



LOGIN

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Education a lifelong job

It was with great sadness that Brett Clarke, as the president of ECAWA, advised us via ECHALK at the sudden passing of Mr Kim Lego, ECAWA's Login editor, Penrhos' Information Technology director, Curriculum Council Information Systems Syllabus Committee Chair and supportive colleague. Kim was such a dedicated teacher that he died while doing what he loved best - being part of the extra curricular camping program of Penrhos College. He had volunteered to supervise students at the Margaret River camp despite being on long service leave. Teaching was Kim's passion. He invested much of his time and effort in people and was a dedicated father to his teenage sons, Kai and Aiden.

The ECAWA committee, on behalf of all its members, expresses its deep regret at Kim's passing as he was an IT educator who gave selflessly of his time and energies to others and to this field with which we are all so committed. He will be sadly missed by all of us that knew him either personally and/or professionally. Kim leaves behind his sons, his colleagues and many, many students.



Affiliates of the
Australian Council for
Computers in Education
and the
Technology Education
Federation of Australia



Kim Lego

7 Sept 1951 - 8 May 2001

To laugh often and much, to win the respect of intelligent people and the affection of children, to earn the appreciation of honest critics and endure the betrayal of false friends, to appreciate beauty, to find the best in others, to leave the world a bit better, whether by a healthy child, a garden patch...to know even one life has breathed easier because you have lived. This is to have succeeded!

Emerson



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Please Note: The details of the committee are for members only.

From the President



Welcome back to Semester Two!

This issue of LOGIN marks a tribute to a fine educator and great contributor to computer education in this state, Mr Kim Lego, who passed away suddenly whilst on school camp earlier last term. Kim was also LOGIN'S editor and I'm sure all would agree that the LOGIN Lite was in good hands. However, in saying farewell to Kim,

the committee has also decided to promote a new look for LOGIN with a return to a 'heavier' version under the new editorial control of Vic Gecas. Welcome Vic and I'm sure all members will appreciate the useful and informative content.

Brett Clarke

Summary of ECAWA Response to the Robson Ministerial Taskforce on Resourcing Issues in Schools, 2001

ECAWA represents a strong, informed and representative voice on a wide range of contemporary issues impacting on education in this state and welcomes the Minister's initiative to form the "Taskforce on Support Services and Resources provided to Government Schools", and makes this submission for its consideration.

This submission relates to the Taskforce's Terms of Reference through its discussion of:

- The *level and manner of resource provision* to schools for delivering educational outcomes through ICTs.
- The *strategies for supporting schools to implement ICTs* in education, particularly in the curriculum delivery process and the management of technologies within schools.
- The provision of appropriate curriculum support (teacher training and classroom resources) to support both cross curriculum and subject-specific ICT activities in schools.
- The policy development and decision-making processes employed by EDWA in *developing and implementing strategic initiatives involving ICT support and resources in schools*, particularly in the light of the many existing shortcomings identified through the recent Auditor General's Report (No. 2, 2001).

In turn, these link to specific recommendations the taskforce will make in relation to:

- (1) increased retention of students into Year 12, particularly boys
- (5) provision of learning environments that are conducive to improved student learning, interest and motivation
- (6) improving the way in which information technology is developed and used in schools; and
- (7) raising the status and standards of teachers

This paper includes our recommendations with respect the issues we have identified that "relate to organisational structures and strategies that will ensure available resources and services are

being used to make a real difference towards improving outcomes for students".

Therefore, *curriculum frameworks* and the *resources and services* which support their implementation in schools, must both facilitate the acquisition of general ICT skills for all students as an aid to learning, and in addition for many secondary students, **particularly boys in Years 11/12**, provide the mechanisms for more in-depth study of ICTs as encouragement to stay in school and prepare for careers in this industry.

As a result, it is the position of ECAWA (supported by its organisational affiliates), that the use of ICTs in schools should be promoted in two contexts:

- 1) as tools, ICTs provide a powerful environment for learning through the research, communication, exploration and development of knowledge, ideas and values. (eg. Learning *with and through* technology.)
- 2) as a field of knowledge and endeavour, ICTs provide a context for the development of specific skills and abilities vital to entry to the largest and fastest growing employment sector in the western world. (eg. Learning *about* technology.)

The balance between these two contexts will depend on the age and inclination of the students concerned, but as a matter of equity, all students must have the opportunity to access both contexts to some extent, throughout their years of schooling.

This position is supported by specific targets related to IT capability and competence set within the National Goals of Schooling (1999) and within WA's own Curriculum Framework.

The Functions of ICT in Schools

It is crucially important for decision and policy makers to recognise that there are two different, though related, functions which take place in relation to education in schools. These are:

- Management of Education (curriculum/school/enterprise)

- Delivery of Education (creating learning experiences/environments/contexts for learning)

Today, ICTs should play a part in both functions, but their purpose is clearly different. In relation to management/administration tasks, it is accepted that most functions in the administration of a school are typical of those undertaken in any enterprise; human resources, finance, policy development and dissemination etc. In this way, EDWA, schools or Western Power for that matter, may have generally similar IT needs. Of significant concern is that this assumption is all too often applied to the resourcing and support of ICTs for educational *delivery* as well. *ECAWA is strongly of the view that this never has, and should never be, the case.*

Access to Sufficient & Appropriate ICTs

Teachers in schools should have ultimate control over the choice of what features and capabilities are appropriate for their needs and therefore product choice (hardware/software) should be theirs within guidelines as outlined previously. Also of interest to ECAWA is the resourcing concept of other government departments “handing down” their “old” computers to schools. As this response is being written, schools are receiving quantities of “Main Roads” computers, often refurbished or cleaned, by students from schools undertaking “work experience” at the Main Roads IT section.

It would appear IT budgets for these government departments are more than adequate to ensure their “office workers” sit at the very latest technology to type their memos or budgets. The government must recognise where the real “power users” in our communities are. They are not public servants in government offices but primary and secondary school students, who in a single day need access to computers not only to perform standard office tasks, but build databases, create websites, design multimedia projects and presentations, record and edit video and sound, create digital works of art and remotely control devices and experiments. It is schools that need access to the most modern technology first. When will a government be brave enough to give money to educational IT budgets first, and let those in other government departments who perform basic administrative tasks with computers, get the school’s hand-me-downs, instead of the other way around. If the Minister is serious about a commitment to ICT in schools, that would be a sure sign.

Management and planning of ICT infrastructure despite almost 25 years of computers in schools, the lack of resources and support for their management can only be described as neglectful. Over that period, the numbers of computers in an average school has risen from zero to over one-two hundred! During that period EDWA has made no change to its staffing formula in schools to reflect the increased need for resource management. Education as an industry can be singled out for its negligence in this regard and may yet be found so in relation to employee stress claims, and occupational health and safety standards related to their use and maintenance in schools.

Over the past 40-50 years schools have obtained Libraries, Science labs and Home Economics facilities and with their advent, governments have recognised the human resource implications related to the management demands of these facilities. Why has not such a simple and obvious need been recognised in relation to ICTs in schools? It must be obvious to even the most Luddite of educational bureaucrats that like books, computers cannot manage themselves. They require periodic maintenance like books, their disk directories get cluttered and disorganised just like library shelves, and everybody wants access to them at a moments notice, just like classes arriving at the library door, expecting everything to be orderly and available for immediate use.

ECAWA’s members are widely recognised as being at the forefront of change in an aspect of educational endeavour where it occurs more rapidly than any other and has required a greater commitment to self funded professional development than any other. Our members have, more than any other, worked themselves toward redundancy in a sense, by selflessly training the rest of their school’s staff in ICT skills time after time and for little, if any, reward. However, EDWA’s attempts to make these educators’ roles redundant, by believing that the removal of the ICT management and training tasks they currently perform in schools (usually uncompensated) is possible through centralised implementation of standardised environments, can only be indicative of EDWA’s lack of real understanding of the issues involved.

What is well overdue is the opportunity for the work of Computing Co-ordinators in both primary and secondary schools in this state to be officially recognised in relation to both the Human Resource (professional development) and the technological management functions they perform.

What is required is, given the current ICT capability of our aging teaching force with respect to ICT use in the curriculum and the management requirements of these resources, that an education act position be created in *every* school of not less than 0.8 FTE value responsible for ICT co-ordination, supported by a technical assistance quota of a similar level (as a minimum).

In some schools it may be appropriate that the same individual undertake aspects of both roles, but these must clearly be *additions* to the current staffing formula, as ICTs are additional resources and requirements introduced by governments subsequent to the setting of current formulas.

Consultation on Resource and Support Issues

As indicated in the introduction to this submission, the Educational Computing Association of WA (Inc) is the peak group representing teachers in relation to the use of ICTs in education in this state. It maintains close ties with other teacher professional associations through its President’s position on the Boards of APEA(WA) and the ACCE (DETYA’s peak advisor on ICT’s in education nationally). ECAWA’s various members hold degrees in education, many with additional graduate/higher degrees in Computing, Information Systems, Learning Technologies and

related technology disciplines including industry certifications.

As such, ECAWA represents the greatest single repository of knowledge and experience in relation to the use and application of ICTs to educational endeavour in this state. In support of ECAWA's national standing, ECAWA members have won three out of the last four National Computer Educator of the Year titles (K-12) and ECAWA has been the greatest source of winners of this National award throughout the last decade.

It is most unfortunate that EDWA ICT policy makers continue to ignore the source of such willing expertise, in relation to both policy formulation, dissemination and implementation.

The Minister must question what checks and balances there are in place in relation to the policies and strategies being promoted by the Information Services Directorate (ISD) within EDWA. Given the specialist nature of Information and Communications Technologies and their relationships with achieving *educational outcomes*, is there any group in this state other than ECAWA, that could knowledgeably comment on the courses of action being proposed from within the Minister's department?

Interestingly, many of the shortcomings identified in the Minister's recent press release in relation to the Auditor General's Report, resonate with positions ECAWA has promulgated throughout the planning and implementation of that program. EDWA's stubborn resistance to suggestions to reconsider their position in relation to many aspects of that program, calls into question what mechanisms of accountability exist to prevent such a situation re-occurring during this term of government.

In summary, ECAWA incorporated the following 18 recommendations throughout its response.

Summary of Recommendations

(1) The Curriculum Council, through its review of Post Compulsory Schooling, ensure provision is made for a wide range of students to study IT specific courses, including a selection of appropriate "Industry Certification" courses such as the popular CISCO Networking Academy program, *which has proved successful worldwide in encouraging students, particularly boys, to complete Year 12 and exit school prepared for work and/or further study in an area of high demand.*

(2) That resources are provided to produce locally developed curriculum materials that create direct links between educational outcomes in all learning areas and popular and engaging ICT based classroom activities. These would facilitate *the provision of learning environments that are conducive to improved student learning, interest and motivation.* Through Learning Area professional associations, professional development in the implementation of these resources would contribute to *raising the status and standard of teachers/teaching* through improved use of ICTs in the classroom.

(3) That the government provide significant funding, directly to teacher professional associations for the development of classroom teaching materials and for delivering professional development in their implementation. *This structure will ensure the most direct route for available resources to make a real*

difference towards improving outcomes for students.

(4) To facilitate *raising the status and standards of teachers and teaching*, the government move to incorporate ICT competence into selection criteria and performance management programs for all educators in government schools in WA, in consultation with ECAWA, the SSTUWA and the teacher training institutions.

(5) To facilitate *raising the status and standards of teachers and teaching*, the government provide a career pathway for specialists with ICTs in education by:

(i) creation of a L3 (min 0.8FTE non-teaching), ICT co-ordinator's position in all schools which recognises their specialist skills and role in professional development of staff and local resource management.

(ii) to recognise ICT related qualifications as prerequisite for teaching ICT specific subjects in secondary schools.

(6) The government, in conjunction with EDWA, ECAWA and the SSTUWA consult to develop appropriate 'standards' governing the implementation of ICT programs and infrastructure into schools in order that independent educational and technological expertise, in conjunction with consideration of industrial issues, is incorporated into its service planning and delivery cycle.

(7) The government recognise the difference between the organisational/administration function of ICTs in education and the Curriculum Delivery role of ICTs and in recognising the unique and diverse needs of curriculum related ICTs in schools, it not apply the same principles or management strategies except where these are developed in consultation with, and agreed to by representatives of the SSTUWA and ECAWA.

(8) The decisions about what hardware and software is educationally appropriate for a given scenario in a school or teacher's classroom, is one that should be made by the school and the teachers using the facilities, commensurate with adherence to the "standards" outlined above not to some assumption of an "industry standard" software/hardware combination not initially derived from an examination of the work of school classroom practitioners.

(9) Government shift its focus of IT spending to provide for schools first, and institute a program for the redistribution of ex-school computers (every 3 years) to administrative sections of government departments where the majority of their use are basic office tasks.

(10) The government plan to facilitate the procurement of portable computing devices by families for student use in schools as an adjunct to the reduced provision of school computers over time.

(11) The government shift the focus of ICT funding towards "maintenance" of current numbers of computers in schools (with machines updated being replaced by more flexible, portable equivalents), and focus funding instead on teacher professional development and the production of curriculum resources directly supporting ICT use in achievement of educational outcomes.

(12) Government commit to working with ECAWA on behalf of schools to determine significant software needs and then negotiate competitive licencing arrangements in each case, rather than

promote a monopolistic approach favouring a single supplier as is the current policy.

(13) The government recognise its strong bargaining position with respect to controlling the exposure of its market base to a vendor's product. This advantage should be exercised to make effective use of resources when negotiating hardware and software procurement, especially in relation to the training that schools are providing to the next generation of users of that vendor's product.

(14) Government immediately undertake to adjust the staffing formula in schools to incorporate ICT support and management levels, commensurate with library resource management levels in schools, to address the obvious lack of attention given to this need in schools over the past 25 years, during which time computer numbers in schools have risen from 0-50,000 approximately.

(15) Within the context of (14) above, that given the current ICT capability of our aging teaching force with respect to ICT use in the curriculum and the management requirements of these resources, that an education act position be created in *every* school of not less than 0.8 FTE value responsible for ICT co-ordination, supported by a technical assistance quota of a similar level (as a minimum) rising to meet the requirements of (14) above in

secondary schools. In smaller schools it may be appropriate that the same individual undertake aspects of both roles, but these must clearly be *additions* to the current staffing formula, as ICTs represent additional resources and requirements introduced by governments subsequent to the setting of original formulas.

(16) For appropriate support of both ICT infrastructure and staff in schools using it, support services will be required at central office, district office and school levels. The services provided at each level may vary, dependant on school/district needs and should be subject to planning and review in the near future by a body incorporating representation from ECWA and the SSTUWA.

(17) Government immediately undertake to ensure that ECWA holds independent, representative positions on all policy development, implementation and decision-making groups concerned with any aspects of ICT initiatives likely to impact on schools and has the ability to report directly to the Minister in relation to issues of concern.

(18) ECWA's role as an independent consultant and watchdog should be on a contractual basis with the Department of Educational Services and not EDWA or the Curriculum Council.

Brett Clarke

Overview of the Post Compulsory Review and IT Skills Development

The emergence of industry-based certification programs such as Microsoft's MCP (Microsoft Certified Professional) and MCSE (Microsoft Certified Systems Engineer); CISCO Systems' CCNA (Cisco Certified Networking Associate); the ICDL (International Computer Driver's Licence) and Aries' A+ Certification for example, are indicators of the need for the IT industry to be staffed by well educated and qualified individuals.

However, it is also indicative that traditional providers of skills have been unable to respond to the need for the rapid course development and review cycle, needed to address the ever changing needs of the IT industry. The timelines for implementing course changes for current post compulsory IT courses are examples of this issue, as are those in universities, which is seeing many of them offering industry certification courses alongside traditional units in their undergraduate and graduate IT programs.

In Victoria, the state government has moved swiftly to ensure that appropriate industry certification programs (eg. Cisco Systems' Networking Academy Program) are now approved for the VCE, which capitalises on the additional resources industry can contribute to school education and course development.

It is clear that IT specific skills and the academic body of knowledge concerning Information and Communications Technologies in their own right, is in increasing demand worldwide, and the use of computers in the curriculum as a tool for learning, whilst vitally important for all students, does not address the issues raised above, and should not be confused with it.

It is with the recognition that all students should exit schooling with an agreed level of IT competence, (as they are required to do currently with respect to the English Language). In addition, post compulsory schooling must play a vital role in encouraging and educating an increasing number of young West Australians so as they can participate in making Australia a "Clever Country", reduce the current need to import a large proportion of our IT skills base from overseas, and ready themselves for the global workforce.

Any review of post compulsory education must address these challenges and respond in ways that integrate learning opportunities offered by the IT industry, shorten the curriculum development, implementation and review cycle and encourage students (both male and female) to recognise the high value IT specific skills have in the 21st century.

Whilst the current Position Paper reflects a good deal of effort and consultation on the part of the Curriculum Council, in its current form the paper leaves many vital questions unanswered and does not adequately address the IT specific issues outlined above.

ECWA is keen to work with the Curriculum Council to address these issues to help ensure that a contemporary context for the post compulsory education of young people in Western Australia is created which appropriately recognises the impact of IT in the lives of everyone in the 21st Century and at the same time is sensitive to the unique requirements for education with respect to ICT skills and the needs of the industry which relies upon them.

1.0 Summary of Issues

The following represents a summary of the major issues ECAWA has identified in the Council's position with respect to:

- the development of learning programs,
- assessment, certification and moderation,
- recognition of acquired learning through other means
- timelines, resources, professional development and consultation
- recognition of the unique demands/requirements of/for IT due to its rapidly changing nature

1.1 VET Courses

As industry accredited courses are a major form of accreditation in the IT industry, the Post Compulsory Review needs to ensure that industry accredited courses are accepted and easily implemented at the school level.

1.2 A Single Curriculum Structure

It is not feasible as not all students can work at higher levels of achievement. Those students working on the lower levels will be deemed "not to have achieved" by default. This classification will have impacts on student esteem and their post compulsory options. Single curriculum structures will create a defacto form of streaming process without recognition of the value of the student achievements.

1.3 Flexible Courses of Study

Is not achievable in the timeframe given. From a school point of view, issues such as timetabling, staffing and counselling would need to be addressed to provide the flexibility wanted. The cost, the implementation time required and effective student counselling of their choices would prevent the implementation of flexible Courses of Study (COS) as described.

1.4 COS Options Available

Do not provide equality of representation across all subject areas. To provide more visible equality, COS could be grouped into major headings (eg. LOTE, Science, T&E) with subheadings providing the subject options available (eg. all languages under LOTE).

1.5 Scales of Achievement

Cannot provide equitable recognition of achievement. Changes need to recognise that achievement in all subjects is not equal (eg. Art and Chemistry) but that regardless of the level of achievement adequate recognition for the achievement will be provided in a way that gives access to valid post-school options. Options for recognition include:

- a) Grading of subjects according to their difficulty with 'points' awarded based on the grade of the subject so that a TER can be calculated
- b) External exam to be used to determine individual student suitability to university entrance. This could be similar to the old matriculation exam.

- c) If the issue of recognition of achievement is not addressed then the flexibility and inclusivity aimed for will not be achieved.

1.6 The Moderation Process

Needs to be reviewed if the stated aims are to be achieved. The use of practising teachers as moderators is our preferred option. The teachers would need continuity of appointment, with 2 years being the minimum contract/secondment time. This would allow them to develop expertise in the moderation process and increase the likelihood of accurate comparability between schools. To be valued by schools and achieve valid results moderators would need to be working part-time in the classroom and part time as moderators.

1.7 The Implementation Timeline

Needs extending to allow for more consultation with teachers. This will allow for their concerns to be addressed in the following areas:

- a) Courses of study available
- b) Use of extensions to ensure that they will be a valued part of the curriculum
- c) Critical practical issues with regard to writing of the courses, training and in-servicing of teachers before and during implementation and provision of resources.
- d) Clarification of the link between overarching statements of the curriculum framework and the post compulsory courses of study with the levels of achievement being accurately described
- e) Use of trial schools where assessment can be made of the assessment scales, breadth of courses selected and reviewing and rewriting of subjects can take place

1.8 Impacts on Schools

In addition, the suggested timeline would have great impact on schools. Funding would be required for:

- a) Teacher time for preparation of the courses of study.
- b) Extra counsellors so that students fully understood the implications of their subject selection choices
- c) Retraining of current staff, employment of new staff and redundancy of staff would be major issues
- d) Provision of building and teaching resources are long term plans and cannot be provided for in the given time frame

1.9 IT is an Essential Component of Education.

This can be verified by looking at the percentage of Australians working as IT professionals, the direction of the world economy and the impact of the IT workforce on Australia's future economic security. The reinstatement of IT competence from the original position paper would be a move toward adequately recognising its importance to Australia's future.

Jennie Ryan and Brett Clarke

The 'Extra' Three T&E Outcomes

By Dr. Paul Newhouse
Edith Cowan University

Currently the Curriculum Council is working on the consolidation of a progress map for the T&E learning area. An issue that has been raised for discussion is how to handle the different strategies to incorporating three of the outcomes as presented by the maps provided by EDWA and CEO. Those outcomes being: Enterprise, Technology Skills, and Technology in Society. I believe that it is important we investigate this issue carefully because this may be the last time for a long time that we get this opportunity. This is particularly important for these three outcomes as each is the source of serious debate in West Australian educational circles. The Enterprise outcome has set us somewhat apart from other states, the Technology Skills outcome is perceived as the 'quality' saviour, and the Technology in Society outcome is often considered 'airy fairy' particularly by groups of secondary teachers.

Choice of Approaches

Ostensibly I think that we have three choices of approaches:

1. Adopt the EDWA strategy of incorporating aspects of the three outcomes in the remaining four outcomes.
2. Work on the CEO strategy of developing separate substrand/level statements for each of these outcomes.
3. Develop an alternative method of describing achievement at/in the outcome such as by defining skill areas and competence levels of skill development.

While the third option may be appealing, I do not think that it would be acceptable to the Curriculum Council and may devalue the outcomes compared with the others. The first option would be seen as the status quo but I believe has tended to hide or devalue the three outcomes. Further I believe that, particularly at the secondary level, it unnecessarily complicates the identification of

achievement in the other four outcomes. The second option is currently underdeveloped and would need a reasonable amount of work to match the sophistication of the other four outcomes.

A Rationale for My Recommendation

I believe that at this time we should work on the development of separate substrand/level statements for each of these three outcomes perhaps building on the work by the CEO and the EDWA statements. If, in the long run, this proves to be futile then clearly the 'fall-back' position is the EDWA statements.

Firstly, we must be sure that we do not take the 'easy way out' of accepting the strategy developed by EDWA because there is too much at stake here and it is important that we get it correct now. The EDWA statements are not entrenched in most schools yet and therefore changes now would not require much adjustment by the bulk of teachers.

Secondly, we must ensure that the adopted strategy is suitable for secondary teaching as well as primary and also a range of key context areas (e.g. foods, materials, computing, business, agriculture). The three outcomes have particular significance to many secondary teachers both in a positive and negative sense. Many secondary teachers voice concerns about the 'lack of skills' of students, some justifiable and others perhaps not. Even so the Technology Skills outcome is one that can emphasise that skills are still important (within the context of process, as for everything). Traditionally many secondary teachers have avoided placing technology within a social context, the Technology in Society outcome ensures this can not be done in the future. There has been much confusion over the meaning of the Enterprise outcome with many teachers equating it with running a business and yet it encompasses behaviours highly prized by employers and not systematically

recognised in formal education.

Fundamentally I believe that we need to attempt to emphasize the importance of the three outcomes by treating them in an equivalent manner to the other four. It is not satisfactory to claim that they are 'just part of the technology process' because in essence the whole learning area is directed by the Technology Process outcome. To date we have not considered that the Information, Materials and Systems outcomes should be subsumed within the Technology Process outcome although the same rationale could be used to do so. We must be sure that in a dynamic area such as technology we are not held hostage to 'history' and inertia.

Further I believe that the current manner in which these three outcomes are subsumed within the other four outcomes by the EDWA map is counterproductive. The three outcomes are effectively hidden to most users and thereby devalued and it has made the other four outcome level statements even more cumbersome (i.e. there are too many competing concepts to consider). By separating out the three outcomes we will provide a richer set of statements for teachers to use in planning and evaluating. Given that there has never been the need for teachers to use all outcomes every time this would provide a greater degree of choice. Most importantly it would provide richer information on the shared meaning behind those three very important outcomes.

Finally, it should be noted that CAF subjects for Years 11 and 12 such as AIT (Applied Information Technology) have successfully incorporated all outcomes in generating subject outcomes. I believe that we will be able to develop substrand/level statements for each of these three outcomes, at least we should try. Each of the other states has worked on their adaptation of the outcome statements originating from the national profiles, this may be the last opportunity for us to do so.

Post-Compulsory ICT Courses of Study Proposal



Dr. Paul Newhouse

Edith Cowan University

The past year has seen the release of two discussion papers by the Curriculum Council on proposed changes for post-compulsory education for Western Australia. In the latest discussion paper there are two courses of study proposed that directly relate to current ICT subjects in Years Eleven and Twelve. The 'Applied Information Technology' two year course would basically replace the current AIT subjects PIT, BIT, IIT, Digital and suggestions to flesh out this concept.

Interactive Media. I believe that, with some work, this would be a workable course of study. However, I believe that the current proposed course of study 'Systems Analysis and Development' is unworkable because it lacks a unifying theme apart from the word "system". It contains two distinct areas one being "Information & Communications Technology Systems" and the other being "Materials Technology Systems". The former would not include the Materials outcome but would

particularly focus on the combination of the Systems and Information outcomes. The latter would focus on the combination of the Systems and Materials outcomes.

I believe that there is a need for two distinct courses of study associated with ICT that focus on different T&E outcomes and different target population. These differences are outlined in the table below. I would be interested in feedback and

Two Proposed Courses of Study

Name	Applied Information Technology	Information & Communications Technology Systems
Orientation	Applied	Technical
Link to T&E outcomes	Main focus on: - Technology Process - Information - Enterprise - Technology in Society - Technology Skills Minor focus on: - Systems	Main focus on: - Systems - Information - Technology Skills (applying technology skills) Less focus on: - Enterprise - Technology in Society
Target population	Students aiming to work within non-ICT industries but apply the technology in those workplaces. Students will tend to be those currently drawn to the AIT subjects.	Students aiming to work within the ICT industry, encompassing a wide variety of roles available. Students will not only be those currently drawn to the Information Systems subject but also some of those currently in AIT subjects or not involved in any ICT subject.
Idea	To provide students with opportunities to explore the creation, manipulation, storage, retrieval and communication of information using a range of software and hardware related to a range of industries.	To provide students with opportunities to investigate and create information and communications systems and develop skills and understandings in the use of these systems in a range of industries.
Content	Design and production of IT products Applications of IT products and systems Impact of IT on workplaces and society etc.	CT systems analysis and development Design of ICT systems Computer networking and control etc.

A Brief History of Echalk

echalk

Access to Internet began for many of us with the assistance of Roger Atkinson and Geoff Rehn from Murdoch University's Academic Services Unit. In March, 1993 the host 'cleo' was setup for community access, with free accounts and modem connections to allow the spread of Internet throughout Western Australia. School teachers became the largest single group of community users. Cleo was a small Unix computer with 2.8GB of disk space, 24Mb of memory. The project was originally setup for student email within the University's External Studies Unit. Never advertised, other than word of mouth, the number of community users jumped from the predicted 20 to over 250 by the end of the first year. Of that group, 85 were teachers.

Users were all beginners, and there was a need to subscribe to 'lists' to not only find out how to make things work (properly) but also trying to find ways of integrating with our work. Eff_one was conceived by Scott Smith and experienced users (the people who had been on Internet about 10 minutes longer than you had) provided technical support. We even had a BBQ to try to put some faces to the names we had been reading for months. The evening discussions included telnet, pine, ftp, newsgroups and the highlight (for some of the guys); converting those

pesky ASCII characters in those newsgroup attachments back into binary data!

Internet came next followed by Echalk on Sunday, 4 December 1994 02:02:41 +0800. Seven years and still going strong. Why? Simple, Echalk meets a need. Our own community...workplace learning, communication with peers and do it yourself professional development.

Recently on Echalk it was announced that Roger has retired. On behalf of the ECWA committee and Echalkers, we wish to thank you for your 'hospitality' and generosity. Your vision in 1993 to include community users and to treat us as part of the University has been appreciated by us all. Thank you for opening so many doors...and then seeing us through.

<http://cleo.murdoch.edu.au/echalk/>



ECAWA Welcomes Graduate Teachers as New Members

During July, the Centre for Excellence in Teaching conducted a New Teachers' Seminar for 300 graduate teachers from around the State. This was a perfect opportunity to inform our enthusiastic and innovative new Western Australian teachers about our Association and the benefits of being an ECAWA member.

The response for 6 month membership was inspiring!

Congratulations to the winner of the lucky draw for State Conference registration, accommodation and conference dinner at the Lord Forrest Hotel, Bunbury – nearly \$300 worth of the best PD in the West!

David Melling
Gwynne Park Primary School

We also extend a warm ECAWA welcome to the following 50 new members:

Metropolitan Area

Liz Efthymou Bicton PS
Deidre Rooney Tranby College
Simone Tolhurst Clarkson CHS
Erin Phipps East Victoria Park ESC
Alex Geneve Gosnells SHS
Linda Blagdanic SE Metro Lang Devt Centre
Nerida Rixon St Stephen's College
Barb Chounding Kwinana SHS
Brendon Ludlow Sawyers Valley PS
Nicola Sullivan St Andrew's Catholic PS
Julie Johnson Willandra PS
Sandy Tasker Bullcreek PS
Trevor Garrett Ballajura CC
Alison Nock Kenwick PS
Nadia Heggors Gwynne Park ESC
Michelle Mc Phail Forrestfield SHS
Louise Rykers Montrose ESC
Nicola Sorrell Cannington CC
Terri Morris Hainsworth PS
Toni Bennett North Parmelia PS
Rachel Fryters Living Waters Lutheran College
Janet Pearce Warnbro CHS
Gail Fetterrell East Maddington PS
Fiona Barton Kelmscott SHS
Geraldine Thomas Koorilla ESC
Amanda Patti Edgewater PS
Katrina Merrells Hampton Park PP
Melanie Stafford Port Kennedy PS
Susan Griffiths Applecross SHS
Rosanna Hart Gosnells SHS

Country and Outer Metro Areas

Robyn Spicer Mandurah HS, Mandurah
Melissa Fairclough ... Falcon PS, Mandurah
Gay Pathmanathan .. Mandurah PS, Mandurah
Brooke Seymour Greenfields PS, Mandurah
Sidra Mc Kenna Bridgetown PS, Bridgetown
Kellie Brooks Nulsen PS, Esperance
Meegan Stuart Nulsen PS, Esperance
Sarah Rooke Wundowie PS, Wundowie
Alison Weller Kellerberrin DHS, Kellerberrin
Joanna Bonner Mowara DHS, Mowara
Stephen Lee Dalwallinu DHS, Dalwallinu
Christy Walker Hannans PS, Kalgoorlie
Shantell Holland Hannans PS, Kalgoorlie
Bree Redman North Kalgoorlie PS, Kalgoorlie
Brett De Grussa O'Connor PS, Boulder
Simone Clews St Joseph's PS, Boulder
Cheryl Young Chapman Valley PS, Geraldton
Joanna Mewes Geraldton S C, Geraldton
Monica Hadley Cassia ESC, Pt Hedland
Christy Bland Pt Hedland PS, Pt Hedland

Out of interest there were 5 Murdoch, 5 Curtin, 2 UWA, 2 Notre Dame and 23 ECU graduates here. It's also good to see the lure of teaching little "Sandgroppers" has attracted graduates from "the East" from Flinders Uni, QUT, Macquarie Uni, Uni of Western Sydney and Uni of SA.

Don't forget our website, www.ecawa.asn.au, will keep you up-to-date with "what's happening" in ECAWA. It also gives you access to requesting PD and offering suggestions about how we can help new teachers.

Would some of you like to get together and present a "Trials and Tribulations of Technology for New Teachers" workshop at the State Conference? Quite a few of you are ESC teachers. Is there a topic of particular interest to you? Tell us! It would be the perfect forum in which to be "heard"!

Jan Clarke
Publicity Officer



Each year the Australian Council for Computers in Education (ACCE) hosts the National Educator of the Year Award. This award recognizes exemplary educational practice involving the use of computer technology in the teaching and learning environment.

Nominees for this award are the individual state Educator of the Year winners. Nominations are now being called for the Western Australian Educator of the Year. These educators must be an individual ECAWA member who, through the use of computer technology, have:

- made an outstanding contribution to the educational advancement of their students
- had a significant positive effect on their colleagues, both at school level and within professional organisations

The award is intended to recognise the efforts of ECAWA members who are contributing to the use of learning technologies in their schools.

While it is recognised that school administrators and district/regional personnel also contribute to the professional computer education community, this award focuses on the efforts of school-based educators.

To be considered for ECAWA's Educator of the Year, people may be nominated by their peers or can nominate themselves.

Nominees must be based in a school and considered a member of that school's teaching staff.

Nominations should address the following two areas: -

- Recognition within the nominee's institution, and
- Recognition outside of nominee's institution.

A successful applicant may not necessarily fulfil all criteria. Complete the nomination form available from the ECAWA website - <http://www.ecawa.asn.au>.

Up to six pages of printable information and a further FOUR samples of documentation on any media may be submitted to support the nomination.

Nominations including any supporting documentation can be submitted electronically:

eoty@ecawa.asn.au

or via snail mail:

ECAWA - Educator of the Year

PO Box 297

Claremont WA 6010



Completed nominations must reach ECAWA by 5.00pm, 31 August 2001.

On-Line Learning Technologies



Steve Kessell

s.kessell@smec.curtin.edu.au

The number of computers, and the level of IT infrastructure, in Western Australian schools have grown rapidly over the past few years. But is all this equipment being used effectively – is it really improving the quality of teaching and learning?

If you are a teacher with strong IT skills, and experience in using IT in your daily teaching, congratulations – but such teachers are a minority. How does a teacher acquire the skills, and confidence, to use information and learning technologies effectively? About 700 are achieving this *via* an innovative, on-line Learning Technologies program offered by Curtin University's National Key Centre for School Science and Mathematics.

This highly successful program is the creation of Associate Professor Steve Kessell, who developed it initially for 100 Education Department teachers located in remote parts of the state. Two years later, it has grown to include teachers from every Australian state and territory, New Zealand, the USA, the United Arab Emirates, Europe and Hong Kong.

Kessell attributes its success to offering “what teachers need, delivered when they need it, at whatever pace they are comfortable with, and at whatever times suit them”. The program is taught totally on-line and with multimedia CD-ROMs; most students never set foot on the Bentley campus.

“Teachers are very busy people, who don't have time to learn IT skills ‘just in case’ they might be able to use them later” says Kessell. “They need tools, ideas and examples that can be used tomorrow, not next year. And believe me, that is what we provide them!”

He has a lot of examples to demonstrate this. On the Learning Technologies web site, there are hundreds of freely available examples of what teachers in the program have created. At the tiny Wingellina Remote Community School, the Intranet includes a complete multimedia portfolio of every student's work in every learning area; at Como Senior High School, it provides a rich set of cross-curriculum teaching materials for year 8 students. Both can be viewed on Curtin's web site, as can dozens and dozens of teachers' Powerpoints, web sites,

and more.

“These show what can be done, utilising basic IT skills” says Kessell. “There is a huge misconception that teachers need heaps of IT training to do anything useful. They don't; they need basic skills, and good ideas. That's why our program is 25 % IT ‘skills’ and 75 % ‘using IT’ in your own classroom.”

“Skills training is provided, of course; every student receives commercial, interactive multimedia CD-ROM training for Using the Internet, Windows, Word, Powerpoint, Excel and Outlook.”

Some might think that studying *via* the Internet is a lonely and isolated experience, but the teachers in this course say otherwise. The Bulletin Board discussions extend well into the evening, seven night a week. “We have seen that electronic communications actually increases ‘contact’”, notes Kessell. “Teachers post ideas and questions and problems at all hours of night and day, and within hours, receive responses from dozens of their fellow students.”

Rosemary Horton is a teacher – librarian at Trinity College in Perth. Her library web site recently was named “Site of the Month” by the International Association of School Librarianship (IASL). Rosemary describes the on-line interactions:

“A great feature of the course is the way the lecturers and technical staff support the teachers in the course. As with all technology (and with all new courses), there have been hiccups. At every stage we've been helped and better yet kept informed (no mushroom syndrome here!). The staff obviously don't have time to eat or sleep, for most new problems have a solution very quickly... One thing that happens is that I read about someone else's difficulty before I reach that point. When I do reach it, there's the answer already waiting... This course is not only about just integrating technology into computer labs or classrooms, but also about changing the way we teach. There is great discussion about these ideas on the Bulletin Board. The staff take an active part in the to-and-fro of debate.”

The development of the Learning Technologies course at Curtin has also created

some interesting spin-offs.

As an example for teachers gaining multimedia skills, Kessell and his staff produced two CD-ROMs for middle and secondary student use: one on astronomy, and one on geographic information systems. Each contains a full term's worth of work. They sell them at cost (\$5 each) so every student can have their own copy. “It's cheaper than photocopying, and the kids love them” explains Kessell. “Currently, about 2500 students in WA, the USA and the UAE are using them.”

The Learning Technologies courses may be completed for academic credit, with graduates receiving Curtin's Graduate Certificate in Learning Technologies, and the credits may also be applied towards a masters or professional doctorate. Alternatively, the courses can be done as not-for-credit professional development. “Teachers can start at any time, work at their own pace, and ‘finish when they finish’” notes Kessell.

Curtin also provides a substantial subset of the course, on-line and free, to teachers worldwide.

Trinity College's award-winning website is available at:

<http://www.students.trinity.wa.edu.au/library/>

The free materials, and detailed information about the courses and options, are available from:

Stephen R. Kessell,
Associate Professor Course Coordinator,
Learning Technologies program
National Key Centre for School Science and
Mathematics
Curtin University of Technology,
GPO Box U1987,
Perth, Western Australia 6845

<mailto:s.kessell@smec.curtin.edu.au>

<http://learnt.smec.curtin.edu.au/>

After hours Help Desk (Please use this number):

+61 8 9259 1446

Univ: Tel +61 8 9266 7297 (S Kessell v-mail);

+61 8 9266-3365

General enquiries: Fax +61 8 9266-2503

Home: Tel +61 8 9354 1319 (has v-mail, but is a personal line, please use ONLY if “urgent”);

Home Fax: +61 8 9259-1446

What a Big Day Out!



*Judy Weggelaar
weggs@inet.net.au*

On April 7, about 40 ECAWA members gathered at Leeming Senior High School to exchange teaching ideas on Technology and Education. Topics explored ranged from a frenzy of Fireworks and Flash to iMovie and Inspiration, LOGO and Linux, Premiere, portfolios and dynamic discussions about digital cameras with hard disk drives. Participants were left highly motivated and well resourced with interesting projects for the rest of the year.

A feature of a day like this is the opportunity for small group interaction and sharing as seen in the following photos. Most participants had the opportunity to share their ideas as well and I know that as the organiser and “presenter” I also went away with an idea to use in one of my classes. Thanks Sue! Thanks also to Rags for taking the following photos on our new Canon camera.



Mark Stephens and his group spent all day creating web pages with Fireworks



Jim Fuller (left) and Paul Dench (right), past Educators of the Year, and Andrew Neilson from Starfish Technologies involved in a small group discussion



Jamie Adair along with Paul Carroll and Bob Richardson examine Linux



Jan Clarke leads some of our members through Inspiration

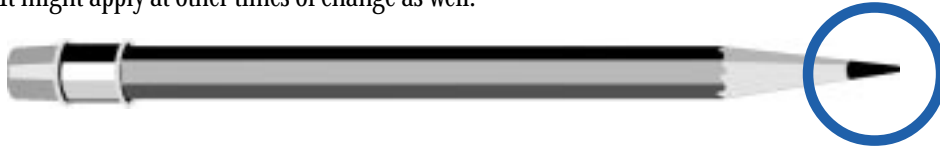
The Pencil Metaphor



Lindy McKeown
lindy@gil.com.au



When reflecting on why every teacher isn't using their computers and Internet connections productively when schools have had computers since the early 80s and the Internet has been in schools since the early 90s, I came up with this metaphor for the various positions people assume in relation to the uptake of information and communications technologies. It might apply at other times of change as well.



The Lead-ers (say *led*)

These are the first to take on the technology, the early adopters who usually document and enthusiastically share what they have tried - warts and all.



The Sharp Ones

These are the people who see what the early adopters have done, willingly grab the best of it, learn from the mistakes of others and do great stuff with their students.



The Wood (would)

These people would use the technology if someone would just give them the gear, set it up, train them and keep it running. All they need is some help from some sharp person and they'll be doing it too.



The Dead Wood

This part of the pencil can never be sharpened no matter how hard you try. Even when the point is still sharp, this little left over bit doesn't seem to be of much use for the task at hand. In a pinch it can be used for the most basic of tasks.

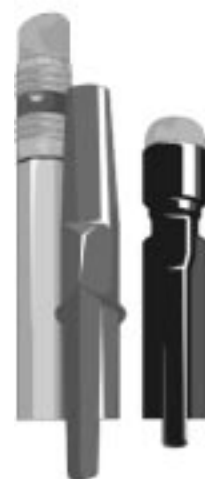


The Eraser

This is used to undo as much if not all the work done by the lead-ers.

Optional Extra - the Hanger On

Hangers on know all the right lingo, attend all the seminars, but just don't actually do anything.



How Secure Are My Computers?

Peter Spicer-Wensley
petersw@svshs.wa.edu.au

Physical Security is an often overlooked weakness of many networks (Ashcroft, 2000). It can be an expensive matter to retrofit some types of security measures, but others are very cheap, possibly too cheap. So what are the options? What is effective? What gives the best bang for the buck? What is at risk and what can we do about it?

Lets look at the current options for physical security for computers and then later we can look at their comparative costs and benefits.

The current physical security options to secure computing devices include:

1. Physical Exclusion
2. Physical Lockdown
3. Deterrent & Recovery Security Identification
4. User-Identification Systems
5. Intruder-Identification Systems
6. Alarms
7. Server-side Security and Asset Management
8. Post-Theft Location Systems
9. Post-Theft Destruction Systems

The first two security options will be covered in this article as there are a lot of options to these. Detail on each option can be obtained from security vendors directly or by emailing the author Peter Spicer-Wensley (petersw@svshs.wa.edu.au).

1. Physical Exclusion

1.1 Security Doors

These are metal or solid-core doors with strong locks, hidden hinges and/or steel door-plates to prevent forced entry and unauthorised removal of equipment. This is a relatively low cost per unit security measure and it is recommended that this is the first of any physical exclusion measures to be taken as a general rule.

1.2 Bars

Steel bars, either vertical or horizontal, of mild steel either solid 15mm circular or hollow 25mm square section welded to a 35mm to 50mm angle-iron frame bolted

into the window recess to prevent unauthorised entry of persons and unauthorised removal of equipment. Moderate expense but extremely secure.

1.3 Security Glass

Laminated, steel wired or hardened security-grade glass strengthened to resist unauthorised entry and removal of equipment. High expense and high levels of security - an expensive retrofit.

1.4 Security Film

Security-grade high tensile strength film designed to resist unauthorised entry and removal of equipment. Moderate to high expense and levels of security.

1.5 Security Grills

Security-grade metal grills designed to prevent unauthorised entry and removal of equipment. Depending upon the type of grill used, moderate to high expense with low to high levels of security.

1.6 Security Fences & Walls

These provide a strong deterrent to casual egress of schools by unauthorised members of the public and to school students outside of school hours. The cost of security fencing varies widely from \$100 to \$1000 (or more) per metre of security fence. The provision of a 500 - 600m security fence at Swan View Senior High School was highly cost effective reducing vandalism and theft to the extent that the approximately \$40,000 fence paid for itself within a few months of being installed. The high initial cost of providing security fencing together with risks associated with staff and community concern about such fencing often prevents their installation, which is a pity because they work.

2. Physical Lockdown

2.1 Cables & Locks

Kensington Security Slot Lugs and Locks

These use standard-sized slots to connect lugs and other hasps and catches

to allow connection of cables and locks. Moderate cost and questionable level of security. Most security vendors will sell these but are of the opinion that they give an impression of security rather than **actual** security. They give you a warm inner glow but don't stop your stuff getting nicked. A determined thief will simply rip these out of the device they are supposed to be protecting.

Cable and Stud Locks

This system uses a cable passed through the exterior case of a server or desktop PC that is then crimped internally (or externally in some cases) with either a copper or aluminium sleeve to prevent removal of the cable from the inside of the case. This is then locked to a desk or frame using a stud and lock. Moderate cost with a high level of security. A really good option because thieves do not steal monitors in 95% of thefts of computers from schools.

Internal Slot-plate

A rear slot at the rear of a server or desktop PC is used to insert a thick stainless steel slot-guard fixed with a security screw. A cable passes through the slot-guard into the PC where it is terminated with a crimp lug the other end is secured to a desk or frame using a stud and lock. Moderate cost with a high level of security.

External Glue Plate

In this system a cable is fixed to a plate either by a swivel-hasps or pressed steel dimple and the plate is fixed to the exterior of the case using an industrial strength fixative. Moderate cost and questionable level of security. Most of the time these can be prised off with nothing more dangerous than a butterknife! Not a good option. Another risk is that the thief unscrews the case cover and leaves that behind taking the rest of the computer or server.

Laptop Cable & Locks

A cable is connected from the laptop to

an external secure fixture by one of the above recommended fixture methods. Moderate cost and moderate to high level desktop PCs or equipment to be securely fixed atop the stand. High cost and level of security.

2.8 Base Anchor Plates

Large metal plates that can be single or double-layered that allows a large surface area to be secured to the desktop and to the base of the secured device. Moderate to high expense and highly secure.

2.9 Security Trolleys

These are large metal trolleys that have slotted spaces for laptop storage and typically have internal power boards and connections to allow overnight charging. These provide a flexible means of distributing laptops. Further research needs to be undertaken to determine which schools are suitable for trolley deployment. High expense and highly secure. A really good option if you have laptops.

2.10 Cabinets

Strong metal cabinets that have

storage slots for laptops and equipment. They are fixed so do not allow flexibility of deployment. Moderate to high expense and highly secure. Recommended for laptops where trolleys are unsuitable.

2.11 Safes

Strongboxes that can be used to store small expensive items such as laptop computers, cameras and PDAs. Extremely high expense and extremely secure.

2.12 Media Drive Locks

Internal Lock or Cable and Lock solutions for Removable devices such as Floppy Disk drives, Zip drives, CD(RW) drives, iMation floptical drives, and removable HDD (Jaz and Orb) drives, etc. Moderate expense and level of security.

2.13 Case Screw Locks

These are connected to the rear of desktop PCs and servers and prevent easy access to the internals of the devices. Special screws are attached in place of the usual fasteners and a lock is connected that covers the external access to the special screws. Moderate expense and level of security (only secure internals).

2.14 Cover Locks

These are locks that hasp or clamp around part of the case of a desktop PC to prevent easy access to the internals of these devices. Moderate expense and level of security (only secure internals).

2.15 Security Screws

These are screws with special heads that require nonstandard tools to access the internals of the devices into which they are screwed. Low expense and moderate level of security (only secure internals). Recommended for desktop computers & servers.

A quick search of the Internet will provide you with vendor information (but mostly from overseas) - so determine the option you think are most suitable to your situation and contact local stores and suppliers for information (or me if they can't help).

References & Websites

Ashcroft, Dave. July 31, 2000

Physical Security:

The Often Overlooked Weakness

http://www.sans.org/infosecFAQ/firewall/phys_sec.htm

Conferences

ECAWA State Conference 2001

1 - 2 October, 2001

Lord Forest Hotel, Bunbury

Contact person: Lorraine Kershaw

Web: http://www.ecawa.asn.au/latest_news/latest_news.htm

Email: conference2001@ecawa.asn.au

Technology and Enterprise State Conference 2001

23 - 24 November, 2001

Edith Cowan University, Mount Lawley Campus

Contact person: Lorraine Kershaw

Web: <http://www.cowam.edu.au/ses/research/MASTEC/projects/project.html>

Email: lkershaw@Bigpond.com



New SIG? Uses of Information Technology in the English Classroom in WA

Objectives of the Special Interest Group

- To research and document some examples of people and places, of current practices, as exemplars of possibilities and best practice in the uses of information technology as one of the learning technologies in the teaching of English in WA.
- To establish a database of willing English teachers for ETAWA to use as contact persons for others interested in this.
- To investigate how teachers may make more use of existing levels of information technologies in schools.

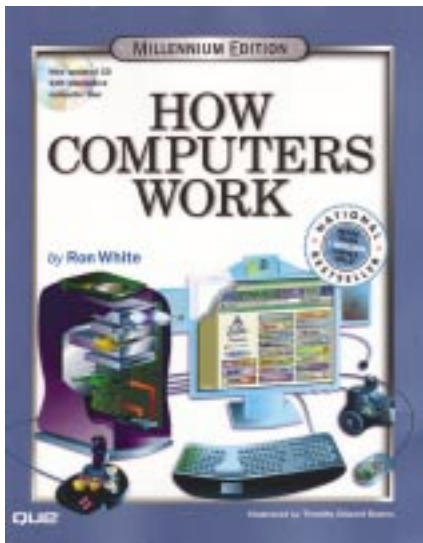
Interested? Get in contact with Phil Pound at Phil.Pound@hamilton.wa.edu.au

The Very Useful Resource Section

www.ecawa.asn.au

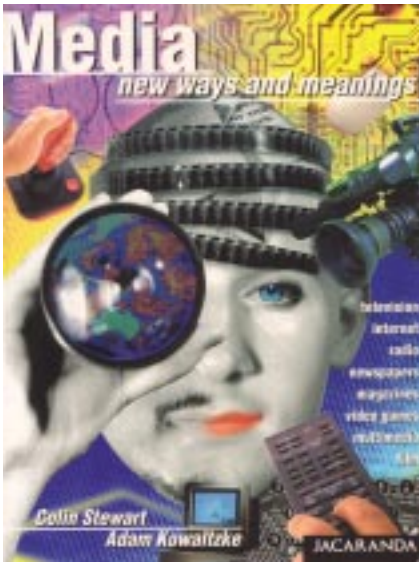
White, Ron.
How Computers Work.
Que Corporation, 1999

Visual representations of the inner works of a computer and its components. Clear diagrams and explanations walk you through the technology. Millennium edition includes an interactive tour of a computer on CD.



Stewart, Colin and Kowaltzke, Adam. **Media new ways and meanings.** Jacranda Wiley Ltd., 1990

Media is one of the primary language experiences of modern society. This book is useful across a wide range of year levels with flexible activities and assignments which can easily be adapted to suit. It outlines some of the trade secrets and formulae used in creating the major media genres. Sections include computer based media, Internet, film, television, radio, newspapers and magazines.



itgraphics
<http://www.itgraphics.com>

Value for money magazine and a great website. Source of it information, tutorials and reviews of popular graphics software. Tutorials are easy to follow using screen shots.



Hillman Curtis
<http://www.hillmancurtis.com>

Present your message so that it will not be ignored. Lean and mean...Kick it out. Lots of Internet is 'brochure-ware' with second rate design work. Hillman was a former Macromedia creative director and has created the art of motion graphics.



Virtual-FX
<http://www.virtual-fx.net>

Site features ActionScript tutorials with and open source Flash content.



Heavy
<http://www.heavy.com>

Nothing but Flash...and lots of humour, satire...

Wanted: Good websites, books, software reviews.
Email the editor - login@ecawa.asn.au

Training Tools
<http://www.trainingtools.com>

This site offers several free on-line courses and introductions on popular graphics and programming topics, including Flash 5, Dreamweaver, JavaScript, etc.