Developing an Online Academic Community of Practice

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Abstract—**Constructivist approaches to learning suggest that learning within groups is more effective than individual learning. Communities of practice are an example of how individuals can unite around a common theme and collaboratively work together in order exploit the collective knowledge of the group members. Higher education professionals may find particular benefits of working within such communities due to the diverse nature of the profession and the wide knowledge and experience that can be found among their peers. At St Mary's University College, London, U.K., a strong tradition of excellence in teaching and learning guides institutional strategies to enhance the learning experience for students. An online academic community of practice is being developed in order to heighten the dissemination of good practice among colleagues and improve the sense of community among staff. This paper describes the stages of the development process. It is argued that the developing community of practice is already improving collaboration and dissemination of good practice among St Mary's staff. The key benefits are accessibility, interactivity and feeling of ownership. As the community evolves and matures, it is expected that knowledge sharing and collaboration will continue to increase, if the barriers that have been identified can be overcome successfully.**

Keywords–online Academic Community of Practice (ACoP); Microsoft SharePoint; Moodle; social constructivism; interaction; collaboration.

I.   INTRODUCTION

Contemporary education often draws upon constructivist approaches, which suggest that learning is more effective when knowledge is constructed by individuals, rather than by the ordering and memorisation of facts [1, 2]. Constructivism originates in the work of Jean Piaget and Lev Vygotsky [3]. Whilst both emphasised the role of the individual in constructing models of understanding, Vygotsky argued that individual learning was mediated by social interaction and cultural setting. Therefore, knowledge is not isolated from the environment in which it is constructed but is instead copied from, or directly reflects, existing models of socially-produced understanding [3].

Vygotsky formulated the concept of the 'zone of proximal development': that is, the distinction between what an individual can achieve by independent thought and what is possible 'through problem solving…in collaboration with more capable peers' [4]. Other workers (including Peter Woods and Jermone Bruner) have suggested that the gradual withdrawal of this collaborative support leads to the development of 'scaffolding' [5, 6]. Scaffolding forms an architecture of understanding, providing a structure in which the learner can develop their knowledge whilst reducing the level of support required from 'more capable' peers. Learning within groups or communities in which the interactions between individuals are applied to resolve practical or real-world problems has gained widespread recognition among contemporary educationalists.

Communities may take different forms based on the aim of the community and the way that individuals interact. Communities can take different forms: knowledge-based communities, learning communities and collaborative communities of practice [7]. Knowledge-based communities are typically focussed on resolving problems based on the group's collective knowledge, and undergo a process of re-adaption in response to other group members. The aim of a learning community is to further understanding: knowledge acquisition is equally shared among group members and the sum outcome of group's endeavours is greater than that of any individual. A third type of community, communities of practice, have their origins in the model of professional development through apprenticeships (the original work of Etienne Wegner [8, 9] and Jean Lave).

Communities of practice (CoPs) focus on the development of professional practices, where 'like-minded' individuals are united by 'joint enterprise, mutual engagement and shared repertoire' [7]. CoPs can therefore be defined as 'groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly' [8].

Numerous examples of CoPs exist. MirandaNet [10] provides an online community for professionals associated with information and communications technology (ICT) education. The Education Communities portal [11] provides access to numerous CoPs with a collective focus on education and pedagogic research, and offers the ability to easily establish new CoPs. One growing focus for the use of CoPs is in developing and strengthening the links between education and the business and enterprise communities through providing an online arena in which ideas can be exchanged and collaborations developed (i.e., [12]).

CoPs may be particularly beneficial for professional development as, for example, the nature of the 'problem' of interest, or focus of the community, is often difficult to define, and identifying exactly what it is may require extensive negotiation amongst individuals [7] potentially deepening their understanding of the 'problem'. Members of a CoP are strongly united by their shared interest in 'problems', which may be derived from the shared institutional identity and process, or from a common professional practice context [7, 9]. These principles may be particularly relevant to professional development in higher education. It is recognised that there is continued tension within the definition of the Higher Education Professional (HEP).

Pressure to be a skilled teacher and researcher has led to the identity of HEPs being increasingly diverse, complex and open to constant re-negotiation [13, 14, 15]. The teaching aspect of the dual professionalism of HEPs can be overlooked if HEPs feel defined by their subject specialism. Many HEPs have higher degrees and research degrees that are subject-specific rather than focussed on teaching.

Developing as an HE teacher is often seen as a 'bolt-on' to subject-specialisms, evidenced in the U.K. by newly appointed HEPs undertaking teaching qualifications, such as postgraduate certificates and achieving fellowships of the Higher Education Academy (an independent organisation in the U.K. dedicated to supporting professional recognition for HEPs and enhancing teaching and learning [16]). It has been suggested that in order for HE teaching to become a 'valid' profession, HEPs must engage in scholarship and research comparable to that dedicated to their subject specialism [17]. CoPs provide a constructivist environment in which HEPs can develop and share teaching expertise.

Drawing on this theoretical framework, St Mary's University College, U.K., is establishing an academic community of practice (ACoP) in order to support academic staff in disseminating good practice and developing the use of e-learning (Section 2). In particular, the ACoP will be used to support a parallel project investigating the use of audio feedback for students (Section 3). Section 4 outlines the technical platform that supports the newly developed online ACoP. Section 5 provides a framework for the development of the ACoP and an analysis of how potential difficulties and hindrances to the success of the ACoP project may be overcome. The last section outlines our intentions for the future development of the ACoP.

II. CONTEXT – ST MARY'S UNIVERSITY COLLEGE

St Mary's is a relatively small higher education institution with around 5,000 students and 150 academic staff. It has a Catholic foundation and although initial teacher education is at the heart of its mission it is engaged with a broad range of disciplines from English and Media Arts to Management Studies and Applied Physics. Learning technologies have been used for a number of years and online learning began to develop around 2003. At the current time almost all of the University College's programmes of study use online learning technology in some form although much of the practice is limited to content dissemination rather than using it to support more contemporary pedagogical approaches.

St Mary's has a Learning, Teaching and Assessment Strategy and the use of technologies to improve students' learning opportunities is embedded into that strategy. The strategy is enabled (in part) by a Learning Resources and Technology Strategy which focuses on the provision of various tools and supporting academic staff (and students) in their use. There is no "top down" managed approach for technology enhanced teaching and learning and so practice has evolved over a number of years. A number of staff clearly see ways in which technology can enhance students' learning and such staff have been leading the way in trying to encourage their colleagues to adopt new and innovative approaches. Recently, St Mary's has recognised the need for setting up institutional requirements for using the internal Virtual Learning Environment (VLE) and all academic staff will be expected to follow these guidelines from September 2013.

One of the barriers to improving pedagogical practice has been a lack of sharing. Staff work in academic schools and learning is delivered in the form of programmes (e.g., Sports Science or Geography). Staff tend to identify strongly with the programme of study with which they are connected but are perceived to have limited contact with staff in other academic disciplines or support roles.

A number of attempts have been made to increase cooperation and collaboration between staff including the establishment of a formal teaching qualification for staff, promotion of Higher Education Academy fellowships and regular teaching and learning 'away days'.

In relation to the use of learning technologies, a network of e-champions has been established. The e-champions have a key role not only in supporting their colleagues pedagogically and technically in the use of the available tools, but also in disseminating their own practice and experience. These efforts will now be supplemented by the establishment of the ACoP, coordinated by the University College's e-Learning Advisor.

The e-Learning Advisor role is a supporting role designed to help motivate staff to embrace the use of technology to enhance learning and provide appropriate support. This role is located in the Information Services Department which is responsible for providing and supporting a broad range of learning support for students and staff.

The technical infrastructure is supported by the IT Department although a number of the online learning tools used are outsourced to third parties rather than being provided internally.

The ACoP will enhance a wide range of online interactions and will promote collaboration, ubiquitous access, increased flexibility, choice and support. Due to the rapid pace at which e-learning is developing within higher education, it is envisaged that the ACoP will provide a flexible working framework which will be adapted as necessary to ensure that the university college can respond pro-actively to such a changing environment.

The ACoP supports the aims of the Teaching, Learning and Assessment Strategy which outlines the specific objective for academic staff "to develop and implement an effective framework for sharing good practice". In the context of providing increased flexibility, the Information Services Department and the e-Learning Committee highlighted the implementation of the online ACoP as a high priority in its staff development strategy.

III. CONTEXT – JISC TRANSFORMATION PROGRAMME

St Mary's has received funding from Jisc (a U.K. charity which works throughout higher and further education to support and champion the use of digital technologies [18]) to develop the use of audio technologies for delivering formative feedback to students. This is part of Jisc's wider funding stream, the Transformations Programme. This programme is funding a number of higher education institutions with the aim of supporting 'large-scale organisational change' [19]. The audio feedback project at St Mary's focusses on the Enhanced Student Experience strand of the programme [20].

The work being undertaken at St Mary's involves a group of academics from several diverse programmes using audio feedback. The e-learning team has supported academics in using of a number of alternative approaches to delivering audio feedback, such as delivering collective feedback through one large audio file or uploading individual commentaries on pieces of work. The team also have provided advice on the technical dimensions to the project.

The ACoP will be used to disseminate examples of good practice to academics throughout St Mary's in order to ensure that the project meets Jisc's requirement for 'organisation-wide impact' [19]. A rich and diverse range of feedback has been gathered by the e-learning team (including audio and video interviews with staff and students, and quantitative and qualitative questionnaire data)

regarding the experiences of students and academics in using audio feedback.

To support academics who are interested in using audio feedback, these materials will be developed into case studies and disseminated on the ACoP. This will enable the whole academic community at St Mary's to engage in the project outcomes and to seek advice, examples and support from those who have experience of using audio feedback. Ultimately, this will enhance the student experience at St Mary's and increase student satisfaction and engagement with feedback activities.

IV. THE TECHNICAL PLATFORM

St Mary's University College uses Microsoft SharePoint 2010 to provide internal staff and student intranet services (branded as StaffNet website for service information and collaboration for staff, and as SIMMSpace website for advice and service information for current students).

The StaffNet website is used for publishing of web-based news, service information and internal documentation for staff members, for collaboration websites for staff groups, for personal storage areas and profile pages for individual staff. StaffNet is the web area that is being used to develop the online ACoP.

SharePoint has delivered significant benefits to the institution by providing a reliable and stable platform on which to host internal communication and information services. In addition, SharePoint is serving as the gateway to other online services such as the Moodle VLE (branded simmsCAPital). The simmsCAPital VLE (integrated with the TurnitIn plagiarism detection service) is used for developing the courses of study, for online submission of coursework and providing feedback to students. Feedback is delivered through both traditional formats (e.g., written comments and numerical grades) and e-learning can be instrumental for establishing CoPs.

This technical platform offers a significant opportunity for the development of a CoP. Technology can facilitate collaborative and community-driven learning, for example by overcoming geographic barriers, facilitating sharing of resources and removing the need for scheduled times for face-to-face meetings [21, 22].

CoPs can be supported by blogs, wikis and other resource-sharing facilities (such as Google Docs and Microsoft SharePoint) which enable collaborative learning. These technologies tend to offer a relatively informal approach to structuring ideas and interactions which is well aligned with the social constructivism inherent within functioning CoPs [7, 8, 9].

This project will establish an ACoP implemented within Microsoft SharePoint that supports professional development and the sharing of good practice in the context of teaching in higher education.

V. RATIONALE AND DEVELOPMENT FRAMEWORK

The rationale for the design of the St Mary's ACoP was informed by conducting interviews with the e-champions. They identified the following themes as important aspects in ensuring that the online ACoP would be successful at meeting the aim of sharing best practice to enhance learning:

- Sharing of information to promote best practice;
- Avoiding duplication and effort (e.g., in the production of guidelines);
- Disseminating high-quality information;
- Facilitating the retrieval of appropriate information at the point of need;
- Supporting the teaching and practice within the University College programmes;
- Encouraging collaborative working;
- Improving access to knowledge and information;
- Bringing different streams of information together;
- Promoting communities of practice by bringing together disparate groups with a shared interest (tutors, administrators, senior managers);
- Providing on-going support, feedback and shared knowledge for the ACoP stakeholders;
- Raising the profile of academic groups and identifying ways in which they can contribute;
- A potential for forming links with other organisations to provide a coordinated approach to information-provision.

These themes are therefore considered to be the desired 'core characteristics' of the St Mary's ACoP. In order to embed these characteristics into the design of the ACoP, the following sequence of stages of development is being utilised: a) the potential stage; b) the building stage; c) the engaged stage; d) the active stage and e) the adaptive stage [23]. The development of St Mary's ACoP is evaluated in the following sections based on the descriptions given in [20], based on feedback collected from members of St Mary's staff.

a) The potential stage: This involves facilitating connections among individuals who are potential members of the community. Communities at this stage are a group of individuals with some occasional interaction concerning a shared interest [24].

During this stage a conceptual framework of the ACoP integrating the relevant pedagogical theories and technological solutions was developed, in order to respond to the requirement for a more systematic way of interacting.

The theoretical and practical appreciation of management of change (for example, discussing suitable approaches for involving e-champions and senior managers in the ACoP development) was also considered. Web-spaces and meetings, such as staff development workshops, have been used to promote the ACoP to staff throughout the University

College and to engage their interest in the project. At this stage, face-to-face meetings and discussions have been held with academic leaders, e-learning strategy developers and other academic staff and tutors to identify existing expertise and the needs of staff.

b) The building stage: During this stage, core members of CoPs develop a shared understanding of the purpose of the community and the ways in which it will function. The community begins to develop the necessary structures to allow expertise to be shared within the community [23].

It is also the stage at which the community is acknowledged to exist and potential members of the community are reached out to. Since this is considered a 'fragile' part of the community development [24] specific action was taken to develop the St Mary's online ACoP to encourage contribution and interest from members.

A case study template was established within the ACoP in order to support a consistent way for presenting show cases by academic staff. Standard activities, such as writing collaborative documents and articles were introduced.

This has resulted in the production of a structured ACoP (Figure 1) with a number of features to facilitate community interactions and the sharing of good practice, including personal webpages, interactive feedback features and details of other projects within the University College (e.g., the Jisc Transformation Project).

Figure 1. The front page of the ACoP on SharePoint

c) The engaged stage: A community at this stage has gained enough momentum to survive. The community has a common purpose as it increases in size. Community members continue to build trust, loyalty and commitment and provide outreach to new members. Members also collaborate to share their knowledge [23].

This was evidence in the St Mary's ACoP as teaching and learning materials, links to social and digital media and embedded objects such as videos and audio files have been posted online.

In order to continue expanding the size of the ACoP, training (including online tutorials and face-to-face sessions) is being provided by the e-learning advisor to enable staff to make contributions which showcases their best practice in teaching and learning.

d) The active stage is when communities continue to expand their membership. At this point it is clear to the community what it is able to contribute to the wider organisation. Members of the group collaborate to exploit their combined knowledge base. The community is publicised throughout the organisation to highlight how it can benefits that organisation. Members may also begin to work with other external groups [23].

The St Mary's ACoP has not fully reached this stage. It is expected that the full transition into this stage will be evident from staff being actively and sustainably engaged with the ACoP and developing the use of a wider range of digital media to do so (e.g., blogs, wikis, discussion forums and collaborative working). Some evidence that the St Mary's ACoP is beginning to reach this stage can be seen in the use of the ACoP to write collaborative articles.

e) The adaptive stage: At this stage a community is able to respond to changing external boundaries. It does this by continually renewing and evaluating its purpose and functionality to effectively use knowledge and resources. The community may move towards setting the agenda of its collective shared expertise and may demonstrate influence beyond its immediate area of expertise [23].

This is an advanced stage of community formation and one that the St Mary's ACoP is expected to achieve in the future through links with national and international CoPs, demonstrating a leading role in developing teaching and learning strategies at the University College and providing a focus for professional development at St Mary's.

VI. POTENTIAL BENEFITS, BARRIERS AND CRITICAL SUCCESS FACTORS OF THE ACoP.

Our observations and the collected feedback from staff show that there are potential benefits to be derived from sharing and learning within the online ACoP. There is a sense of connectedness and a deepening of knowledge to be derived from the interactions and peer support via the ACoP.

This will also help instil a sense of community among St Mary's staff. Peer support is particularly valuable in the context of professional development, as members of the community who are new to HE are able to draw on the experiences of other staff.

One significant potential benefit of the St Mary's ACoP is in the dissemination of other projects running across the institution, such as the Jisc audio feedback project.

The ACoP is already facilitating engagement from across St Mary's as a range of resources showcasing innovative and successful use of audio feedback has been made available via the ACoP.

However, academic staff who have been involved in the ACoP commented on some potential barriers to these benefits being realised. For example, some members of the community may have basic technical literacy skills and may therefore feel intimidated or not confident in participating in the ACoP.

Another potential barrier to the success of the ACoP is the commitment of individuals to participate. Whilst there has been a good initial response to the ACoP and individuals have begun to demonstrate a willingness to engage in with the community, as the ACoP matures there is the risk that the enthusiasm to participate will decline. Engagement may only extend as far as viewing the material rather than contributing expertise (i.e. being a 'read only' participant).

One mechanism to help develop a sustainable community is to ensure that there is leadership [25]. In the case of a CoP, this may be a moderator or facilitator.

A facilitator has been established for St Mary's ACoP, and is encouraging tutors to engage with this newly developed online environment for professional development. They will be working to promote the ACoP and encourage its development through activities such as marketing on the StaffNet intranet, embedding the ACoP into professional development and promoting the ACoP and its advantages through the relevant College Committees.

However, it is acknowledged that frameworks for developing online CoP in other institutions may vary in terms of technological and pedagogical approaches, and may focus on different activities.

For example, one of the authors has had experience in developing an online CoP for Middlesex University, London, where the technological framework was based on Google Apps and the main collaborative activities were around project and research work [26].

Critical success factors (CSFs) for the online ACoP have been identified. These include usability of the available technology, appreciation of the cross-institutional dimension of the ACoP, a sense of belonging and a common sense of purpose among members and shared understandings and ownership.

The potential benefits, potential barriers and critical success factors are shown in Table I (a new adaptation from [26]). Our initial exploration of these potentials and success factors may help to both address the difficulties of establishing an ACoP at St Mary's and also provide a basic framework for other HE institutions developing their own ACoPs.

TABLE I.   POTENTIAL BENEFITS AND
BARRIERS, AND CRITICAL SUCCESS FACTORS
(CSFs) OF THE ACoP

Potential Benefits	Potential Barriers	CSFs
Enhanced learning environment	Perpetuation vs. variety and flexibility	Good use of interactive tools based on Microsoft SharePoint and Moodle (demonstrated by the online activities and engagement by staff and students, analysed in review reports).
Knowledge sharing	Culture of independence	Institutional promotion of the online ACoP as a communication media (demonstrated via workshops and other institutional events).
Building up knowledge and expertise	Maintaining the interaction and information flow	Common values, shared understanding, varied communications (demonstrated by the online activities).
Feeling of connection	Read-only participants	Sense of purpose, sense of belonging, sense of ownership (demonstrated by active online communications and sharing).

To ensure the longevity and sustainability of the online ACoP, engaging and collaborating through the ACoP needs to become part of standard practice rather than seen as a novel standalone project. In an effort to achieve this, there should be clear institutional aims and time frames.

For example, the ACoP could become a primary repository for material relating to workshops, induction events and guest speaker seminars. We will work towards this by involving representatives from each department to collect or design relevant resources and publish these at the online ACoP.

The longevity of the ACoP can also be ensured by effectively incorporating future developments in social networking technologies. Allowing the ACoP to adapt to these will help ensure its continued relevance to new members and facilitate new forms of interaction and collaboration.

Links to other professional online communities of practice should also be established in future to exploit of other sources of expertise and enhance the depth and breadth of discussion within St Mary's ACoP.

VII. CONCLUSION AND FUTURE WORK

The initial experience of developing an online ACoP at St Mary's University College has been successful. The process has demonstrated that Microsoft SharePoint can be used effectively to establish an online ACoP. The St Mary's ACoP has been designed to support the development of collaborative resources, to gain access to e-resources and disseminate good academic practice. It is anticipated that the online ACoP will help to continuously enhance the professional practices of St. Mary's staff and facilitate collaboration with other stakeholders as it develops in the future. The use of the ACoP will be promoted throughout the institution and become increasingly embedded within the culture of academic best practice at St Mary's.

The initial assessment of the use of the ACoP suggests that it is being successfully used as a focal point for the dissemination of good practice in teaching and learning. This includes communicating the outcomes of other projects that are enhancing teaching and learning at St Mary's. It is evident that there are a series of benefits to the staff and institution which arise through the use of the ACoP, including accessibility, flexibility, interactivity and the sense of ownership and community that the users have begun to develop. This provides the rationale for on-going development and promotion of the ACoP.

The ACoP has developed through a series of stages, each associated with specific activities. This sequence and set of activities may serve as a framework for other institutions who wish to establish an ACoP, although it is recognised that the potential benefits and barriers to success may vary in other organisations depending on the institutional context and aims of individual ACoPs. The ACoP is expected to expand in size, develop a wider range of multimedia resources and become central to professional development at St Mary's.

Having established an ACoP, future research will focus on the long term development of the St Mary's ACoP. A three-year longitudinal study is being initiated which will provide a valuable insight into the development of online CoPs. In particular, the relationship between the cultural characteristics of the organisation and knowledge sharing will be investigated. Furthermore, future work will address the potential for critical success factors of St Mary's ACoP to vary in different stages of the development of communities. This will contribute to the evolution of future communities by facilitating approaches that can overcome the barriers to their use, particularly in the context of CoPs for professional development in higher education.

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