Information Technology and schools: the principal’s role

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Summing up: 5 - 6 October 2000

Pre-discussion paper

...by the year 2010 we can expect that the computer will be one of the dominant educational delivery systems in many parts of the world.

(Bork 1991: 34)

If Bork is correct then there is scant time for school leaders to waste in implementing strategies to ensure its effective use as a learning tool in their schools. To date there have been limited studies on the role of the principal and the implementation of Information Technology in schools. The work of Telem and Buvitski (1995); Campbell and Cordiero (1996); Schiller (1997) and others is recognised here but the only large study conducted in the past three years was that by MacNeil and Delafield (1998). This paper suggests that there is a real need for more in depth studies focusing on the role of the principal with the greatest innovation to be introduced into schools in the last twenty years. It is impossible to cover all aspects and issues in a paper of this size so, of necessity, I have limited the scope.

In the context of this paper it is essential to ensure that there is a clear understanding of what we are examining and the parameters we are setting up. It is not the intention here to go into great depth on the theoretical basis of leadership, change management, and the implementation of IT in schools. Nor is it my aim to tackle the multitude of structural, professional development, pedagogical and other issues. Rather, the approach taken here is to give the reader a general feeling for the current thinking in the areas of leadership, change management and innovation and in particular, how that might relate to the implementation of IT (Information Technology) in schools and the role of the principal.

This paper will argue that effective leadership/change management skills and the development of effective learning communities are vital to ensure the successful implementation of IT in schools.

Leadership

Sarason (1997) suggests that schools may not need principals, just managers. He further contends that there are principals who are not managers but they are characterised by (p.91) “an assertive, supporting, ‘street smart’, charismatic principal who rarely was in her or his office but all over the school and the community.” The walls between the school and community were open and the school community supported the principal against the system. I am sure many principals can relate to both. According to Townsend (1999) this has been coupled with increasing advances in technology that will lead us to the development of the information age and virtual schools. He further suggests that principals will need to reclaim their roles as educational leaders. Experience has shown that there are many principals who do not just ‘manage’ their schools but are educational leaders in their
own right. Many (Sergiovanni: 1996, Caldwell: 1997, Hill: 1999) believe that educational leaders must also be change agents and head learners, not just managers. What characterises these leaders?

Early theories of leadership tended to reduce it to several variables which facilitated empirical study but ignored, to a large extent, the cultural and political contexts in which they were embedded (Sergiovanni: 1988). He further contended (1996) as does Fullan (1994) and Owens (1995) that it isn’t a matter of making others follow your vision but more of developing a shared vision. Owens (1995: p.134) puts this clearly in the context of shared power and open communication.

Creating the mutually shared vision cannot be done without sharing some of the power that was traditionally closely held by those in the hierarchy,…(…) … and creating an environment that facilitates the development of trust and open communication that is essential to collaborative group effort.

Hill (1999), Wilsmore (1999) and Sergiovanni (1996) also emphasise the development of staff and community members to ensure successful leadership with the adoption of any innovation. Sergiovanni also argues (1996: p.84) that “…schools should not function as businesses. And school leaders should not function as owners of businesses.” The theories of transforming and transactional leadership developed over past decades (see Owens 1995: pp.116-140) are well documented. In the past decades the educational leaderships have seen increasing changes in the context in which they operate.

Goldring (1997) suggests that the boundaries between school organisations and those outside the organisations are becoming increasingly permeable and that these have implications for school leadership and principals in particular. The increasing calls for accountability, both educational and financially also impinge on that leadership role. The enormous financial and human resources given to schools in NSW and other states to introduce computer technologies underpins this in the Australian context. Nor is this a purely Australian phenomenon as readers in other countries will know.

Two of the prominent leaders in the field of educational leadership are Tom Sergiovanni (United States) and Peter Hill (Australia). To some extent they reflect the views of many others. Let us examine a summary of their ideas on leadership in the table 1.

<table>
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<tr>
<td><strong>Theory</strong> – Community and ideas-based leadership</td>
<td><strong>Theory</strong> – Instructional Leadership</td>
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<td><strong>Facets &amp; practices</strong></td>
<td><strong>Facets &amp; practices</strong></td>
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<td>Emphasis is on building a shared fellowship … not on who to follow, but on what to follow. Members respond to substance and is idea based.</td>
<td>Need to reconnect teaching and administration and reclaim the role of instructional leader.</td>
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<td>Shared vision but in an invitational mode, not a command or sell one.</td>
<td>Shared belief in the importance of collaboration and community.</td>
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<td>Reciprocal process of leaders and followers influencing each other to action.</td>
<td>Establishment of professional learning teams.</td>
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<td>Clear enunciation of roles and responsibilities. Connected to obligations.</td>
<td>Appointment and on going training of team coordinators to act as mentors, coaches and lead learners.</td>
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<td>Directed to connecting teachers, parents, and students to each other and their responsibilities as defined by shared purposes.</td>
<td>Need to be expert in learning theory, school change and professional development, curriculum theory, assessment and data analysis.</td>
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<td>Shared visions. Changes in organisation and mode of operation to attain goals.</td>
<td>Shared beliefs and values. Seek growth not constant change.</td>
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<td><strong>Key tasks of a leader:</strong></td>
<td><strong>Key tasks of a leader:</strong></td>
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<tr>
<td>➢ Modelling</td>
<td>➢ Initiation, implementation</td>
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<tr>
<td>➢ Maintaining harmony</td>
<td>➢ Institutionalisation</td>
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<td>➢ Institutionalising values</td>
<td>➢ Management of the quality of teaching and learning</td>
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<tr>
<td>➢ Motivating, managing</td>
<td>➢ Professional development of self and others</td>
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<td>➢ Explaining, enabling</td>
<td>➢ Improve student outcomes</td>
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<td>➢ Supervising.</td>
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Table 1. Educational Leadership
Whilst there are obvious differences between the emphases of both educationalists there are also similarities. Gone is the autocratic leader working in isolation commanding and enforcing change. Collaborative leadership, hand in hand with continuing professional development is the norm. Sharing an articulated vision is part of this educational leadership. It is interesting to note that Sergiovanni suggests that ‘modelling’ is a key task of educational leaders and Hill emphasises the necessity for professional development of all and that the principal be knowledgeable in many key areas.

It is opportune to now look at how this leadership might be reflected in innovation and change management.

Innovation and change management

Most principals and educators know how difficult change management is. The introduction of even well known but innovative practices are problematic at the best of times. Many principals brought up on a chalk and talk diet find coping with devolution a big enough problem. Along comes IT, children seem to handle it with ease, young staff daily illustrate their skills. The principal, even if not technophobic, hasn’t often time to grasp the complexities, let alone see to its successful implementation.

Some writers (Fullan: 1994) suggest we are fighting a losing battle. He contends, and many would agree that neither top down regulation nor locally based reforms will transform schools. The main problem is juxtaposing a continuous change theme with a continuous, conservative system that defies change. Educators must create learning societies as part of a larger social agenda. He propounds eight essentials for a change paradigm. Finally he argues that continuous teacher education is essential to produce change. This is at some odds with the NSW Quality Assurance School Review statements on educational practice and leadership for change (In NSW in the early 1990s, Quality Assurance teams inspected all schools to report on school progress in a variety of curriculum and professional areas. In conjunction with the school community they published reports on the schools success or otherwise in these areas examined). The table 2 illustrates some of the differences.

<table>
<thead>
<tr>
<th>Fullan</th>
<th>NSW QA School Review</th>
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<tr>
<td>1. You can’t mandate or force change</td>
<td>Provide time, resources and opportunities</td>
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<td>2. Change is a journey, not a blueprint</td>
<td>Articulate the purpose</td>
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<td>3. Problems are our friends</td>
<td>Organise relevant training and development establish</td>
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<td></td>
<td>supporting structures for change</td>
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<tr>
<td>4. Vision and strategic planning come later</td>
<td>Shape and reshape the schools vision</td>
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<td>5. Individualism and collectivism have equal power</td>
<td>Nurture the use of innovative and creative solutions</td>
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<tr>
<td>6. Neither centralisation nor decentralisation work</td>
<td>Build teams</td>
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<td>by themselves</td>
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<tr>
<td>7. Connections with the wider environment is critical</td>
<td>Influence the direction of others</td>
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<td>for success</td>
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<tr>
<td>8. Every person is a change agent</td>
<td>Model, advocate and support continuous learning</td>
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Table 2. Change Management

On closer examination, however, most (except vision) are compatible with Fullan. Many may disagree with some of Fullan’s thoughts, for example, “vision and strategic planning come later” but taken as a whole it does offer guidance for principals. Wilsmore’s (1997) pilot study into the role of the principal in the introduction of IT in schools [and his current research (1998-2000)] pointed out the importance of modelling, knowledge, leadership, adequate professional development, change management and the establishment of effective learning communities if change in the use of IT was to be more then superficial. Another view that appears to draw from both of the above is suggested by Wilkinson (1997). He informs us that the following are vital for school leaders in change management: meshing, empowering, communicating, interacting, responding, developing, envisioning, focussing, ensuring and having the patience and courage to let it happen. Mottier’s (1996: p.291) systems statement is also highly relevant. She suggests that:

Any educational system is in a situation of permanent change. In order to keep up with developments in the world of which it is a part, education must adapt to these changes. Many of the developments result from technology, and the contexts are different because of that technology.
Finally Sergiovanni (1996) tells us that leaders must realise that the school is the centre of change and that in the end it is the teachers that will in the end decide what happens to students.

**IT in schools**

According to Parker (1999: 26):

> Unless we get it right for the future we will see, increasingly, people who are banished to the ‘new techno-coated Dark Ages’.

There is little argument that enormous amounts of money have been expended on computers and computer technology in schools. A more contentious issue is the educational effectiveness of its integration into the normal classroom as a teaching/learning tool. This paper suggests that the role of the principal is crucial to its successful introduction and use. This view is supported by research reported by Sandholtz *et al* (1997) who concluded that one of the key factors on whether teachers integrated technology into their classrooms was the level of support they received from school administrators.

A more recent study in Texas (USA) by Macneil and Delafield (1998) examined principal leadership for successful school technology implementation. This study was one of the first focussed research studies carried out in this area. One hundred and twelve principals and assistant principals were surveyed. Sixty-four returned the surveys. This is a significant number and gives reasonable credence to their claims that the majority viewed technology as very important in their schools and that it was important for teachers to utilise and learn technology as a curriculum tool. Some of the more important findings of the study were:

1. The main barriers to implementing technology in the classroom were lack of financial resources, poor infrastructure and lack of time for professional development and planning.
2. There needed to be a closer alignment between the amount of time given for professional development and its perceived importance.
3. At each level, funding, training and leadership issues must be addressed simultaneously if technology in the curriculum is to grow and have a significant impact on the reform of education.
4. Principals and school leaders must accept the challenge to create supportive conditions, which will foster innovative use of computers.

The final point mentioned is the most relevant for this paper. There have been other attempts to guide principals in the implementation and use of IT (Dawson 1997, Caldwell 1997, Cusack 1997, Smith 2000). Principals in NSW have their principals’ packages on TILT (Technology in Teaching and Learning). There has been a plethora of well-documented conferences in Australia over the past five years, for example, ‘Curriculum for the Third Millennium’, ‘Shaping the Wisdom of Oz’, ‘Beyond the Boundaries’ and ‘Classroom Technology 98’. Similar conferences have been repeated overseas. The major focus of many has been on the use of IT in schools, not the role of the principal. Groups like APAPDC (Australian Principals Associations Professional Development Committee) and on line support through EdNA (Education Network Australia) have tried to fill the void in the literature for principals in Australia. IFETs and the ITEA have done this on an international level.

As many principals will know, these have only scratched the surface. The degree of technophobia of many principals (Parker 1999) is still holding back successful implementation of IT (Information Technology) in their schools.

**Conclusion**

It would seem important to point out (Atkin 1994, Mortimore 1996) that the principal who ignores the school as a learning community does so at their peril. Effective change management and leadership skills are essential. Finally I concur with Dawson (1997) when he suggests that the leader or principal should be the head learner. In addition they should act as a facilitator for technology planning as Schiller’s study (1998) has already shown. IT will only be successfully implemented in schools if the principal actively supports it, learns as well, provides adequate professional development and supports his/her staff in the process of change.

As Schiller (1998: 6) poses:
...will school leaders merely struggle down the ‘information highway’...research needs to be carried out...answers are needed to the questions. (That is posed by the introduction and use of IT)

References


Post discussion summary

Summary #1

The current discussion focuses on the role of the principal with respect to information technology in schools. Discussion moderator, Des Wilsmore, asks that the following questions be addressed:

1. What is the current role(s) (if any) of principals in the implementation of IT (Information Technology) as a learning tool in their schools? and
2. What should the role(s) be to ensure its' successful implementation?
3. Do principals have sufficient devolved authority in their schools to successfully implement its use? and
4. Have principals had sufficient training/professional development to ensure its successful implementation?

Fred Nickols of the Educational Testing Service, USA, addresses the financial aspects of employing IT in an educational environment and sees a lack of funding as the primary barrier to IT implementation. He refers to the Total Cost of Ownership (TOC), which not only includes cost of purchase but all incidental expenditures related to infrastructure, maintenance, staff development, etc. If the principal does not account for TOC, the budget is likely to be inadvertently damaged and drain funds from other budgetary areas.

George Roberts of Oxford Brooks U., UK, suggests that institutional budgets are often framed in terms of micro-politics and micro-economics. The micro-political perspective is that sectional interests compartmentalize schools with different agendas, causing conflict (Sutton, 1994). The micro-economic problem derives from sectarian budget competition within the school's different interest groups. The principal and senior management team must transcend the competition with a mediating, encompassing agenda. He calls for wider political, economic and social agendas as a remedy to conflicting parochial interests.

One suggested approach to transcend the "micro"-based problems is for the principal to encourage inter-departmental collaboration. The Information Technology then serves a dual role: that of improving educational and collaborative endeavors. He states, "...C&IT projects can be used to create inter-departmental functions to work together to define targets, standards, and procedures," and gives as examples the 'virtual university' or 'virtual school' (Challis & Lidgey, 2000). Expanded IT programs result from the management-fostered collaboration that might not have been developed. The principal and/or management team, by transcending the micro-politics and micro-economics, reinforces the institutional character, attracting students and funding.

Muhammad Betz, Southeastern Oklahoma State University, USA, counters the "micro" perspective with the "macro" perspective. He cites two cases: one a technology-infused Junior High School in Texas that was heavily
influenced, both politically and economically, by its proximity to offices of the Compaq Computer Corporation. The other case is a small, rural elementary school, which through grant monies provided from government sources, has purchased a large and technologically advanced computer contingent for a relatively small student population. He says, "...the micro-considerations (were) completely overwhelmed by macro-political and macroeconomic variables."

Summary #2:

Brent Muirhead, Ph.D., USA. Brent refers to Hoffman (1996) in stating that the necessary staff development required for teachers and administrators to effectively integrate technology in classrooms requires up to six years of planning. That time frame includes purchase, set-up, and training. Another barrier to such projects involves rewiring of traditional buildings, and the principal must work with technology staff to assess related financial needs. Ultimately, however, the principal is subject to a political reality.

On a related issue, Brent stresses the importance of assessment procedures used to review/evaluate teachers who use technology. Administrators need a comprehensive knowledge of sophisticated appraisal instruments that truly assess quality. Administrators should determine subtle contextual factors and interpret learning situations with realistic expectations, derived from key questions about educational settings. He recommends that administrators consider which learning theories inform particular assessment procedures (Regian & Shute, 1994).

He closes by urging administrators to create a non-threatening posture towards teachers' use of technology and to accept the challenge of learning about educational technology and its implementation.

Larry Flectch, AmeriCorps. Larry endorses Brent Muirhead's assertion that the political milieu is a very important variable in relation to the integration of technology into the classroom. Principals are under extreme pressures to conform to achievement standards and to succeed on standards-based achievement tests. Larry states, "Standardized testing is by far the most significant stream of education reform in the States and has been seized (sometimes like a club) by lawmakers, the media, and the public alike." He cites examples and explains that principals are often not willing to spend time and money on technology unless it is sure to positively impact test scores.

Another pitfall in American education is a teacher shortage, which forces fast tracking untrained teachers into service. The teacher shortage forces principals to spend time and money on the basic tasks of school operation. Considering the push for higher standards and corresponding achievement test scores, a poorly trained teaching force, and recent research, which reports only marginal impact of technology on tests scores, there is a diminished justification for principals to spend precious time and money to implement technology into their schools.

Despite that, the Larry asserts that the role of the principal in implementing IT in schools is crucial. Such implementation requires visionary leadership that encompasses reform movements, like standards-based testing, and that is comprehensive enough to promote an understanding of the power of technology by the various political entities involved in schooling. He states, "A principal is in the unique position of interfacing and creating a 'buy-in' with all of the significant parties involved."

Des Wilmore moderates. Des notes a similar existence of an increasing focus on standards-based schooling as well as teacher shortages in Australia and explains that principals can still lead schools into the successful implementations of IT, resulting in improved outcomes for staff and students. Des also asserts the importance of visionary leadership but calls the establishment of an effective learning community equally important.

Dr. Inoray Dindang-Osop, Philippines. Inoray states that there is great reluctance to consider technology implementation in Philippine classrooms. The main reasons for the reluctance he attributes to budgetary constraints, unskilled teachers and a dearth of existing technology. He calls for principals to seek external support to instigate technology initiatives in their schools and asks that more conferences be held in third world countries.

Dario Nardi, UCLA, USA. Dario asks if high school teachers have any real incentives to use technology? He also wonders if high schools are becoming the elementary schools of the 21st century, in apparent reference to the lockstep character of standards-based reform.

Ken Myers. Researcher. USA. Ken addresses discussion comments related to standardized testing and technology. While technology-based instruction is capable of inducing learning, it is only one component of a total classroom solution. He explains that teachers are best at augmenting content in their discipline and
providing individualized feedback, while computers provide a factual and conceptual framework and allowing drill, practice, and initial assessment. The essence of the consideration is to delineate and understand the optimal role of computer technology in the classroom. He urges observation, patience and systematic, instructional design.

Larry Fletch. AmeriCorps. In response to Dario Nardi, Larry asserts that way out of test driven schooling relates to visionary principals who inspire all students to achieve academic excellence. However, he asserts that such principals must resist the pressures of a superimposed scope and vision of schooling. He suggests that university faculty act as mentors to high schools faculty, using technology as a medium.

Des Wilsmore. Moderator. Des responds to Dr. Inoray D. Osop of the Philippines and encourages him to make use of limited technology resources. He reports that some schools with little equipment implement technology at every opportunity while other schools with much equipment do little implementation.

Summary #3

Brent Muirhead. Ph.D., USA. Brent notes that the current discussion has highlighted the need to consider changing the principal's role in the educational process. At present principals are preoccupied with issues of political survival, but they need more professional autonomy to develop short and long term plans for technology implementation. This same professional autonomy will allow principals to avoid a fad-driven school culture.

The optimal method for successfully integrating technology in the school relates to comprehensive programs of staff development, which, however, are often thwarted by high rates of teacher turn over. The primary role of professional development is to identify the most effective approaches to meeting teachers' needs, and Brent quotes Gutsky (1995) in relation to advising principals, "...our search must focus, therefore, in finding the optimal mix—that assortment of professional development processes and technologies that work best in a particular setting." Brent sees relevant staff development as critical for the success of principals' efforts.

Des Wilsmore moderates by suggesting that as principals focus on educationally important tasks, managerial and political issues become less burdensome. He states, "I don't want to underemphasise the problems that principals face, but suggest they need to be faced in a manner that improves student outcomes, not just the plumbing."

Des agrees with Brent's view of professional development by referring to his own research in which students report that teachers must be trained to support the school-based implementation of IT. Further he adds that teacher training should address the whole learning experience, not just computer literacy. In reply to Ken Myers, Des suggests that IT, in addition to drill-and-practice and information retrieval, can also serve as a powerful tool of communication.

Concluding Remarks

It is obvious (to me at least) from the discussion that a great deal more research needs to be done in this area and that principals need better support if the introduction of Information Technology is to be successful. Its' use as a learning tool by teachers and students cannot be taken for granted. The innovation has taken off and it is too late to stop it. We can do a lot of work to ensure future 'take offs' by principals are smoother and the flight is not too bumpy. We owe it to our students now and in the future.