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Applying a Communities of Practice Model to Research Partnerships

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Abstract

The quality and relevance of research is determined by those it affects, not just those who fund it or engage in it. A communities of practice model can bring together these diverse interests to meet national and local needs. Practice, the social production of meaning, is the source of coherence of a community. The specific practice of educational research is building and testing knowledge, and through the learning process necessary for this practice, numerous communities emerge, with complex boundaries and peripheries depending on people's roles, purposes and expertise. Communication technologies can facilitate communities of practice, so that online dialogue, rather than replacing personal contact, facilitates reflection and connections to other communities. Online environments appear to have potential as a means of increasing the involvement of stakeholders in devising the research agenda, conducting research and sharing the resulting knowledge. Online environments help counter the 'tyranny of distance' and connect stakeholders nationally. This paper evaluates the development and implementation of communities of practice supported by the online environment of the National Quality Schooling Framework (www.nqsf.edu.au) and Think.com, and highlights the importance of sociability and usability in achieving quality.

Introduction

As the Australian Government embarks on the development of Quality and Accessibility Frameworks for publicly-funded research – influenced by other nations that have addressed the issue – our understandings of quality in educational research need to be justified. Who should be involved in judging quality: peers, funding agencies, or a broader society? How should they judge quality: through quantitative measures such as the number of publications in scholarly journals and PhD completions or through measures of impact or 'making a difference' in the world? In this paper we attempt to address broad issues of quality and accessibility, underpinned by a democratic approach to educational research. We apply the community of practice model (Wenger, 1998) to address how a range of stakeholders might be involved in questions of research quality and accessibility, and consider the National Quality Schooling Framework (an Australian Government funded project) in light of the model.

Assessing quality and relevance: who are the stakeholders?

Educational research affects, and is affected by, multiple stakeholders – some powerful, others less so – contesting quality. If educational research is a public good, that is, if it is

intended to serve the interests of a community greater than the researchers and funding agencies – and even broader than practitioners – in a collective search for knowledge that benefits society, then we need a model and a practice that can incorporate and listen to diverse stakeholders.

Community of practice is a term grounded in a social constructivist approach to learning and frequently applied to the management of organisational knowledge. A community of practice is a group of people who share a concern, a set of problems, or a passion about a topic and who deepen their knowledge and expertise in this area by interacting on an ongoing basis (Wenger, McDermott, & Snyder, 2002). The definition in itself is not new or startling, but, Wenger et al argue, a focus on intentional and systematic knowledge management has become increasingly important in the new 'knowledge economy', and communities of practice are seen to be a necessary structure for organisations. According to the definition above, a community where the practice is educational research could consist of teachers in schools and universities who share concerns, academic researchers, funding agencies, local communities, education bureaucrats and ministers and other specialists. This broad community would naturally be made up of smaller, more focused communities of practice on specific topics of interest.

In his earlier work, Wenger (1998) establishes a detailed model for the community of practice, and makes a strong argument for its role in promoting learning. He argues that education is not limited to schooling, but is a mutual development process between communities and individuals, forming new identities. Designing education means creating an architecture that allows the formation of identities. To achieve this, Wenger suggests three infrastructures: the first, places of *engagement* for people; the second, materials and experiences with which to build an image of the world and themselves (*imagination*) and the third, ways of having an effect on the world and making their actions matter (*alignment*).

Within each infrastructure, he suggests, there are specific areas to develop. Firstly, opportunities for engagement arise through mutual and shared activities, through challenges and responsibilities that call upon learners' knowledgeability and encourage them to explore new territories, and through continuity to develop shared practice and a long-term commitment. It appears that facilities of engagement can assist knowledge building particularly by bringing people together, encouraging shared discourse and recording information. Secondly, Wenger suggests, the three aspects of imagination are orientation: locating self and learning about a wider world; reflection: looking at our situations with new eyes; and exploration: reinventing the self and in the process reinventing the world. He argues that imagination is the way a learning community can expand the definition of its enterprise. This is where knowledge building can be enhanced by time off for reflection and conversation, exploration and play. The third aspect of Wenger's learning architecture is alignment, which encompasses larger-scale understanding of power relations and how to have an effect on the world. Therefore he suggests that any learning community must push its boundaries and interact with other communities of practice in a purposeful way, it must link participation inside with that outside the community (eg. through multi-membership of its members in other

communities), it must use the styles and discourses of the areas it wants to affect, and it must become involved in the organisational arrangements of its own institution. It is therefore deep and wide, able to know what it knows and to use this in a range of arenas. For those involved in educational research, this demands that the knowledge thus created is available to make a difference in society. The elements of Wenger’s learning architecture are summarised in Table 1.

Table 1. Wenger’s architecture for learning

Facilities of Engagement	Facilities of Imagination	Facilities of Alignment
<i>Mutuality</i> Interactional facilities (physical and virtual spaces) Joint tasks Peripherality	<i>Orientation</i> Location in space Location in time Location in meaning Location in power	<i>Convergence</i> Common focus, vision, values Allegiance Leadership Inspiration
<i>Competence</i> Initiative and knowledgeability: Prior experience Accountability: occasions for evaluation Tools including discourses, concepts	<i>Reflection</i> Models and patterns Time off Conversations	<i>Coordination</i> Standards and methods Plans and schedules Communication Boundary facilities, brokers Boundary objects Support for multimembership Feedback facilities Data collection
<i>Continuity</i> Reificative memory: including documentation Participative memory: including intergenerational encounters	<i>Exploration</i> Trying things out Play	<i>Jurisdiction</i> Policies Processes Distribution of authority

(based on Wenger, 1998)

The community of practice model described above is intended to apply equally to co-located workers in an organisation and professionals working in different organisations, and should therefore hold in situations of face-to-face and tele communication. Indeed, many researchers, practitioners and other stakeholders in educational research value the capacity to read background papers, gather data and communicate widely with others involved in their field. With regard to online communities, Preece (2001) considers both social and technical aspects of interaction in evaluating the performance of a community, labelling them sociability and usability. Her analysis is important to this paper, particularly in the section evaluating the National Quality Schooling Framework, because it addresses quality and accessibility in online environments. The focus of sociability is human-human interaction supported by technology. Sociability is concerned with three key components (Preece, 2000): shared purpose, people and their roles, and policies. These fit with Wenger’s alignment (vision, purpose, policies and processes) while raising the position of people, which he implies, but does not state explicitly. Usability, on the other hand, is concerned with how users interact with technology, and includes dialogue and social interaction support, information design, navigation and access. An Australian educational research community using online communication, such as the National

Quality Schooling Framework, needs to consider critical sociability aspects such as purpose and content, roles of the various stakeholders and policies to do with membership, discourse styles and ownership of ideas. Usability issues include national access to the Internet, state and institution policies and individual access to resources for information and communication technology (ICT).

Both sociability and usability factors impact on the involvement of a broad range of stakeholders in educational research. The culture of teacher isolation and academic autonomy can work against the development of communities of practice, leading one report to suggest that for such sharing to occur, significant structural changes in education systems and in schools are required (Department of Education, Science and Training, 2001). On the other hand, a five-year study using collaborative practitioner research in conjunction with university researchers identified the development of a discursive environment, where teachers were able to talk about their actions (Cherednichenko, Hooley, Kruger, & Moore, 2001). This environment also encouraged argument and critique. However, the research also discovered an apparent lack of explicit and agreed language or discourse of learning for teachers to value and present their work, apart from the system-generated language of standards and outcomes. Developing and expanding a shared language to include multiple stakeholders would be a further step towards a democratic approach.

While teachers focus on action (experiencing and implementing) in their practice, they have been less frequently involved in researching (reflecting on and theorising) this practice. Piaget (1969) expressed surprise that the large number of teachers did not produce a group of researchers among their ranks who focused on pedagogy as a discipline from the practitioner's point of view. Kemmis and Carr (Carr & Kemmis, 1986; Kemmis, 1999) took up the challenge in their work in action research, arguing that it is conducted by those involved in a social practice – which it takes as its subject matter – and from a critical stance, proceeding through a spiral of cycles of planning, acting, observing and reflecting, to achieve improvement. They contend that the purpose of action research is social change. Kember (2000) links this to the concept of quality by arguing that improvement implies quality, and that research to improve teaching and learning should be derived from a paradigm that embraces change. However he uses the terms action learning and action research rather loosely and interchangeably, contributing to the current diminution of the critical and social element of action research.

Cochran-Smith and Lytle (2001) discuss three types of relationship between knowledge and practice, which can influence research policy. In the first, knowledge-for-practice, knowledge is generated by outside researchers and passed on to teachers to improve practice, while in the second, knowledge-in-practice, the focus is on practical knowledge generated by expert teachers for reflection by others. The third approach they call knowledge-of-practice, whereby teachers learn when they generate local knowledge of practice within the context of inquiry communities and connect it to larger social, cultural and political issues. They make a distinction between action research as a time-bounded project-focused approach, and their inquiry stance, which is a more fundamental way in which teachers, both experienced and inexperienced, work together to generate local

knowledge, envision and theorise their practice, and interpret the theories and research of others. However they do not consider the potential for partnerships between the two, or the involvement of a broader constituency. In an empirical study in Australian schools Hartnell-Young (2003) found that some teachers preferred to focus on classroom practice while working with researchers to interpret and finally document the outcomes.

In the following section we apply the community of practice model to the National Quality Schooling Framework and assess its usability and sociability, and potential to meet quality and accessibility requirements for a community of practice in educational research.

The National Quality Schooling Framework

The National Quality Schooling Framework (NQSF) is an interactive web environment designed to support Australian school leaders and teachers develop, implement and research innovative and evidence-based projects to improve student learning outcomes. Australia's National Goals for Schooling in the Twenty-First Century (Ministerial Council on Education Employment Training and Youth Affairs (MCEETYA), 1999) drew up a set of national goals for Australia's fragmented, state-based and multi-jurisdictional education systems. The NQSF seeks to support these goals and add value to the range of school innovations and initiatives currently being undertaken in government and non-government schools. A major focus of the NQSF is to support a shift from practices and programs that seem to be working (for some students) to practices and programs that can demonstrate their success in improving learning for all students. The NQSF Project is funded by the Australian Government and developed by Professor Peter Cuttance, Centre for Applied Educational Research, University of Melbourne, in response to needs identified by schools in the Australian funded Innovation and Best Practice Project (Cuttance & Innovation and Best Practice Consortium, 2001).

The specific objectives of the NQSF are to support and enhance quality teaching and learning; build a shared understanding of how student learning outcomes can be improved by quality assurance processes grounded in professional practice and evidence-based research; develop and support whole-school approaches to school improvement; develop a framework for the lateral transmission of best practice knowledge across schools; support schools to embed quality assurance principles and criteria in their practice and encourage whole-school innovation and improvement; recognise quality schools and innovative teachers who can demonstrate a sustainable improvement in student learning outcomes using evidence-based research; and engage school communities in evaluating the quality and effectiveness of school practices and programs and their performance across the key dimensions of learning outcomes for students. These objectives are congruent with a communities of practice model that includes space for engagement, creating knowledge through imagination, and affecting the world by alignment (Wenger, 1998).

The main elements of the NQSF model are ten Key Dimensions of quality schooling and teaching; resources in the form of literature, tools and strategies; a web-platform to engage teachers and professional educators in interactive professional e-learning

communities; and on-line support services. A quality resource within the NQSF is defined as an object providing a critical resource for some aspect of school improvement or innovation; with acknowledged research or practice provenance; written in language readily understood by all stakeholders; and, for school project reports, with a strong evidence-base of effectiveness. The ten Key Dimensions derive from the findings of a review of the fields of school and teacher effectiveness, school improvement and innovation and educational change literature. The Hill & Crevola (1999) model's nine dimensions – initially developed for a model of literacy learning in the early years of schooling – were assessed across the stages of schooling and across a broader range of learning outcomes. The review found substantial support for the model as a general framework for school improvement. However, there was a need to enrich the depth and scope of the individual dimensions and to extend the overall model to include an additional dimension focusing on the nature of student learning. The resulting dimensions are: Beliefs & Understandings, Curriculum, Standards & Targets, Monitoring, Assessment & Reporting, Learning, Teaching, Professional Learning, School & Class Organisation, Intervention & Special Assistance, Home, School & Community Partnerships, and Leadership & Management. Each is supported by statements based on the available evidence.

The web-based infrastructure, based on leading-edge developments for supporting learning communities in the USA, UK and New Zealand was trialled for both usability and sociability in collaboration with Ultralab UK and the New Zealand Ministry of Education. This allowed the NQSF to build on existing knowledge about web-supported communities of practice. The NQSF platform consists of three linked structures. The first provides a range of resources to support the development of school improvement projects. The second provides access to a national and international interactive professional learning environment in which teachers and school leaders can share their understandings of what works and does not work, in their specific contexts. The third, external links to web-based collaborative tools, was established to foster a true community of practice looking outward. One of these tools is Think.com, a site which enables students and teachers to publish and interact with others in a protected community space.

An action research process that underpins the NQSF's Your School Project (YSP) framework articulates with the ten dimensions of quality schooling. By providing such a framework, the NQSF also creates a space for shared discourse between practitioners, as participating schools work within the same broad structure to develop projects that address local needs. The four YSP documents are:

1. **Project Plan:** context, evidence of need, project overview and resources required.
2. **Evaluation Plan:** baseline data, goals, targets and milestones across key dimensions.
3. **Development Strategies:** wider research and practitioner knowledge, includes implementation strategies.
4. **Evidence, Analysis and Impact:** data and evidence of impact on the intended outcomes, other impacts, reflections on the project and on the support used to

achieve the results, and lessons and advice to other schools planning a similar project.

Once completed, the documents provide rich data for meta-analysis by those who are interested in both interpretive and quantitative methods of research. The patterns thus identified can inform several constituencies including policymakers and the public. Similarly, the framework has the potential to bridge the divide between practitioners and researchers.

Evaluating the NQSF as a Community of Practice

The NQSF commenced in July 2001 and moved into trial phase with 46 schools from April to September 2002. A formative evaluation was conducted in 2002. The range of data gathered and analysed included content analysis of school project reports, structured interviews with six trial schools in three states, surveys of information and communications technology environments in trial schools, skills surveys of teachers and school leaders, email polling of participants, transcripts of tele-tutorials and teleconferences, and monthly logs of website usage.

Launched nationally in April 2003, access to the NQSF community is now taken up by 5,877 school users from 2,841 registered schools and 705 non-school users (as at March 2005). In addition to teachers and school leaders, users include university academics, researchers, education bureaucrats in state, federal and non-government jurisdictions, education consultants, members of parent associations, education unions, professional associations, and community representatives. The number of registered schools represents 29% of schools nationally and, by sector, represents 25.2% of Government schools, 25.6% of Catholic schools, and 29.8% of Independent schools. Registrations by stage of schooling indicate a higher proportion of secondary schools and K-12 schools (42% and 30% respectively) than primary schools (20%). Table 2 shows the proportion of schools registered in the NQSF in all states and territories.

Table 2: NQSF registered schools as percentage of all schools, and by sector, in Australian states and territories, March 2005

State/Territory	Total %	% Govt	% Cath	% Other
ACT	63	56.3	41.9	23.5
SA	40	36.1	33.6	39.4
NT	37	26.7	35.3	33.3
QLD	32	26.5	39.9	36.0
TAS	32	27.1	35.0	19.0
VIC	30	29.1	23.1	28.6
WA	25	24.0	14.2	29.3
NSW	20	17.3	21.1	26.5
Average	35	30.4	30.5	29.5

The table shows a wide range of uptake, while in general terms, around one third of all schools have registered. The government sector schools differ greatly between the highest

proportion (56.3%) in Australian Capital Territory (a small, special case) and the lowest (17.3%) in New South Wales. The Catholic sector ranges from a very low 14% in WA to a high of 41.9% in ACT, while registrations of other schools are lowest in Tasmania (19%) and highest in South Australia (39.4%). Within states, the proportions in each sector are relatively similar in Victoria and the Northern Territory, and greatly divergent in Western Australia and Tasmania. The reasons for these variations have not been examined, but could include sociability aspects such as openness to new ideas, and distance between schools, as well as usability aspects such as access to reliable Internet connections and school allocation of computers.

Access to the NQSF site has increased over the past twelve months. The daily average number of hits in April 2004 to March 2005 increased from 2456 to 10550, the average number of daily visits per month increased from 104 to 249, and the average daily number of pages accessed increased from 1047 to 6682. Site usage rates were highest on all measures in March 2005. As the community of practice develops, schools are not only consuming resources but in a reciprocal fashion, have submitted almost 400 reports, of which 350 have been quality assured and published on the website. Preece (2001) considers this reciprocity to be an important measure of the success of an online community.

The facility of engagement – the website – provides the capacity to build an interactive, diverse, and sharing professional learning environment through joint tasks such as cluster projects around boys' education, and links with Think.com where recent learning activities have included live question and answer sessions for students and teachers with professional writers, Australian ambassadors and tsunami survivors. Through engagement in the online learning communities, teachers can learn about strategies that are being developed, tested and implemented by colleagues in other schools, and share resources within the community. As one member wrote:

The ability to be able to tap into schools around the country has been great.

In terms of Wenger's concept of competence, users can engage with professional educators who have undertaken research or developed a high level of expertise and knowledge in priority improvement areas. The action research framework of the Your School and Your Cluster Project documents provides a common discourse and tools for evaluation and accountability. Access to resources from other researchers and practitioners is highly valued:

Research information...has been current and relevant and at my fingertips when I needed it for my project, wanted an issue clarified or just sought up-to-date findings on educational topics that interested me.

Those who take an active role in the online community have been positive about the ability to network with other schools nationally and to interact with colleagues, but this raises issues about what others in the community might be interested to learn:

It was a challenge to put items that might be of interest to others on the pages. Meeting people...was interesting and had potential to develop long term engagement and dialogue.

This giving or sharing is a difficult aspect of community membership. Data regarding the most frequently visited pages confirm that most activity involves browsing discussion threads, rather than formulating replies to the threads. Participants who responded to the three polls confirmed this behaviour, with 92% of respondents reporting that they browsed but did not start a new thread or contribute to an existing thread during the polling periods. This is sometimes called 'lurking' but, as Preece suggests, and Brazelton & Gorry (2003) concur, this is not always indicative of lack of engagement or of the level of quality. For example, one teacher commented:

I have enjoyed reading other teachers' stories and feeling part of a wider educational community.

Providing a web space for sociability at the national level is not enough. Overwhelmingly the biggest barrier to accessing the NQSF online environment is the lack of time, given the existing workload of teachers and school administrators. One wrote:

The site with all its functions is a wonderful attempt to create a 'community of scholars' and to rid intellectual discussion of the tyranny of distance. However, the tyranny of time retains its power.

As well, finding time to participate in synchronous, rather than asynchronous activities, poses difficulties for participants wanting to form communities across time zones. The resulting low levels of interaction and contribution frustrate some members. As other research has found (Hartnell-Young, 2003), the public, formal and permanent nature of the communication means some members are reticent to post comments, requests or suggestions, whereas for others the asynchronicity can encourage reflection (Stahl, 1999). Time spent in the community can have an effect on the attitude to sharing. At first, some members focus on matters within their school, but as they progress their projects and gain confidence, they engage with other schools via the NQSF platform. These behaviours affect the quality of material and interactions within the community.

Wenger's facility of imagination is problematic. The NQSF is underpinned by a belief that teachers hold the evidence, and can work in partnership with others, to make improvements in the quality of education. But what about the other stakeholders? Currently using the NQSF are clusters of the Boys Education Lighthouse Project schools who work together, and variously, with academic partners, researchers, education bureaucracies and education consultants in projects to build the knowledge and the evidence-base, that is, 'proving' improvement in the education of boys. In a few cases, parents are involved in planning, implementing and documenting school improvement projects. But the ultimate power generally resides with the funding agency, who formally approves all NQSF content. Imagination requires time and space for reflection, for play and for taking risks. Quality assurance processes control these aspects, and while Think.com gives permission to try things out, it remains closed to 'outsiders'. Parents may obtain read-only privileges.

The third element of Wenger's community of practice model, alignment, is achieved through the broad purpose of school-based improvement. It gives an opportunity for teachers to affect the world through the evidence they provide of their own research into quality practice. Data is both collected and shared, to inform others, to improve schooling nationally and to connect globally (thirty members of NQSF are from UK or New

Zealand). In terms of usability, the impact of Australian participants' feedback on Think.com version 2 during the trial was a redesign of the software for the following version.

While sociability is well-covered through Wenger's architecture, usability, in Preece's terms, is not. This is concerned with how users interact with technology, and includes support for social interaction, information design, navigation and access. The information gathered about participants' ICT skills indicates that the NQSF population had varied levels of skill, ranging from basic to advanced. There was a modest relationship between the level of engagement and ICT skills, and between level of engagement and ICT proficiency. There was only a weak statistical relationship between level of engagement and ICT access. As would be expected when dealing with a population with varied levels of computing skills and experience, the feedback was diverse. Many participants found the site easy to navigate:

The structure of the site has been easy to follow and the times when I was not sure I just proceeded and had a look anyway and have read and used some very useful information.

Other participants, however, found the navigation difficult, with early versions of Think.com highlighted by a number of participants as being awkward and slow:

Think remains unfriendly unless you are using it all the time.

The experiences of NQSF Project participants reinforce lack of access as a barrier to initial use of the online environment, with many participants reporting difficulties in gaining access to the site – some due to bandwidth problems – especially during school hours when competition for bandwidth from classroom use was at its peak. For some pragmatists, slow access is part of 'the reality of schools'. Notwithstanding the range of experiences with the technology, over time participants found that quality arises from the existence of a shared practice: a common set of situations, problems and perspectives that overrides the choice of a specific form of communication (eg face-to-face as opposed to web-based) and enables members of a community to share information (Wenger et al., 2002).

Tele-tutorials and teleconferences were a major feature of the NQSF project, designed to enhance usability and thereby increase sociability. In the early tele-tutorials, most of the conversations focused on instruction in how to use the various features of the NQSF online environment and conveyed information about the NQSF project itself. Participation rates ranged from a consistent 80–100% of schools in Queensland, WA and SA to 50% or less of Victorian and NSW/ACT project schools. Participation was higher among non-metropolitan than metropolitan schools.

The development of learning in communities of practice over time is well documented. In the NQSF experience, the focus of the tutorials has shifted over time from discussion about the site and project to focus increasingly on national discussion on topics of common interest to subsets of schools. With less reliance on facilitators to lead conversations, and more direct exchanges between teachers, the facilitator's role has shifted from instructor to knowledge builder, entering the conversation at strategic points to clarify discussion or to introduce new knowledge. The exchange of information then

goes to a much deeper level and involves far greater sharing of practice, deeper questioning of each other and greater consideration of the effects of practice than exchanges earlier in the project.

Conclusion

What can we take from the NQSF experience to apply more broadly in terms of quality and accessibility of educational research? The online platform allows a rather democratic involvement of stakeholders in devising the research agenda, conducting research and sharing the resulting knowledge, although at present the teacher community is in the majority. In spite of differential accessibility and usability across the nation, an online environment can help counter the 'tyranny of distance' by connecting stakeholders. The pattern of registrations by state – generally a higher proportion of schools in the less densely-populated states – and higher level of engagement in non metropolitan schools, indicates that online communities of practice may be providing access to the research and knowledge base, and opportunities for knowledge creation, that can not be readily accessed through conventional means. This is yet to be examined and may be linked to other factors.

The experience of the NQSF may point to future directions for this mode of knowledge building. As Brazelton and Gorry (2003) found in the US, communities of practice are not implanted in the landscape: they grow over time where they are seen to be of quality and relevance. A range of evidence presented in this paper supports this contention: the increase in site usage, the significant proportion of schools in all sectors registered in a national environment, and the broad range of stakeholders, although relatively small in number relative to practitioners, using the site.

If online communities of practice are to provide access to research findings, continuing challenges relate to access and usability. Issues of national telecommunications infrastructure include limitations of bandwidth and geographical coverage of connectivity, while the set up of local area networks to access the internet through a proxy server, multiple online environments and log-on and password procedures, can be barriers to engagement.

The implications for educational research policy that really addresses the needs of society as a whole include consideration of a wide range of stakeholders and how they might work together to create new knowledge and access the knowledge thus created. While the NQSF experience makes some steps towards involving stakeholders as partners in research, for such an online community to become truly democratic there would need to be improvements in sociability and usability. If educational research is a public good, then we need a model and a practice that can incorporate and listen to diverse stakeholders. This has implications for power relations in an emerging discourse of educational research.

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