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What outcomes do we want?

Over recent months we have seen an attack on learning 'outcomes'. What are we to make of this? Can anybody really be opposed to attempts to specify what we want children to learn in our schools? Is there another agenda? ACER chief executive Professor Geoff Masters explores these issues.

Traditionally, a central concern in school education was the question of what teachers should teach. This was spelled out in centrally prescribed syllabuses. Students were streamed on the basis of test or examination results and teachers delivered the same syllabus to all students in a class. Accountability-to the extent that it existed-required evidence that the relevant syllabus had been taught. Little attention was paid to specific learning difficulties or individual learning needs. End of year examinations determined whether a student could reproduce enough of what had been taught to 'pass' and so advance to the next grade.

During the twentieth century, educators Ralph Tyler, Benjamin Bloom and others underscored the observation that schooling is fundamentally about children learning. More important than the question of whether and what teachers have taught is the question of whether and what students have learnt. Of course, these are related: if teachers are not teaching, then students are unlikely to be learning.

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But it was an important shift to put *student learning* at the heart of the education process. From the point of view of accountability, it was no longer sufficient to know that teachers had taught the syllabus (input); the more important question was what progress students had made (output).

A learning-centred view of schooling has a number of practical implications. First, the emphasis is placed on what students are to learn rather than on what teachers are to teach. What are the knowledge, skills and understandings that all students should develop by particular points in their schooling? The specification of these desired learning 'outcomes' then invites consideration of the best ways to achieve them.

Second, with greater clarity about desired student learning it becomes unnecessary to require every teacher to teach in exactly the same way. Professional judgements can be made about the most appropriate ways to achieve desired learning outcomes with particular groups of students. Of course, teachers still require quality teaching materials, professional support and research-based information about effective teaching strategies.

Third, a learning-centred approach requires a deeper understanding by teachers of how students learn. What are typical paths of student development? What difficulties and misunderstandings do students commonly develop? It is not sufficient to be an expert in the subject; teachers also require a deep understanding of how children learn school subjects (ie, pedagogical content knowledge).

And finally, teachers must be experts in establishing where individuals are in their learning and in monitoring progress over time (ie, formative or developmental assessment). In recent decades, research into learning has highlighted the importance of diagnosing individual difficulties and development and of providing challenging learning opportunities appropriate to students' current levels of attainment.

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This is all much more demanding on classroom teachers. Added to this, if students are not learning, teachers are now held partly responsible. Not surprisingly, there are some who would prefer a return to traditional classrooms in which teachers were given a syllabus to teach, the onus for successful learning was squarely on students themselves, and assessments were limited to summative examinations.

In an attempt to turn back the clock, opponents of learning-centred education are adopting a three-pronged strategy:

- attack learning outcomes (making American 'Outcomes Based Education' a target is especially convenient because there is an old literature that can be used to advantage);
- assert that outcomes are responsible for declining standards (in fact, link 'outcomes' to anything that may sound bad: lack of academic rigour, failure to teach the basics, political correctness, constructivism, whole language, fuzzy maths, soft assessment, increased teacher workload, re-inventing the wheel, etc); and
- sell these questionable associations to powerful individuals who are concerned about educational standards.

The problem with this strategy is that it overlooks a few important facts.

The specification of learning outcomes is not inconsistent with *international excellence*. Singapore, the country that consistently performs at or near the top in TIMSS, organises its curriculum around 'Learning Outcomes'. For example, the Year 3 science curriculum specifies nineteen Learning Outcomes, including the following :

- shows an understanding that different organisms have different life cycles; and
- recognises that there is a great variety of materials (eg, plastics, wood, rubber, glass, fabrics, ceramics and metals).

Finland, the country that consistently performs at or near the top in PISA, explicitly uses 'student-centred instruction', has no streaming and no national tests or examinations at any time during a child's schooling. Finnish teachers have considerable discretion in how they teach.

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The specification of learning outcomes is not inconsistent with *academic rigour*. The learning outcomes specified in most Australian curriculum documents include key knowledge, skills and understandings underpinning subject disciplines. It is true that some attempts to specify desired learning have gone into too much detail, fragmenting the curriculum into many independent bits of learning.

Other attempts have resulted in outcomes that are too vague and too open to interpretation. Neither of these extremes assists teachers in designing classroom activities. The best learning outcomes describe growth in essential knowledge, skills, understandings, attitudes and values and are worded in ways that provide guidance for teaching.

The specification of learning outcomes is not inconsistent with *explicit teaching*. A focus on learning outcomes and individual progress does not mean that students should be left alone to do what they wish or to learn for themselves. Intervention to address students' misunderstandings and direct teaching of subject matter-including whole-class teaching-are important elements of effective teacher practice in learning-centred classrooms.

The specification of learning outcomes is not inconsistent with *rigorous assessment*. Clear statements of what students are expected to learn provide a better basis for constructing tests and examinations than descriptions of what teachers are planning to do. Sound measurement requires knowledge of what students are expected to learn as a result of classroom activities such as growing tulips or studying Othello. Ongoing classroom assessments and end of year examinations both require a clear focus on intended learning outcomes.

Learning-centred approaches require clarity about the knowledge, skills and understandings students are to develop; the diagnosis and monitoring of individual difficulties and progress; and the design and delivery of learning activities tailored to students' current needs and levels of attainment. These requirements impose greater demands on the professionalism of teachers. For this reason it is important that teachers are supported with quality teaching materials, processes for recording and monitoring student progress, professional development, and reliable information about effective teaching strategies.

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The route to high standards in education is not to revert to one-size-fits-all prescriptions of what and how all teachers should teach. The answer lies in excellent, creative teaching focused on the learning outcomes we want for all children in our schools.

Valijarvi, J *et al.* (2000). *The Finnish Success in PISA and Some Reasons Behind It* . Jyvaskyla : Institute for Educational Research, University of Jyvaskyla .

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A balanced approach needed for students with learning difficulties

A new review of research into the teaching of literacy and numeracy skills to students with learning difficulties asserts that there is no one single instructional method that deserves sole claim to being 'best practice.' Instead, the common wisdom of research points to the need for balanced approaches to accommodate the diverse needs of students.

The latest Australian Education Review, *Balancing approaches: Revisiting the educational psychology research on teaching students with learning difficulties*, by Louise Ellis with a forward by University of Queensland academic Professor Peter Freebody, was released on 19 October.

The review examines what contemporary research, largely meta-analyses from the field of educational psychology, says about the often controversial and much debated field of how best to teach basic literacy and numeracy skills to students with learning difficulties. It identifies current limitations in Australian research and calls for some changes in teacher training.

The review clearly shows that using a balance of strategy and direct instruction teaching methods is most suitable for working with children with learning difficulties. Direct instruction, sometimes referred to as explicit teaching, is an approach to learning characterised by structured practice, explicit performance expectations, systematic prompting, monitoring of achievement, reinforcement and corrective feedback. Strategy instruction focuses on the learning of a number of strategies that are applied to different situations rather than on the acquisition and retention of specific skills.

The review calls for an end to the 'either/or' debate regarding which methodology works best, asserting that teachers should choose aspects from both methodologies taking into an individual student's age, ability and aptitude.

The findings of the review indicate that direct instruction is currently under-researched and under-resourced in Australia. Few Australian studies have been specifically designed to compare the effectiveness of direct instruction with strategy instruction or inform educators how best to combine them in the classroom.

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It is noted as worrying that greater numbers of teachers in Australia are not being exposed to training and research in direct instruction and argues it is critical that teachers be trained in the use of all teaching practices that have been shown to be effective.

The review concludes that once further local research into the comparative effectiveness of the different methods of instruction in Australian classrooms is conducted, the findings from this research can be properly documented and used to strengthen 'best practice' for these students.

Australian Education Review number 48, *Balancing approaches: Revisiting the educational psychology research on teaching students with learning difficulties* by Louise Ellis. Print copies can be purchased from ACER Press. Contact customer service on (03) 9277 5447.

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The first year experience of tertiary students

The first year of tertiary study is a largely positive experience according to a group of just over 4000 young Australians who took part in an ACER study into their transition from secondary to tertiary education.

The transitions made by young Australians from secondary schooling to tertiary education are of particular interest to researchers and policy makers. The first year of tertiary study has been identified as the year in which the greatest amount of academic failure and attrition from study occurs (McInnis, 2001 and Williams, 1982) and, in the view of some researchers, completion of the first year is 'more than half the battle' in degree completion (Tinto, 1988). The first year experience of students, therefore, can have a major impact on later study options and participation.

The current study posed a range of questions pertaining to first year experience including reasons for any changes to initial enrolments. Background variables, including gender, earlier school achievement, depth of curiosity and attitudes to school were considered. The focus was on three main research questions:

- How satisfied are university and TAFE students with their initial experiences of tertiary education? What areas of their transitions have been difficult?
- Who is most likely to change course, or institution, or defer study or withdraw? What are their reasons for doing so?
- Are the outcomes and experiences of the 'equity target groups' – those students from backgrounds that historically have been under-represented in higher education – different from the experiences of other students?

Data were gathered by interview from 4026 participants in the ongoing Longitudinal Surveys of Australian Youth (LSAY) – an ongoing project that studies the progress of several groups of young Australians as they move from school into post-secondary education and work. Each of the students had been in Year 9 in 1998 and commenced study at a university or TAFE in 2002, immediately after completing Year 12.

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Students were surveyed at the end of their first year of tertiary study. Their level of satisfaction with tertiary study was measured by levels of agreement with a number of statements about their experiences in first year.

Student satisfaction

The overall picture painted by students of their first year experiences was largely positive. The vast majority of students agreed or strongly agreed that they liked being a student (94 per cent), tertiary student life suited them (87 per cent), they enjoyed the atmosphere on campus (88 per cent) and they had made close friends at their tertiary institution (89 per cent). Over eighty per cent (82 per cent) indicated that the tertiary experience had lived up to their expectations.

In terms of the difficulties faced by first year tertiary students, the most common problems were ones of 'time press' and balance. Forty-seven per cent of students reported difficulties in juggling work and study, 40 per cent reported problems finding time for other commitments, and 29 per cent reported difficulties balancing personal relationships with study. When asked to nominate their area of greatest difficulty, juggling work and study commitments was still the most commonly nominated area at 26 per cent. Problems with balancing personal relationships and study or finding time for other commitments were less common. Twenty-one per cent of students indicated that their first year had been without major difficulty.

Very little difference was found in the levels of satisfaction with tertiary study as reported by university and TAFE students. However, a greater proportion of university students than TAFE students reported that they had difficulty in juggling work and study commitments (50 per cent compared to 35 per cent) while more TAFE students, compared to university students, reported that they had faced no major difficulties during their first year. Students at regional universities, meanwhile, reported more difficulties paying course fees than students at other universities.

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Course change

Most students remained in their initial course at their initial institution at the end of their first year. Relatively small proportions of students changed course (2 per cent), or institution (one per cent). Slightly greater proportions withdrew (6 per cent) or deferred from study (4 per cent).

For those who had changed course, the most common reason was simply not liking the first course. The most common main reason for changing institutions was that the second institution provided better quality education than the first. The most common reason for withdrawing or deferring was that the course had turned out to be not what the student had wanted.

A number of student background factors were associated strongly with changes to initial enrolment. For example, students who were studying part-time were more likely to have changed institution during their first year than students who were studying full-time. Students who had not planned to participate in post-school study or who were studying at a TAFE college were less likely to have changed course than other students while students who did not score highly on attitudes to school scales or who were working full-time were more likely to defer and to withdraw from study.

The experiences of education equity groups

The experiences of students from the education equity groups were given special consideration in this study in order to determine whether students in these sub-groups had experiences that were different to those of other students. Members of the education equity groups are people from socioeconomically disadvantaged backgrounds; people from rural and isolated areas; people with disabilities; people from non-English speaking backgrounds; women (especially women in non traditional areas of study); and Indigenous Australians.

The results were fairly positive as students from most of the equity groups tended to report similar or higher agreement with the satisfaction items than other students. However, some areas of concern were identified. For example, students from remote or isolated location backgrounds nominated paying fees or other study-related costs as their main source of difficulty more often than other students.

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Indigenous students reported conflict between study and caring for children or other family members, as well as financial difficulties, more often than non-Indigenous students. Indigenous students were also more likely to withdraw from study during their first year, compared to non-Indigenous students.

Conclusions

The findings from this study revealed that, for the majority of first year tertiary students, their experiences of tertiary study were mainly positive. On the whole they were satisfied with many aspects of their lives as students and, although have faced difficulties, remained committed to continuing their education.

Some students, however, appeared to be having more trouble than others maintaining a balance between education and work commitments and experienced lower levels of satisfaction and an increased likelihood of terminating their study. Differences in the outcomes of first year students from rural and isolated backgrounds and Indigenous students are of particular concern. Results suggest that although these students have made the first step in accessing tertiary education, they may still face relatively high difficulties in continuing with their studies.

Further information and additional findings are contained in the report, *The first year experience: The transition from secondary school to university and TAFE in Australia* by Kylie Hillman, research report 40 in the Longitudinal Surveys of Australian Youth (LSAY) program. LSAY is conducted jointly by ACER and the Australian Department of Education, Science and Training (DEST).

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Revised Progressive Achievement Tests in Mathematics released

The ACER Progressive Achievement Tests in Mathematics Third Edition is a thoroughly revised and updated edition of ACER Press's widely used test of achievement in mathematics. The eight tests that make up PAT Maths Third Edition have been normed on over 12,000 students in 134 schools across Australia. Teachers can use the tests to generate normative and descriptive reports on the achievement of students in mathematics from year 2 to year 10 in NSW, Victoria, ACT and Tasmania and year 3 to year 11 in WA, NT, SA and Queensland.

Key Features:

- A common achievement scale for all eight tests
- Descriptions of typical achievement
- Estimates of curriculum outcome levels for each State and Territory
- Comprehensive tables showing the location of all test items for each State and Territory curriculum
- An overview of student strength and weaknesses in the curriculum content strands
- A range of individual and group reporting options
- A CD-ROM containing copy masters of administration instructions, score keys and reports

PAT Maths Third Edition introduces a number of significant new features, including for the first time a comprehensive analysis of each test question in terms of its location on every State and Territory curriculum framework and a curriculum outcome estimate for each State and Territory.

Each question in each of the eight PAT Maths Third Edition test forms has been assigned to an appropriate outcome from the curriculum of each State or Territory. This assignment to an outcome, together with Rasch scaling of all questions on the same difficulty scale, enables an estimate to be made of a student's level of achievement in mathematics in their State or Territory.

PAT Maths Third Edition Achievement Descriptors have been developed that summarise student achievement in each of the tests. Six groups of descriptors are provided, which together span the full range of student achievement on the scale.

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Three types of reports are available as copy masters in the PAT Maths Third Edition Teacher Manual and on the CD-ROM that accompanies the manual. These reports can be used for both individual and group reporting.

- Student Report: includes percentile ranks, stanines, scale scores, analysis of item by strand
- Descriptive Report: includes scale score, PAT Maths descriptors and State/Territory curriculum outcome estimates
- Combined Report: includes Pat Maths Descriptors, scale score, analysis of item by strand

PAT Maths Third Edition is an ideal assessment for measuring student achievement in mathematics, monitoring student performance over time, and planning effective and targeted work programs.

To purchase PAT Maths please contact ACER Press customer service on (03) 9277 5447 or by email to [.JavaScript must be enabled to view this email address.](#)

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Science Education Assessment Resource (SEAR) now available

The Science Education Assessment Resource (SEAR) is now available to teachers free of charge via the Curriculum Corporation website.

SEAR provides a wide range of assessment materials suitable for use across the compulsory years of schooling. The resource includes assessment tasks and items that can be used for diagnostic, formative and summative purposes. A key feature of the resource is rich marking keys to support teachers.

The materials were produced by ACER staff in conjunction with Curriculum Corporation, Edith Cowan University, The Australian Science Teachers Association and the Australian Academy of Science. Funding for SEAR was provided by the Australian Government through the Department of Education, Science and Training (DEST).

The resource has:

- More than 1400 items in over 350 tasks
- objective and open-ended items
- summative and formative items in 'pen and paper', practical, research and diagnostic tasks.

A Scientific Literacy Progress Map was prepared to guide the development of items for the resource. The map shows an increasing complexity of understanding from Levels 1-6, as well as development in three domains (Process domains A and B, and Conceptual domain C). The underlying conceptual framework is complementary to and takes into account, the existing and proposed directions of State and Territory science education policies. The tasks and items in the resource have been directly linked to the progress map, and are spread approximately evenly across the six levels of the progress map and the four curriculum strands of Life and Living, Energy and Change, Natural and Processed Materials, and Earth and Beyond.

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The resources are free to use and teachers need only register to gain access to the full range of tasks, which can then be downloaded as individual tasks in either PDF or Word format.

ACER would welcome teacher feedback, ideas and suggestions on the SEAR tasks and items.

Please send any feedback to sear@acer.edu.au .

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