Boosting Science Learning

what will it take?

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Australian Council for Educational Research
BIOLOGY

% of Year 12

Year

76 78 80 82 84 86 88 90 92 94 96 98 00 02
What would it take to increase ‘market share’ in the senior secondary school?
Perhaps we need a *vision* for a new, innovative approach to senior secondary science (ie, “re-imagine” what is possible).
Perhaps we need a national response.
**ACT** a grade (A, B, C, D, E)

**NSW** a mark out of 100, placing the student’s result in one of six ‘bands’ (Band 1, Band 2,… Band 6)

**QLD** an ‘achievement level’ (Very Limited, Limited, Sound, High, Very High Achievement)

**SA/NT** currently: a score out of 20, placing the student’s result in one of five grades (A, B, C, D, E)

**proposed:** 7 levels (A+, A, B, C, D, E, not yet achieved)

**TAS** an ‘achievement level’ (Preliminary, Satisfactory, Commendable, High, Exceptional Achievement)

**VIC** a score out of 50

**WA** currently: a grade (A, B, C, D, E)

**proposed:** a ‘level’ (3, 4, 5, 6, 7, 8) and a ‘band’ (first/medium/high) within that level
Do we need seven separate Physics syllabuses/curriculum frameworks and their associated examination/assessment procedures?
Can we “imagine” a national, rigorous, integrated science course appropriate for the majority of students in the final years of school?
What has this conference suggested would be desirable features of such a course?
- base curriculum materials on research into how students learn

promote conceptual change

develop understanding of facts and ideas in the context of a conceptual framework

develop metacognitive skills in monitoring own learning against goals
- connect science learning to students’ interests and priorities
real-world situations with which students can engage
science as a *human* activity
- make better use of community-based opportunities for science learning

broader range of contexts for science learning

addressing the complexities of real phenomena

learning that has meaning and relevance
- focus on ideas, evidence and argument (processes of science)

how evidence is used to construct explanations

how criteria are used to evaluate evidence
- Focus on general capabilities important to the practice of science
  - Communicating with multiple audiences
  - Analytical thinking and problem-solving skills
  - Working in multidisciplinary teams
- support teacher learning through high-quality curriculum materials

science subject matter

knowledge of instructional models and strategies

pedagogical content knowledge in science
- find ways to recognise and reward excellence in science teaching

standards for highly accomplished practice

assessment against standards

accreditation; recognition
- adopt a three-pronged approach
  high-quality curriculum materials
  professional learning and support
  underpinning research and evaluation
What practical steps could be taken to introduce re-imagined science curriculum?