Virtual Communities of Enquiry: An argument for their necessity and advice for their creation

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Virtual Communities of Enquiry

In this paper we argue that Communities of Enquiry can and should be developed in courses delivered online. We claim these communities make the most of the available technological resources and overcome some otherwise daunting challenges faced in online course delivery. Indeed, we argue that asynchronous tools like discussion-boards offer a range of benefits for the creation of such communities that are unobtainable in the traditional classroom. Further, we also point to some simple measures we have found successful in helping to create net-based communities. Finally, we draw on recent empirical evidence to demonstrate that online communication tools can, we appropriately employed, offer unique benefits for the creation of learning communities.

Introduction

ICT has dramatically impacted teaching and research, from the creation of virtual research blocks, to the addition of Internet tools to traditional courses, to the creation of virtual universities offering complete degrees via the Internet.[1] Much of this is for the good; virtual research blocks allow interaction between researchers in different places, net-based communication tools enable discussion to take place 24-7 and virtual universities open study to students who are unable to attend traditional institutions. But ICT also brings challenges: the mastery of technical skills to be able employ the resources; but more significantly, challenges as to how best to employ the available resources to enhance and expand teaching and research. In this paper, we explore both the exciting possibilities and challenges ICT brings to university teaching. We draw on our experience with the Philosophy courses offered by Open Universities Australia (henceforth, OUA), though much of what we have to say can be extended to all Internet-based instruction, whether used as the exclusive teaching method or as an adjunct to traditional instruction. We argue that the best use of ICT in teaching involves the creation of virtual *communities of enquiry* (henceforth CoE). We argue for this conclusion on two grounds: (i) it makes the most of the available ICT resources and (ii) it overcomes a number of otherwise daunting challenges Internet-based tools have for instructors and students. Further, we argue that Internet-based communication tools, especially asynchronous tools like discussion-boards, offer a range of benefits for the creation of CoE that are unobtainable in the traditional classroom.[2] Our discussion is structured into three broad areas. First, we explain and argue for the importance of developing CoE in university level instruction, focusing on philosophy, where the CoE is most at home, but demonstrating it can and should be employed in most university disciplines. Second, we argue that with a reflective and creative use of *interactive* communication tools, virtual CoE can be developed, and that this method of instruction overcomes many of the problems commonly associated with other modes of online teaching. Here we also point to some simple measures we have found successful in helping to create net-based CoE. Third, we demonstrate, drawing upon recent empirical findings, that online communication tools can offer unique benefits for the creation of learning communities.

Communities of enquiry

A CoE is a group of people united in the examination of an area of common interest via a process of dialogue-based enquiry. Beyond this it is impossible to provide a clear and precise definition, for the concept of a CoE is dynamic, changing with the employment and development of the method by teachers and students engaged in the practice itself. Nevertheless, it must at a minimum contain the two essential ingredients of a process of *enquiry*—a self-correcting practice driven by dialogue—and a *community* devoted to that enquiry—where community evokes a sense of co-operation, trust and common purpose.[3] It is the shared interest in the subject matter that helps unify the members of the group as a community and keeps them focussed on the target content. Enquiry proceeds via shaping and modifying the ideas and commitments of the participants in an open-ended, dialogue-driven process of enquiry (see Splitter and Sharp, 1995). As the group generates and thereby directs the dialogue, the knowledge gained is *owned* by the students. It is the community that confronts the issues *it* finds problematic or intriguing and it is through

dialogue within the group that these shared interests are transformed into knowledge. Further, as the process of enquiry is itself recognised as the generator of the information gained, the CoE approach not only encourages students to engage more fully with the issues under investigation, but also fosters a commitment to the process of enquiry. This in turn tends to promote deliberate and self-conscious expansion of the range of thinking strategies employed within the group. That is, the shared open-ended focus generates a commitment to the process of enquiry itself, resulting in the community showing a concern for meta-cognition which results in an improved generic skills base.[4] The role of the instructor in such a learning environment is significantly different from their traditional role. The instructor is not the provider of facts that constitute an answer, but the facilitator of dialogue and the model of an engaged, cooperative enquirer. The key role of the instructor is to build a supportive and trusting environment for dialogue such that members are unafraid to modify their point of view in response to suggestions and critique from other members, including the teacher/instructor.

CoE are especially useful for examining questions that by their very nature produce further questions, rather than delivering firm answers. For this reason they are commonly associated with philosophical instruction. Indeed, the approach is typically identified with the Philosophy for Children program developed by Matthew Lipman (see, for example, Lipman, 1984 and 1988). In this context, the CoE method has been extensively employed to develop thinking skills (including information handling, reasoning, creative thinking, evaluating) as it naturally generates a concern for meta-cognition, and emotional intelligence (including the development of self-awareness, self-regulation, motivation, empathy and social skills) as it naturally generates a trusting and respecting environment. These specific domains, and philosophy more generally, are not areas of study that allow the instructor to present facts for students to memorise and reproduce. Indeed, such domains are not primarily concerned with matters of fact, but problems and questions that have no immediate answers. They demand a process of enquiry centrally concerned with argument and open discussion. Although CoE therefore find a natural home in the philosophy classroom and lecture hall, CoE should not be restricted to philosophy. Indeed, CoE is a highly effective mode of teaching across most university disciplines, providing students with a range of generic skills, such as the ability to evaluate arguments and appropriately weight different forms of evidence, valuable to all academic disciplines, and growing in importance in the wider information rich contemporary world.

A CoE approach can be beneficial in any domain where the content can be enlivened and enriched by the process of enquiry and in any discipline that can be enhanced by the expansion and the self-conscious (and self-correcting) application of the range of thinking skills. CoE can be successfully employed in any area where it is beneficial for the students to see themselves as "as active thinkers rather than passive learners, as discoverers rather than receptacles, and as valuable and valued humans beings rather than resources or commodities" (Splitter & Sharp, 1995; p. 21). This is true of most university disciplines. Successful engagement with the disciplines studied at university requires critical reflection and openness to enquiry. In this respect the CoE approach has been demonstrated to be beneficial in a broad range of disciplines.[5] The benefits stem from a deeper engagement with the subject matter under consideration and via the development of essential skills of enquiry by fostering a challenging and yet supportive collaborative learning environment.

The CoE model, then, provides a learning environment that is responsive to the needs and interests of the students, in which students have a sense of ownership of the knowledge acquired, and an appreciation of their own role in the learning process. It promotes deep reflection and allows students to develop a good understanding of the subject matter of the discipline, as well as generalisable thinking skills.

We will argue that a CoE approach translates well to the online teaching environment. In this respect it has an advantage over some other teaching methods, for not all methods of teaching and learning that succeed in a F2F environment translate well into the online domain. But when teaching and learning is modelled according to the principles of collaborative enquiry we are recommending, it is possible to cultivate a dynamic and successful e-learning environment, in which the benefits of CoE noted above will help to overcome some of the common difficulties experienced in online teaching and learning.

Virtual communities of enquiry

Communities of enquiry, we have argued, provide a productive model for university level teaching and learning across a wide range of disciplines. It remains to be shown, however, that this approach can be extended to e-learning. Not all methods of instruction that succeed in F2F teaching carry over to this domain, and it might be thought that CoE, with their emphasis on dialogue, would fail to generalise to a context without F2F contact. We will argue, however, that with appropriate care and maintenance of the online environment, it is possible to develop a virtual CoE, and that the development of such a community has distinct advantages.

Challenges to the Virtual Classroom

We will begin this section by considering some of the difficulties commonly faced by students and instructors online. We will then argue that in order to overcome these difficulties, it is necessary for educators to reconceptualise their teaching methodologies, thinking about the best ways to provide students with the desired learning outcomes in the online environment, rather than attempting to simply transpose familiar teaching strategies from traditional distance or F2F contexts to the new domain. We will show that when the teaching and learning methodologies are viewed with this focus, it becomes clear that the qualities that would support learning in the online environment are those that are emphasised in the CoE model, so if CoE can be developed and sustained online, many of the other problems with online learning would be avoided. We will then demonstrate that virtual CoE *can* be created, and will illustrate strategies that can be employed to facilitate them.

External students, studying by traditional distance methods or online, typically have much higher failure and attrition rates than students studying on-campus. A significant amount of research has been conducted into the problems external students face that contribute to these poorer outcomes. The factors influencing students' failure to successfully complete distance units vary (see, for example, Rovai, 2003 and Kember, 1989), but the most commonly cited problems fall into three general categories:

i. Problems related to the content or delivery of courses;
ii. Lack of engagement and motivation; and,
iii. Conflict between study and personal or work commitments.

Problems in category (iii) may seem to be out of the instructor's control. It is, however, important to recognise that these categories of student difficulties are not exclusive. When conflicts between study and other commitments are cited as a reason for withdrawal, for example, these may be the result of the way the course is delivered—many students report experiencing "information overload" when course content is delivered by means of large amounts of reading material—or the isolation resulting from students' inability to engage in a meaningful way with other students or staff may lead them to prioritise work or other commitments over study. The move from traditional distance education to online learning provides an exciting opportunity to improve outcomes for external students, but to achieve this requires careful attention to the problems identified above, how they interact, and the range of strategies and techniques that can be employed to avoid those problems most open to the instructor's control in the emerging online educational environment.

Online instructors face unique challenges. In today's online environment these challenges are typically not technological for, as the technology available to educators has become increasingly sophisticated, the technical skills required to manage an online course have been greatly reduced. Nevertheless, the online teaching environment is a relatively unfamiliar place for educators and students alike. Educators often attempt to counter-act this unfamiliarity by treating online education as analogous to teaching in a context to which they are more accustomed.

Online learning may, for example, be conceived according to the conventional distance education model, where course material is presented in a largely text-based format, with written notes taking the place of lectures. Additional resources such as review questions may be made available to allow students to test their understanding of the course material. Nevertheless, on this model students are largely responsible for

their own learning, and although assistance from staff will be available, through email or other means, students will have to ask for help and will not be in regular communication with others involved in the unit.

It seems clear that if the online learning environment is developed on the traditional distance education model, it will not be able to overcome the problems that have always been experienced by external students. Students who have infrequent interactions with other students and/or staff are liable to feel disengaged from the course, lack motivation, and fall behind or withdraw completely when faced with pressure from other commitments. The large amount of print material that needs to be provided to students on this model may also contribute to the feeling of "information overload" that contributes to poor retention. And these problems are exacerbated when the course is delivered online, since online delivery requires more initiative and effort on the part of the student, who must download and print material that would otherwise have been posted to them in hard-copy form.

Recognising the difficulties associated with traditional distance education, teachers may instead respond to the challenge of teaching online by attempting to provide students with an experience similar to that available to on-campus students. They may, for example, use the available technology to provide "lectures" in the form of audio or video files, accompanied by overhead slides or *Powerpoint* presentations, with "tutorials" in the form of synchronous chats.[6] Increasing technological sophistication has and will continue to enable the use of more and better resources to attempt to provide online students with the 'on-campus' experience. There remains, however, the normative question of whether we *should*; that is, the question of whether online study should be an attempt to reproduce, as closely as possible, traditional study. We will suggest two general reasons for thinking that trying to recreate the on-campus experience online is not the best way to proceed.

The first reason for concern about attempts to mimic the on-campus experience online is that such attempts may fail to take due account of the differences between online students and those who typically study on-campus. One of the great benefits of online learning is that it makes education more accessible and equitable, providing the opportunity to study to people who may otherwise be excluded. For this reason, students studying online, particularly through institutions such as OUA, are likely to be more diverse than the students who make up a traditional classroom. They are likely to be geographically more isolated, and may have different social and cultural backgrounds, different educational histories and there is likely to be a broader range of difference among them with regard to the reasons they have for studying and the place study has in their lives. Treating these students as though they were on-campus students fails to respect those differences and fails to recognise their different needs. For example, students who have little experience of formal education may feel overwhelmed by the amount and style of information presented in lectures, while students who are studying online because they require flexibility to fit in with other time commitments will not benefit from online tutorials run using synchronous chat facilities.[7]

A second reason to be hesitant about attempts to treat the online environment as a "virtual campus" is the privileging of on-campus learning, with online learning a "second-best" option, implicit in this model. This is an assumption that needs to be challenged if we are to provide an optimal online teaching and learning environment. Inevitably online delivery will have some disadvantages, but we should not begin our thinking about how best to teach online with the assumption that what we offer will be inferior to what we can offer students on-campus.

We have argued, then, that treating online teaching as being analogous either to traditional distance education or to F2F teaching will not help to improve learning outcomes. What is needed, instead of these analogies with other pedagogical models, is a reconceptualisation of teaching methodologies for this new context. Rather than thinking about what we already do that we can now do online, we need to think about who the students are, what we want to teach them, and how best to do that with the resources available. So, what qualities should an online educational environment have to accommodate a diverse student body and avoid the pitfalls to which distance education may be disposed? We can answer this question by thinking about the difficulties we have noted, in the light of what we know about the online student population.

Problems related to the *content or delivery of courses* can be addressed by ensuring that the content is *accessible* and *manageable*. Accessibility mandates the use of technology as a means to an end and not an

end in itself, so that students should not need to have sophisticated equipment or technical skills to be able to make good use of the course material. Accessibility also involves flexibility. Many students studying online do so while working full time or managing other significant commitments, so they should be able to work at their own pace, while being encouraged to keep up by the judicious use of scaffolding techniques. An online unit should deliver a manageable amount of content, so that students are less likely to feel overwhelmed and unable to cope with the volume of material supplied to them. Of course, it is also important to try to make sure that the content is interesting to the students and pitched at an appropriate level, taking into account their potentially very different backgrounds and educational histories. The best way to ensure that material is delivered in a way that is appropriate to the students accessing it is to manage the content in a way that is responsive to the students' needs and interests. It is also important for students to be able recognise the knowledge and skills they are acquiring as relevant to them.

Problems arising from a *lack of engagement and motivation* must be addressed by designing the course in such a way as to encourage participation and involvement. Merely providing reading material will not serve this purpose. If students can simply go to the website and download everything they need at the beginning of the course, they will not have an incentive to return to the website and become involved. This lack of participation is detrimental to learning, and is more likely to lead to students dropping out. Feelings of isolation and disconnectedness influence many students' decisions to discontinue distance courses.[8]

Care must also be taken with the provision of audio or video lectures. If managed well and of a high quality they can be of significant benefit, but there is no clear evidence that tapes of F2F classes are always effective at engaging students. They may, in fact, have the opposite effect, since students can feel they have less of a stake in a course that is apparently really being run for someone else. Students often express dissatisfaction with taped lectures in which they cannot hear questions being asked, cannot see visual material that is being referred to and so on. No matter what material is presented it is important for students to feel that they have some kind of stake in and *ownership* of material being presented to them.

Problems related to *conflict between study and personal or work commitments* cannot always be avoided. Students' circumstances can change, and workloads can become unmanageable, but if students have clear expectations about what is required of them in a course, these sorts of changes in circumstances should not be leading to the kind of attrition rates now evident in many online courses. As noted previously, problems relating to lack of time for study and an inability to keep up are often consequences of other problems with the online courses. If students are offered courses that are interesting, motivating, accessible and in which their participation is valued, they are more likely to be motivated to keep up and participate in the units in which they enrol.

In sum, a successful online learning environment will be one in which the content is accessible, interesting and responsive to the needs and interests of the students, in which students have a sense of ownership of the knowledge acquired, an understanding of their own role in the learning process, and from which they can take away not only a body of subject-specific knowledge, but generalisable skills relevant to other contexts. The qualities desirable in an online course to improve students' experiences of e-learning, it appears, are just the qualities cultivated in a CoE.

Challenges Overcome in a Virtual CoE

In a CoE students do not learn by being presented with a large amount of material to read. Instead, they begin with a relatively small amount of material to act as a catalyst, for the community to build further knowledge. This ensures not only that students will avoid the initial feeling of being overloaded with information, but that they will develop important research and enquiry skills, and come to have a sense of ownership of the knowledge developed by the community. The CoE model also allows the course to develop in a way that is responsive to and respectful of the students' differences. While the diversity of the student body can make pitching the content difficult in a more traditional distance course, it can in fact be advantageous in a CoE, where students are encouraged to broaden their own thinking by considering and responding to the views of others. A CoE approach to instruction not only forces the recognition of diversity and demands that students engage respectfully with each other, but tends to be more successful to

the extent that a diverse range of voices are heard. The challenge of motivating and engaging distance students would be well met by a CoE, where participation is integral to the learning process. Learning communities succeed because students are motivated by their recognition of the value of their involvement, and the importance of their own role in the community's learning. If that sense of responsibility and ownership can be gained by online students, one of the most foundational problems for distance education will be avoided.

We have argued so far that *if* CoE can be developed online, they will provide an ideal model for online learning. As has been noted above, however, not all teaching methodologies that are successful in classrooms will succeed online. In the remainder of this section, we will argue that it *is* possible to develop and maintain a CoE online.

One useful model of learning communities is that developed by Garrison, Anderson and Archer (1999), which identifies three elements essential to a successful educational experience in a learning community: cognitive, teaching and social presence. Strategies to promote the development CoE online should aim to promote and integrate these three elements. Drawing on our experience in creating and convening the Philosophy courses offered by Macquarie University through OUA, we will demonstrate that each of these presences can be fostered online and suggest strategies for their successful promotion.

Garrison *at al*. (1999) identify community members' *social presence* as consisting in their ability to project their identities into the community, and to present themselves to each other as "real people". It is in this respect that an online CoE will be most obviously different from the one-way transmission of knowledge typical of earlier distance education models. Isolation and disengagement often discourage students from persevering with online courses, so the promotion of individuals' social presence within the community is very important in overcoming these significant difficulties. The sound use of communication tools is obviously significant in fostering social presence. Asynchronous discussions boards are particularly useful, since although they lack the immediacy of synchronous 'chat', they have the advantage of accommodating students' need for flexibility, and are more inclusive, since they are less likely than synchronous tools to favour those who are more familiar with online communication.

One very important strategy for encouraging the development of social presence through discussion boards is to encourage all members of the community to post messages of introduction at the beginning of the course, and respond to the posts of others. For many students, making a first post is quite a challenge, so rather than being expected to launch straight into a discussion of the course material, it is important to be able to make initial contact in a less daunting context. Encouraging students to find connections amongst themselves, in terms of where they live, what other courses they have done, or purely autobiographical details helps to foster the sense of community that will be so important to their subsequent collaborations. These introductions also allow the teacher to become a part of the community, since although instructors have a significant role to play, there is less of a clear dichotomy between teacher and student in the CoE model.

Teaching presence involves the design and organisation of the course material and resources, and the facilitation of learning within the community. While the former function will be the responsibility of the instructor presenting the course, the facilitation function is shared between members of the CoE. Course design needs to be undertaken with the CoE model in mind. For example, not all the information to be transmitted to students needs to be given up front, since in a CoE knowledge is developed as a collaborative venture. Instead, the content of the course should be presented in such a way as to inspire interest, and resources should be provided to allow students to further their own knowledge and that of the community into the areas *they* find most interesting. The course should also be designed in a way that promotes accessibility. This model of teaching does not generally require a lot of sophisticated technical resources, and keeping technical requirements reasonably modest will avoid the equity issues that can otherwise arise. Because students will have varying amounts of experience with the online environment, it is also advisable to keep navigation reasonably simple. This consideration is relevant not only for the structure of the course generally, but for the set up of discussion boards, for example. We have found that, particularly in large courses, it is advantageous to divide the board up into different fora for different weeks. This keeps the number of threads in each forum manageable (avoiding again the problem of 'overload'), without

prescribing the direction discussions should go, as may be a result of dividing the boards according to topic. Dividing the discussions according to weeks also allows students the flexibility of posting at times to suit themselves, while still providing some scaffolding to maintain and encourage progress through the course.

The facilitation function of teaching presence can be shared to a significant extent throughout the community, with the instructor's role being to model the kind of interaction to be encouraged in other participants, and to enhance and support the development of a productive group dynamic in the community. Such interaction needs to focus on skills of enquiry and questioning. For example, rather than simply asking questions for students to respond to on the discussions board, the instructor can encourage students to ask questions the week's material has raised in their own minds, and respond to the questions raised by others.

The teacher also has a responsibility to provide a structured space for enquiry, giving students sufficient direction to control their own learning. Aviv, Erlich, Ravid, and Geva (2003), compared two three-month long university courses and found that in a structured Asynchronous Learning Network (ALN) the knowledge construction process reached a very high phase of critical engagement, with the students themselves taking on the role of bridging and triggering and leaving the tutor very little power. In a non-structured ALN this was not the case: students accepted a passive role as instructor-follower. The difference between the two courses was statistically significant. They conclude that a well-structured ALN develops significant and, possibly distinctive, role and power structures that lead the knowledge construction process to high levels of critical reflection.

Teaching presence and social presence are necessary to set the educational environment in which learning and enquiry can flourish. *Cognitive presence* consists in the ability of members of the community of enquiry to construct meaning and engage in higher order thinking through communication with the group. It is therefore the cognitive presence established by members of the group that reflects the success of their learning in that environment, and the development of the critical thinking skills that underlie other learning. Members of a community of enquiry demonstrate cognitive presence through the responses they provide to others in the group, and the questions they ask. Teachers can help develop the cognitive presence of their students by recognising indicators of it in student interactions and encouraging and modelling such interactions. The sorts of communication that are indicative of enhanced cognitive presence are: bringing new information into a debate; identifying themes that relate distinct topics; and suggesting new frames of reference to reopen discussions that have stalled. Students can be made aware early in the course of the qualities of debate expected in the community of learners, but it is through the modelling of appropriate interactions that the teacher can most significantly influence the development of cognitive presence in students.

As was noted previously, numerous studies have found that engagement in a CoE promotes the development of general critical thinking skills. Although we are only now beginning to conduct empirical research into the effects of virtual communities of enquiry as defined in this paper, the literature on related models such as that of Garrison et al (Garrison, Anderson & Archer 2000, Kanuka & Garrison 2004) leads us to expect such gains will also be found in the kind of communities we are proposing, since the development of cognitive presence, identified by them as central to a community of learners and conducive to meta-cognitive development, is a focus of the strategies we are suggesting.

Practical Advice for Creating Virtual CoE

The precise strategies to be employed to enhance the educational experience presented by an online CoE will depend to some extent on the nature of the subject, but the general principles about the importance of these presences will be applicable in any successful learning community. For this reason, it is important for all teaching staff involved in the development and delivery of online courses to be aware of the principles underlying the CoE model, and to reflect on the application of those principles in their teaching.

We have devised the following simple strategies for the development of CoE in the philosophy courses offered through OUA (The simple techniques have been developed from suggestions from Tim Sprod (personal communication):

- Students are asked to read trigger material (usually in the form of philosophical papers, but in advanced communities material from the popular media or other general sphere with philosophical content);
- Students are asked to post a message about what they found most puzzling or interesting to the discussion board;
- The instructor attempts to group the questions into areas to identify what students find most interesting;
- Students then discuss the grouped questions with the instructor as facilitator. At this stage it is essential that the instructor avoids the common roles as source of knowledge and instant evaluator of student responses. These roles are to be taken on by the community itself;[9]
- As the instructor is a member of the community, she has a duty to participate in the discussion. Participation typically proceeds via such techniques as exhibiting puzzlement, asking questions that signal the cognitive moves that might be useful and concentrating students' attention on meta-cognition. Again, the instructor should proceed in this stage without providing firm solutions and should hold back in matters of fact, otherwise the instructor's contributions will be seen as carrying more weight and the instructor's traditional role as teacher will be reinforced.[10] The instructor needs to be, as Lipman often says, "pedagogically strong but philosophically self-effacing" (Sprod, personal communication).
- The instructor should jump-start stalled discussion (deciding when and how to do this is a major challenge that is guided by the instructor's knowledge of the group and the prior consideration of the issues involved), ensure that premature closure of questions does not occur and guarantee that the group recognises the value of clarifying a problem even when no answer is found; and,
- The instructor needs to encourage students to take responsibility for their comments and be prepared to defend, modify or change them as appropriate. This can be achieved by providing a model of such practice and ensuring that communication occurs in a space where attacks on a position are neither made nor perceived as attacks on the holder of the position.

CoE do not occur naturally in online communication, but with care and effort can be developed and maintained in the e-learning environment. Because a successful CoE will avoid many of the most significant problems typically associated with distance education the care and effort required to develop a community online is well justified.

3. Future trends

We argued above that CoE can be developed online. We will now examine some growing evidence to suggest that if careful attention is paid to the structure of the online environment, it can provide some significant advantages over the F2F classroom for the development of CoE, since the nature of asynchronous communication and the more equitable nature of online dialogue provide significant benefits not achievable in the traditional classroom.[11] Hiltz (2000), for example, found that with active engagement, the outcomes of online courses can surpass F2F classes. We find this unsurprising, for there are good philosophical and pedagogical reasons to suppose the online environment may offer resources for overcoming some of the difficulties associated with creating a CoE and may even offer independent benefits. In what follows we will briefly outline some of these benefits.

One of the challenges for many instructors adopting the CoE method is relinquishing the "teacher" role. The instructor in a CoE must become a peer to the students; a more experienced, but nonetheless equal member of the community who facilitates exchange and acts as a model of an open respectful thinker. The dynamic of communication using online discussion tools supports this model, allowing for a more equal role to be played by teachers and students in the process of debate by breaking down the power structure that exists in a traditional classroom. Online there is not such an obvious teacher/student dichotomy, meaning that students are encouraged to take more responsibility for the direction of the group's learning.

This is supported by Smith, Ferguson and Caris (2003) who, in a study of 22 college instructors, found greater student-instructor equality and deeper thinking in discussions in online relative to traditional courses. Others have documented reduced gender and racial biases in student communication (Graessle, 2000; MacDonald, Stodel, Farres, Breithaupt & Gabriel, 2001; Palloff & Pratt, 2001) and greater input by otherwise shy students (Doucette, 1994; Palloff & Pratt, 2001; Reber, 1996) via discussion-board interaction.

CoE in the classroom can also be challenging for instructors because of the level of preparation that is required. Although it is often assumed that a CoE places fewer demands on instructors, as they are not seen as the source of knowledge, this is not in fact the case. To effectively lead discussion the instructor is required to have previously considered possible lines of development of the discussion. In the traditional classroom, with interaction in real-time, this demands a great deal of preparation. The instructor must rehearse a variety of lines of discussion as it cannot be predicted in advance which particular line will actually be pursued. Moreover, even when fully prepared the instructor must have the ability to "think on her feet" as the agenda is set by the students and the actual direction of the discussion arises from its own dynamic. Thus the online environment has a huge advantage for the instructor if asynchronous communication tools are used: the need to think on one's feet is dramatically reduced and the possible lines of discussion can be thought through as and when they happen. The instructor will have more time to reflect on remarks that students make, and can suggest the right intercessions to help develop them. Thus preparation time and the need to think on one's feet are both dramatically reduced, and instructors are able to offer better guidance to their students.

The added reflection time available in an asynchronous learning network has also been found to have a positive impact on the quality of students' contributions. There have been a number of empirical studies documenting a positive correlation between dialogue-based online instruction employing asynchronous communication and both learning outcomes (Webb, Jones, Barker & van Schaik, 2004; Swan, 2001) and student rating (Wu & Hiltz, 2003, Spiceland, 2002). (The Wu and Hiltz (2003) study involved a review of 116 students in two undergraduate and one graduate course. The Spiceland (2002) experiment involved a comparison of learning in asynchronous Internet courses with traditional F2F courses). That this is a function of the increased time available is supported by the otherwise puzzling finding that *synchronous* communication did not seem to improve skills in argument construction (Veernam, Andreissen & Kanselaar, 2000).

A further possible advantage of asynchronous text-based communication over F2F discussion is the contribution made by the medium of writing to thinking, learning and the development of reasoning skills. Advocates of the "Writing Across the Curriculum" movement and other educators have claimed that writing promotes learning and thinking skills, and have suggested various explanations of the connection between writing and thinking (see, for example, Applebee 1984). As well as allowing more time for reflection, as was noted above, it has been suggested that writing encourages more clarity and explicit expression, for example, so that contributions can be understood outside the context in which they were originally produced, and that the active nature of writing stimulates the evaluation of otherwise unquestioned assumptions.[12]

Asynchronous communication has a number of more practical benefits. For example, turn-taking and over-speaking are non-issues, any disrespectful posts can be removed before they cause harm, and off-topic posts can be moved to different areas of the discussion board. The use of increased wait times is not "stressful" or seen as dead time. Some of these benefits will extend to other forms of online participation, such as blogging, which has recently been found to led to similar positive learning outcomes (Du & Wagner, 2005).[13] Finally, as was noted previously, the heterogeneity of students in a typical online course relative to those in an on-campus class can also contribute to the success of a community of enquiry, since students in a CoE are encouraged to extend their own frames of reference by reflecting on the views of other members, and can therefore benefit from exposure to a broader range of perspectives. Further, Dietz-Uhler and Bishop-Clark (2001) found that students rate asynchronous discussion as more inclusive of diverse views.

The benefits of CoE we have identified have implications for F2F, as well as distance education. ICT is increasingly being used in traditional university courses, and although most universities now use online resources as an adjunct to traditional F2F teaching, on the whole the available resources are probably not being used to the best effect. We have demonstrated above that virtual CoE have some advantages over communities that can be developed in F2F classrooms, and yet few faculty use such resources to foster a more positive sense of community within their F2F classes (Woods, Baker & Hopper, 2004). Further research is needed to determine the most effective ways to integrate online community-building with F2F teaching to optimise the effectiveness of the dual modes of teaching.

Conclusion

In this paper, we have argued that communities of enquiry can and should be developed online to make the most of the potential offered by the ICT resources now available to educators. We have argued that the beneficial qualities of a CoE that have been found in F2F teaching are those qualities that are most needed in online education to avoid the problems commonly associated with distance teaching and learning, and that with careful attention to the way the online learning environment is constructed and managed, it is possible to create successful learning communities online.

CoE foster ownership of the information learned and commitment to the processes of enquiry, thereby offering a natural means of overcoming some of the causes of higher drop out rates in the online learning body. The CoE approach actually benefits from some factors about the online student body that are otherwise problematic such as their increased diversity and different learning expectations. For these reasons CoE provide a productive methodology for online teaching. We have argued that the communication tools available online, especially asynchronous tools like discussion boards, make the creation of virtual CoE possible and suggested some rule of thumb strategies for the creation and maintenance of such communities. Finally, we have drawn upon a growing body of empirical research to suggest that virtual CoE may offer benefits unavailable to F2F CoE. These benefits range from practical—reduced need to think on one's feet—to philosophical—the less hierarchical nature of online communication enables the instructor to relinquish the "teacher" role more easily. Overall, we have argued that the time and care required to create a virtual CoE is well justified, given the potential benefits of such communities for learning in the online environment.

Endnotes

1. For an example of a virtual research block see the online network devoted to research into Asynchronous Learning Networks themselves run out of the New jersey Institute of Technology at http://www.alnresearch.org; the use of Internet tools such as discussion-boards, is now widely employed; Open Universities Australia is an example of a virtual university offering a complete degrees via online study.
2. This is not to imply that virtual CoE are better than real-world CoE, but that each environment presents its own range of benefits. Our considered position, but one we will not argue for herein, is that CoE are best created and maintained using a range of real and virtual communicative strategies.
3. Splitter and Sharp, (1995, pp. 17-19) emphasise the importance of these twin aspects of a CoE while noting that neither alone is sufficient. Indeed, it is perfectly possible that either one can exist independently of the other without creating a CoE and without thereby generating the range of benefits found in a CoE.
4. Improvements in thinking skills due to engagement in a CoE are empirically well documented. See Cotton (2002) for a recent review of the available evidence for a variety of teaching protocols from 56 different empirical studies. In the area of CoE and Philosophy for Children see Sternberg and Bhana (1996) who in their meta-review noted widespread gains in critical thinking skills due to CoE. Also see Lipman, Sharp and Oscanyon (1980), Williams (1993) and Sasseville (1994) for documentation of logical reasoning improvements due to a CoE approach. For early studies supporting improvements in formal and informal logic, as well as meta-cognitive skills, see Iorio, Weinstein and Martin (1984), who emphasise that a CoE approach not only increases thinking skills but the awareness and appreciation of those skills, and Karras (1979), who documents an increase in pupils' predilection towards logic.

5. This is not the place to restate the broad range of empirical findings in support of CoE and Philosophy for Children approaches across a diverse range of disciplines and subject areas conducted over the past 30 years. The interested reader should consult the recent meta-review by Trickey and Toppings (2004). Some of the better-controlled studies document improvements in the hard sciences (Sprod, 1994 & 1998), reading and language comprehension (Banks, 1989), mathematics (Fields, 1995), and emotional intelligence (Doherr, 2000). Also see note 4 above for logical and critical thinking skills improvements. It should be noted that these studies concern CoE and Philosophy for Children in schools, not at university. They do, nevertheless, clearly document the success of these approaches across diverse subject areas and disciplines.
6. At present, this more sophisticated online model can lead to some technical problems to do with file sizes and bandwidths, but these are problems that will presumably be reduced as technology advances, so we will not consider those here.
7. Further, even with improvements in technology noted in the note above, equity issues may arise from excessive technological demands placed on disadvantaged students or those in remote areas.
8. Tinto (1975) has emphasised the influence of a lack of social integration on attrition rates in higher education generally.
9. We will presently suggest that the more equitable nature of Internet communication, in which the distinction between teacher and student is less 'visible', removes some of the pressure that otherwise make this difficult to achieve.
10. In a traditional university environment when the instructor is both the lecturer and tutor this is very difficult to achieve. A lecturer often cannot hold back from statements of opinion. Again the format of net teaching, when the author of content is less transparent, can significantly enhance achieving this self-effacement.
11. Again let us emphasise that we do wish to not claim that these benefits make virtual CoE more valuable overall than F2F CoE; virtual and F2F CoE have a range of relative benefits and challenges such that it seems to us the best CoE are very likely to promote engagement in both environments.
12. For more on the effect of writing on learning and cognitive development, see Emig, (1977), Fulwiler (1984) and Freisinger (1980).
13. There are worries about blogging, if it does not include an interactive dimension that are the mirror-image of the benefits of open communication in a CoE (see Townley and Parsell 2004 & 2005). As our claims herein are restricted to the building of online communities via dialogue we will not consider blogs, which due to their individual nature in the first instance, can at best serve as catalysts for dialogue. The same applies to a range of other net-based technologies like podding.

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