DEVELOPING NETWORKED SCHOOL COMMUNITIES: CREATING A HOME-SCHOOL NEXUS

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Abstract

Due to the increasing availability of digital technologies for students in their homes and personal lives, access to this growing suite of digital technology remains largely unmatched in most classrooms. Rather than position this as a home-school divide, this presentation summarises key ways in which we can create a home-school nexus through developing networked school communities. This approach capitalises upon the home-school differences by framing the challenge in terms of taking advantage of the rich technological resources which many students have. Specific reference is made to the book Developing Networked School Communities (Lee & Finger, in press) edited by the authors of this presentation through summarising four sections of that book – 1. The call for networked school communities; 2. An examination of the home-school differences; 3. Creating a home-school nexus; and 4. Ideas for implementation.

Developing *Networked School Communities*: Beyond a *Digital School*

The role of professional associations such as the Australian Council of Computers in Education (ACCE) should not be underestimated in relation to its role in progressing the importance of new and emerging technologies for the renewal of learning and teaching. The contributions of professional associations have informed policy, and have enabled important space for sharing research and practical teaching ideas made possible by technological innovation. Collectively, policy, research and practice have informed the moves for schools to become *digital schools* (Lee & Gaffney, 2008). Digital schools have made the transition from a traditional paper based mode of schooling to a digital mode appropriate for schooling in the 21st Century.

This paper examines the next phase of schooling *beyond digital schools* which is proposed as being an increasingly networked, collaborative mode. Digital schools, while enabling learning and teaching that can not be achieved through paper-based modes, can still operate within the traditional school walls, with the same hierarchical structures and the teaching and learning controlled by the professional educators and the educational bureaucrats. Our belief is that *networked school communities* will characterise the next phase of schooling, and will be realised through a strengthening of the partnerships and relationships between homes and schools.

After considerable deliberation, we have proposed the use of the term *networked school communities* to describe the type of schooling evolving in the networked phase. This term embodies a mode of schooling that will covers teaching, learning and all facets of school operations which impact on the education of young people enabled by network technologies. Therefore, a networked school community is defined as a "legally recognised school that takes advantage of the digital and network technology, and a more collaborative, networked and inclusive operational mode to involve its wider community in the provision of a quality education appropriate for the digital future" (Lee & Finger, 2010, p. 46).

Already, we know that student access to and use of digital technologies beyond the physical classroom walls and school timetable exceeds that of their use of these technologies in schools. Strategically, we

argue for a positioning which conceptualises the home-school difference enabled by a more sophisticated understanding of the power and potential of students' personal and home access to and use of technologies. Adopting this paradigm, schools will be able to draw upon the ever-growing digital capacity of the vast majority of their students' homes to begin providing a world class education that;

- creates educational experiences that are meaningful and relevant to students' present lives in the 21stCentury;

- better prepares students as digital citizens for today, and for digital futures, using technologies they have acquired and embraced now; and

- enhances Australia's national productivity.

That shift is occurring already in pathfinder networked school communities, but guidance is needed for schools to implement the shift from a *digital school* to a *networked school community*. Drawn from a more comprehensive articulation in the book with a n expected publication date of March 2010, and being edited by the authors of this paper (Lee & Finger, in press), insights are provided through the following sections:

- The Call for Networked School Communities;

- An Examination of the Home-school Differences;

- Creating a Home-school nexus; and

- Ideas for Implementation.

The Call for Networked School Communities

As new technologies emerge, educators require mechanisms and opportunities for exploring and identifying the learning and teaching possibilities of those technologies. The three adoption horizon timeframes which the *Horizon Report 2009* (Johnson, Levine, & Smith, 2009) uses for the entrance of technologies into mainstream use for teaching, learning, research or creative applications is useful to provide signposts for educators; namely, 'The first adoption horizon assumes the likelihood of entry into the mainstream of institutions within the next year; the second, within two to three years; and the third, within four to five years' (Johnson et al., 2009, p. 3).

The *Horizon Report 2009* (Johnson, et al., 2009) identifies two technologies drawn from hundreds of technologies for each adoption horizon. The report usefully explores the teaching and learning possibilities for each of the technologies for each of those adoption horizons; namely,

- First adoption horizon – *mobiles* and *cloud computing*

- Second adoption horizon – *geo-everything* and the *personal web*

- Third adoption horizon – *semantic-aware applications* and *smart objects*

Larry Johnson, CEO of The New Media Consortium at the launch of the Australian and New Zealand edition (Johnson, Levine, Smith, Smythe, & Stone, 2009) in September 2009, proposed that 'metatrends' were evident from his analysis of the series of *Horizon Report* issues. His highest ranked 'metatrends' were that *the people are the network*, *networks are everywhere*, *collective intelligence*, and *content is being co-created and is everywhere*.

Within this networked world, the compelling implication is that schools need to use the network technologies to move beyond the constraints of its school walls and traditional timetable. The development of networked school communities aligns well with the metatrends, and differs markedly

from more traditional conceptualisations of confining learning to 'A place called school' where formal learning occurs.

Schools can begin building upon their efforts to become digital schools to the next phase through creating a new, rich networked learning environment to better educate its students. The nature of the schooling will be transformed, through 'the dismantling of the classroom walls' to enable the school to reach out to harness unimagined opportunities, enabling parents, students, and the wider community to contribute meaningfully to the formal and informal educational process in partnership with schools. The move from a digital school to networked school communities will require a redesign of teachers' working conditions – how, when, where and why learning takes place. Thus, the vision for networked school communities sees 'A Place called School' as becoming part of a richer, more comprehensive understanding of networked, legitimate learning spaces, as displayed in Figure 1.
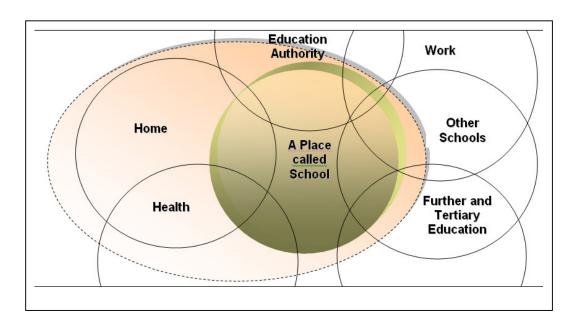
Figure 1: The Vision - Networked School Community

An Examination of the Home-School Difference

We have known for some time that the congruence between home values and those of the school, and the parents' interactions with their children are influential in student learning achievements. This is supported, for example, by Woolfolk who notes that recent research has shown that home and neighbourhood resources explain the greatest impact on children's achievement when not in school.

> When parents of any SES level support and encourage their children – by reading to them, providing books and educational toys, taking the children to the library, making time and space for learning – the children tend to become better, more enthusiastic readers… …White (1982) found that the actual behaviors of the parents were more predictive of their children's school achievements than income level or parents' occupation. (Woolfolk, 2001, p. 165)

The technologies in the 20th Century homes which were highly influential for learning in the home were print materials such as books and magazines, educational toys, and pen/pencil and paper. Those technologies of the past have been complemented through access by students and their parents to digital technologies in the home. For example, the OECD Program for International Student

Assessment (PISA) 2006 data (OECD, 2007) demonstrated that only 23% (OECD average 6%) of 15 year old Australian students surveyed used a computer at school almost everyday, while 74% (OECD average 57%) of Australian students surveyed used a computer at home everyday. These results are higher for Australian students than the OECD average, and reflect higher digital technology use by them at home than at school.

Therefore, given that many Australian students use their digital technologies at home everyday and access the Internet more frequently from home than at school, it follows that probably the investment by the students and the homes is at least equivalent to the funding of digital technologies by government, school systems, and schools. However, based upon a case study, we seem to have underestimated this investment in the home. As displayed in Table 1, in obtaining some background data from a Year 6 class of 30 students, the investment by the school was $24 680. In comparison, as shown in Table 2, the investment collectively by their homes in digital technologies was $438 200. This surprised us as we were postulating equivalent investment, or, possibly, a multiple of 2 times the investment by the school. This home-school difference represents a multiple of more than 17 times.

Table 1: Investment in Digital Technologies by the Home
(Acknowledgments to Bernard Ryall who undertook this investigation based upon a class of 30 Year 6 students in Australia, 2009)

Students Home			
Items	**Cost**	**Qty**	**Total Cost**
TV HD Digital LCD 32"	$1,200	45.0	$54,000
HDD Recorder	$500	30.0	$15,000
DVD Player	$120	30.0	$3,600
VCR	$120	30.0	$3,600
PC Lenovo	$1,270	25.0	$31,750
PC Mac	$1,400	20.0	$28,000
Printer/Scanner/Copier MFDs	$500	30.0	$15,000
Net Connection (PA)	$1,000	28.0	$28,000
Surround Sound Home Theatre	$8,000	25.0	$200,000
Digital camera	$250	30.0	$7,500
Digital Video Camera	$600	15.0	$9,000
Data Projector	$1,750	4.0	$7,000
Interactive White Board 78"	$2,850		$- 0
Games consoles Wii/PS3/Xbox	$350	25.0	$8,750
Ipods	$200	30.0	$6,000
Mobile SmartPhones	$900	15.0	$13,500
Fixed Phones	$300	25.0	$7,500
Instant Messenger / Skype		30.0	$- 0
Total			**$438,200**

Table 2: Investment in Digital Technologies by the School
(Acknowledgments to Bernard Ryall who undertook this investigation based upon a class of 30 Year 6 students in Australia, 2009)

Classroom			
Items	**Cost**	**Qty**	**Total Cost**
TV HD Digital LCD 32"	$1,200	1.0	$1,200
HDD Recorder	$500	1.0	$500
DVD Player	$120	1.0	$120
VCR	$120	1.0	$120
PC Lenovo	$1,270	6.0	$7,620
PC Mac	$1,400	6.0	$8,400
Printer/Scanner/Copier MFDs	$2,000	1.5	$3,000

Net Connections	$1,000	0.8	$800
Surround Sound Home Theatre	$8,000	0.1	$800
Digital camera	$250	1.0	$250
Digital Video Camera	$600	1.0	$600
Data Projector	$1,750	0.4	$700
Interactive White Board 78"	$2,850	0.2	$570
Games consoles Wii/PS3/Xbox	$350		$- 0
Ipods	$200		$- 0
Mobile SmartPhones	$900		$- 0
Fixed Phones	$300		$- 0
Instant Messenger / Skype			$- 0
Total			**$24,680**

This is interesting data, particularly given that the Australian Government plans to achieve 1:1 computing in Years 9-12 by 2013 through the *Digital Education Revolution* (DEEWR, 2009). For these 30 Year 6 students, while they have a computer to student ratio of 1:2.5 at school, at home they have a ratio of 1:0.6. Therefore, at home for many of these Year 6 students, this already exceeds the *Digital Education Revolution* target of 1:1 with no costs to Government and the school, and this has already occurred now, well before 2013, without Year 6 students being targeted for increased provision through the Digital Education Revolution funding.

However, we suggest that we need to take the important next step, and, instead of positioning this as a *home-school divide*, we should capitalise on this *home-school difference*. Consequently, this means that for this class of 30 students, they have access to 57 computers, consisting of 12 computers in their classroom at school, and 45 computers in their homes. This provides a ratio of almost 2 computers for each student! By adopting this approach, governments and school systems can develop a more sophisticated understanding of access to and use of digital technologies by students. In addition, the students have a richer range of digital technologies at home through access to games consoles, iPods, SmartPhones, fixed phones, high definition digital television, and surround sound theatre systems. Presently, except in some pathfinder examples, taking advantage of the home provision is not explicitly evident in Australian schooling. The following section provides discussion for building upon the home-school difference by creating a home-school nexus.

Creating a Home-school Nexus

Creating a home-school nexus is an essential part of the vision of the networked school community displayed in Figure 1. We suggest that all networked school communities will evolve out of existing schools, and can build on the many excellent things that those schools are doing, as they gradually takes on an increasingly networked mode. It is likely, in creating the home-school nexus and developing networked school communities, that one is changing the existing mode of schooling to better meet the needs of the times. Lipnack and Stamps (1994) reassures us that networks allow you to build on what you have, and can include all that has gone before, to reshape it, and bring a new spirit and capabilities to your organisation.

The possible forms of networked school communities, and the kind of home-school nexus the school wishes to create are many. Indeed, one of the challenges schools will need to address as they seek to envision the shape and form of their networked school community is to be aware of the possibilities. Below are two possible scenarios as schools move to the vision displayed in Figure 1. It is possible to create many variants. The first model, displayed in Figure 2, can be achieved as a first step with no structural or legislative changes, while the second, displayed in Figure 3, would probably require those changes. Given the limitations of length in this paper, our aim here is to help clarify the concept of the networked school community and begin opening your minds to the possibilities.

The current interaction between most schools and their homes is encapsulated in Figure 2, which

could be referred to as *Prestructural Change*. Throughout the early 21st Century, schools and education authorities have been seeking to enrich schooling and its efficiency through the new school networks. For example, there are examples where schools provide learning management systems, and have made strong links with their communities through online networks.
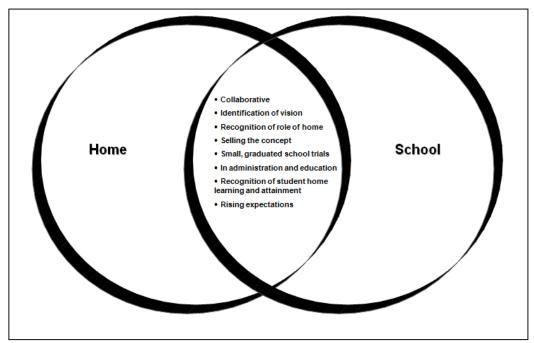

Home

- Collaborative
- Identification of vision
- Recognition of role of home
- Selling the concept
- Small, graduated school trials
- In administration and education
- Recognition of student home learning and attainment
- Rising expectations

School

Figure 2: Networked School Community – Prestructural Change

In Figure 3 below, the conceptualisation attempts to convey a possible next phase referred to as the *Mid Range Structural Change* which builds upon the *Prestructural Change*.
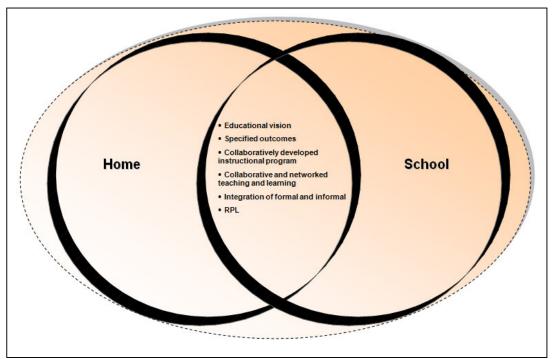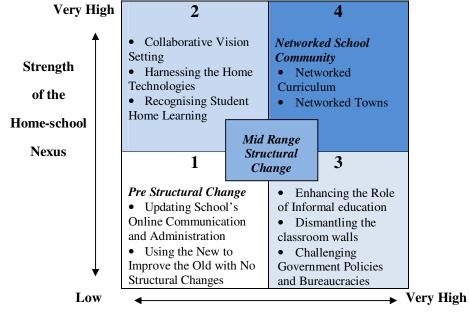
Figure 3: Networked School Community – Mid Range Structural Change

In considering the desired form of a networked school community and the various options, the following matrix has on the one axis the extent of the home-school nexus, and on the other the extent of structural change required. For modelling purposes, the *Prestructural Change* would be located in Quadrant 1, while the *Mid Range Structural Change* would be located at the intersection of all 4 quadrants as labelled below in Figure 4. As you'll see from the possible options outlined below there is actually much that can be done within the existing structures.

Figure 4: Networked Schools Options Matrix

Ideas for implementation

In implementing the shift to a networked schooling community and creating a home-school nexus, we suggest that, after schools locate where they are on the matrix in Figure 4, there is a suite of twelve key guiding principles to be addressed. These are more comprehensively elaborated upon in the forthcoming book. Overlaying these principles are the now well-understood factors which influence bringing about major organisational change, articulated well by Fullan (2008; 2009) in his guidance for school change and for schools implementing school improvement agendas.

1. Opt for graduated, balanced and engineered change;

2. Plan and implement holistically;

3. Identify and pursue the unifying vision and underlying principles;

4. Implement the principles in the management of the technology;

5. Openly use the new to improve the old;

6. Act independently – within parameters;

7. Meet government responsibilities;

8. Develop readiness;

9. Politic the change;

10. Sell the concept;

11. Attend to the administration; and

12. Measure your attainments.

The first guiding principle suggests a graduated and balanced implementation strategy that consciously promotes the earlier on-going and successful change within the organisation, and considers the vision (see Figure 1), and how the school is positioned in relation to *Prestructural Change* (see Figure 2) and *Mid Range Structural Change* (see Figure 3). Schools can use a series of thoughtfully evaluated trials to enhance understanding, to clarify the school's relationships with its homes and facility to use the networks and collaboration. They can continue to retain the support of the wider school community, while instituting the changes and movement toward a networked schooling vision. The organisational literature provides cautions about over-reaching.

In essence, success is likely by schools making incremental change, and then proceeding in manageable ways. This will be particularly important in managing the move to include student's use of their technology in the school. Therefore, it is important in the initial graduated moves that schools acquire the understanding required, consistently align the school's operations to on-going change, and secure support of the leadership at senior levels of their education systems, and build relationships with their communities. This support is needed to overcome the human and the technical hurdles to realising the vision of a networked school community.

In addition to adopting a graduated approach, schools will need to make change a strategy, appreciating that compromises will be required to balance the following tensions:

• The tensions between the status of the informal and the formal curriculum;

• The aspirations of the school community and those of the Government and education system;

- The amount of technology provided by the home and that provided by the school;

- The differences in home and school access to the Internet;

- The aspects of learning best addressed in the social context of the school, and those more effectively undertaken privately in the home; and

- The independence required by a teacher to innovate and his/her obligations to fulfilling the unified purpose of the community.

The principal's role and the role of the school leadership team in maintaining that balance will be vital. The importance of the early identification of the vision and purpose of the school, and the key principles guiding the school's operation, are critically important. All players in the networked school community have to understand and actively work towards fulfilling the unifying purpose and observing the key principles. That includes the principal, the school staff, the parents and the students.

One of the more important roles which the networked school community can play is to help place these developments in a macro context. It can assist in identifying those which are worth continuing with, and to enable each school to identify its educational vision within the wider networking schooling mode. Therefore, it is important in planning to implement the shift to a networked school community to

- Develop the school's vision, and its underlying principles

- Develop a process consistent with the desired networked and collaborative mode

- Ensure all the staff understands and embraces the networked schooling community's unifying purpose and its operational principles

- Ensure that there is flexibility and an on-going review processes that allow the vision to be reviewed and improved over time.

Ensure that the principles are implemented in the management of the technology of the networked school community. The technology management has to accord with the school's purpose and its operational principles, and should be evident from the first pilot phase which capitalises upon student personal and home technology use. While you will have idiosyncratic technology issues, the management of technology requires a consistent alignment between the underlying principles and the deployment of the school and home technologies. Without that alignment, the problems occur as the home-school nexus is compromised.

The vision and the principles of the organisation should shape the choice, deployment and use of the technology. While most schools know how to manage their own technology, few have had any experience in managing the simultaneous use of both the student and school technology. A vital first step in any move to the networked mode is to identify your operational principles and desired outcomes. We suggest that the shift to implementation needs to consider embracing the following principles:

- Use of the digital technologies should be normalised and ubiquitous in all school operations;

- Use of the digital technologies by all the school community should work from a position of trust rather than mistrust, assuming innocence but astutely monitoring transgressions;

- Decisions on the management of the technology should be made collaboratively involving stakeholders, including the students though, ultimately, the final decision will be made by the school principal;

- All students have home access to the Internet;

- The school strives to provide ready student access to the Internet across school campus, while recognising its legal obligations, 24/7/365;

- The school endeavours to provide 24/7 operability of its network services;

- The individual, be it a staff member, or a student, will decide which mobile computing technology they wish to use, including the back up of critical data;

- Students will be responsible for the care, operation and maintenance of their own technology;

- School community, including the students, parents and the staff will collaboratively identify the parameters for the students using their technology on the school campus ;

- The school educates the community on availability of open source applications and online data storage;

- The school maintains onsite storage for mission critical or sensitive data;

- The school clearly states appropriate digital contact times during the day, and agreed response times between members of its community;

- The school implements an identity management system so that the inevitable myriad of contact numbers, addresses, handles and nicknames can be readily accessible. Ideally, this will be a system that allows clients to change their own details; and

- The school shifts its communications to being fully digital, including communications with parent bodies, alumni and governance.

We appreciate there will be others you will want to add and some of these might be able to be merged. We emphasise that, before you make your first steps and mount your first trials or pilot programs, make sure that you identify the key principles and understanding that you will review and refine them over time. It might also be opportune to reflect on some of your current technology management practices and ascertain if they are consistent with those principles.

Conclusion

As indicated in the introduction to this paper, ACCE continues to provide an important space for informing policy, research and practice. For more than 20 years, schooling has been immersed in transformational, global technological developments. Many schools have moved towards becoming *digital schools*. The contribution this paper makes is that it proposes the next phase – the development of *networked school communities* and creating a home-school nexus. This provides the opportunity to markedly enhance existing schooling, to use new networks in conjunction with the best of the traditional approaches, through developing an important partnership between the school, the students and the parents, enabled and enhanced by digital technologies. We encourage schools to have the confidence and courage to approach the task thoughtfully in a graduated manner, and to work collaboratively with its parents, students, and wider community.

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