouri, Kansas, designed by Deanna Martin in the 1970s.

Context, modes, and scope: Institution setting, level of blended and subject context

From an institutional point of view, online PAL has been piloted in a range of settings: (1) where students attend purely online (Davies, 2004), (2) mostly on campus (Malliris, 2012), and (3) with a mixture of on and off campus students

[2] American University, USA; Newcastle University, Australia; Anne Arundel Community College, Maryland, USA; Minneapolis University, USA; Lincoln University, USA; Cappella University, USA; University of Maryland, USA; Southern Cross University, Australia; and Curtin University, Western Australia.

(Beckmann & Kilby, 2008). Pilots also exist offering supplementary online PAL (Huijser & Kimmins, 2006) or online PAL embedded into taught courses (Sax, 2003). Beckmann and Kilby's (2008) scheme linked on and off campus students.

It could be assumed that students who are based off-campus would be more incentivised to access an online PAL scheme, due to physical isolation from colleagues and transport concerns. They may also be more familiar with the technology used as they may be already required to access online teaching services. On the other hand, students joining on-campus courses do not necessarily live close to campus and/or have convenient timetables (Watts, 2012), so the flexibility afforded by online PAL may also be attractive to this group. Beaumont et al., (2012, p. 27) assumed (based on student feedback from their predominantly on-campus university) that students living furthest from campus would be most likely to access online PAL. In fact, they found that students who "lived close" (p. 27) to campus made up the majority of participants. Thus Beaumont and colleagues urge caution about promoting online PAL in predominately on-campus universities (2012, p. 29), and suggest that "online, distance education [institutions] are the best candidates" for online PAL. Due to the size of the study (see Table 1.0) this notion requires further testing.

A further example is where online PAL is blended with in class PAL (C. Mathany, personal communication via SINET, June 18, 2013). At the University of Guelph, Ontario, in the first semester, an Introductory Physics module ran in class with a parallel in class PAL session and in the second semester both the module and the PAL session ran online. Thompson, Jeffries, and Topping (2010, p. 313), in an e-mentoring study found that "early [in person] contact was very important, i.e., that a staged blended approach was necessary." The balance between in person contact and online interaction remains to be determined (Malliris, 2012). Mayes and de Freitas (2007, p. 20) suggest that "most implementations of e-learning will include blended elements." There may not be a definitive online model, as all these pilots mention successes and challenges. However, the institutional context should inform whichever model is selected.

Different academic subjects have piloted online PAL models (e.g., Introduction to Physics, C. Mathany, personal communication via SINET, June 18, 2013; Organic Chemistry - Evans & Moore, 2013; Development studies - Beckmann & Kilby, 2008; STEM - Malliris, 2012; Engineering systems design and Intermediate Financial accounting - Beaumont et al., 2012; Foreign language learning – Dekhinet et al., 2008). We found only one example offering online PAL to a humanities based course (Engaging Humanities - Pereira, 2012). It is not clear from the literature whether this means that humanities courses are less suitable for online PAL or not. Possibly it reflects the pilot nature of many online schemes, where there is a need and expediency to gather data and test models, rather than offering a service across the full spectrum of courses. Beaumont et al. (2012) explain that subjects were selected from "discussions with PASS supervisors […] and staff" (p. 22). Trialling in different subject areas allowed for a range of experiences to be explored and also a chance to contrast modules already experienced in PAL with ones in which it was entirely new. Others selected

courses based on assumed need (Pereira, 2012) and courses with willing volunteers (Malliris, 2012).

Several scholars (e.g., Perry & Pilati, 2011, p. 97), raise questions about whether there are some academic subjects more suitable and some less suitable for online learning in general. For example, Weller (2002, p. 65) warns of the danger of combining constructivist learning approaches (essential to peer and online learning) with "subjects where there is in fact one correct interpretation of a concept and it would be positively dangerous to encourage students to all develop a different understanding." Pedagogies and activity focus are also raised as concerns by some pilots. C. Mathany (personal communication via SINET, June 18, 2013) expresses uncertainty about whether "problem-solving" courses are best suited to online environments. Dvorak and Roessger (2012) found sessions focusing on exams "especially helpful." Vocational courses specifically can offer opportunities for fieldwork and/or placements, and could thus be more attractive to an online model (e.g., Beckmann & Kilby, 2008). Malliris (2012, p. 7) found that online support was less helpful for courses with a practical laboratory component. He also notes that technology can be harnessed to address these concerns. More research is needed to identify if differentiation is required when selecting which subjects to apply an online model of PAL.

Context, modes, and scope: Online modes and technology choices

Until recently, asynchronous modes have been the most widely used in e-learning settings. Consequently, they have also been the subject of most research (Hrastinski, Keller, & Carlsson, 2010); however, "use of synchronous software is increasing" (Hrastinski, 2008, as cited in Evans & Moore, 2013, p. 145). Still further research is needed to decipher "when and how to use synchronous e-learning [...] as research is sparse and the results inconclusive" (Hrastinski et al., 2010, p. 652). Early indications (Armitt, Slack, Green, & Beer, 2002; Marjanovic, 1999; Paulus, 2005; Weller, 2002) suggest that synchronous modes are more suitable for small group collaborative learning approaches and that the reflective nature of asynchronous modes supports the development of "serious academic discussion" (Mottram, 2001, as cited in Paulus, 2005, p. 106). The trend in online PAL pilots is inclining towards synchronous modes, in line with technological developments. The choice of software clearly follows on from this decision. Table 1.0 lists the range of software options recently accessed. Some were selected due to institutional constraints (e.g., budget); some for the functionalities (Beaumont, et al., 2012) they afford.

As new software packages emerge, PAL organisers may need support and guidance on selecting appropriate packages for their needs. Most pilots have accessed licensed packages. Although initially tempting and speedy to set up, choosing open-source software, may prove difficult in the longer term if the software is withdrawn, technical problems arise, or access to support is unavailable (personal communication, Dr Olivia Billingham, UWE, Bristol, UK, 2013). Whichever option is chosen, peer-only access needs to be guaranteed in order to honour the confidential and safe space essential to peer collaborative learning (Best, Hajzler, Pancini, & Tout, 2011).

Students on the UWE pilot have been on the whole supportive of the online PAL pilot. Billingham and Malliris (2013, Disadvantages of the MS Lync

platform, para. 3) report that students found the synchronous technology used during phase one of the online PAL pilot (MS Lync) familiar and easy to use. One PAL Leader reported a "lag in the video picking up" some participants, which could have been due to the network connection or the device being used rather than the software itself. It does, however, raise an important consideration when selecting which software to use: the standard of the network available to students and the possible range of devices that students will be using to attend online PAL as some may not support the chosen software. In an earlier pilot, Huijser et al. (2008) report that students adapted quickly and that they were well-aligned with constructivist pedagogies. Beaumont et al., (2012, p. 25) also note that PAL Leaders were "impressed" by the flexibility and range of options the software afforded.

Context, modes, and scope: Scope

The *scope* of online PAL initiatives concerns the size and scalability of the service. Examples of both group (peer tutoring) (Malliris, 2012) and one-to-one PAL or e-mentoring (e.g., e-College Wales, Davies, 2004) exist. Beckmann and Kilby (2008, p. 67) suggest that the best size for a synchronous online PAL group is between "6–8 people." This ensures the possibility of "high quality sharing and vigorous and informed debate". Others warn against groups that are too small, which can lead to question-answer style sessions, or too big, leading to low participation rates by some participants, especially in asynchronous modes (Beaumont et al., 2012). Similar concerns are also prevalent in in-class PAL.

Extending and expanding these initial pilots may depend on availability of funding for development (Pereira, personal communication via SINET, January, and February, 2012), institutional priorities, and the development of a sustainable training and support model. Mann et al. (2010) developed their pre-induction online scheme on a very small budget but recommend the engagement of cross-disciplinary partners as the way forward.

Implementation: Promotion, recruitment, and attendance

Promotion of Online PAL pilots is achieved in a variety of ways: presentations in lectures by PAL Leaders (Beaumont et al., 2012, p.23; Malliris, 2012), flyers sent by email and LMS (Beaumont et al., 2012, p.23), and by tweets and YouTube announcements on the course management system created by the PAL Leader (C. Mathany, personal communication via SINET, June 18, 2013). Pereira (personal communication via SINET, January, and February, 2012) expresses how even with a good deal of effort, the results of promotional activities can be disappointing. Pereira (personal communication via SINET, January, and February, 2012) suggests that the promotional messages being sent to potential online participants need to be refined. Promotion also needs to reflect the context in which online PAL is proposed; that is, pure or blended model, on or off campus students, module type, and student category (e.g., part-time/full-time). However, we suggest that a better understanding of learners' motivations should be the main driver for promotion.

The selection and recruitment of Online PAL Leaders is also reported throughout the literature. The issues raised include assessing technical and linguistic skills, the benefits of a formal selection process (Beaumont et al., 2012), identifying moderating skills (Malliris, 2012), and finally what

characteristics comprise a good online PAL Leader (Billingham & Malliris, 2013; Pereira, personal communication via SINET, January, February, 2012). At UWE, Bristol, in-class PAL Leaders need to be enthusiastic individuals with good communication skills and proven competent performance on the modules they will be working on (Makis Malliris, personal communication, 2014), these qualities are no less important for online PAL Leaders. In the next section, we discuss these skills and qualities in more depth.

A frequent concern is that of low attendance (Beaumont et al., 2012; Malliris, 2012; C. Mathany, personal communication via SINET, June 18, 2013) at online PAL sessions, despite initial evidence of student interest (Beaumont et al., 2012; Malliris, 2012) and the need to support off campus students (Pereira, 2012) and online learners (C. Mathany, personal communication via SINET, June 18, 2013). It is not entirely clear why participation rates are so low. A considered view of an experienced PAL co-ordinator (Fiorella Bettin of UWE, personal communication) suggests that the primary reason for low attendance is that most of the variables affecting attendance are out of the control of PAL Program organisers. Factors affecting attendance include: students not recognising the need for academic peer support; easy access of alternative online support and informal support networks; informal (rumours) and sometimes false and negative promotions; and the unassessed nature of PAL participation towards the overall undergraduate award.

Feedback from online participants shows some dissatisfaction which may explain low take up, such as technical glitches and software/hardware incompatibilities (Malliris, 2012; C. Mathany, personal communication via SINET, June 18, 2013), access and “cumbersome registration procedures” (Pereira, 2012), reluctance to learn new software (C. Mathany, personal communication via SINET, June 18, 2013), “unappealing and difficult to use software” (Pereira, 2012b), finding visual representations “uncomfortable” (Beaumont et al., 2012, p. 25), and “unpopular” scheduling (Pereira, 2012). Pereira (personal communication via SINET, January, and February, 2012) infers that promotion of new online schemes to target groups may play a part and need to be customised to the local context. Low participation rates were also affected by participants finding online PAL “impersonal” and “less social” (Beaumont et al., 2012, p. 27). Although this could change over time as users become more familiar with the technology and its use becomes embedded.

Implementation: Skills of online PAL Leaders

Online PAL Leaders need both technical and linguistic (oral and written) skills to operate effectively and efficiently online. Perry and Pilati (2011, p. 97) and Ferguson (2010, p. 580) caution that we cannot assume all students are technically savvy. Billingham and Malliris (2013) found that a variation in levels of technical ability amongst PAL participants did not matter. On a cautionary note, Huijser and Kimmins (2006) draw attention to the fact that PAL skills learnt for an in class setting may not be fully transferable online and advise specific training for online facilitation and interaction.

Beaumont et al. (2012) carried out a parallel recruitment process to their regular PASS procedure for online PAL Leaders. Experience and knowledge of online tools, such as Skype, was assessed and those that were deemed “enthusiastic and resilient” (p. 22) preferred, due to the pilot nature of the

initiative. Huijser et al. (2008, p. 55) report that PAL Leaders felt "inadequately prepared" to manage synchronous online discussions. We support their recommendation for training on "moderating online discussions." Little discussion of moderating skills was found in the PAL specific literature. Malliris (2012) reports a range of responses from PAL Leaders regarding the ease or difficulty of moderating online discussions. There is, however, extensive and reasonably conclusive literature on moderating in tutor-student settings (see Salmon, 2000, 2002). Determining the level and nature of moderating skills required for synchronous peer-to-peer interactions remains to be determined. Some criteria may not require the same level of skill as a tutor moderator, as PAL Leaders are not responsible for content or assessment. In synchronous settings, PAL Leaders also need to manage multiple simultaneous interactions; for example, sending instant messages, welcoming a new attendee, and uploading a shared document (authors' observation), thus requiring advanced moderation skills.

Programs selecting for in class PAL Leaders emphasise the importance of personal qualities, such as trustworthiness, sincerity, transparency, self-awareness, generosity, and authenticity. Other programs focus on the importance of nimbleness or being responsive and adaptable to needs, learning styles, and size of groups. Effective group management and facilitation, effective communication, and being assertive are also sought after skills. We assume that there is no reason that these skills are less likely to be needed by online PAL Leaders.

At UWE, Bristol, we have not added any additional skills or qualities for online PAL Leaders and are working to see whether Leaders can self-adapt with minimum involvement from the PAL office.

We do have a 360 degree process in place where all leaders receive feedback from their students, other PAL Leaders through peer observations, and through PAL office observations done by the PAL Interns. PAL interns offer continuous support to the Leaders via an online coaching and mentoring process.

Implementation: Scheduling

Scheduling of PAL sessions is a concern both for in class and synchronous online PAL sessions (Malliris, 2012). PAL program organisers need to balance the needs of student participants, PAL Leaders, academic timetables, and available rooms. Some pilots experimented with fixed sessions scheduled at daytimes, evenings and/or weekends. Working students especially found this flexibility helpful (Malliris, 2012). However, sessions held outside regular hours can result in more distractions being present for the participants; for example, other people may be relaxing while the PAL participant is trying to study, and sessions scheduled at meal times can conflict with family needs. Social media software has tools to schedule meetings and alert participants, so flexibility is inherent. Synchronous online sessions obviously require students and PAL Leaders to meet up at an agreed time. We would suggest that there is no reason why times necessarily need to be fixed at the same time each week. Pereira (personal communication via SINET, January, and February, 2012) wisely points out that it is "difficult to please everyone," referring in particular to scheduling of synchronous sessions.

Pilot participants reported positively that online modes afforded flexible and convenient ways of studying (Beaumont et al., 2012). Session times scheduled outside office hours were useful, access was safer (e.g., no need to walk across campus in the dark), and easier for those who lived far from campus. Flexibility also reduced study time pressures and in some instances less time was wasted if participants did not attend (Malliris, 2012). In theory it is anticipated that students who study part-time, work and study simultaneously, and/or those with family responsibilities (Perry & Pilati, 2011, p. 99) could also find online PAL more accessible and convenient to their schedules and therefore be more likely to participate.

Schedules also need to consider the length of PAL sessions as some pilots report that learning activities online needed more time (Beaumont et al., 2012; Malliris, 2012). Participants also referred to competition with and even preference for in class PAL (Beaumont et al., 2012; Malliris, 2012). These concerns result from the small sample sizes of most pilots and indeed the pilot nature of these studies, in which technical glitches negatively influenced some of the responses from participants.

Implementation: "Feeling comfortable online"

Some participants reported that they felt more confident to contribute online, partly due to the more anonymous nature of the interaction. They felt less inhibited and more able to ask questions (Beaumont et al., 2012, p. 24). It seems that in this example, participants did not use video features online. In other settings participants reported that activities "sometimes felt forced" (C. Mathany, personal communication via SINET, June 18, 2013).

Developing a sense of community and building rapport with participants are core features of in class PAL. Several online pilots raised concerns on this issue. Students reported that it was more difficult and took longer to build relationships (Huijser & Kimmins, 2006; Malliris, 2012). Although not all students report this, so the individual skill of the PAL Leader may be a significant variable. Huijser et al. (2008, p. 54; Huijser and Kimmins, 2005, p. 291) discuss the "virtual sense of belonging" in some detail and there are many studies in the asynchronous online literature which discuss "social presence." Social presence, as defined by Rourke, Anderson, Archer, and Garrison. (2001, p. 3), "is the ability of learners to project themselves socially and emotionally" online (originally referring to asynchronous modes). Rourke at al. (2001, p. 3) also note that social presence additionally "supports cognitive objectives through its ability to instigate, sustain, and support critical thinking in a community of learners." In synchronous settings, however, where collaborative technology provides a near equivalent "in class" social and interactional experience, the nuances of "social presence" need further investigation, and may not be so dissimilar to in class experiences.

It is also suggested by Malliris (personal communication, 2013) that engaging in online PAL will enhance PAL Leaders employability and transferable skills. McLuckie and Topping (2004, pp. 574-576) summarise these "transferable skills" as (1) social/affective, (2) task organisation, (3) interaction management, 4) thinking in interaction, and (5) reflection and evaluation—all essential skills to ensuring a collaborative learning experience. They urge particular attention be paid to the "social/affective and interaction process management skills." They suggest that social/affective relationships may

require more conscious effort online than the potentially more natural development of in class relations. Secondly, interactive process management includes "role clarification, [requesting, building discussions, giving feedback, and reinforcing contributions]" from participants. They suggest that one reason why interactive process management skills raise concern is the large number of elements (McLuckie & Topping, 2004, p.583 Appendix B) that online PAL Leaders need to take into consideration.

Implementation: Gaining academically

An important and emerging strength of synchronous online PAL is that it can contribute to academic benefits. Billingham and Malliris (2013, "Discussion within the online PAL sessions") found that 65% of dialogue could be coded as "conceptual", indicating that participants were focusing on module related content. Pereira (2012) also notes, regular online PAL attendees had "16.11% higher grades than non-attendees." However, other variables may also influence these achievements, such as the self-selection of motivated and high achieving students.

Pilot participants report positively that online modes afford flexible and convenient ways of studying (Beaumont et al., 2012). However, divergence from the collaborative learning model (Beaumont et al., 2012, p. 25) could risk sessions "becoming [like] an online tutorial," especially when the group is small and it is easier to resort to just asking and answering questions (C. Mathany, personal communication via SINET, June 18, 2013). Billingham suggests that this is less likely to occur in synchronous online settings where participants are able to make use of video and audio amongst other features (personal communication, 2013).

Implementation: Planning and delivering

Extensive pre-planning of online courses is recommended by Rovai (2004, p. 82) who deems it as essential. It follows that peer assisted learning activities online may also require a similar level of attention. Graham (2002, as cited in Beckmann & Kilby, 2008, p. 63) concurs with Rovai and explains that to create "effective opportunities for peer learning in online environments […] care [is needed] in creating groups, structuring learning activities, and facilitating group interactions." Some scholars advise caution in rushing too fast and with insufficient planning and resources into online modes of learning (Beaumont et al., 2012; Rovai, 2004).

Implementation: Preparing online PAL Leaders

In particular, the online PAL pilots raise the need for the training of PAL Leaders. Ferguson (2010, p. 582) with reference to asynchronous modes notes that "more research is needed to investigate the range of skills that students need in order to benefit most from computer-mediated interaction." We can assume that more evidence for synchronous settings too would better inform the design and planning of training. To date, training has included orientation to the software package selected and "role-plays" (Beaumont et al., 2012). Initial feedback from online PAL Leaders trained at UWE shows that training is appreciated and useful on software features, interaction skills, and session management. To meet diverse needs, training could be personalised to ensure a better use of time. Some pilots have supplemented in class

training with software manuals (Beaumont et al., 2012; Billingham & Malliris, 2013), email follow up contact (Beaumont et al., 2012) and online access to an online PAL Intern (Makis Malliris, personal communication, 2014). We found no mention of the training needs of PAL participants (i.e., usually first year undergraduate students) but suggest that some minimal introduction to the technology used and guidance or "netiquette" (Mintu-Wimsatt, Kernek, & Lozada, 2010) on interaction online would be beneficial.

Implementation: Evaluating online PAL projects

Malliris (2012, p. 20) asks, "How do we evaluate the efficacy of online PAL schemes?" We also need to ask, what tools are available for monitoring and analysing online PAL? Billingham and Malliris (2013, Future direction, para. 2) especially emphasise this need where "multi-tool collaborative software" is accessed. Some pilots have measured achievement rates (Pereira, 2012); others have sought users' feedback in focus groups and from questionnaires (Beaumont et al., 2012; Malliris, 2012). Malliris (2012) advocates analysing online interaction using a linguistic approach and the ease of recording online interactions facilitates this. The findings can be rich; however, this type of analysis is labour-intensive and may require interdisciplinary expertise that is not available to all PAL program. Attendance rates and peer reviews are tools used by in class PAL and can equally apply in online settings. It is widely acknowledged that identifying the exact variables that make PAL a success is tricky. A useful and detailed summary of different approaches to evaluation can be found in Falchikov's (2001, pp. 179-198) *Learning Together*.

CONCLUSION

This article has focused on existing online PAL pilots' experiences and learning, with particular attention paid to synchronous modes. The picture is mixed, with some small successes and much still to learn. Despite some of the negative and difficult experiences expressed in these pilots, we would suggest that it is too early in the development of online PAL to dismiss it. Overall the generic online literature (tutor-student) seems more positive than the specifically online PAL literature. This may be due to the fact that online PAL is relatively new. It is too early to say convincingly what works, what improvements need to be made and how improvements can be implemented, when many of the findings discussed above are based on small pilots, both in time-scale and number of participants (e.g., Beaumont 2012; Huijser & Kimmins, 2006; Malliris, 2012; C. Mathany, personal communication via SINET, June 18, 2013; Pereira, 2012).

Although there are some shared findings (e.g., low attendance and in most cases, flexibility and accessibility, and appropriate and available software), experiences remain variable and responses to these experiences differ. For example, in two synchronous online PAL pilots where the experiences were less positive than hoped (Beaumont et al., 2012; Pereira, 2012), different conclusions arose. At Curtin University (Pereira, personal communication via SINET, January, February, 2012), a small synchronous pilot was replaced by a second asynchronous pilot, even though the target group were off campus students. Conversely, at the University of Melbourne (Beaumont et al., 2012, p. 29) following the experience of a synchronous online pilot at an on campus university, it was found that synchronous online PAL is more suitable for "institutions offering predominantly online, distance education." The local

context again may be a significant factor; defining and deconstructing the context may be a more difficult task.

The questions posed by Malliris (2012) and Beaumont et al. (2012, p. 29) continue to be valid starting points for further research. In addition, we would recommend further exploration of suitable pedagogies; online peer interactions; deepening understanding of student motivations for learning online; establishing larger and longer-running studies; and trialling different forms of online PAL.

Finally, despite some disappointing experiences of some online PAL pilots there seems to be a small, growing and tentative consensus that online PAL can provide an equivalent experience to in class PAL and that once the operational and pedagogical issues are resolved, it can enhance both the student experience and academic achievement for a wide group of learners. Recent (2015) correspondence on Supplemental Instruction for Online Courses on the SINET Listserv gives further encouragement that SI practitioners are interested and keen to understand how online PAL can best work for them and their students. Further work remains to devise and refine the best model.

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