

Reshaping the learning curve for the future

Professor Andrew Gonczi is calling for a new learning paradigm that could have profound implications for higher education and the VET sector. **JACQUI ELSON-GREEN** reports

THE way most people think about learning is wrong argues Professor Andrew Gonczi, dean of education at the University of Technology, Sydney who challenges the tradition dating back some 2000 years of assuming that learning is concerned with furnishing individual minds with ideas and that those ideas are the basis of individual competence.

"Such a conception rests on dichotomies about the mind and body which are false," he says, calling instead for a new learning paradigm that links learners to the environment in which learning takes place. Such a paradigm would take account of the affective, moral, physical as well as the cognitive aspects of individuals and insists that real learning only takes place in and through action.

This would mean the learning of key competencies can only occur through acting on the world in ways that increase the capacity to make judgements.

Gonczi presented his controversial views at a recent OECD symposium, during which he was asked to discuss teaching and learning of the key competencies as part of the commission's DeSeCo project (Definition and Selection of Competencies). (See page 8 for Paul Comyn's analysis of the symposium.)

Recent research and scholarly work in a range of seemingly unrelated areas, neuroscience, artificial intelligence, knowledge management, learning theory, as well as less recent work in philosophy, is now pointing in the same direction and undermining much of what educationalists believe, says Gonczi.

That is that competence in jobs, professions and life more generally, depends on the prior understanding of foundational knowledge and principles, propositions and ideas codified in the various disciplines.

"Essentially, I believe that we should be coming to the recognition that the best way to prepare people for occupations and professional practice and the more general capacity for successful life, is through some form of apprenticeship – an educational process in which the exercise of judgement and the ability to act in the world emerge out of the complex of interactions to be found in a community of practice."

The interactions combine cognitive, emotional and bodily processes in the social and cultural setting of the workplace or other social settings, Gonczi says which means that real understanding and competence is essentially a result of social rather than individual activities.

Gonczi concedes that if followed to its natural conclusion this argument will have profound implications for universities, technical colleges and for the professions, industry, associations and workplaces.

It will mean a need to embed much professional/vocational education in the sites of practice and a focus on "process" at the expense of content. For the part of the educational experience that remains in formal institutions, it will mean the growth of cross-disciplinary teaching, problem-based approaches, project work and use of portfolios to gather evidence. Extensive clinical and practical experiences will be the core of any program. It will also mean far more elaborate induction



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programs for new recruits to professions and occupations placing greater obligations on the professions, industry and workplaces to participate in professional education through coaching and mentoring in association with formal institutions.

Citing recent advances in neuroscience that have significant implications for our understanding of learning, Gonczi says one of the major findings is that reasoning and emotion are vitally connected.

"It seems clear that reason depends on many brain systems including the lower levels which regulate bodily functions. Thus, there is a chain of functions in which the body is intimately involved and which culminates in reasoning, decision-making and creativity. The mind exists in and for the integrated holistic organism and not outside it."

The implications for education from these developments in neurobiology are not clear, Gonczi concedes, but he says it seems reasonable to suggest the affective domain should not be ignored in educational programs.

Further, recent developments in artificial intelligence parallels the theorising and experimentation in brain research. A new paradigm for this research called "connectionism" moved AI away from the focus on data storage and logical manipulation of symbols and replaced it with a focus on how the brain was used for survival as part of the biological system.

"Another way of describing this is that the old focus was inspired by the 'mind as container' metaphor while the new sees the mind as a holistic pattern detector."

It is not that the patterns are stored in the mind, rather they are in the environment and that our brain interacts with the environment to produce the appropriate pattern – to act intelligently or competently.

According to Gonczi, the implications of this new research for professional and vocational education is profound as it challenges the traditional view of knowledge which is held by most educators that there is a distinction between knowing *that* and knowing *how*.

It also provides, says Gonczi, a framework for thinking about the perennial problem of professional education – the theory-practice gap.

"What it suggests too is that the old dichotomies between thinking and doing, mind and body are funda-

mentally wrong and that as a consequence we need to rethink our assumptions about how to produce capable practitioners.

Gonczi also refers to the increasing interest in what has been called situated learning with a number of studies of learning through apprenticeship-type situations postulating that knowledge is gained in effect through participating in a group who already have competence and are willing to allow the learner to progressively become part of the core of their community.

Studies in a number of countries show that apprentices actually generate new knowledge rather than just follow others, in other words, they generate their own tacit knowledge.

"Thus learning is fused with work and with a changing identity, notes Gonczi, and that learners are engaged in the process of constructing their world.

"This is a social theory of learning which is in stark contrast to traditional accounts which emphasise individual learning of propositional knowledge and the assumption that this forms the basis of professional competence."

Gonczi says that by contrast, situated learning theory argues that transfer is the knowledge developed by acting and doing in a range of contexts or communities of practice, where each time the learner creates new knowledge.

He maintains that the importance of the combination of the new neuroscience and cognitive sciences and situated learning is that it provides a way of addressing so-called "generic/key competencies".

People need to be given the opportunity to be immersed in the world in various contexts with some scaffolding to help them develop their capacity to make judgements.

While Gonczi says that none of this denies the role of institutions in developing and teaching propositional knowledge, it does mean the development of the capacities contained within constructs like the key competencies requires more than that.

"We need to accept that much of what makes people competent, resourceful, adroit, and therefore knowledgeable, is largely tacit, instinctive, intuitive, difficult to pin down and certainly can't be located in objects stored in the mind."

Gonczi emphasises that a wider conception of learning which acknowledges that it is developed through doing and acting in the world is needed, adding "it is a process which involves the emotions and the formation of identity through adapting to the world in which the person is situated".

The challenge, he says, is to shift the focus of professional and vocational education from training the individual mind, to the social settings in which the individual becomes part of the community practice.

"From facts and rules stored in the brain until the need to use them to enacting knowledge through activity; from a conception of humanity centred exclusively on the brain to a wider conception where humans are seen as embodied creatures in an embedded world."

Workplace will play key role in new model

THE new model of professional and vocational education will be concerned with the workplace not merely as a site of valid knowledge production and transmission, but as one which is equally valid to institutional knowledge production, according to Professor Andrew Gonczi.

Such a model should be one in which teaching, learning and research in universities and vocational colleges have close ties with the world of practice.

While there have been some attempts to link universities with industry, Gonczi says much more needs to be done.

At the radical end of the continuum would be apprenticeship models for undergraduate education and postgraduate workbased learning degrees, he says,

citing as an example of the former the change to teacher education in the UK where two-thirds of the degree is undertaken in a school under the supervision of professional colleagues.

In workbased learning, says Gonczi, a learner designs a learning program around their work responsibilities.

Such degrees already exist in a number of UK universities and will be further developed through the University of Industry.

"At my own university we have a number of such degrees in their early stages with a couple of organisations – the AMP Society and the NSW Department of Education and Training.

Features of these arrangements

include a three-way partnership between the organisation, the learner and the university where the learning program is linked to the strategic goals of the organisation while assessment and accreditation are the responsibility of the university.

Gonczi concedes that the model he is proposing will require a change in the relationships between formal educational institutions and professional associations and workplaces, changes to funding and to the organisation of educational institutions.

The most difficult change of all, he says, will be to the assumptions of most educationalists about the nature of knowledge and their conceptions of the mind.

And he says there are many implications for lifelong learning. "We need to embrace the idea of a learning society in which all social institutions – workplaces, families, trade unions, clubs and professional associations are acknowledged to have a learning dimension and a responsibility for the growth of their members."

In vocational and professional education the distinction between universities and technical colleges on the one hand and workplaces and professional associations on the other, should become far less marked.

While these things won't happen quickly, Gonczi says the evidence suggests these directions are both desirable and possible and now is the time to start.