
**Mathematics and Lifelong Learning: In Whose Interests?**

Gail E. FitzSimons  
*Monash University*  
<gail.fitzsimons@education.monash.edu.au>

There has been a shift over the last two decades in the orientation of lifelong learning discourses promoted by many governments and international organisations from social to economic goals. Not only has the discourse of lifelong learning been appropriated by economically-oriented governments, but the promotion of lifelong learning has in turn appropriated discourses of marketing and its associated psychologies. This paper will examine the possible contradictory roles played by mathematics as a means of developing and maintaining personal agency on the one hand, while being harnessed by governments in the production of self-managing subjects, on the other.

**Lifelong Learning**

The rhetoric of lifelong learning has been adopted by governments of many countries around the world over the last quarter century. Although the notion of lifelong learning was posited by Dewey (1916), together with the importance of experiential learning, the concept was given prominence by the UNESCO commissioned report (Faure et al., 1972) which emphasised the dual ideas of lifelong education and a learning society. Whatever the previous educational uptake and intellectual abilities of the person, the rapidly changing economic and social circumstances of our society require that education be seen as a lifelong endeavour, removed from particularities of time and location. It recognised the need for optimisation of professional mobility as well as the development of personal interests in education of the self, in order to develop and maintain a sense of personal agency in areas such as reason, creativity, democratic competence, and a spirit of social responsibility. According to Faure et al. (p. 163) the learning society “can be conceived as a process of close interweaving between education and the social, political and economic fabric, which covers the family unit and economic life;” with a sense of responsibility replacing that of obligation.

At approximately the same time the OECD (1971) was focusing on what it termed *Recurrent Education*, suggesting the reorganisation of the traditional patterns of education and work to accommodate “the aspirations of the individual” as well as “the emerging requirements of modern society” (p. 17). It called for reform of the basic presuppositions of education as the monopoly of the young, arguing for the centrality of continuing education as part of normal programmes, but warning against its possible marginalisation through the perception that its focus was to provide solutions to problems that schools could not or would not solve. Individuals, as ‘person[s]-in-community’ (p. 137) were to be granted a claim on education to accommodate their lifestyle needs, and this would act as “a counterweight to the dominantly selective
function” (pp. 17-18) of educational systems. This de-emphasis on the selection function of education was viewed from the double perspective of the state benefiting economically from certain minimum levels of schooling among the population as a qualification for social membership, and in return affording its members further opportunities to acquire scientific and artistic culture “not necessarily linked to selection for occupation” (p. 18).

The impetus given to the concept of lifelong learning in the 1970s by reports of bodies such as UNESCO (Faure et al., 1972), was revitalised in the 1990s. The more recent UNESCO report Learning: The Treasure Within (Delors, 1996) made the following statements which appear to maintain a holistic approach to personal, social, and economic development:

... education is at the heart of both personal and community development; its mission is to enable each of us, without exception, to develop all our talents to the full and to realize our creative potential, including responsibility for our own lives and achievement of our personal aims. (p. 19)

... it seems to us that the concept of an education pursued throughout life, with all its advantages in terms of flexibility, diversity and availability at different times and in different places, should command wide support. There is a need to rethink and broaden the notion of lifelong education. Not only must it adapt to changes in the nature of work, but it must also constitute a continuous process of forming whole human beings — their knowledge and aptitudes, as well as the critical faculty and the ability to act. It should enable people to develop awareness of themselves and their environment and encourage them to play their social role in work and in the community. (p. 21)

The concept of learning throughout life thus emerges as one of the keys to the twenty-first century. It goes beyond the traditional distinction between initial and continuing education. It meets the challenges posed by a rapidly changing world. The need [for people to return to education in order to deal with new situations in their personal and working lives] is even becoming stronger. The only way of satisfying it is for each individual to learn how to learn. (p. 22)

Notwithstanding the tenor of the 1996 UNESCO report, it has been argued that the concept of lifelong learning has undergone fundamental changes in discourse since the late 1980s. Within the last decade a vision framed within new politico-economic imperatives has placed importance on highly developed human capital, science and technology — thereby increasing the importance of work-related education and reducing the concept of lifelong learning to a narrow interpretation of equipping the workforce with necessary skills and competencies.

From a socio-political perspective Rubenson (1995) claims that the original conception of lifelong learning/education, encompassing formal, informal and non-formal settings, would have moved towards a classless society through the reduction of educational gaps. He asserts that this second-generation lifelong learning “neglects to critically examine the underlying assumptions regarding work such as the link between education and work, and the combined effects of family and school that hinder lifelong learning across class and ethnic lines” (p. 15). Using Bourdieu’s concept of *habitus* to provide a perspective on this phenomenon, he noted that socialisation within family, school, and working life provides a positive disposition towards adult education for some groups only. Larsson et al. (1986, cited in Rubenson, 1995), found that for non-skilled workers with little formal education there is a restricted view of adult education: It is only when participation results in better and higher paying work that it becomes meaningful.

From a socio-economic perspective Marginson (1997) observed that, in contrast to
the 1971 OECD publication, by the mid-1980s the OECD policy documents attributed to education a human capital function of contributing both as a socialisation and a screening mechanism. He continued that the OECD, if not all member governments, realised that simplistic assumptions about the nexus between education and productivity were tempered by the effects of market forces as well as the individual’s capacities. Not only has education been linked to productivity, it is also implicated in the production of a self-managing subject. This may be achieved partly through inculcation the aspirations of citizenship and partly through encouraging people to invest in themselves through education (Butler, 1998; Marginson, 1997). Following the periodic surges of interest in lifelong learning over the last three decades, there appears to be an over-riding belief among policy makers, at least, in the positive linkages between vocational education and training (VET) and economic performance in the UK, for example (Brown & Keep, 1999), and in Australia as these nations seek to establish, maintain and enhance economic advantage through the development of a more highly skilled labour force. This is paralleled by expressed beliefs among policy makers, if not all employers, about linkages between mathematics education and the economy (e.g., NBEET, 1995; NBEET/ESC, 1996).

However, Butler (1998, p. 69) warns, however, that “readings of lifelong learning texts illustrate both their persuasiveness and the contradictory positions available within their discourses.” She claims that depictions of mutuality, shared loyalty and trust between employer and worker are illusory. According to Butler (in press) the concept of lifelong learning is taken as a univocal construction of global logic, with little or no acknowledgement of the contestability of notions such as the concept of work which is rarely problematised, or the issues of power on which official texts remain silent. She asks whose metaphors are used and for what purposes? She continues that the Australian adult and vocational education sector is attempting to re-market itself to overcome the problem of citizens who value qualifications but not necessarily learning. And, as Butler (1998) and others have commented, within the textual representations of discourses such as curriculum documents, learners/workers are often absent.

The observations of the preceding paragraphs may be seen to be clearly manifested in the rhetoric of ANTA (1999) website document on lifelong learning which builds on the rhetoric of the Delors (1996) report to UNESCO, linking social and economic change with the need for lifelong learning. Social marketing, as in health awareness campaigns for example, is to be the vehicle used to instil a desire, even a passion, for skill acquisition and engagement in lifelong learning within the Australian community and enterprises. An example of text is given in Figure 1:
Life is changing

In 1999 it’s clear that life as we know it is constantly changing.

More and more our employability and fulfilment as individuals will depend on how successful we are at learning new things — our skill at ‘getting skilled’.

But it’s not just an individual thing.

The economic strength and social cohesion of the country increasingly depends on how well Australians can move with the times — to develop the skills and knowledge they’ll need for employment and to be active members of our 21st century society.

So . . . what’s the answer?

We need to inspire within the Australian community and enterprises a love of new skills and knowledge.

But that’s not enough.

To succeed we’ve got to understand what people and enterprises need and have the products and services to meet those needs.

But how do we do that?

We apply modern marketing techniques ... just like what’s happened with road safety or quit smoking .... through a national marketing strategy.

What will a national marketing strategy achieve?

It will tell us

- What Australians think about acquiring new skills and knowledge
- What will motivate them to do it and what the barriers are
- What products and services are required to meet their needs.

And finally, based on these answers, it will provide:

A strategy to effectively market skills and lifelong learning to the Australian community and enterprises.

A tangible product that will support everyone involved in the teaching and learning arena and which builds on what’s already working.

Figure 1. A lifelong learning brochure from Australia. (ANTA, n.d.)

The questions arise: Whose voices are heard here? Whose interests are being served by the appropriation of discourses of marketing to promote the commodified version of education depicted here? However the paradox remains that there is little evidence of any heed being paid to the educational or social messages of lifelong learning at the vocational mathematics classroom level in Australia at least. The explanation may lie more deeply within contemporary lifelong learning ideologies.
Ideology and Lifelong Learning

Bagnall (2000) identifies three interrelated progressive sentiments, which he claims transcend epistemology, emerging in the ideological commitments of philosophical traditions informing contemporary lifelong learning advocacy. Within each, however, lies the potential for the ideal to be “subverted, distorted or contracted into programmatic forms that fail to capture — entirely or in part — the liberatory thrust of the sentiment” (p. 24).

According to Bagnall (2000), the first, individual progressive sentiment, is committed to individual growth and development, seeking liberation from ignorance or dependence, and is reflected in the work of authors such as Dewey, Knowles and Mezirow. Although individual in focus it tends to frame a perception of public benefit arising from increased functional independence and cultural awareness, with a tendency towards advocacy of state support. The educational institution is seen to be important and distinct from other social institutions and teachers are expected to have specialist expertise. The second, democratic progressive sentiment, is committed to social justice, equity, and social development through participative democratic involvement, informing social action and its reflective and discursive evaluation; it is reflected in the work of authors such as Freire, Illich, and Aronowitz and Giroux. It is considered first and foremost a public good, calling for relatively high levels of state support. Teachers need to be relatively well educated and skilled, with a commitment to cultural reform, and educational organisations require a degree of institutional autonomy. The third, adaptive progressive sentiment, seeks liberation from deprivation, poverty and dependence through adaptive learning, based on the impact of accelerating cultural change, and calling for the development of metacognitive skills to allow learners to manage their own actions. Individuals or organisations are seen as the primary beneficiaries, with public benefit a secondary consequence; the role of the state is limited to the support of marginalised groups and regulation through setting standards and frameworks for recognition and transfer of adaptive learning. Costs are shifted to those perceived to be direct beneficiaries, and teachers are expected to have relevant recent task experience and to be open to change. There is a strong element of enculturation into ever-changing realities of lived experience.

However, under the influence of what Bagnall (2000) describes as economic determinism — where contemporary educational change is driven by considerations of cost and economic benefit, and preoccupied with educational accountability with all its implications for outcomes, accreditation, generic vocational skills and so forth, as well as the de-differentiation of education from other cultural domains together with the commodification of both education and personal identities — the progressive, ethical, liberatory nature of each sentiment is marginalised or excluded from the discourse. Education funded by the state is focused increasingly on the needs of the global economy. Thus, the individual progressive sentiment has been reduced to a focus on basic and minimal skills, arguably deskilling and disempowering for students, and teachers idealised for their conformity to prevailing orthodoxies. In contrast to the second democratic progressive sentiment, Bagnall asserts that contemporary lifelong learning discourse is strongly counter-critical in its vocationalisation and contextualisation of learning, the claims for democratisation through Recognition of Prior Learning (RPL) and so forth are patently false, and that the sentiment is in fact vigorously marginalised. The third adaptive progressive sentiment appears to be more appropriate to the contemporary lifelong learning discourse in its individualisation and the creation of “a mind-set of ephemerality,
changeability and fragmentation” (p. 30). However, Bagnall notes that its liberatory emphasis is only for the culturally privileged; for the remainder the discourse is directed to fitting them to the cultural realities and ideologies informing those realities. Bagnall goes so far as to criticise UNESCO’s support for lifelong learning at congresses in Hamburg, 1997, on adult education and in Seoul, 1999, on technical and vocational education, for making serious errors of judgement in accepting the superficial but misrepresentational gloss of these ideologies.

In summary, there has been a shift in the orientation of lifelong learning discourse from social to economic goals, although both still feature in the rhetoric. This is particularly noticeable in the approach of the OECD; it is being operationalised as a more subtle yet nevertheless persuasive strategy in Australia. Not only has the discourse of lifelong learning been appropriated by economically-oriented governments, but the promotion of lifelong learning has in turn appropriated discourses of marketing and its associated psychologies in the formation of (potential) workers’ identities. Flexible learning is promoted by ANTA (1999, n.d.) as an important strategy of encouraging learning (supposedly) when, where, and how the learner wants it. However, at a deeper level it is yet another instantiation of neoliberal technologies of management or what Butler (in press), drawing on Haraway, calls ‘knowledge-making technologies’ to highlight both knowledge-making practices and Foucauldian discursive ‘truth games.’ Nicoll and Chappell (1998) identify the shift to new discourses, in particular the shift in focus from education to learning giving rise to the possibility for a discourse on lifelong learning, as enabling the breakdown of previous boundaries of the VET sector. In this way the vocational sector, as with its general adult education counterpart, becomes (re)positioned as a strategic tool of the economy.

Positioning of Workers

In the Australian VET sector there appears to be a subtle kind of positioning at work. This takes the form of requiring all workers at lower qualification levels to begin (and frequently end) their vocational mathematics careers with limited, but arbitrary, selections from the number work strand of primary school mathematics curriculum documents. These are then justified, a posteriori it seems, by the inclusion of so-called contextual examples. Although the learner may be given the impression that the context came first, this is not the case as the curriculum writers and mathematics teachers have been given explicit instructions to ‘find typical workplace examples’ for the predetermined mathematics learning outcomes (e.g., Australian Committee on Training Curriculum [ACTRAC], 1993, 1994). Because lower level courses are frequently taught by workplace trainers (without post-school mathematics discipline educational qualifications), trainer’s guides often attempt to fulfil this task (e.g., ACTRAC/NFITC, 1995). However, there are few examples if any that deviate from the artificiality apparent in school texts as they promulgate what Dowling (1998) calls the ‘myth of participation.’ In the Australian VET sector an artificial version of workplace discourse is manifested in what Dowling (1998) calls the ‘myth of emancipation’. Here the ‘mathematical gaze’ recognises the mathematics in the work, but then the pedagogics “pathologizes the yet-to-be-schooled” (p. 15), using the superficialities of the workplace context to ‘motivate’ students to swallow their ‘elementary maths pill’.

For example, Level I pharmaceutical manufacturing operators are being taught the skills of estimation, using the pretext of “How can you estimate how much tax you pay?” (ACTRAC/NFITC, 1995). Given the algorithm that “Net pay = Gross pay - Tax
and deductions” (p. 13), the learners are directed to Worksheet #1 (ACTRAC/NFITC, 1995; Appendix 3, unpaginated) — a simplistic facsimile of “John’s payslip.” Gross pay is shown to be $362.60 and Net pay is $310.85; with a blank space against Tax and deductions. Most workers would simply read their (completed) payslip or else telephone the pay office. What is the message for these workers? These worksheets provide evidence of the kind of artificiality and static view of what is normally a dynamic workplace (e.g., workers as learners are required to write down temperatures marked on a pictorial or sample thermometer, rather than to interpret rises and falls of coolroom temperatures over time, essential to actual workplace functioning). The final pedagogic coup lies in the Additional Materials (ACTRAC/NFITC, Appendix 5) where, after nine examples of whole number and one-place decimal multiplications by 10, 100, and 1000, the learner is asked to:

Fill in the spaces:

If you multiply a whole number by 10 you put a ............. on the end of the number.

If you multiply a whole number by 100 or 1000 you put ...... or ...... on the end of the number.

If you multiply a decimal number by 10 you move the decimal point ............. places to the right.

If you multiply a decimal number by 100 you move the decimal point ............. places to the right.

Do these without a calculator

36 x 100

5.7 x 10

... 

Whose voice is heard here? How empowering is this text for the novice, mathematically or industrially? On what mathematics education research foundation is this recontextualisation of mathematical knowledge based? Is there an underlying message of conformity to meaningless rules?

Dowling (1995) argues that the kind of examples found in school mathematics texts mathematise everyday experiences with the implication that people’s lives would be more efficient and effective if they operated as mathematicians. However, he notes that this assumption is not valid “because mathematised solutions always fail to grasp the immediacies of the concrete settings within which, as Jean Lave points out, problems and solutions develop dialectically” (p. 4).

“How can you work out how much is produced per minute?” (ACTRAC/NFITC, 1995, Appendix 2, unpaginated) is another typical illustration of an algorithmic approach to a question which might well be answered by the more practical means of workers being told the answer (politely or otherwise) at production meetings. In any case, pausing to do the suggested repeated addition or multiplication calculations would severely downgrade the production rate. How many workers would do these kinds of calculations in their coffee break or lunch-hour?

The subsequent problem, to be worked through with a trainer, states:

The machine breaks down at 12 noon and starts again at 1.05 pm.
The average amount produced is 20 items each minute.

How much production was lost while the machine was stopped?

You can fill in the second column of Worksheet 5 for extra practice at multiplying numbers.

This final instruction betrays the real agenda. Apart from the improbability of a breakdown on the stroke of 12 noon (and maybe an extended lunch-hour?) there is no consideration of the reality of the situation. For example, there may have to be a line clearance [complete cleanout] for certain products before the process can start up again. In any case what happens to products partly completed — are they to be discarded or reworked? How long will it take between the restarting of the machine and the resumption of full production? Is it the case that workers have repeatedly complained to management about poor maintenance processes or ageing machinery? And so on.

**Conclusion**

In this paper I have presented some examples to illustrate the contradictory values and assumptions inherent in the rhetoric of lifelong learning. On the one hand the worker/learner is being cajoled through marketing strategies to take responsibility for their own education. An image of individual progression is conveyed, supposedly to develop functional independence and cultural awareness in the citizen. However, under economic determinism this is reduced to a focus on basic and minimal skills, arguably deskilling and disempowering for students, even if dressed in the language of pseudo-contextualisation. On the other hand the commodification of education, the shifting of costs and responsibilities to the individual, together with an attempted enculturation into the ever-changing realities of lived experience through the implied need for continuous training, suggests that education even when funded by the state is focused increasingly on the needs of the global economy rather than the individual whose identity it seeks to reform to serve these interests. However, by failing to theorise mathematics curriculum and pedagogy in any serious way, even these interests may not be well served.

**References**


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