The Beginnings of Government Support for Computers in Schools – The State Computer Education Centre of Victoria in the 1980s

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Abstract. The 1980s saw the introduction into education of a new technology – the microcomputer – that many of us saw as an enabling technology that could offer new educational opportunities and potentially change the nature of schools. Discussion of events at this time is very much a socio-technical history of a technological innovation that involved both the computers and the people who managed them, supported them, taught with them and used them. Support structures were introduced to assist with the use of computers in schools and to provide teachers with professional development in order to understand their benefits, to evaluate software, to suggest curriculum applications and to evaluate computer systems for school use. The goal was to offer schools and teachers choice in how they handled this innovation rather than coercion in an attempt to force adoption. Due to the large number of low-cost microcomputers bursting onto the marked in the 1980s computer systems evaluation was especially important. This paper concerns the historical purpose, formation and development of the State Computer Education Centre of Victoria.

Keywords: History of Computing · technological innovation · computer systems · computer education · schools support · State Computer Education Centre

1 Introduction

The 1980s saw a huge increase in the number of microcomputers on the market at a cost that made them affordable to schools. This, however, was not long after the period when to many people the computer was seen as a remote and incomprehensible 'electronic brain'. Why would you want to introduce them to school children? Some educators quickly saw the possibility of making good educational use of the new microcomputers, but at the time most teachers had little knowledge or understanding of this potentially enabling technology.

A study of the history of Computers in Education is a socio-technical one that requires an understanding of both computers of the time, and of the teachers and students who were to use them. As in the introduction of computers in business, support

was needed and the research reported in this paper is about the historical purpose, formation and development of the State Computer Education Centre of Victoria.

2 Computers in Australian Schools in the 1980s

The Commonwealth of Australia is a federation of six states and two territories each operating largely independently. School education is constitutionally a matter for State Governments, and State Government Education Ministries determine school curriculum and how it is supported and delivered. However, in matters considered to be of national importance the Commonwealth Government sponsored and provided funding for specific school education projects [1]. In the 1980s, one of these was the Commonwealth Computer Education Program through which the State Computer Education Centres were funded. While each Australian state had its own Computer Education Centre this paper will examine the State Computer Education Centre of Victoria (SCEC).

In 1983 the Australian Government set up the *Commonwealth Schools Commission National Advisory Committee on Computers in Schools (NACCS)*, whose purpose was to provide leadership and funding for Computer Education across all Australian states and territories [2]. In the 1984-6 triennium $18.7 million was allocated to the Commonwealth Schools' Commission Computer Education Program [3], one goal of which was co-ordination of Computer Education facilities and offerings in each of the States. NACCS published its first blueprint for Computer Education in Schools in 1983 [4] in a report: *Teaching, Learning and Computers* which listed a number of possible uses for computers in schools:

- Computer Awareness / Computer Literacy courses at the upper primary and lower secondary levels aimed at teaching students a little about computers, how they are used, and the social effects of this use.
- Computer Science / Computer Studies / Information Processing.
- Using computers across the curriculum in many areas such as: word processing, problem solving, information handling, simulation and modelling, educational games, spreadsheets, graphics, drill and practice, tutorial and electronic blackboards.
- Curriculum Support including information retrieval, preparation of teaching materials and the maintenance of student records.
- Communications with other teachers and students and for the interrogation of remote databases.
- Administrative applications performed by school ancillary staff and teachers for the normal business applications of database management, financial management and word processing.

3 The Beginnings of the State Computer Education Centre of Victoria

In Victoria, early developments in School Computer Education were 'bottom-up', beginning with the efforts of a small number of mathematics/science and commerce teachers and it was some time before the Education Department itself became sufficiently interested to set up any form of central involvement [5]. When the Computer Education 'explosion' began in 1983 the Department saw the need for some form of top-down planning, central focus and control for some for computer education in the state. The Commonwealth Schools Commission proposed the need for computer education centres in those Australian states that did not already have them, noting that [6]:

> Education Departments in some states introduced computing into their schools before microcomputers became plentiful and inexpensive, by installing a minicomputer in a central place and using it to provide a service to schools. Having made this decision it was essential that a Centre be established with staff to operate the computer and provide support to teachers who were using it.[1]

Formation of the State Computer Education Centre of Victoria in 1984 was the eventual result [2], [5].

4 Computer Education Support Centres in other States

As noted by the Commonwealth Schools Commission, both South Australia and Tasmania, each of which commenced programs of Computer Education earlier than the other states, had by this time already set up some form of Computer Education Centre [6], Angle Park in South Australia and the Elizabeth Computer Centre in Tasmania.

4.1 Angle Park Computing Centre, South Australia

South Australia first became involved in Computer Education with the setting up of the Angle Park Computing Centre (APCC), which comprised professional staff, support staff and regional advisers, in the early 1970s [5]. The Centre initially provided schools with a batch-card input system for teaching computer programming, and with access to two extensive microcomputer networks. It also loaned computer equipment to schools. Peter Sandery, the APCC Principal Education Officer at the time, describes the function of the Centre as support for school activities including:

> Teaching at the APCC, teaching in schools, development of software - the APCC currently sells software at cost price to schools through the Education Department bookshop, software and hardware review, consultant assistance to schools, LAN installation and operation assistance, teacher professional development activities,

[1] [4 p5]

curriculum support activities, development of teaching techniques, forward planning[2].

The APCC also had an important role in the recommendation, ordering and installation of computer hardware in South Australian Schools.

> South Australia has a support service for schools in relation to the purchase of equipment. The Angle Park Computing Centre will discuss school plans, demonstrate the recommended hardware and a range of software, and assist the school in preparing its submission seeking approval to purchase. Following approval, the Centre will place the equipment order on behalf of the school and check the installation prior to the school making payment. ... New equipment is evaluated by the Centre as it becomes available[3].

4.2 The Elizabeth Computer Centre, Tasmania

Tasmania also had an early involvement with educational computing beginning with the introduction of a year 12 Computer Studies course in 1972 [6]. It developed a state-wide timesharing network (TASNET) for educational purposes and, in the mid-1970s, created the Elizabeth Computer Centre whose role involved:

> ... development of educational and administrative software for the network and for microcomputers; the provision of expert advice on computing to the Department, to schools and to colleges; the provision of advice and training to Tasmanian teachers and the production of the regular newsletters ...[4]

Thus the notion of a State Centre for the support of Computers in Education as a curriculum arm of central educational administration became generally accepted across Australia.

5 Research Methodology

This study is about the historical purpose, formation, development and ultimate end of the State Computer Education Centre of Victoria and so the research technique primarily used is that of case study. According to Orlikowski and Baroudi [9], as IS research topics commonly involve the study of organisational systems, a case study approach is often quite appropriate. Case study evidence can come from documents, archival records, interviews, direct observation, participant-observation or physical artefacts. In this quasi-historical case, evidence comes from several of these sources and in particular from participant-observation as I was a professional member of SCEC from 1985-1988.

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2 [7 p109]
3 [8 p48]
4 [8 p49]

One problem in researching the formation of SCEC was that primary sources of information are, in many cases completely lacking, apart from anecdotal information. Researching its operation, on the other hand, was much more straightforward as I had access to documents and was able to interview professional staff and teachers.

6 The State Computer Education Centre of Victoria (SCEC)

In January 1984, the State Computer Education Centre was set up in temporary premises at the old Moorabbin High School in Melbourne, with 10 seconded education staff. At the same time, in each of the twelve Education Department regions, Regional Computer Education Resource Centres were set up with a teacher seconded full-time to act as 'Computer Resource Centre Manager'. Late in 1984, all positions at the SCEC were declared vacant and advertised as three year appointments with a total of 27 professional positions. In early 1985 I was appointed as Educational Computer Systems Analyst (Principal) with the task of evaluating microcomputer systems for school use and producing the 'Recommended List' of school computers. Other positions included: Senior Computer Education Officer (Centre OIC), Software Coordinator, Professional Development Coordinator, Curriculum Coordinator and Equal Opportunity Officer, Senior Software Officer, Senior Curriculum Development Officer, Professional Development Officer, Information Officer, Schools Commission Program Officer, Software Officer, Professional Development Officer (Non-Government Schools) and Policy Analyst as well as the twelve Regional Computer Resource Centre Managers.

6.1 Head of the Centre

In an interview in 1985 the Head of SCEC (formally a secondary maths teacher) noted that there were several reasons for the existence of the Centre [5]:

1. A place for administration of the computer education program that was needed to provide financial and program accountability and 'supervision' of the program.
2. To provide a major input to policy development as this needed to be done on a broad spectrum and to involve other people. An example is the computer systems policy that really had to be done as a central initiative for efficiency and because of Government and Education Department constraints.
3. To be a (non-exclusive) focal point for a variety of computer education services of the Education Department and to provide co-ordination of elements like state-wide professional development.
4. To be a focal point for the provision of advice and to act for the provision of services and/or resources associated with computer education.

He went on to add that SCEC should give and take advice from: Regional Computer Education Centres, consultants and schools and that it needed to be a centre of expertise where people were invited and encouraged to discuss possibilities, not so much to make decisions about policy. It also needed to act as a sounding board for various ideas and to work with other Education Department agencies. "Now that the

money has begun to flow, all states also need to determine how Commonwealth and State grant money in computer education will be spent and/or be allocated to schools. Giving advice in this area is also a function made easier by the existence of some form of State Centre or central committee."[5] He pointed out that in this computer education is not unique and a similar situation would apply to any curriculum area having a large number of dollars to dispense.

6.2 Software

One of the problems faced by schools early in the microcomputer era was a lack of suitable software. The State Computer Education Centre was set up to support computer *systems* not just hardware, and software development thus constituted an important role. Programming was now not considered as the only possible use of a computer and educational software began to become more important. In the early stages software from organisations like the Minnesota Educational Computing Consortium was utilised, but there was a cultural issue as what software there was often had an American outlook. One example of this was the Apple II simulation game 'Lemonade', based on making and selling lemonade from a street stall. While this had some merit in terms of teaching students about mathematics and one aspect of doing business, lemonade stands are almost unknown in Australia. Education authorities saw a need to develop *Australian* educational software [10], but at SCEC a first step was seen as software evaluation [11].

In an interview in 1985 the SCEC Software Coordinator (whose original teaching background was in chemistry and maths in secondary schools) reported that in 1981 he was seconded full-time as a consultant to produce and run a 'software library'. This later became a part of SCEC. (Actually the name 'software library' was a misleading one as its function was not to *loan* software but to sell it. 'Software Clearing house' would have been a more accurate name.) The initial aim of the Software Library was to sift through the available public domain software for Apple II and CP/M and to distribute to schools that which was found to be suitable. As it was not possible for the Software Library to actually produce educational software the Victorian government took a 50% interest in Prologic – a company which aimed to produce educational software [12], and sponsored the secondment of a number of teachers to work with professional programmers to produce educational software.

6.3 Curriculum

The task of this area was production of curriculum materials. The Assistant Curriculum Coordinator (teaching background in English, maths and history who had recently been teaching in a small country high school) said in a 1985 interview: "The role of the SCEC is to create magic, to be all things to all people. Because of this it will inevitably disappoint people. People want heaps of stuff and this is not possible."[6] He argued that the

[5] Head of Centre.
[6] Assistant Curriculum Co-ordinator.

Centre needed to provide basic support and be a forum for discussion in all computer education areas as well as getting involved in publishing, but sometimes 'red tape' was a problem as to publish curriculum materials SCEC had to work with subject committees which could be a help or a hindrance depending on their personnel [5]. He indicated that there had been an over influence on production of materials for general secondary school subjects but not for computer science. He found the primary school area particularly exciting as so many things were possible. “I expect that the greatest things may be possible with the youngest kids.”[7]

6.4 Professional Development

Co-ordination of Professional Development (PD) or In-Service Education (ISE) of teachers was another function perceived as sensibly done from the Centre. The Professional Development Coordinator remarked that: “The ISE role is important, vital. There are problems though. You can't instantly in-service everyone; staff can't get out of schools because you can't get Emergency Teachers and you can't easily communicate with people in schools.”[8] In the early days of a new curriculum like this, professional development was especially important as few teachers knew much about using a computer or about any of its educational possibilities. Consequently, many of these early PD activities were still typically of an 'awareness' nature.

Much of the PD was done from the regions by the Regional Computer Centre Managers with SCEC acting to co-ordinate these activities. One type of activity involved speaking to all the teachers at a school during a Curriculum Day. This really was an awareness activity. Other activities involved smaller groups of teachers from a variety of schools, often looking at a software package such as a word processor, spreadsheet or educational simulation or game. The Professional Development Co-ordination also spent a lot of time working on publishing curriculum materials for use in the PD activities. This was particularly useful and of value to schools.

6.5 Educational Computer Systems Evaluation

The late 1970s and early 1980s saw a huge increase in the number of low-cost microcomputers on the market that were available to schools. These included: Apple II, Tandy TRS-80, Commodore VIC-20, Commodore-64, Acorn BBC, Microbee (an Australian designed and built CP/M machine), Atari 400/800, Cromenco, Osborne, Sinclair ZX80, XZ81 and Spectrum, Sorcerer, Altos, Franklin ACE, DEC Rainbow, Hitachi Peach, SEGA, Amstrad, Spectravideo, Apricot, Micromation, Pulsar and Olivetti. (The IBM PC and Apple Macintosh did not appear in Australian schools until later.) This made the need for computer systems evaluation most important.

As the incumbent of the position of Educational Computer Systems Analyst I can speak from personal experience and observation as well as making use of documents and interviews. In Victoria in the 1980s there was no central mechanism for purchase

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[7] Assistant Curriculum Co-ordinator.

[8] Professional Development Co-ordinator.

or maintenance of school computing equipment and so schools made their own arrangements [13]. SCEC assisted through a process of evaluating computer systems for educational use and producing a 'Recommended List'. Government Schools were obliged to purchase only *recommended systems* with Education Department funds as this was necessary in order to comply with Government tender, offset and preferred supplier requirements. Government 'offset policy' was designed to encourage local manufacture of computing equipment by requiring that 'foreign' companies re-invest in the state 30% of the profits they made as the result of being nominated as a 'preferred supplier'. An important thing here is that it was *systems* and not just hardware that was evaluated for student use in schools.

The evaluation and recommendation process involved staff at SCEC, in consultation with practicing teachers and other curriculum personnel, determining the system needs of schools in educational computing and drawing up a detailed Educational User Requirement statement. This was then further developed into specifications for educational computing systems which were then put out to public tender and, as a result of the responses received, the systems of a number of suppliers were tested extensively for their suitability in schools by staff at the SCEC, and recommendations made. This was an annual process due to rapid developments in computer hardware and software. As there was little software compatibility between the early types of PC used in schools and it made a big difference to a school's computer education curriculum whether it used Apple II, BBC, Microbee, CP/M, IBM or Macintosh computers, another reason for the recommendation process was to control the proliferation of these brands In order to facilitate support services [14].

Like several other countries Australia even commenced a project to design an Australian Educational Computer [15] as the Commonwealth Schools Commission in its 1983 report recommended the development of a set of Educational Technical Requirements based on Educational User Requirements for an Australian Educational Computer. The reason for this was partially to provide computer systems that did not have a bias towards US or UK culture and partially to stimulate the Australian computer industry [10]. I was a member of the team involved with this process. After the Educational Technical Requirements had been developed the next step would have been the design and development of appropriate systems. Fortunately (in retrospect) this did not proceed past the design stage as later developments saw the rise to dominance in schools of the IBM-compatible PC (Windows) and the Apple Macintosh.

6.6 Regional Computer Centres

One of the Regional Computer Centre Managers (originally a secondary maths teacher) said in an interview in 1984: "In the region I've got a fair degree of autonomy. I think I work hard, particularly with in-services, and have a good relationship with teachers and schools. For instance I know all the computer coordinators in secondary schools in the region and have done a lot of primary school curriculum days."[9] He went on to describe how the Computer Centre Managers met quite regularly as a

[9] One of the Regional Computer Centre Managers.

group (as well as socially) and were a pretty cohesive group as they all had similar problems and got a lot out of sharing them [5].

He was not particularly complementary about SCEC, noting that: "I do wonder though at times what Moorabbin[10] is on about as many of the staff there don't seem to have the same interests as us. Most of them, with a couple of notable exceptions, don't have any idea of what goes on in the regions either. It would have been better if more of them had been involved in a region at some time in their career!"[11] He suggested that some members of the Moorabbin staff were out of touch with reality as it had been too long since they had actually taught in a school or even had any real involvement with real school problems like students, timetables and extras. "I don't want to sound too negative but we don't see much of what goes on at Moorabbin, perhaps you do great things."[12]

7 Some Views of SCEC Professional Staff

It was interesting to see that the SCEC professional staff had diverse views of both their roles and of the value of the Centre. The comments of some of the staff are given below. (The names I have used are fictitious to preserve privacy.)

7.1 Mary

"Our role is to point out a direction for computer education in this state, based on our inside knowledge of Commonwealth programs and on discussions of current educational issues plus interstate and overseas information. We should be an 'Information Bureau' on computer education in schools and should assist with cross fertilisation of ideas between schools and other groups."[13]

7.2 Oliver

"My main concern for the SCEC is that it is, and is seen to be, valuable in assisting schools to further computer education in this state. An inward looking SCEC is of no use to anyone. We must always remain aware of what schools are doing and what their needs are. It is very easy in such an organisation to forget these things and get totally immersed in what you are doing yourself for your own ends. If this happens to us then we will be useless."[14]

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[10] Moorabbin was the location of SCEC.
[11] One of the Regional Computer Centre Managers.
[12] One of the Regional Computer Centre Managers.
[13] Mary was a member of the SCEC professional staff.
[14] Oliver was a member of the SCEC professional staff.

7.3 Janice

"It's hard to answer questions like: 'You people at the SCEC are costing thousands of dollars a year. What are you doing with it?' Our role is not to produce heaps of software, we can't do it. Even software evaluation is of doubtful value, what's useful to someone may not be useful to someone else – they may teach in a completely different way. You need to know where people are at now before you start doing anything. For instance there is a place for drill and practice and we shouldn't rule it out for everyone."[15]

7.4 Matthew

"We've been going now for some time but still have no formal strategy to determine which way we are heading – particularly in curriculum. This is partly due to the centre's personnel. I'm not at all certain about the curriculum use of telecommunications and I don't know that the trials we're conducting at the moment will give us the answer. It's also strange that we're doing so little for the use of computers in maths. This is where it started and largely because we all tried to compensate for our maths backgrounds, it has not developed much."[16]

7.5 Betty

"I have a difficulty in talking with some of the 'technical' people and I don't know what we have in common. We need to meet more often to talk over issues or we are in danger of knowing less than schools. If this happened, our credibility will be nil! We need to further define our role at the SCEC. Is it our role to produce curriculum materials, to conduct ISE or what? It's becoming increasingly important to re-assess this so we can be of use to schools."[17]

7.6 Allan

"I think that were doing a pretty good job and that things are all working quite smoothly. People at times expect too much of us; we can't be expected to produce much in the way of curriculum materials here. Our job is to co-ordinate curriculum committees and curriculum programs people to produce them. This all takes a lot of time and people have to realise that. The Government Printer is not over speedy either but we need to send out any materials with a high quality of production so we have to be prepared to wait. People shouldn't be so impatient. It's also a bit of a problem to have to work through regions as we must."[18]

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[15] Janice was a member of the SCEC professional staff.
[16] Matthew was a member of the SCEC professional staff.
[17] Betty was a member of the SCEC professional staff.
[18] Allan was a member of the SCEC professional staff.

7.7 Mark

"My job is fairly clear cut and doesn't really involve a lot of contact with schools. I don't think we're doing enough to help schools develop curriculum, although perhaps we can never do enough. We should be doing more for the disadvantaged kids; computers can be of tremendous value to them. Answering the phone to reply to 'silly' questions gets irritating but I suppose this is all part of our job. People don't realise though that we could get a lot more done, and product a lot more goodies if we didn't have to waste so much time on trivialities."[19]

8 Conclusion

Today in Victoria, central Education Department support for the use of computers in schools comes mainly in the form of on-line information regarding ICT support and services [16] and curriculum [17]. As there is now no scarcity of people with expertise in this area there is no longer any perceived need for a Computer Education Centre. In most developed countries the situation is much the same with any form of support of this type coming from the private sector.

Many other technological innovations have impacted school education since the 1980s including the Internet, Google, mobile smart phones and Facebook. A discussion of these technologies is, however, beyond the scope of this paper. What is clear though is that school principals, teacher professional associations, national computer societies and interested university academics need to assist with school ICT infrastructure choices and offer suggestions for the future use of computers in schools.

It is instructive to consider why a central operation was undertaken to support computer education in Victoria in the 1980s and to compare this with the introduction of new enabling technologies in other curriculum areas. There were several key aspects of the computer education support situation in Australia that distinguished it from other curriculum areas and from support for the use of computers in business. These pointed towards a perceived need for a central operation and included both the scarcity of people with expertise in the area and the need for oversight of funds received as part of the Commonwealth Computer Education program [6].

It can be seen that the State Computer Education Centre of Victoria played an important part in the history of computing in schools by providing advice and guidance to teachers in a time when this was most needed. Children quickly picked up and made good use of this innovative technology, but convincing teachers of the value of computers in education presented more of a challenge. SCEC certainly assisted in this.

[19] Mark was a member of the SCEC professional staff.

References

1. Tatnall, A. and W. Davey: Reflections on the History of Computer Education in Schools in Victoria. In: Reflections on the History of Computing: Preserving Memories and Sharing Stories, A. Tatnall (ed). Springer: Heidelberg. 243-264 (2012).
2. Tatnall, A. and W. Davey: Computer Education Support Structures in Victorian Schools in the 1980s. In: History of Computing and Education 3, J. Impagliazzo (ed). Springer: New York. 1-22 (2008).
3. Tatnall, A. and R. Leonard: Purpose-Built Educational Computers in the 1980s: the Australian Experience. In: History of Computing: Learning from the Past, A. Tatnall (ed). Springer: Heidelberg. 101-111 (2010).
4. Commonwealth Schools Commission: Teaching, Learning and Computers. Report of the National Advisory Committee on Computers in Schools. Commonwealth Schools Commission: Canberra (1983).
5. Tatnall, A.: The Role of the State Computer Education Centre of Victoria, in Education. Deakin University: Geelong (1985).
6. Tatnall, A.: The Formation and Role of State Centres of Computer Education in Australia in the 1980s. In: 8th IFIP World Conference on Computers in Education (WCCE-2005). Stellenbosch, South Africa: IFIP (2005).
7. Sandery, P.: Computing in South Australian Schools - large and small. In: CEGV conference - 'Students, Teachers and Computers'. Melbourne: CEGV (1979).
8. Shears, L.W. and E.C. Dale: Computers in Education. A report to The Honourable Robert Fordham M.P. Minister of Education, Victoria. Ministry of Education: Melbourne (1983).
9. Orlikowski, W.J. and J.J. Baroudi: Studying Information Technology in Organizations: Research Approaches and Assumptions. Information Systems Research,. 2(1): 1-28. (1991)
10. Tatnall, A.: The Australian Educational Computer That Never Was. IEEE Annals of the History of Computing, 35(1): 35-47 (2013).
11. Salvas, A.D. and J.T. Thomas: The Evaluation of Educational Software Material. In: Computing and Education - 1984 and Beyond. Melbourne: CEGV (1984).
12. Tatnall, A.: The Growth of Educational Computing in Australia. In: History, Context, and Qualitative Methods in the Study of Education, I. Goodson, F. and J.M. Mangan, (eds). University of Western Ontario, Canada. London, Ontario. 207-248 (1992).
13. Tatnall, A. and P. Jenner: How State Education Authorities Recommend Computer Systems for Use in Australian Schools. In Australian Computer Conference (ACC'86). Gold Coast, Queensland: Australian Computer Society (1986).
14. Tatnall, A. and W. Davey: Streams in the History of Computer Education in Australia. In: History of Computing in Education, J. Impagliazzo and J.A.N. Lee (eds). Kluwer Academic Publishers / IFIP: Assinippi Park, Massachusetts. 83-90 (2004).
15. Tatnall, A.: Designing the Australian Educational Computer. Education, 110(4): 453-456 (1990).
16. Department of Education and Training. ICT Support, Services and Advice. `http://www.education.vic.gov.au/school/teachers/support/Pages/tecsupport.aspx.`
17. Department of Education and Training. Teaching with Digital Technologies. `http://www.education.vic.gov.au/school/teachers/support/Pages/elearningcurriculum.aspx.`