This article is the second of two articles examining the role of leadership in Information and Communications Technology (ICT) in secondary schools. Where the first article, (Keane, T. (2011) ICT Leadership in Schools Part 1, The Australian Educational Leader, 33(4), pp. 20-24.) examined the historical context and current research available surrounding the role and focus of ICT leadership, this article will provide recommendations for effective ICT leadership in teaching and learning.

History tells us that computers were introduced into schools by enthusiastic amateurs who enlisted the support of sometimes far-sighted Principals to ensure the provision of computers for students. In the early days computer education was about the use of the computer, and staff generally were not expected to necessarily gain competence in computer skills. When the use of computers in schools evolved from computer science to using computers for business applications the situation changed. No longer was the computer solely the provision of technology focused programmers. From then on the computer had potential application in Business, English, Mathematics and Science classrooms. As more software was written for education, the potential uses for the computer grew.

In the early days, computers were often part of another Faculty in secondary schools. This was normally the Mathematics or Science Faculties, but it could have easily been the Business Faculty as was the case at tertiary level. This showed that computers had the potential to be part of all of the learning areas in a school. This in turn highlighted one of the central dilemmas: who was to provide leadership? After all, there was an English teacher to lead English and a Mathematics teacher to lead Mathematics. The early answer was that someone who was ‘good’ at computers should lead the use of computers. Because there was a network to run, in order to connect all of the people who might now use the computers in the school, the person who was best at using computers in a school was often the technical person who ran the network. However, the kinds of skills and abilities associated with running a network did not always translate into teaching and learning.

The last decade and a half has seen the computer become a permanent and ubiquitous part of modern living, including education. This has been reflected by schools attempting to find a context to use computers in most subjects found in the curriculum. As a consequence of this, it has become more important than ever to have appropriate and good leadership in Information and Communications Technology (ICT). It could be argued that in an ideal world the people to provide ICT leadership within, for example, an English Faculty would be the Head of English. In practice this is not always possible, however, somebody needs to provide leadership in ICT, and so the question is still: Who will this person be?

Whilst the obvious and convenient choice has been a technician or a Network Administrator to take on the role, it is not always practical in terms of providing strong and sound educational leadership. With the growing emphasis on ICT as interdisciplinary, the role of the Information and Communications Technology leader has become more complex, more curriculum focused and more significant. The role has evolved from being narrow focused in terms of understanding the operation of specific hardware and software, to a much broader base with an emphasis on understanding ICT in a learning and teaching context. The role of the ICT leader is a major and significant leadership position and needs to be supported by an appropriate team.

“**The key question for Principals is clear: how do I improve teacher use of ICT, in order to improve student use of ICT, in order to improve student learning outcomes.”**
As the software and hardware used by subject specialists becomes more specific and specialised (See Table 1), it is possible that one person will no longer be able to keep up to date with subject-specific requirements. For example, from an educational perspective it requires a sound knowledge of Science content, Science curricula, and teaching strategies commonly used in Science, in order to make an informed decision about purchasing software such as simulations and hardware such as data loggers, probes and digital microscopes. The business models that are the basis of many current leadership models are not appropriate in the multidimensional context of technologically rich secondary schools.

<table>
<thead>
<tr>
<th>Learning Area</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGLISH</td>
<td>Word Processing; Desktop Publishing; PowerPoint; Blogging</td>
</tr>
<tr>
<td>MATHEMATICS</td>
<td>Spread sheeting; Graphing mathematical equations CAS calculators</td>
</tr>
<tr>
<td>SOSE</td>
<td>Databases; Multimedia; Simulations; Internet; Mapping</td>
</tr>
<tr>
<td>SCIENCE</td>
<td>Data-logging; Simulations</td>
</tr>
<tr>
<td>TECHNOLOGY</td>
<td>Computer Aided Design; Simulation</td>
</tr>
<tr>
<td>ART</td>
<td>Drawing and photo manipulation; Web authoring; Animation; Movie editing</td>
</tr>
<tr>
<td>MUSIC</td>
<td>Music creation</td>
</tr>
<tr>
<td>LOTE</td>
<td>Language based software</td>
</tr>
<tr>
<td>HEALTH PE</td>
<td>Forms of data logging (fitness testing)</td>
</tr>
<tr>
<td>DRAMA</td>
<td>Scripting; Lighting</td>
</tr>
</tbody>
</table>

Table 1: Typical generic software needs of Learning Areas.

Recommendations for Practice

The recommendations for practice outlined below have applications in schools that are of a medium to a large size such as 600-1500 students; however it is limited in practicality when applied to large schools that have multiple campuses or to smaller schools. In addition, the recommendations for practice can be used in schools to develop a position description of the ICT leader with elements of uniformity.

- The position of the ICT leader needs to be clearly defined in the school's organisational structure.
- The ICT leader’s position should be senior in rank. Ideally the position should be equivalent to a Deputy Principal position or failing that, at the level just below the Deputy Principal. The position should be remunerated accordingly with the seniority of the position.
- The ICT leader leads the Network Team by providing strategic direction and understanding of the curriculum needs of the teaching staff.
- There needs to be a significant relationship between the Leadership Team and the ICT leader regardless of whether the leader is part of the Team.
- The ICT leader needs to work closely with teams with responsibility in the following areas: Network, Information and Communications Technology Strategic, Curriculum and Leadership.
- The ICT leader is skilled as a teacher; has formal qualifications in ICT; is able to provide strategic direction for the network; and is able to lead teachers in the development of ICT.
- The ICT leader oversees the network operations and the work of the technicians.
- Professional development is a key component of the ICT leader’s role. The facilitation of ICT related training for all staff is the responsibility of the ICT leader.
- Professional development from the ICT leader needs to include skill building for staff development.
- Professional development from the ICT leader needs to include capacity building for innovation.
- The communication structure for the ICT leader, the context, along with the special knowledge inherent in the position, needs to be considered. The ICT leader needs to provide direction to the Leadership Team.

With the growing emphasis on ICT as interdisciplinary, the role of the Information and Communications Technology leader has become more complex, more curriculum focused and more significant.”
CONCLUSION

There is still tension with respect to technical issues threatening to dominate educational ones when it comes to the role of the ICT leader. However, there are clear signs that school leaders are increasingly of the view that ICT needs to be led by someone with educational experience who will put the needs of learning and teaching ahead of the purely technical requirements of running a network. Nevertheless, important questions remain. In many schools, the precise role of the ICT leader is not well defined and, where the position exists, there is a danger that the position will be either marginalised or under-utilised.

Such is the complexity of the role of providing professional development for staff in schools that it is likely to be beyond the scope of any individual. However, the ICT leader need not be the one physically training staff in all instances but rather coordinating the training. In an ideal world, the ICT leader would be leading a team of others who would also provide much needed professional development.

ICT leadership has come a long way in a short time. In fact, when computers were introduced into schools, there was no such thing as ICT. There was little significant networking infrastructure, there was no Internet or web 2.0 technologies as we know it today, and computers were for the specialists who knew how to interact with them. The idea that there could be a leadership role to assist all staff to not just use computers but to integrate them into their teaching and learning seemed a foreign concept. What has happened in the interim shows there is clearly a need for ICT leadership and the role itself is both highly specialised and highly significant.

The central question of who should lead ICT is in one sense, a non-question. What do I mean by that? What I mean is this: the confusion about who should lead ICT is an historical accident that came about because people, who were leading ICT in the beginning, were people who grew up with some computer knowledge. It is clear from the research that Principal knowledge hasn’t kept up with ICT and it seems some Principals have placed exaggerated trust in the Network Administrator, because, for them, the crucial question is what happens when the network breaks down? This is the wrong question.

The key question for Principals is clear: how do I improve teacher use of ICT, in order to improve student use of ICT, in order to improve student learning outcomes? The answer is very straightforward: an educator needs to run ICT. Once this is understood the rest follows fairly logically. This is similar with other aspects of the role such as: to whom does the ICT leader report?; the seniority of the role; and the remuneration of the position. All of these become straightforward matters.

The ICT leader is someone who leads teachers and leading teachers is a significant educational leadership task and not just a technical function.