2006

Finding a way forward - Panel Discussion

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Finding a way forward: Plenary discussion

Russell Tytler
David Symington
Issues within science education
Issues within science education

Jonathan Osborne - the liberal perspective
Denis Goodrum
Rodger Bybee - BSCE and inquiry approach
Jim Davies - creativity and enterprise
Tytler & Symington - analytical thinking
Graham Foster-thinking skills

Science inquiry and reasoning
Leonie Rennie
ASISTM projects
Louisa Ivey - ESWA consortium
Jim Davies
Ruth Targett & Kate Anderson - science mentors

Science through school
/community links

Science inquiry and reasoning
Science through school
/community links

Science inquiry and reasoning

Student learning of the key ideas of science

Roger Bybee
Denis Goodrum
Mark Hackling
Shelley Peers
Contemporary practice of science

Tytler & Symington
ESWA
Jim Davies
Anne Osman
Carter & Clarkson

Science through school
/ community links

Science inquiry and reasoning

Student learning of the key ideas of science
Values, affective responses as part of key purposes

Contemporary practice of science

Science through school/community links

Science inquiry and reasoning

Student learning of the key ideas of science

Deb Corrigan
Peter Fensham
Tytler & Symington
Kurup & Hackling
Values, affective responses as part of key purposes

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Rethinking schooling

Jim Davies
Leonie Rennie
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Science education as a humanistic enterprise

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Student learning of the key ideas of science

Peter Fensham
Deb Corrigan
Jonathan Osborne

Rethinking schooling
Values, affective responses as part of key purposes

Contemporary practice of science

Science through school/community links

Science education as a humanistic enterprise

Science inquiry and reasoning

Student learning of the key ideas of science

Rethinking schooling

Student's lives and interests

Papers dealing with context
Reimagining Science Education:

- Values, affective responses as part of key purposes
- Contemporary practice of science
- Science education as a humanistic enterprise
- Rethinking schooling
- Student learning of the key ideas of science
- Students’ lives and interests

Science through school/community links
Science inquiry and reasoning
Teacher forums: new directions

- Open ended projects related to real life issues valuing creativity, solar car. Curriculum is untied - all units are of relevance to students lives eg science and art pigments solvents etc. Units give choice so students own topic,
- Real life examples, build on prior knowledge, students can help teachers
- Science of sport look at interpreting the intent of the syllabus and depend less on text book.
- Ask students before choose contexts, use contemporary science issues
- Winemaking unit involving partnership with local industry
- More debate, research in classroom, interdisciplinary, debate on a deep level;
- Develop skills in students on researching issues; courses too content prescribed, should be issue based.
Teacher forums: curriculum constraints

- Prescriptive nature of curriculum prevents innovation.
- Topics in media can deal with at the time if curriculum less rigid;
- Freedom of choice at 7-10 but 11-12 much more prescribed. In 7-10 choices are made so it’s more relevant.
- 7-10 indigenous pupils and disadvantaged so must rewrite courses for students. Much of syllabus irrelevant.
- HSC assessment drives curriculum
- Need to increase ability to design local programs at 11 and 12
- Need to contextualise learning. Move away from the prescribed syllabus
- Open curriculum may cause problems with less motivated
Proposition 1

- We need to re-imagine science education, accepting a shift that is occurring and must occur in the way we think of its nature and purposes.

- Implication: *Any moves towards a national agenda for science education (curriculum and assessment) need to be premised on this re-imagining rather than refinement.*
Forum: Assessment and status issues

- Engaging students in science across the curriculum, events in local community, problems with assessment and making assessment valued.
- Science in context, multidisciplinary approach eg senior science NSW but not valued for uni courses.
- Conservatism of staff in schools; parents conservatism;
- University staff attitudes, training undergrads for narrow discipline knowledge. Not enough process so students come into schools with narrow view of science.
- Parents are conservative in their views. Our role is to educate them;
- Academic scientists on panels for assessment and curriculum resist change; need to broaden approach to setting assessment tasks;
- Issue also for media, business and industry; cultural change also needed here
Proposition 2

- To achieve this re-imagined science education we need to develop:
  - A new metaphor for science education that will capture it’s nature; and
  - Rigorous assessment processes appropriate to this re-imagined science education.
Implications for the teacher

- A number of presentations (Rodrigues, Ingvarsson & Semple, Harris) have dealt with teacher standards, teacher professional learning, teacher knowledge and beliefs.

- The many innovative projects and directions described at this conference require new pedagogies, knowledge, and commitments of science teachers.
Forum: teacher education

- Where to exert pressure: teacher training.
- Want engaging and dynamic teachers so training important.
- Negative effects of school training experience for learner teachers. Needs culture change in schools.
- Many teachers want to change so structures for upgrading would be taken up.
- Way we work as teachers; sec teachers isolated so must work in groups;
- Teachers need to be supported to take risks;
- Kuala Lumpur experience where teachers were encouraged to take risks so more students took science. Principal of school and curriculum coord etc all had same attitude;
Proposition 3

There needs to be a national teacher education agenda focusing on re-imagining the role of the science teacher and developing teachers’ capabilities (knowledge, pedagogy, disposition) that enable the support of the new directions.
Proposition for the conference:

- The time has come for a significant re-imagining of school science in Australia
  - Strongly agree
  - Agree
  - Unsure
  - Disagree
  - Strongly disagree