

---

# The codification of local knowledge into learnerships

James Garraway

---

## Abstract

There is a need to improve the delivery of services in the water and sanitation field to many parts of South Africa. In order to do this not only money but also requisite structures and systems of training are required. The approach taken, in line with national trends and directives, is that of qualification-led training. This paper analyses the development of qualification statements which derive from work being currently done on the ground in rural areas. The analyses, using theory related to the sociology of science and technology, illustrate a process of knowledge change and further support the contention that a qualification-led educational transformation may not be the best model to follow in South Africa. However, the development of more practice-based qualification statements does serve a purpose in the field of qualification design.

## Introduction

In this paper I describe and analyse the changes that occur in knowledge as local information gathered in the field about community sanitation work is re-represented as qualification statements towards a learnership. The purpose of the qualification is to drive the improvement of training for sanitation workers so that the health of the community is also improved. This is an important issue in the development of South Africa. Before engaging in analysis it is important to illustrate the situation on the ground and to interrogate the National Qualifications Framework as a response to national education and training needs.

## The NQF and learnerships

The advent of the National Qualifications Framework in 1995 under the SAQA Act of the same year allowed for working knowledge to become a legitimate and equivalent form of knowledge with traditional academic theory

(SAQA, 2000a). This approach was exemplified by the Skills Development Act (No.7 of 1998) which introduced a new approach to promoting and developing work-related skills in South Africa. The overall vision of the Act is that of an integrated skills development system which will promote growth in employment, social development and the economy by means of integrated education, training and employment opportunities. This approach is rooted within South Africa's national priorities which are indicated by various macro-economic, industrial and labour market policies, science and technology issues, the SAQA Act (1995) and the National Qualifications Framework, as well as the declaration of the Presidential Job Summit (1998).

The Act aims to improve the skills levels of the current, largely unskilled workforce in industry and business such that the ripple effect is greater economic returns and growth in the long run. A more highly qualified workforce, it is argued, is more likely to be productive in competitive workplaces but also in service delivery in the public sector. For the workforce there are also advantages since improving their skills contributes to job satisfaction, mobility, security and the development of entrepreneurial skills which may enhance their mobility.

The concept of learnerships, and the shorter skills development programmes, is a central intervention in this integrated skills development system aimed at achieving a set of transformations which include transforming access to education, training and work; aligning education and training more closely with labour market needs; and integrating structured learning programmes with work experience to equip learners with the competencies required by the labour market as well as for lifelong learning.

Learnerships are essentially structured programmes of workplace learning which are integrated with formal learning components. These programmes are designed to take place over a year, and result in an NQF-registered qualification.

The question needs to be raised as to why we have followed an outcomes-based qualification-led education and training route in the emergent democratic South Africa. Firstly, there was a perceived need for a break with past systems of education, and in particular Bantu education with its baggage of authoritarian and unequal access to education and low-level rote learning. At the same time, there was an awareness on the part of policy makers from the ANC and the trade union movement during the period 1989–1994 of the

impact of globalisation on the development of South Africa. For these policy makers, globalisation signaled the need for a high skills approach to economic development if South Africa was going to compete in the world market. Successful economic development was also understood as the driving force to enable social development and the creation of a more equal society (Kraak, 2001, 1999). Thus outcomes-based education (OBE) and a national qualifications framework (NQF) were seen as breaking with past educational systems and as an engine for both economic and social upliftment (Kraak, 2001; Allais, 2003).

The state is unlikely to allow a national initiative of such importance to be voluntary and beyond its direction and control. A qualification-led system of change enables the state to set targets and monitor both the production of qualifications, numbers of learners enrolled on them and their relative success rate, and hence the accountability of providers towards successful provision of education (Young, 2003). This, it is argued, is substantially easier than attempting to direct, monitor and control teaching and learning on the ground. A qualifications-led education system in the form of the NQF also had the advantage of allowing accreditation of previous learning, particularly in industry, and the accumulation of credits which could allow the learner to access increasingly higher qualifications in a step-wise manner. Thus all sectors of society, and particularly those who were previously disadvantaged by unequal access to formal and more prestigious educational resources, could trace a pathway of learning from the now much cited 'sweeper to engineer'.

However, as Young (2001) points out, despite the high level of production of qualifications and unit standards there are as yet limited numbers of takers in South Africa. Furthermore, the throughput rate of learnerships in particular is discouragingly low. In October 2004 it was estimated that of 70 000 enrolled learners since 2001, only about 10% had managed to complete and qualify (*Mail and Guardian*, 2004). Part of the problem, particularly for smaller businesses, seems to be the large amount of confusing terminology and time-consuming red tape involved in registering and monitoring learners.

An additional problem is that discourses of access and social upliftment are not necessarily easily combined with more economist discourses associated with high skills development. In South Africa, it has been argued, the more economist high skills approach has, over the last eight years or so, come to dominate the education landscape (Allais, 2003) at the expense of principles of access and egalitarianism (the sweeper to engineer possibilities). Furthermore,

an economist education and training focus is only one of many educational approaches to high skills development. For example, Japan, characterized as a high skills economy, maintains a focus on high quality general school education rather than a more economist or work skills orientation (Young 2001). As Young (2001) further points out, it may be that we have attempted to 'jump' the high skills divide via the NQF rather than first build the necessary educational resources, skills and systems to enable this move.

Unlike in other parts of the world where national qualifications systems were initiated in the 1980s, in South Africa there was an attempt to have a single, integrated framework which was inclusive of all sectors of education from adult basic to higher education, as well as of education at different sites (for example work, schools and universities). Furthermore, the system was predominately structured around highly detailed unit standards (Allais 2003; Ensor, 2003). Knowledge learnt in different sites under different conditions could relatively easily be equated under a rubric of 'different content, same outcomes'. This, in turn, would enable a system of credit transfer and advancement between different sites.

There was a determination to erode three knowledge boundaries: between education and training; between academic and everyday knowledge and between different forms of knowledge, disciplines and subjects. (Ensor, 2003)

But there is a localization of knowledge and learning at different sites which may be ignored or restricted with the development of highly prescriptive unit standards-based qualifications. As Young (2003a,b) and Ensor (2003) point out, knowledge, for example at work and in the academy, does come in different forms and is acquired differently, and one cannot easily merge one into the other. This difficulty is highlighted in Australian and British educational institutions where knowledge from work may be unsuccessfully imported into more academic curricula (Boud and Solomon, 2001; Solomon and McIntyre, 2000). Similar difficulties arise with attempts to bring everyday knowledge into curricula based on school subjects (Whitty, Rowe and Aggleton, 1994). There is a need for flexibility in order to account for 'real learners in real situations' and to relate to previous experiences of both learners and providers (Allais, 2003; Young, 2001). Other NQFs, for example in Australia, recognize that knowledge and learning in different sites may have different outcomes, and there is thus not an attempt to seamlessly equate these learning outcomes (Keating, 2003).

Although the NQF and OBE have been widely criticised as an approach to education and training improvement for the reasons described above, little attention seems to have been paid to how knowledge taken from the traditionally extra-academic field may become incorporated into more formal, codified knowledge systems in the form of qualifications on the NQF.

Researchers operating in the field of science and technology (for example, Callon, Law and Rip, 1986; Law, 1997; Latour, 1999) have long recognized that knowledge movement often involves change. In this paper I set out to analyse the process of how segmented, grounded knowledge in the workplace becomes codified into qualification descriptors, and what sorts of changes may occur during this process. I present the case that the change is quite substantial and that, along with the other reasons cited, a qualifications-led approach to meet the required changes in education and training may not be ideal. Lastly, I set out to suggest how the process of qualification design may be fruitfully further explored.

## The context of the qualification development

In late 2001 approximately 18 million people in South Africa, residing in about 3 million households, did not have access to suitable sanitation facilities. The facilities available would be open buckets put out and collected daily in peri-urban areas, rough pit latrines, or, where neither of these is available, use of the open bush. Approximately 12% of schools had no sanitation facilities whatsoever, and in such sites students would simply use the bush (Framework for National Sanitation, 2001). The situation has changed little from 2001 to the present (Hemson, 2004).

Not surprisingly, these poor sanitary conditions have led to the spread of disease either by direct contact or through insect fly vectors. Approximately 1.5 million children suffer from preventable sanitation-related diarrhea or worm infections (*ibid.*). In early 2002, 150 000 people in South Africa were infected with cholera, one of the diseases whose spread is directly attributable to poor sanitation (Cottle and Deedat, 2002).

The solution to the problem in areas which do not have access to piped sewage lies in the building and correct use of the appealingly named ‘VIP’, or ventilated improved pit latrine. This consists of a well-built, safe pit surmounted and sealed by a concrete slab and a toilet with a lid. The structure is housed in a small hut with a door. The door, lid and sealed slab prevent the

easy passage of flies in and out of the latrine. Perhaps the most important aspect on the VIP is the chimney which leads directly from the pit. At its apex there is a gauze covering which prevents flies from escaping; as it is the only source of light into the pit, flies tend to congregate and die in the chimney.

It costs about R1 200 to build one VIP and about R60 a year to maintain it. In 1994 when the new ANC government came to power there was a strong focus on poverty alleviation via the Reconstruction and Development Programme, and a relatively large budget was allocated to water and sanitation. But in 1998, following the World Bank's notion of cost recovery, the budget was slashed by R500 million to approximately R132 million in 2001 (Cottle *et al.*, 2002). This shift in emphasis to economic development was accompanied by a focus on businesses and water reticulation in the more wealthy areas.

More recently, however, there has been a recognition of the importance of basic sanitation and this budget is now increasing annually, reaching approximately R1 200 million rands in 2004 (Hemson, 2004). But increased funding alone will not necessarily improve sanitation. In 2001 just over half of the budget was utilized by local authorities in promoting basic sanitation (Cottle *et al.*, 2002), which suggests that there is insufficient capacity to supply these services on the ground. The question of building capacity in water and sanitation points directly to on-the-ground sanitation training and the design of appropriate qualifications to guide this training.

Qualifications and training exist in a complex organizational web in the sanitation sector. Qualification development and training involves the central government Departments of Water Affairs and Labour, local government, large semi-private water bodies, consultants, qualification design groups, funders and provider organizations for training, amongst others. There is currently little coordination amongst these bodies but a lot of qualification and training information is being produced and used. Since 1994, following the draft policy guidelines of the National Sanitation Policy (1995) the dominant approach to improving sanitation has involved educating communities about appropriate sanitation practices and the need for VIPs, and enabling community participation in decision making at local government level.

Despite a substantial period of this form of training and delivery in South Africa, there is still a huge backlog of basic sanitation facilities, preventable sanitation-related diseases are rife and available funding is not being utilized (Cottle *et al.*, 2002). In 2002 the community water and sanitation skills

development unit of the Peninsula Technikon was given the task of researching and developing suitable qualifications to be delivered by providers in mostly rural areas.

The qualifications development approach taken by the unit was to identify the projects responsible for sanitation delivery in communities and to determine how they operated and how these operations could be extended and enhanced. The more effective projects comprised builders and labourers who actually constructed the toilets; quality assessors of building work; health workers/monitors whose job it was to assess the sanitation needs of the community and educate them in good health practices; bookkeepers responsible for financial and administration issues; storekeepers who order and store materials, and project managers.

From the units' perspective there were four important elements to any set of qualifications, all of which focussed on the work of the on-the-ground practitioners in the projects. Firstly, the scope of best practices for each type of practitioner needed to be identified. Secondly, it was important to identify what knowledge and skills were needed in order to improve their efficiency. Thirdly, there had to be an identification of what each individual needed to know about the others' work in order to do their job successfully. The development of this sort of cross-disciplinary knowledge in learnership qualifications is referred to as "supporting flexible work organization" in official documents (GTZ, 2002, p.9). A good example of this arose where toilet builders 'cut corners' because of time or money constraints and failed to ensure that the concrete blocks above the pit were sealed, thus enabling flies to move in and out of the pit and hence spread disease. If the builders knew about disease transmission as well as building they would be less likely to commit this error. An additional example, discussed later, is that of on-site builders often having to discuss issues of sanitation with homeowners. As this sort of knowledge appears to be important for work, it was termed 'horizontal connectivity' and included as part of the qualification grid planning in Figure 1. Related to this horizontal connectivity was a vertical developmental or career pathway so that those at the lower levels of the project could become more skilled and eventually take on managerial positions. According to SAQA (2000b) each qualification needs to act to open up access routes to additional training. In order to move up the career ladder, individuals would not only have to perform their job in more complex and responsible ways, but would also have to steadily increase their knowledge of what other members of the project do.



Figure 1: Water and sanitation vertical and horizontal project training structure

Role → Position	Building	Health	Administration
Manager ↑	Quality/health/finance ↗ ↖ ↕		
Supervisor ↑	Quality assessor	Health worker	Bookkeeper
	↔		↔
Operator ↑	Builder	Health Promoter	Storekeeper
Entry level ↑	Labourer, building assistant	Informal facilitator	Guard

Figure 1 is interesting representation of this horizontal and vertical development training structure because it is a shell for describing both project and training development. As qualification statements were developed, they were progressively added to the grid. Horizontal articulation was ensured by placing cross-disciplinary statements, such as those concerned generically with disease transmission, onto the grid.

In developing the qualification statements the researchers in the unit began with the real world of what people do and what their needs are, and packaged and prepared this information so that it could be worked on in another world, the world of education. Information was gathered in the north of the country and worked on (transformed) in the south in Cape Town, in offices and classrooms, as the researchers interacted with technical advisors. One could say that work on the qualification statements occurred in a sort of educational laboratory, physically removed from its origins.



The idea we are interested in here is that the movement of knowledge and issues from one situation to another involves change. Current critiques of qualification-led moves to transform society and the economy have not adequately explored this issue. The final object, in its new situation, may be substantially different from its form in the original object. The process of change occurs, firstly, because of the conditions and traditions of the new situation into which the knowledge is moved, and secondly because of the compromises negotiated between the different actors involved in interpreting the knowledge. The above processes of knowledge change have been described in the development of technological innovations (Callon, Law and Rip, 1986), the transfer of technology (Law, 1997) and in the development of scientific knowledge and scientific papers (Latour, 1999; Callon, Law and Rip, 1986).

In the next section, I extend the ideas of knowledge movement and change to that of curriculum development. In particular, we focus on the movement of knowledge from the world of work, both current and anticipated, into qualification descriptors.

## Transformation of knowledge from the workplace to a qualification

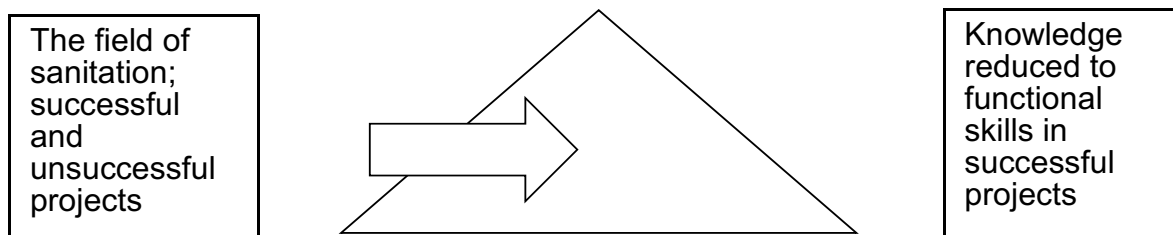
The researchers cannot visit all the pertinent local government areas so they take a sample by asking provincial organizations to select their best water and sanitation (W & S) projects, and to justify this selection. They then visit each chosen site and gather information from the members of the project about what they do and what they think they need to be able to do. Because work within a W & S project typically occurs within a project cycle, i.e. identifying health and sanitation needs, registration of households, the development of VIPs and quality control, the researchers use this as a tool to gather and initially organize information in a table. So, for instance, identifying a need requires the functional skills of project management and the ability to identify health problems.

This is a first level of knowledge transformation, which I will refer to as a form of translation. By translation (Latour, 1999; Callon *et al.* 1986) I mean that knowledge gathered has been aligned to the issue at hand, that of developing qualifications for water and sanitation workers in areas without water-borne sewage, and that a choice has been made to focus on currently

more successful projects. Other forms of sanitation (for example, water borne sewage) and less successful projects have been excluded. In a sense, only that knowledge relevant to the problem at hand has been 'recruited' into the project.

Another level of knowledge change is that the 'things' which people do in their day-to-day work have been transformed into descriptors of functional skills. For example, one of the roles of the health worker is to find out what the current sanitation situation is amongst individual households and to record what sorts of training and building need to be done. This house by house listing of needs would be grouped under the heading of 'registering households'. There is a contraction or an abstraction here in that what is expressed as a functional skill is a generalizable term for a number of activities. The whole has been reduced (Latour, 1999). The act of reduction can be represented diagrammatically, as shown in Figure 2.

Figure 2: Transformation as reduction



This information is recorded on site and arranged into a table. Once in the form of a table, the information is removed from the site to offices approximately 1 500 km away in Cape Town where it is worked on without further reference to its origins.

In Cape Town a major transformative move occurs. The functional skills that were previously linked to the stages in the cycle where they occur become de-linked; the contexts in which they were previously situated have been deleted. The functional skills become a pool of disconnected descriptors which can then be put together all in one place. The researchers use an organizational trick here: they write down each separate skill on a small sheet of paper and affix each of these skills temporarily and randomly to a larger, sticky sheet of paper. They can then see all the functional skills at once and begin the process of organizing them into groups. This is an iterative process; as one group emerges so it changes the composition of another pre-existing group.

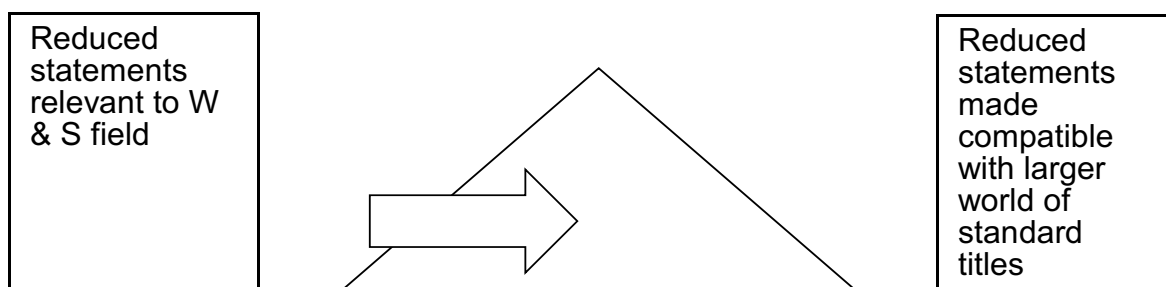
This process of categorization is the second major transformative move. The pool of disparate elements (functional skills) is clustered under headings. For example the functional skills of monitoring the health of a group of households, conducting health visits, identifying health problems, doing groundwater risk assessments and monitoring people's behaviour can all be grouped under the heading of 'Observe, investigate and monitor people and things'. The sheet of paper and the skills randomly stuck onto to it, is a device which enables articulation; that is, it is something which brings out commonalities and differences such that we can categorize and compare the skills (Latour, 1999).

In a sense, the clustering 'emerges' on the sheet of paper as the device enables the researchers to match like elements. But there is continuity here too. The elements we began with, the roles people perform and the part of the project cycle they are in, emerge again, in a different form, having lost some properties and gained others.

The next transformation in qualification statement development is again one of reduction; only the category headings, and not the detail, move onto the next stage. So, for example, the statement 'observe, investigate and monitor people and things' only, and not the supporting information which led to its development, are recorded.

There is a clear danger here that the reduction distances the qualification statements from what is actually happening on the ground. But this reduction is also an enabling device, one which renders the headings as proto-qualification standard titles to prepare them for comparison to the full field of pre-existing qualification standards. It is a process of preparation for compatibility to a larger world out there. In being made more compatible the qualification statements are given particular linguistic and domain-specific properties and are thus amplified (Latour, 1999), as shown in Figure 3.

Figure 2: Transformation as reduction



In some cases the researchers will say ‘this pre-existing qualification statement provides a necessary introduction to ours’ or ‘such-and-such qualification statement should be done with our qualification standard’ or even ‘this pre-existing qualification statement can replace ours’. Thus, from this comparison, new combinations may emerge; and our proto-qualification standard titles may be enriched or replaced.

Once we have these transformed qualification descriptors we can begin to add them to the grid in Figure 1, ensuring horizontal and vertical articulation.

There is a final phase of transformation, which is currently unfolding, to do with horizontal and vertical development as shown in the table in Figure 1. The qualification statements were matched to the table and were presented to training practitioners – i.e. those groupings who train the workers in the projects – for some form of validation (ideally, we would like to have worked with filling in the table with project workers but getting a group of trainers together was logistically easier and served other needs of the unit). During this process three main transformations occurred. Firstly, the qualification statements were enlarged to include more specific items. Secondly, additional qualification statements which would enable vertical progression were discussed. For example, for labourers/assistants on Figure 1 to undergo vertical training to become builders they would need to be trained in basic measurement as well as the more specific information relating to building VIPs. Thirdly, important horizontal development qualification statements were uncovered. For example, builders being on-site around households while building VIPs meant that they often instructed people in good sanitation practice; builders thus needed training in sanitation practice/control of disease which is traditionally a health worker qualification component.

## Discussion of knowledge change

In codifying workplace knowledge into qualification statements, we are essentially changing it into something different, something more compatible with educational discourses. The process may involve distinct stages as the knowledge loses its local flavour and becomes progressively more distanced from grounded practices. It is not, however, simply a matter of abstraction but involves mechanisms such as translation, context deletion and reduction, articulation, categorization and amplification. The mechanism of context deletion has been observed in insurance claims processing by Wenger (1998) as an often necessary transformatory step which enables information to more

easily cross boundaries within the workplace. The purpose of this step here may be similar in that work practices are being prepared to cross boundaries into educational design practice. This and the other mechanisms have been noted by science and technology researchers tracing knowledge change as field observations are documented. During this process there is loss of detail, but there is also extension and development (Latour, 1999). The transformed objects in the form of qualification statements, through being rendered compatible, may serve an important purpose in productively influencing the whole field of water and sanitation qualification statements. Boundary crossing theory may serve to illuminate this productive influence.

Engestrom, Miettinen and Punamaki (1999) and Engestrom (2001) examined the interactions between different systems of knowledge in law courts and health systems and attempted to describe and codify these events. Hall *et al.* (2002) described interactions between conservationists and builders as involving the development of particular ways of speaking to one another to maximize co-operative work and minimize conflict. Gutierrez, Tejada and Baquedano (1999) described the development of interlanguages between teachers and pupils which enhanced student learning. In all these interactions a more local need or understanding is faced against some larger more expansive system of knowledge. What ensues is a disturbance on both sides of the interactions such that pre-conceived understandings of the one group are challenged or contradicted by the other. This, in turn, opens up a hybrid or third space in which “potentially shared or jointly constructed objects” (Engestrom, 2001, p.136) may arise and which may also satisfy the needs of all groupings. Such objects may furthermore be generative in that they enable new avenues for knowledge development.

Can we then describe something in interactions between qualification statements based on work knowledge and the field of qualification descriptors which have the above characteristics?

Firstly the table in Figure 1 is a hybrid between actual work structures on the projects and the educational system of the NQF, with vertical and horizontal articulation. This is a new object which is potentially developmental. We can see this development potential when it can be filled with qualification descriptors which result from observed practice being made more compatible with existing sanitation qualification descriptors. In a sense we have here disturbed codified workplace knowledge and recontextualised it into a new hybrid object. But have we disturbed or re-oriented ways of doing and thinking at the next level up within the current system of designing sanitation qualifications?

In fact, the table in Figure 1, with the attachment of qualification descriptors, was acting in powerful ways at decision-making and policy levels. In order to understand this action we first need briefly to return to the scenario outlined at the start. There are many competing decision-making bodies, consultants and providers of training all attempting to make an impact on the field of water and sanitation training. In short, the situation was of qualification statements emanating from different positions essentially sliding off one another such that more and more collected rather than were grouped. The qualification statements put forward by the researchers were powerful in three ways. Firstly, they were transformations of what people actually did on the ground and what their needs were. Secondly they were hybrid in the sense that they were matched with other pre-existing qualification statements, and thirdly they were about horizontal and vertical developmental pathways.

According to the researchers, the qualification statements described in this study were acting as both a “bridge and container for everybody else’s work” (Cousins, Project report back, Peninsula Technikon, May 2003). They were used by the researchers to provide a sense-making device for government, labour, funding and programme provider organizations, something which could hold together the disparate approaches to curriculum. They were also used by the researchers to influence the future directions of qualifications, and prevented other powerful water bodies from forcing through their versions of qualifications which were not necessarily based on empirical work.

## Conclusions

Using techniques from the sociology of science (Latour, 1999) we have shown how local knowledge may change in complex and systematic ways as it is re-represented, or codified, into more formal qualification statements. In the case study analysed here, the qualification development process results in something quite different from the context from which it is drawn as it essentially glosses over local practices and knowledge. We could suggest that this supports the contention initially raised by Young and Allais (2003) that educational change needs to be about teaching and learning issues rather than about focusing on the more abstract design of qualifications and the NQF. Although qualification-led movements may be less than ideal for educational change, it has also been suggested that such transformations may serve a productive purpose, at least within the ambit of better qualifications development.

What we have not dealt with here, however, is whether or not these qualifications serve the purpose they were designed for: to improve water and sanitation structures and practices through more appropriate training. Currently we have managed to get informal validation of the qualification statements from those working in some of the projects, and through matching them to what field trainers currently do and feel they need to do. But we still do not really know the on-the-ground efficacy of the qualification statements until they are delivered in programmes of learning. This closing of the loop is an essential step in evaluating and critiquing the processes involved in qualification design. This again invokes the points raised earlier by Young and Allais (2003) on the need to look at learners, learning contexts and providers in order to remodel and to provide feedback on the NQF, or indeed to suggest different structures for the provision of education and training in South Africa.

## References

- Allais, S. 2003. The national qualifications framework in South Africa; a democratic project trapped in a neo-liberal paradigm? *Journal of Education and Work*, 16(3): pp.304-325.
- Boud, D. and Solomon, N. 2001. *Work-based learning. A new higher education?* Buckingham: Open University Press.
- Cottle, E. and Deedat, H. 2002. The politics of cholera. *Mail and Guardian* 15 February 2002. <http://www.mg.co.za> Accessed 13 September 2005.
- Callon, M., Law, J. and Rip, A. 1986. *Mapping the dynamics of science and technology: sociology of science in the real world*. London: Macmillan.
- Engestrom, Y., Mietinen, R. and Punamaki, R. 1999. *Perspectives on activity theory*. Cambridge: CUP.
- Engestrom, Y. 2001. Expansive learning at work: toward an activity theoretical reconceptualisation. *Journal of Education and Work*, 14(1): pp.133-156.
- Ensor, P. 2003. The national qualifications framework and higher education in South Africa; some epistemological issues. *Journal of Education and Work*, 16(3): pp.325-347.



Framework for national sanitation strategy: bringing sanitation up to speed. 2001. <[www.lgwseta.co.za](http://www.lgwseta.co.za)> February, 2003.

GTZ. 2002. South African German Development Cooperation: The Learnership Development Series. *Book 3: How to design qualifications*. Pretoria: German Technical Cooperation.

Gutierrez, K., Tejada, C. and Baquedano, P. 1999. Rethinking diversity: hybridity and hybrid language practices in the third space. *Mind, Culture and Activity*, 6(4): pp.286-303.

Hall, R., Stevens, R. and Torallba, T. 2002. Disrupting representational infrastructure in conversations across disciplines. *Mind, Culture and Activity*, 9(3): pp.179-210.

Hemson, D. 2004. South Africa's poverty by numbers. *Weekly Mail*, 24 June 2004. <[www.mg.co.za](http://www.mg.co.za)> September, 2004.

Keating, J. 2003. Qualifications frameworks in Australia. *Journal of Education and Work*, 16(3): pp.271-288.

Kraak, A. 1999. Competing education and training policy discourses. In Jansen, J. and Christie, P. (Eds). *Changing curriculum*. Cape Town: Juta, pp.21-59.

Kraak, A. 2001. Policy ambiguity and slippage: higher education under the new state, 1994–2001. In Kraak, A. and Young, M. (Eds). *Education in retrospect*. Pretoria: HSRC/IOE publications, pp.85-120.

Latour, B. 1999. *Pandora's hope: essays on the reality of science studies*. London: Harvard University Press.

Law, J. 1997. Traduction/Trahision – Notes on actor network theory. Unpublished seminar paper. England: Lancaster University, Department of Sociology.

National Sanitation Policy. 1995. Department of Water Affairs and Forestry. Pretoria: Government printer. <[www.dwaf.gov.za](http://www.dwaf.gov.za)> May, 2003.

Presidential Job Summit. 1998. Pretoria: Government Printer. <[www.polity.org.za/govdocs/summit/jobsummit.html](http://www.polity.org.za/govdocs/summit/jobsummit.html)> September, 2004

SAQA Act. 1995. South African Qualifications Act No. 58. *Government Gazette No. 1521*. Pretoria: SAQA.

SAQA. 2000a. The national qualifications framework: an overview. Pretoria: SAQA.

SAQA. 2000b. The national qualifications framework and curriculum development. Pretoria: SAQA.

Skills Development Act No. 97. 1998. Pretoria: Government Printers.  
<<http://www.labour.gov.za/docs/legislation/skills/act98-097.htm>> September 2004.

Solomon, N. and McIntyre, J. 2000. Deschooling vocational knowledge. In Symes, C. and McIntyre, J. (Eds). *Working knowledge: the new vocationalism in higher education*. Maidenhead: SRHE and Open University Press, pp.111-123.

Wenger, E. 1998. *Communities of practice: learning, meaning and identity*. Cambridge: Cambridge University Press.

*Weekly Mail* (no author specified). 2004. 90% SETA drop-out rate. *Weekly Mail*. 22 October 2004. <[www.mg.co.za](http://www.mg.co.za)> 20 February 2005.

Whitty, G., Rowe, G. and Aggleton, P. 1994. Subjects and themes in the secondary school. *Research papers in educational quality and practice*, 9(2): pp.159-179.

Young, M. 2001. Human resource development strategies. In Kraak, A. and Young, M. (Eds). *Education in retrospect*. Pretoria: HSRC/IOE publications, pp.73-84.

Young, M. 2003a. National qualifications frameworks as a global phenomenon: a comparative perspective. *Journal of Education and Work*, 16(3): pp.223-237.

Young, M. 2003b. Options for the NQF in South Africa. Research report commissioned by the Council for Higher Education. Pretoria: CHE.

## Acknowledgements

Thanks to Debbie Cousins and Professor Alvin Lagardien of the Community Water Supply and Sanitation Unit of the Peninsula Technikon for permission to use and analyse their data. Thanks to Arie Rip, Barbara Jones and Arona Dison and the reviewers for their input. Also to the National Research Foundation for funding and the Peninsula Technikon Work Integrated Unit (WILRU). The initial draft of this paper was presented at the IOE and the FACE conference in Stirling in 2003.

---

James Garraway  
Cape Peninsula University of Technology

[garrawayj@cput.ac.za](mailto:garrawayj@cput.ac.za)