early childhood
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This is the first newsletter of 2007 for the Early Childhood Education Council of NSW. Please refer any comments to the Editor, c/- PO Box 418 Leichhardt NSW 2040 editor@ecec.asn.au

Our Vision

The Early Childhood Education Council of NSW Inc. is a professional association promoting child centred practices through advocacy and professional development, informing on current trends in early childhood education and ensuring a high profile for early childhood issues.

K-6 Science and Technology Review

This newsletter focuses on the review of the K-6 Science and Technology syllabus. The b\Board of Studies is currently in the process of reviewing the 1991 *K-6 Science and Technology Syllabus and Support Document* and the 1991 K-6 *Science and Technology Outcomes and Indicators* document. The process has involved a Literature review, 10 regional consultation meetings, online survey and a survey to a targeted group of schools, oral and written submissions and a Science and Technology Symposium.

ECEC has taken the opportunity to be involved in most facets of this process. Members participated in the regional consultation meetings and the committee submitted a written response that made a series of recommendations. A copy of our submission is included in this newsletter. On August 11 several members of the ECEC committee participated in the Symposium which provided input on science education and technology education from different several keynote speakers and discussion groups of participants who represented a wide range of stakeholder groups and academics. A report on the symposium is also included in this newsletter.

The board has established a reference group of academic to provide additional advice and expertise during the review. The next stage of the review process involves the collation of all the responses from the meetings, submission, symposium and the recommendation from the literature review to develop a writing brief. This writing brief will then be sent out for consultation to schools, stakeholder groups and other interested people. Once feedback is received a writing team will be formed, early in 2008, to undertake the task of developing a draft syllabus in line with the recommendations of the writing brief. Once the draft writing brief is developed a further round of consultation will occur.

It is vital that teachers and other interested parties take the opportunity to comment at all stages of the process so the syllabus reflects the need of the teachers who will be using it to develop effective teaching and learning programs for students in the 21st Century.

ECEC strongly support the position of maintaining the relationship of Science and Technology in the revised syllabus. Technology is not just 'computer education' or 'information and communication technology (ICT)' but

> '*extends beyond tools and technical inventions of a society and involves the 'application of human skills, knowledge, techniques and processes to expressive and practical problem-solving situation in all aspects of life'* (K-6 Science and Technology syllabus p1).

Think 'New Inventors' and you're developing the processes, skills and understanding involved in Science and Technology.

Suzanne Ziems (President ECEC)

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ECEC submission

Office of Board of Studies
117 Clarence Street
SYDNEY NSW 2000

Dear Mr Perkins

The Early Childhood Education Council of NSW (ECEC) appreciates the opportunity to contribute to the review of Science and Technology K-6. The following comments have been made specifically in relation to the *Science and Technology K-6 syllabus* 1991, the *Science and Technology K-6 Outcomes and Indicators* 1999 and the *NSW Primary Curriculum Foundation Statements* 2005.

With the three Science and Technology documents currently in use by primary teachers in NSW, none provides a current coherent rationale for Science and Technology for the 21 century.

With this, the aims and objectives, outcomes and content within these documents also needs to reflect current research and developments in Science Education and Technology Education. There needs to be clear articulation of the difference between Technology Education and Information and Communication Technology (ICT).

In 1991 Science and Technology Syllabus, the introduction contained information about the learning area's relationship between science and technology. This provided good background information for teachers and should be included in the revised syllabus but needs to be made current and more reflective of teaching and learning today.

The work previously developed as an AGQTP *Supporting SciTech in the Primary Classroom* provides an excellent example of staged content to allow teachers to develop a progression of learning and for schools to develop a scope and sequence of learning to meet the local needs of their students and their environment.

As advocates for promoting effective early childhood practices we would urge the writers to provide advice and guidance, especially in the early years (Kindergarten to Year 3), to encourage teachers to engage students in hands-on experiential and explorative learning. Children engage in with their learning by questioning, investigating, analysing, innovating and interacting. Support material should include sample tasks as opposed to units of work that would encourage such learning opportunities. Sample tasks should clearly demonstrate the appropriate learning process and examples of content that could be taught. A task would focus on integrating a process and content over a short period of time allowing students to develop skills and understandings at their stage of development. This would also encourage students to develop greater depth of understanding and for teachers to develop confidence in teaching Science and Technology.

Knowledge and understanding of the learning processes should be of primacy to this key learning area. Teachers will then be able to teach the appropriate content through the learning processes. We suggest that there be two learning process strands:

- Investigating Scientifically
- Designing and Producing (This aligns with the 7-10 Technology Mandatory Syllabus)

Knowledge and understanding currently in the *Using Technology* strand are embedded in the other two learning processes and thus should not be a strand on its own. Keeping it as a strand on its own will continue to confuse teachers with the use of ICT/IT (Information Technology).

Advice about Assessment and the use of student work samples is essential in providing support for teachers and guidance for them to come to some common understanding about achievement across the learning processes. Again, this needs to be written in the current context and reflective of assessing student achievement.

While we are aware it is not the responsibility of the Board of Studies to provide professional development for implementation, a support document that includes examples of authentic student work, suggested timeframes for teaching and learning tasks, whole school planning etc, would support all teachers and schools and would be supplemented by system and sector professional development.

Recommendations:

1. Provide a coherent rationale for Science and Technology K-6 for the twenty-first century
2. Aims and objectives, outcomes and content to reflect current research and developments in Science Education and Technology Education, clearly articulating the difference between Technology Education and ICT/IT
3. Include information that is more current and reflective of teaching and learning and which demonstrates the relationship between Science and Technology
4. Primacy to be given to the learning processes of
   - Investigating Scientifically
   - Designing and Producing

   and that the *Using Technology* strand be embedded in the two above learning processes
5. Support materials to include
   - Sample tasks as opposed to units of work
   - Staged content (that can be modelled on QT project supporting *SciTech in the Primary Classroom*) to allow teachers to develop a progression of learning and for schools to develop a scope and sequence of learning to cater for local contexts
6. Advice about Assessment be included so as to provide support and guidance for teachers to come to some common understanding about achievement across the learning processes
7. A support document that assists with the professional development in its implementation be provided that would also be supplemented by system and sector professional development.

The Early Childhood Education Council would like to be included as part of further consultation as the review continues. We would be happy to organise a forum of early childhood educators at any time to discuss material if it is appropriate.

Yours faithfully

Suzanne Ziems Vilma Fyfe
President Secretary

Early Childhood Education Council NSW
1.08.07

K-6 Science and Technology Symposium Report

The Board of Studies held a symposium on Saturday 11 August as part of the review leading to the development of a new *K-6 Science and Technology Syllabus*. A range of interest groups were represented including professional teacher's associations, parent groups, principals' associations and academics. Members of the Board of Studies Primary Curriculum Committee and Board Curriculum Committee were also present.

The purpose of the symposium was to engage those present with several keynote presentations and discussion groups to consider these questions.

- What elements of science and technology education need to be addressed in developing a K-6 Science and Technology syllabus for students of the 21st century?
- How should what we know from research about best practice in K-6 science and technology education inform the revision of the current syllabus?

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Keynote speakers

Professor Peter Fensham, previously from Monash University and currently Adjunct Professor at Queensland University of Technology spoke about the falling interest in science at all levels of schooling and provided examples from current research and discussed their implications for a revival of science in schools. These included the work of Glen Aikenhead (2000) taking a humanistic approach to the teaching of science, that is to prepare for citizenship, development of scientific reasoning, knowledge about science and scientist rather than the traditional focus of science for professional training.

Professor Fensham also spoke of the new movement of Context-based science (and technology) education that encourages active learning and acquisition of specific science competencies. This movement support the substantial reduction in expected content and suggests giving priority to making science interesting by choosing natural phenomena and local science technology interests.

Dr Doreen Clarke is a fellow of the Academy of Technological Sciences and Engineering and has a long standing interest in technical education and is the Chair of the Children's Discovery Museum. Doreen spoke of the pleasure young students derive from important life skills in structured situation what involve 'investigating, discovering, designing and making and testing'. All these skills when

taught with science as a Key Learning area provide opportunities for creative thinking and practical realization of ideas.

Veena Sahajwalla is the Professor of Material Science and Engineering at the University of New south Wales. Her research is focused on sustainability of materials and processes, including innovative recycling of waste materials. She spoke of the importance of primary education increasing the interest and passion of students for technological studies through implementations of learning activities that help them to understand its relevance for their future.

Peter Thompson is Head Teacher, Technology at Bossley Park High School. Peter spoke about how we are educating students for an unknown future that requires different thinking and an ability to be adaptive, creative and innovative. He believes we need to ensure that our students are technologically literate, that is they need to understand what technology is, how it is created, how its use shapes society and in turn how society shapes the developments of technology.

Marilyn Fleer is Professor of Early Childhood Education at Monash University. Marilyn provided an overview of relevant research about student's engagement in science and technology. These included valued early experiences, transformative experiences and relationships and connections between schools and children's homes. She believes that curriculum implementations in classrooms is framed as developing an understanding of a collective enterprise by positioning children as researchers of their own technological and scientific knowledge and capability. She provided an example of this with a multimedia presentation of a research project for children from a Prep/Year 1 class and year three/four class acting as researchers.

The discussion groups enthusiastically discussed and debated the question and issues providing feedback to the questions; however there were no clear directions from the group. All groups were expressed concern about the importance of ongoing professional support for teachers when the syllabus was ready for implementation. Participants were reminded that the Board of Studies has no responsibility for implementation as it is the role to the education systems and sectors.

Suzanne Ziems

Notice of the Annual General Meeting

The Annual General Meeting will be held as part of a professional learning activity on **Tuesday 13 November 2007 at the Professional Teachers' Council Conference Centre at 5.30pm**

The focus of the professional learning activity will be Creative Arts and will involve two workshop activities beginning at 4.30pm. The AGM will be held between the workshops.

The committee hope that all interested members will attend and consider joining the committee. To ensure the future of ECEC it is important to continue to renew membership of the committee as some longer term members take a step back from active commitment to the committee.

Details of the professional learning activity ands official notification of the AGM will be sent early in October.