Impact on the School Leadership: Computerization of School Administration

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Abstract

School leaders need to have access to the full advantages of computer technology to give them immediate, accurate, current and complete information in order to maximize their vision and exercise their capabilities. Computer applications have the capacity to facilitate an increasing number of functions and to produce data that may inform a large range of decisions which school leaders must take. However, schools are beset by structural, financial and cultural factors, which tend to inhibit effective use of computer technology in them and are thus denied the potential benefit that such technology promises. This paper describes the issues schools and their leaders face in attempting to implement new technologies in school administration and analyses the reasons behind these issues and concerns. Among other things, schools suffer from the lack of planning in the use of administrative systems, the lack of support for clerical staff in using systems, a limited availability of appropriately tailored software packages, the presence of inhibiting management strategies and the lack of desire to embrace new and challenging technology in their pursuit of increased computer usage. The paper describes a research project which examines the way in which these issues reveal themselves in schools in Thailand and elsewhere and discusses the nature of technological, management and training solutions which have been offered to overcome problems. In addition, the paper presents the view that good management of information provides a useful foundation for good leadership and effective communication. The best schools monitor their effectiveness well and learn from their past experiences. They manage staff and students in compassionate and professional ways and pursue their educational objectives with commitment and passion.

Keywords: school leadership, computerization of school administration, school administration

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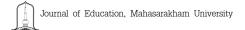[1] Faculty of Education, Mahasarakham University, Thailand

Introduction

Computerization of school administration promises huge advantages to schools despite the accompanying headaches, frustrations and anxieties. School administrators depend more and more upon the fruits of computerization in the performance of their roles and in the potential enhancement of the quality of their institutions (Kleesoontorn, 2004). A well run school computer system can provide ready access to a myriad of data and analyses of data so that administrators are well placed to make informed decisions about a range of matters to do with the operation and future development of their schools (Christopher, 2003 ; Condie and et al., 2007 ; Kiatkomol & Kejornnan, 2008). Unfortunately, the road to such administrative competence and efficiency is strewn with disasters, failed plans, administrative errors, embarrassing apologies, extensive overspending, disgruntled and alienated staff and underutilization of resources.

A smooth transition to a fully computerized administrative system needs to take account of the nature and purposes of computer-based systems and the difficulties, which might be encountered, in a transitional process. It is important for schools to be aware of the strengths and limitations of manual systems of administration as well as the potential benefits and problems of a fully computerized system. Technological advances first made available to businesses

and agencies may not necessarily be readily translatable to school settings. We need to ask questions about the purposes schools have in wanting to introduce computerized systems and investigate what objectives are to be set and what functions are to be included in the system. Ultimately, the benefits of any system must be measured in terms of the manner in which the school and its principal and other key administrators may increase their efficiency and effectiveness. This paper examines these questions and issues by describing the functions and advantages of computerized systems, identifying issues associated with their implementation and then examining a number of case studies of schools that have undertaken a process of transition to a computerized system.

Approaches to Computerization of School Administration

Schools generally require their administrative leaders to have expert information about their schools so that the purposes, philosophy and objectives of the schools may be clearly articulated, adequately defended and relevant to the needs of the students and parents. Effective management is contingent upon accurate information of what is going on both inside and outside schools (Christopher, 2003). Administrative systems in schools support the administrative functions of data base management and transaction processing

and help to manage and integrate data on student demographics, grading, budgeting, payroll, personnel, scheduling, attendance, grants, fees and inventory to name a few. Not all these functions are present in all systems.

There are three major applications of administrative systems

• databases to record and manage data and information

• electronic spreadsheets to manage numbers and

• office systems to manage words and communications.

Databases can manage a range of information on students (such as grades, attendance and schedules), staff, curriculum, finance and facilities. The data in the databases may be analysed in the spreadsheets to produce, amongst other things, projections, cost analyses, budgets and cash flow statements. Office automation software can help for example, to produce

and store correspondence, newsletters, meeting notices, contracts, appointment notices, invoices, graduation lists and manage internal communication through email.

Manual administrative systems perform many of these functions but often in a non-integrated and variable fashion. The table below describes the differences between manual and computerized systems. The first column describes the characteristics of manual systems which might be supported by a limited amount of computer technology such as by word processing. The second describes the characteristics of a fully integrated computerized system of school administration. Almost all functions described on the table may be performed at a superior level by computerized systems. The advantage manual systems have over computerized ones is in the possible loss or corruption of data through computer malfunction, operator error or downtime.

Table 1:   Characteristics of Manual and Computerized School Administrative Systems

Manual Systems (including use of word processing for data recording and management)		Computerized Systems	
1	Curatorial role of keeper of files	1	Accessibility of data to all appropriate staff at varying levels
2	Varying quality of data including • idiosyncratic and anecdotal data • different levels of veracity of data • personally known and interpreted data	2	Standard quality of data including • compatible, manipulable categories of data • established data values • regulated, standardized input of data • consistent veracity of data
3	Difficult or impossible to perform aggregational or summative functions	3	Easy to perform aggregational or summative functions
4	Difficult or impossible to expand, collapse or cross-tabulate data categories	4	Easy to expand, collapse or cross-tabulate data categories
5	Difficult to perform statistical and research functions	5	Easy to perform statistical and research functions
6	Ready accessibility of data from hard copies of registers, ledgers, manuals, etc	6	Without adequate backup procedures, system failure or operator error can render data inaccessible or corruptible
7	Lineal process of data analysis and presentation	7	Flexible process of data analysis and presentation

A clear advantage computer based systems have over manual systems is in data veracity and reliability. Manual systems tend to develop as needs arise and there is no imperative to ensure compatibility of data or data sets. Computerized systems have the advantage (perceived as a disadvantage in early design stages in schools) of requiring the possible interrelationships between data to be specified. Furthermore, the possibilities of data manipulation in computerized systems are endless and entirely flexible.

The superiority of computerized administrative systems and the power they seem to confer on school leaders appears to be well established. Yet the rate at which school leaders adopt computerized systems and integrate systems into their patterns of work is lamentable (Gentry, 2005). It is important to identify the reasons why this should be. There is a growing research literature on the nature of the implementation

process, which examines the factors, which promote effective use of computer systems. The research findings may be considered under three headings, namely, the factors which seem to promote effective system use within schools, the factors which appear to impede effective implementation and the outcomes of effective training of school leaders in system use.

1. Factors promoting effective training

A number of research studies indicated that the commitment of the principal to efficient computer usage was a key factor in the successful implementation of systems (Telem, 1999). Administrative staff were far more likely to take their training seriously if they saw the principal's enthusiasm for the system modeled in the workplace. Further, a clear indication of the support of management for professional development assisted in implementation (Kibby and Heller, 1996 ; Picciano, 1998). This commitment was enhanced if school resources and staff time were readily available for training sessions (Visscher, 1996 and Fung, 1991). Research on the training programs themselves showed that the training needed to be broken down into achievable incremental steps (Malaiwong, 1998 ; Tesaputa, 1999c), that it focused on the acquisition of skills in the management of administrative functions and applications (Bozeman and Spuck, 1991) and that administrators were encouraged with realistic
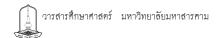
feedback at regular intervals during training (Kibby and Heller, 1996).

2. Factors inhibiting effective training

Administrators were seriously frustrated by a lack of overall understanding of the nature, purposes, capabilities and possibilities of their administrative systems. This lack of knowledge to motivated them to learn about their system and led to increased dislike and distrust of systems (Fulmer, 1996). Administrators also found it hard to see the positive links between effective school management and computerized administrative systems (Telem, 1991). Many were discouraged by their belief that the systems were hard to use (Malaiwong, 1998) and that their use should remain the province of so-called techno-experts in the field. One study found that lack of skill in administrators in using systems was significantly correlated with age (Ross, 1993). The fact that administrators tended to be in the older age groups militated against the effective use and management of systems in schools.

3. Impact of effective training upon administrative practice in schools

While the use of computerized administrative systems had to be regarded as just one element in effective leadership and management of schools (Mintzberg, 1989), studies showed that increased computer usage in administration increased leaders' power over administrative functions and improved effectiveness of management of

schools (Regan and O'Connor, 1994). This was shown to be due to improved perceptions by leaders of their roles and functions within schools (Crow and Rariden, 1993).

Case Studies

The research reported in this paper focuses on what prevents school administrators from making best use of computer technology. Information gathered from schools in Australia and Thailand was used to explore difficulties facing administrators and possible solutions to those difficulties. This presentation of research findings draws firstly, upon a quantitative study in Thailand of 130 schools and their use of computerized administrative systems (Tesaputa, 1998) and an in depth action research study of an administrators' training program (Tesaputa, 1999c) at a private commercial school in Thailand. The Australian data is based on studies of two Victorian secondary colleges in the private and public sectors of schooling (Tesaputa, 1999a and 1999b).

Thailand

Many Thai schools lacked good planning in implementing computerized school information systems. This affected the success of schools' systems development, particularly in early stages of system implementation when schools were coping with new hardware and programs and trying to induct staff into using the systems effectively. In the early stages the users reported that they lacked confidence in the systems and needed someone to provide advice and help to solve problems. Schools had obviously launched themselves into the use of new systems without an adequate level of readiness. Experiences from some schools which were unsuccessful in developing school information systems indicated that they lacked an understanding of problems that may arise and lacked planning regarding adjusting their working methods from manual to automated, lacked personnel who had adequate computer knowledge to participate in strategic planning. The changes that had to be made in the management and processing of budget records, personnel records, student records and so on were overwhelming.

Educational management in Thailand is more commonly carried out from the top down rather than from the bottom up. Most development plans of schools in rural areas were carried out by the Ministry of Education with a little input from the schools involved. Local management problems also occurred. Bureaucratic organizations often struggle with the introduction of new technologies or the repair of old ones thus reducing the usage of systems and dampening the interest of their users.

Financial limitations are a major problem for acquiring computers in Thailand.

Most Thai schools in both state-run and private sectors face problems with a shortage of personnel who have computer knowledge to develop school information systems and a shortage of computer technicians and clerical staff to run school administration computer programs. However, some schools have found it useful to work with computer companies in implementing computerized school information systems. This strategy was also subject to the same form of limitations such as the lack of suitable personnel to manage the implementation stages of systems.

There is still a limited number of school administrative software packages in Thailand and lack of refinement in the ones available to manage school tasks. The development of software packages by computer companies eliminated some of these limitations but it was found that software developers lacked an understanding of the nature of school administrative tasks. Moreover, schools have limited selection of the appropriate systems.

Organizational culture has an important influence upon the success of the utilization of computer systems. In Thai cultural contexts, inferiors have to accept and respect their superiors and their elders. Administrators perceive their role as giving orders right down along the chain of command, even when they need data and information. By passing this system for the crass sake of greater efficiency is not considered an appropriate or a viable alternative.
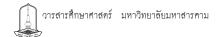
There were many types of barriers in implementing computer systems in Thai schools. Such as, there was the negative attitude people had about computer technology as an instrument to supplant human workers. Most of school administrators make little use of technologies because they do not have enough time. Most older workers experienced difficulty in adjusting work habits to the new technologies. As Ross (1993) stated, the lack of technological skills in present day administrators is often related to age.

Australia

Computerized school information systems and strategies in developing schools administration are wide acceptable in Australian schools. Both government and private schools had developed information systems themselves and some used appropriate software from software companies. However, the introduction of information systems to school personnel in the early stages required significant advice from outsiders. The lack of computer programmers and appropriately trained clerical staff caused problems in some schools.

Government schools ran internal computer systems which are linked to the Ministry of Education Computerized Administrative Systems Environment in Schools (CASES) system. This combination

of systems did not entirely meet the needs of schools. Some personnel expressed concern about the arrangement because each system was set up to respond to different purposes.

In some ways the use of computer systems in Australian schools was different from what was observed in Thai ones. Some school administrators were very familiar with computer systems and also used such systems as a tool in their day to day school administration. Others realised the value of the systems available to them but were unable to access systems by themselves. They required training to gain fuller benefit from their systems.

Development of school information systems for school administration was dependent upon school personnel needs. Users collaborated in the making of decisions and in choosing the software packages that suited their needs. This was grass-roots development or decentralized decision making in practice.

Victorian principals' ranking of problems schools had in using computers in schools put the following five problems above all others

• insufficient number of computers

• insufficient number of peripherals

• inadequate financial support

• limitations of computers (for example out-of-date, incompatible with current software too slow, insufficient
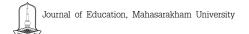
memory) and

• teachers and administrators lacked knowledge and skill in using computers (Shears, 1995).

School administrators used school information systems at variable levels of effectiveness. Principals tended to use broad ranging information from systems like CASES while deputy principals took greater interest in internal information systems to carry out their school administrative tasks. Some school principals did not utilise the school information systems by themselves. They instead saw their role as needing to facilitate and support the operation of the systems.

Conclusions and recommendations

The case studies from Thailand indicated that computer applications for school administration were closely related to the Ministry of Education policy that was responsible for controlling the whole education system. The educational system was centralized along with a hierarchy and bureaucratic system. Traditional culture dictated that inferiors should defer to superiors. Most decisions had to come from the top. These factors could be regarded as obstacles in the development of school information systems. However, many schools realized the advantages of using computers in school administration. Some had tried to develop the systems using internal school

personnel and donation computers from parent and alumni associations, while others had collaborated with computer companies to adapt software packages to suit their needs.

Case studies in Australia indicated that Australian schools were developing school information systems by themselves and collaborated with software company to use appropriate software packages. Many big companies provided administrative software packages for school administration as well as computer hardware. Schools were supported in these activities by government funding, donations from parent-teacher associations and alumni associations.
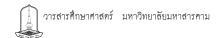
However, many schools in both countries still had problems in providing training for staff in better utilizing school information systems. Some users did not realise the procedures for using the systems including such elementary tasks as logging on or off. In more general terms, the common problems facing administrators in both countries were

• lack of support funding

• lack of adequate planning in using systems

• lack of training for school administrators and clerical staff

• limited appropriate software

• lack of adequate practice in using computer technology and

• poor system management strategies.

We would suggest school administrators might consider a number of possible solutions to these problems. The first is that schools need to develop strategic plans for their use of systems, with such plans including needs analysis of administrative processes, system design which takes into account the anticipated requirements of schools, a budgeting and purchasing strategy and a plan for the possible integration of a local system with regional or national computer systems. Further, schools need to tackle the issue of negative attitudes to the use of systems. It is important that new working strategies be developed in schools to enable efficient and effective management processes to work. A third recommendation is for government support to become more consultative and practical in terms of establishing processes of consultancy and training and in setting system standards. Schools need to review their current practices and structures and assess whether they are appropriate to the emerging nature of educational institutions and to the ever-changing needs of the students.

The ultimate purpose in the use of computer systems should not be lost in the seeming rush towards automation. Our intention should always be to use whatever means are at our disposal to promote the

effectiveness of our schools and advance the development of our students. Computerization serves a valuable purpose in helping to achieve those aims.

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