Taking the Technology Trail: In Whose Interest?

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Abstract
This address will explore in whose interest it is for home economics to take the technology trail. The address will explore the interests of the national economy, the interests of students and the interests of the home economics profession. The implications of taking the technology trail will be analysed, and complementary and alternative trails explored.

Introduction
Five years ago, maybe two years ago, maybe now, technology was strongly linked to electronic and computerised gadgets and appliances. Technology education was (is?) strongly linked to computer education. However, national curriculum developments both in Australia and overseas have changed the face of technology education, although in many quarters this is still not well acknowledged. Consider, for example, the interim report on the review of the Queensland curriculum. However, as Martin (1993) states, central to the debate about technology education has been the uncertainty about the meaning of technology. Martin (1993:6) explores a range of definitions for technology, and goes on to say “that the national curriculum statement takes technology as involving the purposeful application of knowledge, expertise and resources to create products and processes that meet human needs”.

Given this definition, it appears that throughout the history of humankind, people have been involved in technology – the purposeful application of knowledge, experience and resources to create products and processes that meet human needs. How else would we have developed the spaceship, the computer, the microwave oven, the car, the bicycle, the biro? And yet it is only now, in the 1990’s, that education systems throughout the developed world have decided to label, and promote, learnings related to technology as technology education. The Victorian P-10 Technology Studies Framework stated:

Despite the pivotal role technology has played in human development, it has rarely appeared as a major area of study in formal education programs. That situation has now changed (Victoria 1988:6).

So why has this happened? In whose interest is it to identify and formalise learnings related to meeting human needs? Maybe it is in the interests of the nation to better meet human needs; maybe it is in the interests of the students; maybe it is the professional interests of the subject areas involved in technology education. Or maybe it is in no-one’s interest. And, pertinent for home economics educators, in whose interests is it for home economics to take the technology trail?

These questions are particularly pertinent given that, as Bigum and Green (1993:107) ask “Where has ‘the question concerning technology’ been debated in Australia?”. They argue that policy and practice with regard to technology education have been well in advance of appropriate curriculum research, and that the technologising of Australian curriculum and schooling is being achieved without adequate and informed deliberation on the part of curriculum workers generally. In 1991, at the Your Vision, Your Future, Your Say conference in Brisbane, Professor Kevin Morgan, Chair of the World Council of Associations for Technology Education, was asked after giving his address “Technology: Visions for the Future” what research had been done to demonstrate that society benefits from technology and technology education. Professor Morgan was unable to identify any such research. And indeed, since that time, very little has been revealed as to the efficacy of including technology in the
curriculum. This paper will explore in whose interests it is to take the technology trail.

The Interests of the National Economy

While the National Curriculum has been put to the side for political game playing, it is important to question the emergence of inclusions proposed in the curriculum for all Australian students and to consider in whose interests they serve. The question of the place of each of the learning areas has been largely overshadowed by the questions surrounding the actual mobilisation of the principles at a systems level. Bigum and Green (1993) lament the failure of Australian educationists to debate the questions surrounding technology education.

In various other countries of the world, technology education has been adopted as a compulsory component of students education. The Australian inclusion is not without precedent – in fact, we are many years behind other countries in the world. In the UK for example, technology was included as a compulsory aspect of the curriculum for all students in 1988. In this case, there was no doubt that technology education was introduced in the interests of the national economy. The inclusion was driven by educators being held accountable for the decline in the industrial and economic base of the country. As Pratt & Mahoney (1995:67) describe it “The Technology Subject Orders have been sold to the public as the means to regenerate the British economy”. Despite the intent that technology education serve the interests of the national economy, as clearly stated by Tim Eggar, the then Education Minister – “we have ensured exactly the sort of profound changes which are necessary to ensure an important contribution toward improvement of the performance of British industry” (Brown 1982:12) – there are doubts as to the efficacy of this. As Brown (1992:12) stated: “By the Governments own admission, this claim has proved false”.

This top-down education structure exemplifies the patriarchal structures which dominate systems throughout our western culture. Is it the role of education to adjust the curriculum to meet the needs of the struggling economy? And is this the reason why technology education was earmarked for inclusion in the Australian national education agenda? Or was it simply seen to be appropriate that Australian education structures emulate other international education reform leaders? Bigum and Green (1995:115) are concerned that “little explicit justification is given for the inclusion of technology”. There are some commentators who have questioned the relationship between technology, workplace reform and the economy, and these are adequately reviewed in Bigum and Green’s (1993) paper. Many of these discussions focus around the redefinition of work in society and the simple fact that our students in schools need to be able to play active and valuable roles in society. It is this point which is of concern. If the British philosophy towards technology education is emulated in Australia, then there is potential for the marginalisation of workers. The British system is encouraging the development of technical skills in preparation for the world of work, and this obviously limits exposure to a broad-based empowering education. The comment by British Education Secretary Patten is of great concern. He has asked the school inspectors to review the curriculum “to ensure that technical skills are developed through work with construction materials and related components and systems” (cited in Brown 1992:13). A researcher at the National Institute of Economic and Social Research in London, Sigbert Prais, believed that students should be able to specialise at the age of fourteen, spending two years concentrating on the skills needed for one specific discipline (Brown 1992:13). Similarly, the British Engineering Council has argued that technology courses should be strongly structured around manufacturing skills and industrial production (Dickson 1993:182).

The Australian Technology Education documents reflect at least some of this philosophy. The Technology Statement (1993:2) denotes the importance of technology in the curriculum “...because changes occurring in societies and environments demand that people in Australia become more innovative, knowledgeable, skilful, adaptable and enterprising”. Bigum and Green make the comment that:


It appears that the motivator behind much of the technology education push has focused on the potential contribution of individuals for paid work for the reconstruction of the Australian economy, and not on a culmination of roles played by people in our society. Preston and Symes (1992:225) argue for a redefinition of work
in the context of post-industrialist society "... in which there was more free time than work time and in which social and non-economic activities predominated".

Rather than following the British failures, maybe Australian curriculum developers should heed the advice of Watkins (1990:61), that the solutions to Australia's economic difficulties and the path towards the restitution of our national prominence are to be found in varying instances of flexibility. He supports flexible manufacturing systems, flexible technologies, flexible workers, and a flexible education system to respond to the immediate economic demands which our politicians deem should be speedily met.

The vocational push is on, and this is evidenced in most schools throughout the country. Is it valid to allow economic reform to drive our education structures, or does this simply throw an educational smokescreen through which politicians can emerge with rhetoric blasting, claiming they are making reforms which will reduce unemployment rates, multi-skill, meet the needs of the workforce etc. We will be so impressed with this approach that we will vote them in for a further term to continue their good work. The economic-rationalist agenda is all consuming in the technology debate and it is from this perspective that the curriculum has emerged:

*The relation between technology and the economy is understood in hyper-rationalist terms, and education is reconceptualised and restructured accordingly (Bigum & Green 1993:120).*

The Interests of the Students
In what way is technology education deemed to be in the students' interests? What is it supposed to do? Ferguson (1991, cited in Martin, 1995) examined a range of technology curriculum documents and found that there was general agreement that technology education should:

1. enable students to have the knowledge and confidence to select and use appropriately a range of technologies i.e. information technologies, communication technologies, some industrial technologies, health technologies, recreation technologies, and domestic technologies;
2. develop students' technological capability (ability to apply knowledge and design solutions to develop or improve products and processes in answer to human problems and needs;
3. give students the skills and knowledge to appraise their own and other people's solutions to technological problems, including those from the past and from other cultures;
4. develop students' ability to critically examine the impact of technology on society and the environment; and
5. assist students to cope with an increasing rate of innovation and change and to develop awareness of the range of technological careers.

An examination of the Australian National Technology Statement (1995:4-6) reveals that these goals are reflected in the intent of the Australian document. The statement claims that technological skills and understandings will enable people to:

- respond critically and resourcefully to challenges;
- devise creative ways for generating and applying ideas;
- translate ideas into quality outcomes;
- be innovative in meeting community needs;
- focus on design of techniques and products;
- deal with uncertainty in an informed way;
- cooperate in flexible teams;
- appreciate cultural differences;
- participate in continuous learning; and use local, national and international networks.

Even if the research proving that technology education would deliver such outcomes, Bigum and Green (1995:116) make the point:

*While there is little doubt that these are desirable qualities in themselves, arguably consistent with much recent liberal and progressive educational theory and philosophy, it is how they are contextualised in this instance that needs to be emphasised.*

There is an underlying assumption that technology is potentially both good and inevitable, and that technology in the curriculum will contribute to technological awareness, technological capability and technological critique (Fensham 1990). The question remains, technology is good for whom, and will technology education make a difference? Bigum and Green (1995:15) state:

*It still remains the case, however, that little explicit justification is given for the inclusion of technology. Such justification is something that seems entirely appropriate, given that it is not simply a new cognate area of curriculum organisation and emphasis that is in question here but also, arguably, a new epistemological orientation.*

Given the concerns of Bigum and Green (1995), it
is worth considering how technology education could be contextualised to address the interests of students through development towards active and informed participation in society. From a home economics perspective, we need to consider active and informed participation in:

- family and community life;
- present and future study;
- leisure and recreation; and
- productive work (paid, unpaid or voluntary).

If technology education can facilitate active and informed participation in family and community life, paid and unpaid work, further study and leisure and recreation, then technology education would appear to be in the interests of students. In other words, is the ability to “design, make and appraise” (the key processes in technology education) consistent with active and informed participation in family and community life, paid and unpaid work, further study and leisure and recreation? Or, is there another, a better, way? Let us explore this further, and explore the extent to which home economics learning experiences presented from a technology education perspective, can facilitate these student interests.

Let us consider first of all, the dimension of family and community life. What is it, then, that can be designed, made and appraised that will develop active and informed participation in family and community life? What does one need to be able to design, make and appraise in order to become an active and informed participant in family and community life?

One could design, make and appraise menu plans for nutritious meals; one could design, make and appraise nutritious foods; one could design, make and appraise strategies to improve the supply of nutritious foods to a community; one could design, make and appraise garments; one could design, make and appraise strategies to overcome domestic violence or child abuse...

And so the list could continue, developing products and processes which address human needs or problems.

And so to paid and unpaid work.

Again, the range of design, make and appraise activities appropriate related to paid and unpaid work that could be undertaken in a home economics context is huge. For example, students could design, make and appraise a management plan for the completion of home tasks; students could design, make and appraise new food products; students could design, make and appraise garments for the fashion industry...

And leisure and recreation?

Students could develop leisure interests in designing, making and appraising with a range of materials, information and systems that are used in the home economics learning environment. Leisure interests in the areas of food preparation, clothing construction, fabric decoration, interior design, and pattern making are more obvious examples...

So, is technology education in the interests of students? An examination of the above list of “design, make, appraise” activities would, at first sight, appear to be in students’ interests. But this is not necessarily the case.

Firstly, there are three issues of methodology which might guide us as to the value of these activities for students. The first issue to consider is, are the skills transferable? There seems little point developing in students the ability to design, make and appraise using here and now materials, information and systems to solve here and now problems, unless they are able to transfer these abilities to other contexts at other times. This is closely linked to a metacognitive approach to learning; students must learn how to learn. Rather than being teacher-driven, students must learn how to learn new skills, learn how to learn about the power brokers in society who control their futures, learn how to learn about materials, information and systems that they may wish to use. Teaching specific skills to students in a way that lacks a metacognitive perspective, even to give them the scope to make what they have designed, has a limited lifespan. What, for example, is the real value of learning how to design, make and appraise a buttonhole? a garment? a meal plan? Naturally there is some intrinsic value related to accomplishment of a task, quality of work, self esteem etc, but for how much longer do we need to be able to make buttonholes? garments? meal plans? Wouldn’t it be better for students to be taught how to independently develop new skills—where do they find out how to accomplish a new skill? what principles should they follow? (e.g. begin with easy tasks, seek out examples of good practice, practice, etc). Then, when they wish to implement skills that are new to them, as they inevitably will, they will have developed a metacognitive approach which will enable them to perform the task.

Consider those people who learnt how to design, make and appraise garments using natural fibres. Are they really active and informed participants? Their skills in the textile world could
be very limited compared to the student who
learned how to learn to design, make and appraise
garments regardless of the fibre, yarn or fabric.
Only if students take such a metacognitive
approach to technology education are they
empowered to become active and informed
participants in society, whether in the field of
family and community life, paid and unpaid work,
study or leisure and recreation. With such
an approach, there is no doubt that technology
education can be in the students’ interests. Failure
to take a metacognitive approach to technology
education will result in students developing
design, make and appraise abilities which have a
very limited life span. They will know the process
of designing, making and appraising but will not
know how to design, make and appraise with new
materials, new equipment, new information and
new systems. They will be in a technological
straight jacket for which the key will very soon go
rusty. They will become factory fodder for
industry. We must caution against the British
approach which encourages the development of
technical skills (Brown 1992:15).

The second issue of methodology relates to the
“appraise” component of the process. Perhaps one
of the most crucial “claims” of technology
education is that it will enable people to “respond
critically and resourcefully to challenges” (DEET
1995:3) and develop in students “a capacity
to exercise judgement in matters of morality, ethics
and social justice” (DEET 1995:4), although the
placing of the latter point at the end of a long list
of claims raises questions as to how important it is
perceived to be. Certainly there is merit in
students taking a critical look at technology —
presumably this comes in the “appraise” part of
the process. Issues of methodology will determine
the effectiveness of students taking such a critical
look at technology. Certainly in the past, the
notion of “appraise” has been linked more
strongly to appraisal of the product, its technical
worth, rather than an appraisal of whether the
product should have been developed in the first
place. Pratt and Mahon (1995) would argue that
unless technology is set within the social,
economic and environmental contexts, then
students could be used by technology rather than
able to use it.

Finally, the Technology statement (DEET 1995:4)
claims that technology programs equip students
with capabilities for innovative and productive
activity. Even assuming for a moment that
innovative and creative productivity is a
worthwhile activity (worthwhile to, for whom?),
this type of creativity will not necessarily

eventuate from a program whereby students are
taught to design, make and appraise in such a
rigid environment that students are not allowed to
develop creativity and innovation. In fact it is
debatable whether such a structured approach to
meeting human needs develops or stifles
creativity and innovation.

Even if methodological issues are addressed,
there are issues which caution against technology
education. A key issue to consider is whether
technology in the curriculum will, as has been
mooted, break down the traditional academic-
vocational divides which have traditionally
prevented the ablest students gaining experience
of those subjects associated with employment in
manufacturing and production. Bigum and Green
(1995) analysed the national technology statement
and concluded that technology education has, in
fact, the effect of reinforcing a mental-manual
distinction. They argued that the design-make-
appraise process that involves students in
investigating, devising, producing and evaluating
(DEET 1995:8-9) is essentially a mental process
rather than a material one; the fact that this
process forms the organisational basis of
technology in the curriculum presents a content/
process distinction whereby process is seemingly
privileged over content. As Bigum and Green
(1995:119) stated:

> Once again this can be understood as, in
effect, a mental “process” rather than a
material “process”; that is, over and above its
manual character. Hence the “manual-
mental” distinction is further emphasised and
accentuated.

They go on to cite Barnes (Bigum, and Green
1995:119) saying that he:

> warns that a real danger exists that new
emphases such as “practical learning” nd
“action knowledge” will be simply drawn
back into existing agendas and investments,
or else incorporated into new instrumental-
vocational frames of reference.

Having discussed the relationship of technology
education to the interests of students generally, it is
now worth pursuing specifically the interests of females.

In a way it is difficult to separate student interests
from the nation’s interests and the interests of the
economy. For example, in whose interests is it for
students to be creative and innovative? On one
hand it can be argued that creativity and
innovation are in the interests of the actor in that
they create a sense of self-fulfilment in some
students. But, on the other hand, one cannot help
but wonder whether such activity is more in the interests of the nation's economy. As stated in the UK, is it not in the students' interests for the nation to have a sound economy? However, Claydon (1984:1) wrote:

_We have frequently referred to youth as our future. So be it. Let's look after it for its own sake, stand accountable to youth rather than some political or economic abstraction such as the well-being of the nation, or the needs of the economy, or even a social abstraction like the community._

The Interests of the Home Economics Profession

The International Federation for Home Economics (IFHE) was founded in 1908 as the worldwide organisation concerned with the promotion and defence of home economics. It defines home economics as:

_Both a body of theoretical knowledge, based on exact sciences and humanities, and forms of practice, backed up by appropriate technologies. Its area of activity is the development, use, and management of human and material resources, for the greater welfare of individuals, families, and human society in its entirety (IFHE publication)._  

The practice of home economics around the world varies enormously, and this is reflected in the loose definition of the federation. This is considered to be a strength of the field, respecting cultural differences whilst simultaneously enabling continual adaptation of the field of study to meet the needs of various human societies throughout the world.

The Australian national association – with a recent name change to the Home Economics Institute of Australia (HEIA) – and state affiliated bodies, have adopted the principles of this definition, and in their position statement have acknowledged variation in the interpretation and mobilisation of this definition, viz:

_The interpretation of home economics in Australia reflects the rights of states and territories to autonomy within a loose national federation (HEIA Position Statement, 1987)._  

So within Australia there are enormous variations as to what is practised as “home economics” in each state and territory. Indeed, the Priorities for Action identified by the national association include specifically to “encourage diversity within the profession” (HEIA Position Statement, 1987).

When considering the impact of technology education on the profession of home economics, it is imperative to be aware of this diversity of profiles of home economics which exist. It is appropriate to refer to the national Position Statement as a foundation document with specific reference to states and territories as secondary considerations.

As a profession, the challenge presented to home economics by the underlying principles identified are substantial. And these are not the only challenges facing the field of study. In a recent document prepared by private consultants to advise the profession through the development of a strategic plan, the consultants have speculated that the problems facing the profession:

...do not arise from any inherent weakness in Home Economics. They have arisen because the profession has failed to stake a claim to its rightful territory, and because it has failed to publicise its achievements and its potential benefit to the community (Siedle, R. 1993:2).

It is important that the opportunities presented to home economists to contribute to the national curriculum areas of education are not neglected, thereby reinforcing this predicament. With specific reference to the technology learning area, Morgan warned "time and tide wait for no person, and nor does policy formulation" (Morgan 1992:47).

In considering whether taking the technology trail is in the interests of home economics, it is necessary to consider the relationship between home economics and technology, and then consider in what way this trail can further the interests of home economics.

The relationship between home economics and technology education are immediately obvious. It was stated in the 1987 HEAA Position Statement when the national curriculum remained purely visionary that:

_The practice of home economics is chiefly problem solving... The skills of problem solving are developed through practice in everyday concrete situations (HEAA Position Statement, 1987)._  

Added to this, the IFHE states uncategorically that the ultimate goal of home economics is “to improve the quality of life and bring about human progress” (IFHE). This links closely to the widely recognised definition of technology which has been used in the National Statement on Technology Education, viz:

...the know-how and creative processes that may assist people to utilise tools, resources...
and systems to solve problems and to enhance control over the natural and made environment in an endeavour to improve the human condition. (DEET 1992:1)

Clearly, the mission of home economics education and technology education have strong parallels. However, if the model for technology education in Australia and Queensland has any similarity to the British model, there is cause for concern for the profession of home economics - contrary to the opinion of Fritz, who suggested that "...in the United Kingdom...Home Economics has successfully stepped into the technology breach" (Fritz 1992:116).

There are two clear reasons for this concern - the apparent failure of the technology strand in total in the U.K.; and the role of home economics within this. Just a few years after the introduction of the National Curriculum in Britain where technology education was identified as being compulsory for all children up to the age of 16 (Brown, 1992) the teaching of technology in schools is in "disarray" and is being reviewed (Dickson, 1995). It is deemed to have failed because "There was not enough time to teach practical skills. It's a crying shame for a country that needs quality technical skills" (Brown 1992:15). Brown goes on to say that most criticism of technology in schools has targeted the relatively low priority given to making things. This is apparently due to the lack of a clear definition of what technology education meant, with a too broad subject and teachers uncertain of what it should include (Dickson, 1995; Brown, 1992). Australian educators may not see the failure to focus on the development of practical skills as a failure of technology education.

From the outset of the notion of the National Curriculum in the U.K., home economics educators were concerned at the prospect of being marginalised in the technology curriculum, or perhaps missing the focus of technology culture. Home economics educators are, however, confident that they have succeeded in having a strand called Food Technology included in the compulsory curriculum (Pratt & Mahoney, 1993). The situation at the moment seems to challenge the location of some of the component areas of food technology (nutrition, cookery, etc), with the suggestion that some are better located in life skills - not technology education. This has divided the profession of home economics, with the national association position remaining that home economics has a considerable role to play in technology education. However, it remains to be seen whether, in the current review of the technology curriculum in Britain, home economics receives a guernsey at all.

New South Wales home economists may well lose heart at hearing of the situation in the U.K. since the model in use in N.S.W. has subjects such as Food Technology and Textile Technology in the Technological and Applied Sciences Key Learning Area - a similar structure which is now being challenged in the U.K. This move has been seen in the past as being a strengthening of the position of the field of study, as Fritz stated in a recent paper - "The threatened demise of Home Economics has been forestalled" (Fritz 1992:117). But has it? Unfortunately, often home economists fail to consider the overarching philosophy of home economics and instead make short-term sacrifices, which may ultimately be revealed as inappropriate solutions. As a profession, we can be accused of making knee jerk reactions and overcompensating for our weaknesses. Boyd (1992) has warned against such a response, encouraging home economists not to throw the baby out with the bath water in our rush to be recognised as contributing to technology education.

Following the pattern of the British dilemmas, there are discrepancies around the states and territories of Australia regarding the role of home economics in technology education. However, as previously identified, this is to be expected given the divergent forms of home economics education which rightly exist. As a profession, we have been challenged to rationalise and validate components of our field of study. We have been driven by external forces to modify our subject area to conform to a preferred model of curriculum design - one in which home economics is not - no matter how hard we try - neatly compartmentalised (Boyd, 1992; Gardner, 1995).

Another concern for the profession of home economics are the strands in the technology programs which have been devised. The overall process of design, make and appraise raises the shackles of some Home Economists who have struggled for decades to remove the emphasis away from the product orientation to that of the process of design: a process which does not necessarily involve the "making" of any product. As a profession, this has led to split opinions as to the benefit of adopting the technology trail and reverting back to the hard fought battles against the image of cooking and sewing - an image which has required enormous energy to even begin to fade. Bigum and Green (1995) have detected that the making of products is
inconsistent and maybe even contradictory to the purpose and orientation of the field of home economics. Further, these authors suggest that the technology approach has been devised "more or less exclusively with workplace and the economy" rather than for other educational and professional reasons (Bigum & Green 1993:121) and that ultimately there is a need for alternative framings of the curriculum-technology nexus, and a critical assessment of the technology initiatives. Pratt and Mahoney (1993) further allude to this when they advise home economists in Australia to question the government's motivation or reason for implementing technology in schools and to then contextualise this in terms of the parameters of the profession.

The interests of home economics as a profession may well be guided by Boyd (1992:59), who outlined six needs which must be addressed if we are to deal with the dilemmas associated with home economics and technology education. These can be paraphrased as being the need to:

- improve technological literacy and competency;
- be reassured that home economists are in a strong position as potential technology educators;
- develop a position statement on a national basis;
- engage in collaborative research in the field of technology education;
- access industry for professional development;
- share with other home economists.

Many of these factors have been reiterated in the paper prepared by Pratt and Mahoney (1995), but it is the third point which provides us with the imperative. There is a need to develop a position statement on a national basis – one which is politically informed, technologically literate and provides ongoing strategies for the future – from which states and territories can be guided. Pratt and Mahoney (1993) are extremely direct in encouraging this approach:

*The professional body must know clearly how to represent itself nationally and understand the politics of the situation, particularly in the long term, using where appropriate, international experiences to assist. It must use the weighty 'politicalness' of the system and speak with one coherent public voice. No divisions can exist especially in the public arena.*

Perhaps we can be advised by our own wise words in the Priorities for Action component of the HEAA Position Statement which suggests we should:

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Establish clearly, as Australian home economists, who they are and what they can do (HEAA 1987).

It is time we undertook a critically reflective assessment of the place of technology education as a key element in an education curriculum, and then consider the implications it may have at a systems level – if we consider it still to be a good idea.

In whose interest do we take the technology trail?

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