Reflections of School District Technology Leaders on the Implications of the New Technologies for Educational Leadership

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Abstract

This paper reports the results of a focus group interview of technology-integration leaders to identify the leadership issues which influence the integration of technology in schools. The participants discussed questions that focused upon the relationship between ICT technologies and educational leadership. Qualitative analysis of these discussions indicated the participants agreed that leadership is a very important but misunderstood determinant of successful ICT integration. The report concludes that effective technology integration requires a new approach to leadership. It requires the integration of leadership at each and every level of organizations to attain the objectives of those organizations as integrated wholes.

Introduction

This investigation of the implications of the new technologies for educational leadership began as a result of incidental observations that occurred during the data-collection phase of a technology-integration study which included educational leadership as a variable but not as it's main focus.[2] Informal discussions with the participants in this study, most of whom are experienced teachers from regional school districts, indicated that despite the technology initiatives in many schools and school districts, there is a general lack of specific knowledge about the nature of educational leadership for effective technology integration. This admission is not extraordinary. Reid's (2002) investigation of the views of teachers who are at the forefront of ICT integration demonstrated that there is no consensus concerning the purpose of ICT integration or the effects it will have upon teaching and schools. Several investigators of educational technology integration have noted that many educators, including educational

leaders, have little understanding of this relationship (Sandham, 2001; Slowinski, 2000; Schmeltzer, 2001).

The discussions with the participants also indicated a growing concern that the increasingly integrated nature of the educational applications of the new technologies is making educational leadership increasingly important for effective technology integration in their schools and classes. The wisdom of this concern is well supported by the research literature on technology integration (Kostic, 2002; Rockman, 1998). Some examples of this concern came from the teachers' reports that there are many barriers to technology integration that can only be overcome with new methods of leadership that specifically address the integrated nature of the technology and the needs of those leading the efforts to integrate it into the curriculum. An important feature of the reports is that the pioneer spirit and "go-it-alone" nature that are characteristic of many technology leaders often become barriers to integration when applied in organized educational contexts that rely upon systems to function effectively (Fouts, 2000). This is particularly the case for school districts that have adopted school-based models of management that allow individual schools and teachers to decide the extent, nature, and timing of their involvement with the new technologies. Both characteristics have prompted technology leaders to make decisions that constitute barriers to the effective integration of technology in schools. Some examples of barriers that were noted are (a) the choices made by different and sometimes incompatible platforms that are made by different schools or different teachers within a school, (b) the lack of integrated educational opportunities for ICT learning for students who move from one school to the next and sometimes even from one grade or one class to the next, and (c) the longitudinal development of incompatible hardware collections and software sets as a result of obsolescence differentially influencing major purchases that occur in various schools at different points in time. It is noteworthy that barriers such as these are very common products of early technology-integration initiatives because they were implemented before the new technologies became as highly integrated as they are today (Fouts, 2000). These examples suggest that the issues of leadership in the area of ICT integration differ across the various levels of school systems and that there is a need for integrative decision-making across levels if effective and efficient integration is to occur (Anderson & Dexter, 2000; Eastwood, Harmony, & Chamberlain, 1998).

When considering the development of an effective course to facilitate technology integration, these conversations with the participants suggested a need to expand the design of the technology-integration study to include an investigation of the relationship between educational leadership and technology integration. A review of the literature on this subject indicated strong support for this assumption (Anderson & Dexter, 2000; Bailey, 1995; Rockman, 1998; Sandham, 2001). Given the availability of this body of literature on the importance of leadership for technology integration, it is ironic that many teacher education textbooks on technology integration offer no information about leadership or its role in technology integration.3 In particular, the informal discussions indicated that the efficacy of the course would be improved if its curriculum for technology integration was guided by the results of an empirical investigation of the technology integration barriers and leadership needs. A review of the relationship between administrative leadership styles and the use of technology indirectly supports this conclusion (Hughes & Zachariah, 2001). An unusual challenge for the design of such an investigation was that while the participants were concerned about the importance of leadership for effective technology integration, most also indicated that they were not well informed about either

educational leadership or the forms it takes for successful technology integration. Consequently, there was a need to identify individuals who were familiar with the circumstances reported by the study participants and were well informed about both educational leadership and technology integration. By chance, the original proposal for the technology-integration study included a group of educators who were exceptionally well qualified to serve in this capacity. The members of this group are considered to be technology leaders in their school district. They were contacted for the original research project because they offered the advantages of being recognized leaders of technology integration and were familiar with the status of technology integration in the region's schools.

Method

Participants

Four males and one female agreed to serve as focus group members for this investigation. Each member of the focus group is regarded as an expert in the educational uses of the new technologies and is considered to be a technology-integration leader in his or her school district. The group included a district technology coordinator, a principal and developer of a leading ICT school, a secondary ICT teacher who manages the school district's servers and is responsible for a great deal of the technology integration that has occurred in the district, a secondary level science teacher who has specialized in the use of computer-based assessment and evaluation systems, and an elementary level ICT teacher and consultant who is responsible for exceptional levels of technology integration at a leading elementary school. Collectively, these persons have also made a major contribution to their school district's good reputation for ICT integration. They have chaired and/or served as members of the district's ICT committees; acquired, installed, used, and modeled the use of ICT in their classrooms and schools; advised district policy makers; installed and maintained hardware and software that serves the entire district; conducted most of the district's many ICT briefings, seminars, and professional development workshops; and now are working with the University of Northern British Columbia (UNBC) to improve the level of ICT education available to in-service and pre-service teachers.

The study co-ordinator contacted each of the potential candidates by phone. Each person was told about the study, given a brief description of the focus group, and invited to attend. Five potential candidates were contacted and all five agreed to participate in the focus group.

Procedures

The method used for this investigation was a focus group interview. A focus group is a method for conducting qualitative research that is becoming increasingly popular for educational research (Campbell, 1996; Catterall & Maclaran, 1997). The method requires the assembly of a group of people with defined qualifications to focus upon a specified topic and share their points of view. A moderator guides the discussion by leading the group through a set of open-ended questions that typically represent several different aspects of a single topic. Vaughn, Shumm, & Sinagub (1996, p. 14) have observed that relative to individual interviews, focus groups offer the advantages of stimulation, synergism, spontaneity, snowballing, and security.

Focus group methodologists recommend that several focus-group sessions be conducted and that each involve a different set of homogeneous participants from a defined sample (Lewis, 1995; Morgan, 1993). For this investigation, the technical expertise and situation-specific experience of the members of this group is a rare combination of qualifications that precluded the assembly of more than one group. In defense of this practice, Krueger (1994, pp. 88-89) has advised that the number of groups required for an investigation is determined by the extent of the discourse that occurs for each group and the reversibility of the decision/s based upon those results. In this case, the discourse of the single focus group was extensive and the conclusions drawn from it are easily reversible if they are not supported by replication.

The focus group sessions for this investigation were conducted at UNBC. The conference room that accommodated the group was equipped with a large table, comfortable chairs, audio-taping equipment, and a flip chart. The moderator was an experienced focus group facilitator who prepared the questions for the group, guided the members through a discussion of each question, and encouraged each member to be a comfortable contributor to the conversation.

In keeping with the procedure recommended by Krueger (1994, p. 54), the focus group interview included opening, introductory, transition, key, and ending questions. The end questions were of two types. The first was a summary question that followed the discussion of each focus question, and the second was a final "missed anything" question that was presented at the end of the interview. This report addresses only the key and end questions of the interview because these were the interview questions designed to focus the attention of the group members directly on the relationship between educational leadership and the new technologies. The questions are presented below.4

Question 1   *How do new technologies reshape our assumptions about leadership?*
Question 2   *How do new technologies foster new forms of leadership?*
Question 3   *How do new technologies politicize leadership practices?*
Question 4   *How do new technologies internationalize education and leadership?*
Question 5   *To what extent will new technologies enable leadership to be more educative?*
Question 6   *Are there other implications of the new technologies for educational leadership?*

The discussion of each question was recorded on the audio recorder and the moderator used the flip chart to succinctly summarize the focal points. At the end of the discussion of each question, the moderator asked a summary question and then asked the members to verify the accuracy of each summary noted on the flip chart. This member-checking practice was included to insure that all members were satisfied that the discussion of the question was complete and that the moderator's interpretation and summary of the discussion was accurate.

Results

The flip charts and audio-tapes from the focus group discussions were transcribed as computer data files for subsequent analysis. With the aid of a software program that facilitated parts of the process, the transcript statements were linked with their speakers, tagged with their transcript locations, sorted into categories, and coded with category and category-level symbols

(Marczak & Sewell, 1998). The initial categories for the analysis were the focal points of the group discussion that were noted on the flip charts and verified by the focus group members. The descriptions of these categories were then compared with the transcript and some were edited to more accurately reflect the statements made by members of the focus group. The next stage of the analysis was an examination of the statements in each category and the specification of sub-categories which reflected the unique aspects of each category. The last part of the analysis was a cross-category and then cross-question examination of the transcript statements, focus categories, and sub-categories to determine minor themes associated with individual questions and the major themes that apply to the focus group topic as a whole. The results of the analysis are presented below.

Implications of the New Technologies for Educational Leadership

Question 1.   How do New Technologies Reshape Our Assumptions About Leadership?

Factors. In their discussion of this question, the group members focused on four factors that influence the reshaping of our assumptions (see Table 1).5 First, the new technologies facilitate information sharing and discussion and second, they force leaders to look beyond the boundaries of their jurisdictions, which exposes them to a variety of educational issues. As a third point, the members also agreed that "technofiles" convey a persona of competence that is assumed to be necessary for educational leadership. The last factor noted to reshape assumptions about educational leadership is that ICT literacy is a necessary requirement for educational leaders who attempt to integrate technology.

Table 1. How do New Technologies Reshape Our Assumptions About Leadership?

Factor 1:   **New technologies force more dialogue when information is shared and comparisons are made.**
E.g. 1:   "E-mail is an organizational leveller that allows communication with anyone in the organization." (L5)
E.g. 2:   "Leaders cannot control the flow of information as much as they once could; e.g., resource allocations made in one district become easily known to other districts." (L2)

Factor 2:   **New technologies force leaders to be more aware of issues outside their jurisdictions.**
E.g. 1:   "It has made leaders "look up" more; for example, information on safe schools, accreditation, bullying, these are some of the tough issues that are being addressed in schools right now because information about them is readily available through technology." (L3)
E.g. 2:   "They neutralize geography by allowing communication with educators anywhere in the world." (L2)
E.g. 3:   "More information is available to leaders so there is more to think about before decisions are made." (L3)

Factor 3:   **Technology carries a leadership persona that practitioners are knowledgeable and are good leaders.**
E.g. 1:   "One example is the use of a hand held computer is a leadership status symbol, like a big desk." (L5)

E.g. 2:   "Another example is a leader who gives a workshop that involves a significant computer application. It increases the belief that the leader is ready to lead." (L3)
E.g. 3:   "One who cannot manage technology gives the impression that leadership qualities are lacking." (L5)

Factor 4:   **It is essential that administrators know about technology to maximize its use and avoid its misuse.**

E.g. 1:   "Technology allows data collection but it may not influence or improve the decisions that are made." (L3)
E.g. 2:   "Excessive consultation often stifles decision making because consensus is hard to achieve." (L4)
E.g. 3:   "The ability to use technology has to be balanced by the ability to use it wisely to make decisions." (L2)
E.g. 4:   "It (technology) adds another layer. Leaders not only have to manage people, they have to manage technology as well." (L5)

Themes. Two themes influenced the discussion of Question 1. The first was that the information sharing and inclusiveness of the new technologies, particularly e-mail and the Web, would "level" the various levels of authority and force improved methods of leadership. The second was the appreciation that the new technologies are just tools that can be put to any purpose, good or bad.

Question 2.   How do the New Technologies Foster New Forms of Leadership?

Factors. The focus group discussion of Question 2 produced six factors that influence the new forms of leadership that are associated with the new technologies (see Table 2). First, the new technologies increase the possibility of centralized leadership; second, they facilitate collaboration and the sharing of information. Regrettably, this facilitation has also allowed some "leaders" to copy the initiatives of others, or avoid the risk of making tough leadership decisions by using the technology for consensus determination. Fourth, the members also focused on the value of the voice afforded by the new technologies. A fifth point was that they concluded that its presence outweighs its absence even at the risk that it may not improve leadership. The final consideration was that the controlling nature of the new technologies can prompt coercive leadership.

Table 2. How do the New Technologies Foster New Forms of Leadership?

Factor 1:   **They make centralized, top-down leadership easier.**
E.g. 1:   "Messages can be sent easily and instantly to every school." (L3)
E.g. 2:   "School administrators constantly check with the district office and risks are seldom taken." (L3)
E.g. 3:   "School leaders become building managers." (L2)

Factor 2: **There is a lot of copying of online leadership trends and issues.**
E.g. 1: "Improved information access prompts leaders to be concerned with what everyone else is doing." (L3)
E.g. 2: "There is a tendency to see where the crowd is going and then jump in front of them as a leader." (L3)
E.g. 3: "The trends and issues tend to come and go very quickly." (L1)

Factor 3: **The technology allows for a lot of collaboration.**
E.g. 1: "An example is an administrator asking other administrators what they have done at their schools about a common problem; i.e., a principal asking teachers about criteria for the school's honour roll." (L3)
E.g. 2: "With e-mail, everyone can participate and get the same messages." (L2)

Factor 4: **Some leaders use technology for consensus determination to avoid the risk of tough decisions.**
E.g. 1: "When there is no consensus; these leaders do nothing." (L4)
E.g. 2: "This type of leadership means that there is no risk taking." (L1)
E.g. 3: "But there is certainly credit taking if any benefit comes from the failure to act." (L3)

Factor 5: **It is better to enable communication than to block it even if it means that no decision is made.**
E.g. 1: "Sometimes the best leadership comes from enabling communication and getting out of the way." (L2)
E.g. 2: "'E-mail enhances democratic leadership by allowing everyone to have a voice." (L5)

Factor 6: **There is also the pushing of technology rather than educational leadership.**
E.g. 1: "One example is hiring technicians to service PCs without any resource allocation to support Macs." (L4)
E.g. 2: "Another example is district-wide adoptions of grade reporting programs." (L1)

Themes. One of the two themes related to this question contradicts a previous theme, while the other supports a previous theme. The contradictory theme is present in Factor 1; that is, the new technologies facilitate centralized "top down" practices of leadership rather than the decentralized practices noted for Question 1. The second theme evident in Factors 2 through 6 is an amplified repetition of the view that technology is just a tool that can be used for any purpose.

Question 3. **How do New Technologies Politicize Leadership Practices?**

Factors. The discussion of Question 3 produced only two factors (see Table 3). The first was the position that the new technologies are new tools that can be put to old purposes, in this case, politicization. The second factor, that technology has a politically correct image, was discussed extensively and endorsed by all members of the group.

Table 3. How do New Technologies Politicize Leadership Practices?

Factor 1: **They are just a new tool for the same practices of politicization.**
E.g. 1: "They do not politicize any more than previous practices." (L2)
E.g. 2: "Leaders use them if they are adept with technology and offer an advantage." (L1)

Factor 2: **Technology has a politically-correct image.**
E.g. 1: "It is seen as being equitable and democratic." (L2)
E.g. 2: "The Industry Canada initiative for connected Canadians is a huge political statement. The billions that are spent to have Canada connected is thought to be a good thing." (L2)
E.g. 3: "It is stunning how easy it is to get money out of Industry Canada." (L1)
E.g. 4: "Technology is just accepted without due consideration." (L1)

Themes. The statements voiced during the discussion of this question reflect a repetition of the tool theme and the initiation of the theme that the new technologies are politically correct.

Question 4. **How do the New Technologies Internationalize Education and Leadership?**

Factors. The discussion of Question 4 focused upon six aspects of this question that came to be regarded as factors (see Table 4). The first of these noted was that technology provides a new window on the world for educators who care to open it. The second factor discussed was the fact that computers are only one of the new technologies. The third and fourth factors are similar and each was discussed at length. These factors are the filters that are included in the new technologies and the limited understanding that most persons, especially children, have of the filtering process. The fifth factor was the agreement that the new technologies are dominated by American culture. The last factor was agreement that technology integration is often a trade-off with nationalization because the technologies are often available as packages that include the culture of their producers.

Table 4 . How do the New Technologies Internationalize Education and Leadership?

Factor 1: **They provide a new window on the world and make new viewpoints available**.
E.g. 1: "But do we look through it (the window of new technology) to see those viewpoints?" (L2)
E.g. 2: "The safe schools information that was shared included studies from the US, and during (a local school dispute) the school's parents cited evidence from many world locations to support their position." (L3)

Factor 2: **Technology is not limited to computers.**
E.g. 1: "Television and videos present international news and views from all over world."(L1)
E.g. 2: "But it is only a potential. Most children ignore world-wide news and watch YTV or worse." (L5)
E.g. 3: "But it is still possible to be aware of international events. That was not easy when we were young." (L1)

Factor 3: **Media reports of news include new filters that provide only snapshots and sound bytes of the world.**
E.g. 1: "We are only spot checkers of the world scene. We know very little that is of depth." (L2)
E.g. 2: "But it is also possible to be extremely well informed, better than before this technology and from your own home." (L1)

Factor 4: **There is poor understanding of the media-filtering process.**
E.g. 1: "People just accept the media views that are presented without realizing that media editors determine the content of their newspapers, radio programs, and television broadcasts." (L5)
E.g. 2: "Services that have provided extensive coverage have usually failed to survive financially." (L5)
E.g. 3: "Some people have refused television to avoid the information overload and filters it can present." (L4)

Factor 5: **The new technologies have produced an American-dominated global village.**
E.g. 1: "The technological view of education is primarily an American view. We hear little of education in other countries." (L5)
E.g. 2: "Studies of education in other countries tend to be unavailable and there is little effort to make comparisons." (L1)

Factor 6: **Integration is a tradeoff on nationalization–everything is beige.**
E.g. 1: "It is beige because it is cheaper to copy than to discover and invent and copies comes with other cultures included." (L3)
E.g. 2: "It is also beige because e-mail is colour blind. Every message looks the same regardless of the colour, race, sex, or status of its sender." (L2)

Themes. The extensive discussion of Question 4 gave rise to four themes. The first was the "window on the world" theme that is frequently expressed in the new technology literature. The second was the correction that the new technologies go well beyond computers. The third was the presence of filters and the need to learn to cope with them. The last was the concern about the trade-off with nationalism that is often the price of affordable technology integration.

Question 5. To What Extent Will New Technologies Enable Leadership to be More Educative?
Factors. The discussion of Question 5 focused on six factors that are relevant to the question (see Table 5). An inspection of those factors and the statements associated with them indicates that the first factor set the stage for questioning the validity of the positive relationship that is implicit in the question. The factors that follow indicate that the members of this focus group do not accept that assumption. The comments that prompted the identification of the first factor appear to be rooted in the previously-noted theme that technology is a tool that can be used for any purpose. In this case, it can enable or disable educative leadership. All of the comments made after the discussion of Factor 1 indicate that the experience of these technology leaders is that as they have been applied, the new technologies have not enabled leadership to be more educative.

Factors two and three strongly indicate that opinion by noting that in many instances the efficiencies of the new technologies have been devoted to school management. In turn, this practice has forced both educational leaders and teachers to follow a management pattern of technology integration. Factor four extends the view of technology for management by noting its increased use in the name of public accountability. Factor five indicates that district technology leaders experience the frustration of being caught in a never-ending cycle of technological change that breeds a never-ending demand to keep current. Finally, Factor six expresses the concern of technology leaders that a principal outcome of working at the leading edge with work- and time-saving technologies is that they make work to replace that which is saved. In fact, they make the work so portable that it comes to occupy the time that used to be spent away from work.

Table 5. **To What Extent Will New Technologies Enable Leadership to be More Educative?**

Factor 1:   **The new technologies can both enable and disable educative leadership.**
E.g. 1:   "On the bright side, the new technologies make it easy to reach people and coordinate activities." (L3)
E.g. 2:   "The new technologies can also cripple educative leadership with information overload and administrivia." (L3)
E.g. 3:   "The technologies are just tools. Whether they help or hinder depends upon the leadership skills of those who use them." (L5)

Factor 2:   **Technology has made many of today's education leaders more mangers than leaders of educational practice.**
E.g. 1:   "The technology has resulted in is a great deal of educational paperwork such as budgets, reports, plans." (L3)
E.g. 2:   "Continuous technological change means that educators need to spend time keeping current." (L2)

Factor 3:   **Technology has also made today's teachers more managers than teachers**.
E.g. 1:   "Technology has increased the amount of time teachers spend entering marks, reporting, answering e-mail." (L4)
E.g. 2:   "Technology also means that a huge part of a teacher's job is now spent on IEPs, ARCs, and fund raising." (L1)

Factor 4:   **Technology has enabled leaders to spend a lot of time on public relations and public accountability.**
E.g. 1:   "Accountability is a new mantra. Teachers are accountable to every parent." (L1)
E.g. 2:   "Schools are held accountable every six years." (L3)
E.g. 3:   "Accountability involves spending hundreds of hours using technology to collect data and present information." (L1)

Factor 5:   **The use of technology in education breeds an ever-increasing set of demands.**
E.g. 1:   "The technology is purchased to make tasks easier; e.g., the new report card program, but the time saved is filled with more tasks. And this does not take the technology learning curve into account." (L2)

E.g. 2: "Busy teachers do not want to invest time learning new technologies because they are already busy." (L2)
E.g. 3: "Teachers want to simply use the technology immediately without any problems." (L1)

Factor 6: **The use of technology doesn't help educators to go home any earlier.**
E.g. 1: "Educators have laptops but that just means they can continue to work at home; it doesn't create spare time." (L3)
E.g. 2: "Hand-held computers allow you to work anywhere, but can also cause you to work everywhere." (L1)

Themes. An important theme that is repeated for this question is that technology is a tool that serves the choices made by those who use it. In this case, the choice is about the types of educative leadership that will be enabled by the technology. A second theme is that these leaders of technology integration indicate that very important decisions about the integration of technology in education are made at levels of leadership well above the level they currently occupy. The comments about educational leaders being made managers of technology that serves the needs of reporting and accountability support this theme. A third theme is the leaders' frustration that is the byproduct of the interdependent cycles of never-ending technological change and never-ending demands to keep current.

Question 6. Are There Other Implications of the New Technologies for Educational Leadership?

Factors. Question 6 produced the lengthiest discussion of all six questions. It indicated that the previous questions missed some important implications of the new technologies for educational leadership. All of these factors are new perspectives and all but one bear upon the informal comments of the UNBC study participants that prompted this investigation (see Table 6).

Table 6. Are There Other Implications of the New Technologies for Educational Leadership?

Factor 1: **A shortage of money for technology will allow business to encroach on education.**
E.g. 1: "Typically technologies are developed for business because they have the money." (L2)
E.g. 2: "Business drives an awful lot of technology integration and educational leadership." (L1)
E.g. 3: "Business sponsorship of technology for schools is already common. It could easily spread." (L3)
E.g. 4: "School teams have sponsor names and logos. Next it will be courses sponsored by Coke." (L5)
E.g. 5: "Monopoly drink franchises already exist in some schools." (L4)

Factor 2: **There is concern now being expressed that technology has not improved education.**
E.g. 1: "Parents are beginning to ask how the technology we already have is being used." (L5)

E.g. 2:   "Despite the purchase of technology, the schools have not changed. They still have rows of desks." (L1)

Factor 3:   **Many school districts have jumped into technology without adequate educational planning.**
E.g. 1:   "The history of technology in education is that the first step was for school districts to put money into hardware. Now they are asking if the investment has produced a result." (L5)
E.g. 2:   "A better strategy would have been to identify the outcomes first." (L1)
E.g. 3:   "Just like teacher training, start with objectives and then determine the instructional method, curriculum materials, and methods of assessment." (L5)
E.g. 4:   "Districts have not conducted assessments to know if technology really matters or if it works." (L2)

Factor 4:   **There is no provincial ICT curriculum to indicate the appropriate curriculum units for each grade level.**
E.g. 1:   "The current technology IRP can mean anything you want it to mean, so every school interprets it to fit its circumstances and philosophy." (L3)
E.g. 2:   "There are no provincial outcomes defined for ICT." (L2)
E.g. 3:   "Individual districts are planning scope and sequence determinations for K - 7 ICT, but why this should have to be done at the district level is a mystery. Technology is not specific to districts." (L3)

Factor 5:   **A provincial technology curriculum is needed for all districts, schools, and grade levels**
E.g. 1:   "Right now, teachers teach whatever technology lessons they want to teach." (L5)
E.g. 2:   "The choice is influenced by the technology the teacher has and his/her knowledge of technology." (L1)
E.g. 3:   "The result is great variability in ICT instruction within grades, schools, districts, and provinces." (L3)
E.g. 4:   "A provincial curriculum with defined outcomes will allow teachers to plan and provide ICT instruction that is appropriate for each grade level." (L2)
E.g. 5:   "It will also insure that ICT instruction is provided according to a suitable scope and sequence determination and that all students will have appropriate opportunities to attain all of the ICT outcomes included in the curriculum." (L3)

Question 6 produced five factors and each is the product of extensive discussion by all members of the focus group. Factor 1 is a compound concern. These technology leaders are concerned that there is a shortage of money for technology and equally concerned that the shortage will allow business to encroach on education. The second factor is the acknowledgment that there is increasing concern that technology has not improved education and that these technology leaders share that concern. The third factor is the acknowledgment that many school districts have enthusiastically spent money on technology but failed to integrate it into their educational plans. The fourth and fifth factors speak to two facets of the need for a provincial technology curriculum for all school districts, schools, and grade levels.

Themes. Three cross-category and cross-question themes are reflected in the discussion

associated with the factors identified for this question. The first is an acknowledgment from technology leaders that current technology-integration plans and practices have produced little evidence that technology integration has improved education. The second is that the technology integration initiatives of many education authorities have not included the type of planning that is fundamental for effecting educational change. The third theme is that there is a pressing need for leadership at the provincial level to prepare and implement a provincial technology curriculum that specifies the curriculum and learning outcomes at each grade level.

Discussion

An evaluation of all the themes identified for all of the questions indicates that discussions of the technology leaders who participated in the focus group included several major themes as well as some thematic contradictions.

A contradiction occurred for two themes that were noted for several questions. One of these themes was that technology, especially e-mail and the Web, will facilitate democratic leadership by increasing the distribution of information and the opportunity to participate in decision-making processes. The other was that the same technologies will facilitate autocratic leadership by means of increased circulation of administrative information and increased responsibilities to report information to administrative authorities. Another aspect of this contradiction was that the technology allows all participants to have a voice in decision-making, but when these voices fail to produce a consensus, the technology can be used to support indecisive leadership.

A major theme that served to resolve this contradiction and others that appear in the discussion data is the oft-repeated observation that technology is just a tool which can be used to serve the highest and lowest purposes of educational leaders.

A similar major theme that served to integrate contradictory minor themes is the realization that the new technologies facilitate both good and evil. One example is that they open new windows on the world, but those wonderful new windows simultaneously create the need for new types of blinds, or to use the language of the focus group, new filters for the new technologies.

Still another major theme that crossed several questions was the challenging fact that the new technologies renew themselves so frequently that they establish "renewal treadmills"' that must be run regularly by technology leaders lest they lose their place at the leading edge and with it their positions as technology leaders. A variant of this theme is the constant cash flow that is required to continually renew the infrastructure of the new technology. Accordingly, leaders who value the currency of the new technology have no choice but to lead the search for cash. The last variants of this theme are the complaints of technology leaders that technology that was supposed to save work and provide time is doing exactly the opposite for those who buy into the technology, and especially those who become technology leaders.

The most important themes that have new technology implications for educational leaders are those that speak directly to education. The first of these is the consensus of a group of educational technology leaders that technology has not produced major improvements in education. A caveat that must be noted for this theme is that discussions clearly indicated that the

failure was not due to the technology. Rather it was and is due to the many leadership decisions that have been made by humans concerning the place of technology in education and the roles it is allowed to play in the education process. The second theme speaks loudly to this point. That theme is that the technology plans associated with the technology integration initiatives of many school districts are not consistent with the fundamental types of educational planning that is required of teachers. In particular, there is an absence of learning outcomes to define successful technology integration, which may be at least part of the reason that there is a growing belief that the improvements have failed to appear. The last theme that is linked to this failure is the consensus of these technology leaders that there is a desperate need for a provincial technology curriculum to identify by grade and subject the technology learning outcomes that constitute success. The extraordinary initiatives of the International Society for Technology in Education to develop technology standards for students, teachers, and administrators attests to the importance of standards and the need for technology curricula for educational organizations that are responsible for teaching the new technologies (O'Neil, 2000).

Consideration of all the results for this focus group of educational technology leaders suggests that the technology-integration observations of the in-service teachers who participated in the pilot versions of UNBC's educational technology course were accurate. The increasingly integrated nature of educational applications of the new technologies is making educational leadership increasingly important for effective technology integration in their schools and classes. There is a need for leaders who can lead the integration of objectives and methods of the persons and parts of educational organizations so those organizations can make sensible decisions about technology integration that will assist those organizations to attain their objectives. This model of leadership is itself integrated. It calls for integrated leadership at every level of the organization.

For the purpose of designing a university course to prepare teachers to effectively and efficiently integrate the new technologies into the learning experiences they provide for their students, the results of the present investigation support an increased emphasis upon the nature of educational leadership and the important role it plays in technology integration for new technologies that are highly integrated. It is anticipated that instruction of this nature will assist educators to plan and implement technology-integration initiatives that will serve their educational organizations as integrated wholes and genuinely improve the quality of education provided for their students.

The discussions of the educational technology leaders indicated that effective leadership is essential for the successful integration of the new technologies in any organized system of education such as schools, school districts, and provincial or national systems of education. Their answers to questions about the implications of the new technologies for educational leadership suggest that the successful integration of the new technologies in educational organizations as complex and integrated as school districts requires a significantly different perspective on organizational leadership. The networked nature of the new technologies and the high costs associated with them will require an integrated model of leadership that integrates the initiatives of technology leaders at all levels of the organization. Those leaders will have to agree upon the purposes for technology integration and recognize the constraints of their organizations before they can make wise decisions about the types of technology they will need and be able to afford to accomplish their purposes.

References

Anderson, R.E., & Dexter, S.L. (2000). *School technology leadership: Incidence and impact.* Center for Research on Information Technology and Organizations. Irvine, CA: University of California.

Bailey, G.D. (1995). Technology leadership: Ten essential buttons for understanding technology integration in the 21st century. *Educational Considerations.* Retrieved 10/05/02 from http://www2.educ.ksu.edu/Faculty/BaileyG/html/currentbuttonsart.html

Campbell, T. (1996). Technology, multimedia and qualitative research in education. *Journal of Research on Computing In Education,* 28(5). Retrieved 10/05/02 from http://www2.educ.ksu.edu/Projects/JRCE/v28-5/Campbell/article/textonly.htm
Catterall, M., & Maclaran, P. (1997). Focus group data and qualitative analysis. *Sociological Research Online*. Retrieved 10/05/02 from : http://www.socresonline.org.uk/2/1/6.html

Eastwood, K., Harmony, D., & Chamberlain, C. (1998). Integrating technology into instruction: How we became the best by simply listening. *Curriculum Technology Quarterly,* 7(3), Retrieved 10/04/02 from http://www.ascd.org/readingroom/ctq/vol07/1summer.html

Fouts, J.T. (2000). *Research on computers and education:* Past, present and future. Bill and Melinda Gates Foundation. Retrieved 10/05/02 from http://www.esd189.org/Tlp/images/TotalReport3.pdf

Hughes, M., & Zachariah, S. (2001). An investigation into the relationship between effective administrative leadership styles and the use of technology. *International Electronic Journal for Leadership in Learning*, 5(5). Retrieved 10/05/02 from http://www.ucalgary.ca/~iejll/volume5/hughes.html

Kostic, M. (2002). *Leadership and information technologies in education.* Paper presented at the meeting of the American Society for Engineering, Chicago, Illinois.

Lewis, M. (1995). Focus group interviews in qualitative research: A review of the literature. *Action Research Electronic Reader.* Retrieved 5/03/02 from http://www.scu.edu.au/schools/gcm/ar/arr/arow/rlewis.html

Krueger, R. (1994). *Focus groups: A practical guide for applied research* (2nd ed.). Newbury Park, CA: Sage.

Marczak, M., & Sewell, M. (1998). Using focus groups for evaluation. *Cybernet Evaluation.* Retrieved 11/04/02 from http://ag.arizona.edu/fcr/fs/cyfar/focus.htm

Morgan, D. (1993). *Successful focus groups: Advancing the state of the art*. Newbury Park, CA: Sage.

O'Neil, J. (2000). Integrating curriculum and technology standards. *Curriculum Technology Quarterly,* 9(4), Retrieved 10/04/02 from.
http://www.ascd.org/readingroom/ctq/vol09/1sum00.html

Reid, S. (2002). Teachers' views on technology and the future of teaching. *International Electronic Journal for Leadership in Learning,* 5(5). Retrieved 10/05/02 from
http://www.ucalgary.ca/%7Eiejll/

Rockman, S. (1998). *Leader's guide to education technology.* EDvancenet (National School Boards Assn.). Retrieved 10/05/02 from http://www.edvancenet.org

Sandham, J. (2001, July). Tech training 101: Time, leadership and incentives. *Wireless Solutions,* Retrieved 10/05/02 from
http://www.convergemag.com/magazine/story.phtml?id=2530000000002317

Schmeltzer, T. (2001, July). Training administrators to be technology leaders. *T & L Magazine*, Retrieved 10/05/02 from
http://www.techlearning.com/db_area/archives/TL/200106/training.html

Shelly, G.B., Cashman, T.J., Gunter, R.E., & Gunter, G.A. (2001*). Teachers discovering computers*: Integrating technology in the classroom. Cambridge, MA: Course Technology.

Slowinski, J. (2000). *Becoming a technologically savvy administrator.* ERIC Clearinghouse on Educational Management, ERIC Digest 135, Retrieved 10/05/02 from
http://eric.uoregon.edu/publications/digests/digest135.html

Vaughn, S., Schumm, J., & Sinagub, J. (1996). *Focus group interviews in education and psychology.* Thousand Oaks, CA: Sage.

Notes

1. A draft report of this investigation was presented May 27, 2002 at the annual meeting of the Canadian Society for Studies in Education, OISE, University of Toronto.

2. This study, an investigation of the efficacy of a new undergraduate course to assist pre- and in-service teachers to integrate information communications technology (ICT) in their teaching practices, is supported by a research grant from the Ministry of Education, Province of British Columbia.

3. A review by the first author of four popular textbooks for teacher education courses on the subject of technology integration indicated that no significant information about the role of leadership in technology integration was included in any of these books. Furthermore, the textbook selected for UNBC's pilot versions of a new educational technology course did not include the word "leadership" in either its table of contents or its index (Shelly, Cashman, Gunter, & Gunter, 2001).

4. These questions were patterned after several of the questions that were prepared by the Commonwealth Council of Educational Administration and Management for an AERA symposium request for papers on the topic, New Technologies and Educative Leadership.

5. The table noted for each question summarizes the focal points of the discussion for that question. For each focal point noted, the table also includes select quotations of the focus group members. These illustrate the nature of the discussion and support the interpretation of the factors and themes noted for the question. To protect the privacy of the focus group members, each member was assigned a number so the sources of the quotations could be identified without revealing the identities of the members.

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