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Beyond 'supply and demand': Moving from skills 'planning' to seeing skills as endogenous to the economy

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ABSTRACT

This article questions the notion of supply and demand of skills, and, accordingly, the rules and tools that have been developed for skills anticipation in South Africa. I argue that there is nowhere 'outside' of the economy where skills are produced. Rather, a society and an economy need to be seen as an organism, where skill formation is a complex set of moving parts. The concept of supply and demand is unhelpful to think about skill formation because it directs our attention towards specific moving parts in isolation from the broader factors that shape them. This explains why, despite the existence of extensive tools and institutions for skills anticipation, and numerous institutions for social dialogue and stakeholder engagement, researchers and policy-makers argue that South Africa has an inadequate supply of the skills that are needed in the workplace and concomitant skills mismatches. The article also presents more specific problems with the rules and tools, particularly in the way the systems and institutions for understanding labour market demand interact with the systems and tools for the supply of skills – especially those tools that govern and shape skills provision. It argues further that, whereas there are real problems with these rules and tools, and while they can certainly be improved, the broad goals that they are intended to achieve will not be attained even with better tools, but that different conceptual lenses are required instead.

KEYWORDS

Job credentials, skill formation, skills anticipation, skills mismatches, skills planning, skills supply and demand, vocational education

Introduction

South Africa should be a poster child for skills planning. We have extensive institutions, policies and systems for analysing labour market demand for skills, many of which are recommended by the International Labour Organisation (ILO, 2015; 2021). We have structures and mechanisms for social dialogue and stakeholder engagement on skills which were praised by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) in the 2012 *Education for All Report* as the best among 46 countries examined (UNESCO, 2012). We have mechanisms for funding training interventions that are, in theory, linked to the planning mechanisms, and also linked to our systems for designing and regulating qualifications. The Department of Higher Education and Training (DHET) has invested considerable funds in large labour market intelligence projects that aim to build and support skills planning. The first,[1] initiated in 2012 and led by the Human Sciences Research Council (HSRC), included the development of an econometric model which is intended to forecast shifting skills needs in response to fluctuating changes in the economy; however, it has yet to be used.[2] A second Labour Market Intelligence Project, hosted at the University of Cape Town, builds on the first one, and attempts to improve the ways in which the education and training system supplies skills to the economy.[3]

Both projects include a large number of research projects using different methodologies, including:

- analysing trends in the labour force;
- employer surveys;
- tracer studies;
- studies of skills ecosystems; and
- analysis of skills planning policies and systems.

Through these projects, a report entitled *Skills Supply and Demand in South Africa* has been produced more or less annually since 2016, most recently by Khuluve, Bhorat, Oosthuizen, Asmal, Ganyaupfu, Netshifhefhe, Martin, Monnakgotla and Rooney (2022). These reports provide:

- a synthesis of labour market data over time;
- economic indicators;
- output from the education system;
- an analysis of drivers of skills changes; and
- an analysis of 'skills mismatches' and 'gaps', drawing on tools and methodologies

1 A full set of reports can be found at: http://www.hsrc.ac.za/en/departments/ied/lmip

2 This could partly be a factor of the way it was developed (by an external consultant), coupled with whether internal capacity exists to use and manage the system. There are also concerns about the viability of the model.

3 Information on the projects under way and the results to date can be found here: http://www.dpru.uct.ac.za/lmi-research-programme-labour-market-intelligence

> from the Organisation for Economic Co-operation and Development (OECD, 2017a).

In short, policies, institutions and large research projects have been instituted with a view to shifting our education system towards being more 'demand-led' and to ensuring that supply meets demand.

The notion of a demand-led provision of education is based on the idea that shortages of skills and mismatches between the skills required by employers and those produced by education systems are caused by insufficient information about labour market demand. Although the notion of 'manpower planning' is no longer used, policies for skills anticipation are very much in vogue. The ILO (2015:1) suggests that this is because

> [d]espite increased spending on education and training and increasing educational attainment, countries around the world are experiencing a persistent gap between the skills demanded and those available.

The ILO goes on to suggest that skills anticipation means 'assessing the future prospects of the labour market and the potential imbalance between the demand for and supply of skills' and that skills needs anticipation 'refers to activities to assess future skills needs in the labour market in a strategic way, using consistent and systematic methods' (ILO, 2015:3). In the United Kingdom in the 1980s and in Australia in the 1990s, the idea that complacent education providers were concerned with their own interests and either disregarded or were ignorant of employers' requirements was used to marketise the provision of vocational education in the name of shifting from a supply-led to a demand-led system (Wolf, 2002; Young, 2009; Wheelahan, 2010).

South Africa has been attempting a similar shift to a demand-led system for nearly 30 years. And yet, many policy and research reports argue that both a lack of skills and an inappropriate supply of skills are key causes of our stagnant economy and an incredibly high unemployment rate. The National Development Plan (NDP) suggests that low skills are a major factor hindering economic growth (NPC, 2012). The third National Skills Development Strategy identifies ongoing shortages of artisans and technicians as a major problem for the economy (DHET, 2011). The OECD (2017b:9) argues that South Africa's 'existing stock of skills' and its 'mobilization into the labour market' are serious bottlenecks hampering economic development and growth. The priority, the OECD report goes on to argue, is to invest in the 'right skills, not just more skills' (OECD, 2017b:9). Another OECD report argues that 52.3% of South African workers were employed in an occupation for which they did not have the correct qualification, with 29,7% being 'underqualified' and 24,4% 'overqualified' (OECD, 2017a). The National Plan for Post-School Education and Training (NP-PSET) suggests that skills planning mechanisms are not working as hoped for (DHET, 2019), as does an evaluation of the National Skills Development Strategy (Mzalabazo & REAL Centre, 2018). The 2022 *Skills Supply and Demand* report

published by the DHET (Khuluve et al., 2022) suggests that the output from Technical and Vocational Education and Training (TVET) colleges and other training programmes has declined considerably since the onset of COVID-19; it also suggests that unemployment among TVET graduates has increased.

This article presents an overview of some of the key mechanisms for skills planning in South Africa, highlighting systems for analysing labour market demand, and how they were designed to support and shape supply through the education system.

Three sources of data for the policy analysis are presented in this article. The first source is as a participant–observer role in many high-level policy processes over the past 20 years. These include being:

- a member of the Ministerial Task Team on Sectoral Education and Training Authority (SETA) performance (DHET, 2012b);
- a member of the team writing the Green and White papers for the post-school education and training system (Department of Education, 1995; DHET, 2012a) and the plan for the post-school system;
- a lead author of the Skills Strategy to support the Economic Recovery and Reconstruction Plan (DHET, 2022 – the 'COVID Skills Strategy');
- a special advisor to the Minister of Higher Education and Training.

The most recent sources of participant–observer data were five high-level Skills Dialogues which I organised in 2021. These were a form of action research in that they were aimed at building insight into problems for the purpose of better comprehension and understanding, as well as into individual role-players' changing approaches, tools and systems. High-level representatives from employers, unions and the state engaged in structured dialogues, which were initiated with an overview of research findings with respect to skills anticipation systems, in order to understand what is working and where improvements are needed.[4] The challenge of being a participant–observer is to retain objectivity in the processes described above, from which published reports and documents are drawn and also insights gained by participating in the processes.

The second source of data is a set of research projects that I worked on with colleagues at the Centre for Researching Education and Labour (REAL) for the two national Labour Market Intelligence Projects (LMIP) supported by the DHET and related policy research (REAL Centre, 2020; 2021).

The third and most recent source of data is a research project in which the researchers surveyed 61 manufacturing companies and conducted in-depth interviews with 23 of them.

4 A full set of briefs and reports from each Dialogue is available here: https://www.wits.ac.za/real/publications/skills-dialogues/

These interviews were conducted with human resource (HR) directors, supervisors and union representatives.

Drawing on these sources, I present an analytical overview of the various components of the skills anticipation system, showing the relationship between various policies and systems that have been added over the years, and how they do and do not work together. Locating this overview in broader research that considers the factors shaping skill formation and educational preparation for work, I argue that the various problems analysed derive in part from the idea that skills are demanded in one place and supplied by another. The idea of supply and demand directs our attention towards specific moving parts in isolation from the broader factors that shape them. Instead, drawing on literature on skill-formation systems, I argue that we need to see society and the economy as an organism in which skill formation is a complex set of moving parts. Skill formation is shaped by the economy and the ways in which different spheres of society interact with one another which are different and constantly in a state of change.

The term 'skills' in this context refers to knowledge, expertise and the ability to perform work. It is an unfortunate term which simplifies what is in fact a complex mixture of theoretical and applied knowledge acquired through education and training programmes. I use it here because the term is used in policy.

Rules and tools for skills planning in South Africa

I begin with the systems for coordination and engagement between education providers and economic actors. This is followed by an overview of some of the central rules and tools for analysing labour market demand and skills anticipation. These directly engage with, and affect, the ways in which qualifications are designed and funded (supply), which is reflected on next.

Coordination

The OECD (2017b) recommends better coordination across government as a critical priority for South Africa, and the ILO states:

> Social dialogue is a cornerstone of skills needs anticipation: it is critical for informed decision making as well as for the implementation of findings and recommendations (ILO, 2015:4).

South Africa has a plethora of structures and systems for formal engagement with stakeholders. The Human Resource Development Council (HRDC) was created in 2010 as a key structure to link different areas of government work and to link this work with different spheres of the economy. Led by the deputy-president, the council is supposed to:

- guide and shape the HR development agenda;
- provide a platform for dialogue and consensus-building;

- identify skills blockages; and
- recommend solutions (RSA, 2010:10).

Fourteen government ministers are part of the structure, as are captains of industry, union representatives and others. Yet, as explained by Allais, Marock and Ngcwangu (2017), there is no evidence of actual coordination from this structure. Perhaps this is because no real mechanisms exist to create integration or to hold the different parts of that system to account, because the structure is so large and unfocused and because interventions in the economy to create a *requirement* for skills are generally not the focus of the council's discussions.

There are other bodies and other sets of problems with each of them. The National Skills Authority (NSA) is a stakeholder body with representatives from different social partners. Debate is ongoing about how its role relates to that of the HRDC and there is a confusion of mandates. Despite a Ministerial Task Team (DHET, 2012b) arguing for it to be disestablished, it remains part of the coordination environment. The National Economic Development and Labour Council (NEDLAC), the body which facilitates negotiations between employers and labour representatives nationally around legislation, includes skills in its remit. This formal process is, of course, vital but it can be adversarial rather than emphasising collective problem-solving.

At a sectoral level, all of the SETAs (discussed below) have representation from employers, unions and government on their governing boards. This is intended to ensure that their systems and interventions meet the skill-formation needs of their sectors. However, at a board level this representivity has at times led to vested interests dominating SETA agendas, and also to corruption (DHET, 2012b). Finally, employers are directly involved in the design processes for qualifications. Employer voices should thus be heard clearly. This is important because policy advice from all the international organisations concurs that understanding employers' requirements is a key component of skills anticipation (ILO, 2015; 2021; OECD, 2017a; 2017b).

However, what emerged clearly through the Skills Dialogues is a sense that coordination and stakeholder engagement are often formalistic and often involve representatives of employers and unions that are not directly involved in either the provision of skills or in workplaces.

The following section moves from broad coordination and engagement to specific rules and tools developed to obtain information from employers about the labour market demand for skills.

Demand side: Skills anticipation and labour market analysis

In South Africa we have more than 20 years of experience behind us in attempting to analyse skills demand through the aggregation of employer-specified vacancies. This has been done through the SETAs, which were instituted through the Skills Development Act 97 of 1998

(RSA, 1998; Kraak, 2004; 2010; Allais, 2013). As labour market intermediaries, their key functions are to improve relationships between education and work by analysing skills demand, on the one hand, and, on the other, by shaping supply (provision) through the allocation of funds and ensuring quality of provision[5] (Kraak, 2004; 2008; Akoojee, Gewer & McGrath, 2005; Allais, 2013). They have changed over time in terms of their remit, configuration and sectoral demarcation. They have also been reduced from an original 33 to 21 (DHET, 2012b), and have been subjected to considerable evaluation, contestation and debate, as well as a ministerial review (Singizi Consulting, 2007; DHET, 2012b; Mzalabazo & REAL Centre, 2018).

But the core idea remains improving the supply of skills by gaining better insight into demand. Employers above a certain size pay a levy of 1% of their payroll to the South African Revenue Service. They receive a portion of their levy back on submission of a Workplace Skills Plan, which outlines where their skills gaps are, and an Annual Training Report against this plan. The intention was that these tools would enable SETAs to gain insight into both the training requirements of employers and what training actually takes place. The SETAs would aggregate employers' priorities in their sector and would then know what skills are required across the sector; this would enable them to fund the necessary training.

From the start, there were problems with the data obtained. For example, because obtaining data from employers was considered to be a crucial goal of the system, employers were given a portion of their levy back (the so-called 'mandatory grant') on submission of reports on planning data (through the Workplace Skills Plans) that were intended to feed into sectoral and national plans. But this grant was *also* seen as incentivising employers to train. Because of this, the SETAs refunded them if, in their Annual Training Report, they reported on meeting their training plans. This encouraged employers primarily to indicate the skills needs in their training plans that they could fulfil within the year. Anything that was lengthier – such as apprenticeships – would typically be excluded, thus compromising the quality of the data intended to analyse skills demand (DHET, 2012b).

Another challenge is that employers report not finding the Organising Framework for Occupations (OFO[6]) to be a useful tool, as it does not reflect either skills or jobs in the way they think about them (REAL Centre, 2021). Employers do not hire according to occupations, but in line with required skill sets. For example, what became clear during the process of working on the COVID Skills Strategy is that employers in the digital space – one of the few

5 The role of quality assurance was relatively recently partially removed, leaving them free to focus on understanding the demand and shaping the supply of skills.

6 The intention of the OFO was to standardise occupational definitions and their up-to-date associated practice requirements. Policy-makers hoped that this could then be used by educational institutions to develop their training programmes. The intention was that employers would update occupations on the OFO through Workplace Skills Plans, which would lead to occupational definitions providing an accurate reflection of the labour market. However, employers rarely make significant updates to the definitions on the OFO and many sectors suggest that the OFO is not updated sufficiently to accommodate emerging occupations or to reflect jobs that are constituted by skills from across multiple occupations.

growing areas of the economy – are looking for a high-level combination of specific information technology (IT) skills and not for any of the occupations as listed in the OFO.

In addition, companies are not always good at predicting their future needs and even regarding their current vacancies as having limitations. They tend to focus on identifying deficits in staff – so again, in the COVID Skills Strategy process, a skill such as 'critical thinking' came up as a scarce skill; this is extremely unhelpful for planning education programmes. Another insight from many policy processes, particularly the Ministerial Task Team on SETA Performance and the COVID Skills Strategy, is that an analysis of one sector does not necessarily provide an indication of potential shortages across the economy. This is because many occupations cut across sectors and many graduates from a qualification do not necessarily work in the related occupation. More recently, a phenomenon appears to be emerging where employers report on skills gaps in order to obtain funded learnership positions, which are seen as cheap labour, regardless of whether these are real skills gaps.

In short, while employer demand is seen as the holy grail of skills anticipation, there is a range of reasons why data from employers about skills needs are poor.

SETAs have started to use the Quarterly Labour Force Survey, conducted by Statistics South Africa (StatsSA), to supplement their aggregated employer vacancy data.The survey methodology is to look at labour market demand by analysing trends over time regarding employment at different levels relative to qualifications held. One challenge is that the sectoral demarcation used by StatsSA does not correspond to the demarcation of the SETAs. Another is that, for various historical reasons, the SETAs (and therefore employers) use the relatively newly developed OFO, whereas StatsSA uses the South African Standard Classification of Occupations (SASCO).

At best, both sets of data – aggregations of employer-specified data and analyses of labour force surveys – give snapshots and can give some (limited) insights into the current and emerging skills needs, and into trends over time. But they do not help to develop a picture of the way the requirements for work may change, particularly in the context of responses to changes in the world of work and the environmental crisis.

Supply side: Qualifications and provision

The skills anticipation rules and tools through the SETAs relate directly to the systems for qualifications in a range of ways. One is that the systems of the Quality Council for Trades and Occupations (QCTO) for identifying and developing qualifications in addition to the occupational standards related to qualifications, and curricula and assessment, involve employers. The basic logic, similar to that of competence-based training reforms in many countries (Guthrie, 2009; UNESCO, IIEP & IFEF, 2020), is that employers should specify the skills (or competences) they require, and education and training institutions should be given funding for their courses that lead to these specific competences. A body of literature

internationally explains the limitations of this idea (Young, 2009; Wheelahan, 2010; Allais, 2012a).

The qualification system is linked to the rules and tools for planning in other ways. For example, the starting point for the development of a new trade or occupational qualification is the identification of an occupation on the OFO. This has led to many problems in the design and development of an appropriate set of vocational qualifications, including very narrow qualifications. Conversely, the development of a qualification is frequently viewed as the solution to a skills shortage – for example, the Education, Training, and Development Practices SETA is currently supporting the development of a qualification for research managers, because this has been identified as a skills shortage in their sector. Similarly, the DHET has been attempting to sponsor the development of a qualification for skills planners, because skills planning is weak. In both cases, the thinking is that once a qualification exists, the occupation will exist or be strengthened. The problem is the idea of a one-to-one correspondence between what the OFO classifies as an occupation (but what is more like a job) and a qualification. In reality, there is only such a tight relationship between qualifications and occupations in regulated occupations and professions where there is a licence-to-practise requirement.

Another issue shaping provision is funding. The SETAs were intended to translate their analysis of skills needs into support for training through the funds collected from the skills levy, allocated through 'discretionary grants' to employers or to training providers identified by employers.[7] As has already been mentioned, a small portion of the levy goes to the National Skills Fund, which was intended to fund unemployed learners, assuming that the SETAs would mainly fund training for existing employees through companies.

In summary, on the demand side, data from employers are a key input into the system, but have been poor for a range of reasons. These data are increasingly supplemented by labour force survey analysis, which provides additional insights into trends with regard to levels of qualifications and of employment. The classification systems used for collecting and aggregating employer-stated needs are different from those used for labour force analysis. In terms of the supply side, the same classification tools shape the identification and design of qualifications.

Shaping supply through analysis of demand: The Skills Lists

A key mechanism that is supposed to bring demand analysis and supply planning together is the Skills Lists, which categorise the types of demand for skills. The central list is called Occupations in High Demand. This list includes skills that need to be prioritised for

7 Some funds were used for SETA administration; some went to the National Skills Fund. The percentage allocated to the mandatory and discretionary grants, respectively, was the subject of an ongoing court case that has recently been resolved.

development that are currently scarce and skills that are not necessarily scarce but are critical for enabling larger numbers of new entrants to access the economy. There are two sub-lists in the list of Occupations in High Demand. One is the Critical Skills List, which is the basis for decisions about visas and enables individuals to work in South Africa, based on the logic that these skills cannot be developed in time to meet local employer demand. The other is the Priority Skills List, which highlights the skills where demand can be met through a short-term training intervention or where there is likely to be ongoing demand such that it can be met through shifting enrolment in certain programmes or through the development and/or adaptation of qualifications and programmes.

The lists are based on weighted information from a variety of sources. A major source is aggregated employer data via the SETAs, which brings in all the problems of data weakness described above. Other data sources are analyses of labour force surveys and research into 'skills drivers', such as that of the World Economic Forum (WEF).

Also given consideration are government plans – in theory, an area where the government should have a good ability to anticipate skills needs that match targeted economic development interventions. As an aside, a National Skills Infrastructure Plan (Presidential Infrastructure Coordinating Commission, 2012) included 18 Strategic Integrated Projects, for which a complex 21-step methodology for integrating skills planning was developed. However, no publicly available evaluation of the extent to which this either happened or worked could be found. It has certainly affected the supply side through a major project that focused on building capacity for specific occupations in specific TVET colleges: the Centres of Specialisation project.

The Skills Lists are intended to be the basis for enrolment planning in universities and colleges. Here the logics of provision and of educational institutions can be seen to be at odds with the ways in which skills anticipation is currently conceptualised. A major dislocation relates to time frames. No distinctions have been made between funding for short-term interventions, such as an urgent training programme for using a new machine, and long-term interventions, such as training more engineers, with respect to qualifications and quality assurance. It is the former that employers are more likely to be able to specify, but the latter which the education system is more able to plan for. So, for example, employers and training providers have struggled to obtain funds for short-term training because SETAs require training interventions to be accredited. But short-term skills programmes can be accredited only if they are linked to qualification pathways.

Moreover, the processes for qualification development and for the accreditation of part-qualifications are long and cumbersome. To date, the rules associated with national qualification frameworks have stipulated that short programmes can be accredited only as a part-qualification, constituted by credits within a full qualification. The rationale for this is to deal with a proliferation of part-qualifications that do not lead to a full qualification, and also with qualifications of extremely low credit allocations. However, this creates the

unintended consequence of negating the possibility that industry associations can determine the need for a short programme, have it accredited and enable the graduate to gain access to a specific opportunity in the workplace. The effect has been that the formal qualification requirements lead to planning based on where qualifications exist rather than on where the demand is emerging.

In the initial unit standards-based qualifications that were developed through the National Qualifications Framework (NQF), many non-governmental organisations (NGOs) and even workplace providers could not get funding because of these kinds of rules, plus the complex quality assurance systems which were initially different for each SETA (Allais, 2012b). The QCTO has recently engaged in a process of reconfiguring occupational qualifications to change this and to revisit the formal requirement for workplace experience, which learners now simply cannot get (and most could not get before the COVID-19 pandemic).

Furthermore, with almost all of the data systems that we have for skills anticipation it is impossible to provide information about skills needs beyond current and emerging skills. Policy responses to identified current and emerging skills should lead to short-term, immediate interventions. And yet, our systems prevent short-term responses because of the relationship between the qualifications system, the OFO, the quality assurance requirements and the funding levers. And the same data are used to inform medium- to long-term planning, through the Skills Lists. This means that our medium- to long-term planning is extrapolated from current and emerging demand; it also means that our occupational qualifications tend to be rather narrow.

The Skills Dialogues also highlighted how, because of the occupational classification and qualification system, the analysis of training needs and provision pays insufficient attention to the full package of provision, including formal training in an education provider, formal training in workplaces, non-formal training in workplaces and simple learning from experiences in workplaces. Data that are not part of the formal provision of training are lacking, and there is even less about training that happens in workplaces.

Our research (Allais, Schoer, Marock, Kgalema, Ramulongo & Sibiya, 2021) shows that skill formation in the automotive industry, for instance, involves much workplace provision but also relationships with formal providers (Allais et al., 2021). Conversely, this has not occurred historically in the clothing and textile industry despite the active engagement of the unions in attempts to save the industry, involvement with the SETA and a strong political commitment to transforming the industry. Nonetheless, all the companies in the clothing and textile sector are training, and this training is integrated into hiring and career progression.

Meaningful planning and allocation of financial support needs to be based on better insight into what is happening in specific sectors and to the ways formal programmes are complemented by on-the-job training. This is because the nature of provision and the extent to which there is integration of pre- and in-employment training differ across industries.

In summary, the key data source for skills anticipation – employer-identified skills needs – is weak and yet it drives much of our planning because labour market demand is seen as the holy grail. This weak data source, even when supplemented by other data sources that come with other challenges, mainly provides information about the current and emerging labour market demand. But they constrain and complicate our provision in part through the qualification system, which in turn makes short-term responsiveness impossible, because the funding levers are related to formal qualifications. This makes short-term provision of urgent training difficult, if not impossible. At the same time, the data about current and emerging labour market demand are aggregated and then used to shape medium- to long-term provision through funding and qualification systems.

Despite all the structures, policies and institutions for coordinating with employers, obtaining employer specifications for skills needs, and involving employers in qualification design, the OECD (2017b) argues that a key priority for South Africa is to create vehicles for employers' voices to be heard regarding their skills needs. However, it seems clear from the analysis above that the lack of vehicles for employers' voices to be heard cannot be the problem. Rather, I argue, we need to think about this issue differently.

Thinking beyond supply and demand

A key cause of the phenomenon described as 'skills mismatches' is that the knowledge and skills required to do work and the credentials required to get a job are different – but the latter are often more relevant in labour markets (Allais, 2020b). Credentials are shaped by the economy and the nature of labour markets, and also by cultural factors. Labour markets with very limited rewards can increase intense positional competition for credentials, particularly in the context of the mass expansion of schooling (Collins, 1971; Bills, 2003; Carnoy, 2019). Failing to distinguish between the screening role of credentials in labour markets and the substantive requirements of skills and expertise in workplaces leads to confused policy interventions. For example, in the southern African region, there is a policy goal and much policy focus on the recognition of low-level skills to support migration, even though employers do not require qualifications for low-skilled jobs and immigration policies work against the migration of low-skilled workers. The logic behind this policy seems to be that highly skilled people have qualifications and access to labour markets and so low-skilled people will also be able to access labour markets if they have qualifications (Marock & Allais, 2022). This means that the concept of supply and demand is unhelpful when analysing and planning skill formation: people do not know what they are buying – neither the learners nor the employers.

The supply and demand concept tends to be blind to the full picture of training because of the way it separates educational and economic actors. And yet the knowledge and skills acquired to do work are developed through a complex mix of formal preparatory education programmes, relatively formal on-the-job training and, simply, learning through experience. The relationships between these will differ in different workplace environments. Skills are

a commodity that can be separated from neither their bearer nor the nature of the organisation of work – and the skills and abilities of managers who organise the work. Policy notions of the supply and demand of skills underestimate the extent to which the ability of education to prepare individuals for work is shaped by the ways in which work is organised. The literature on the use of skills shows that the ways in which skills are both developed and deployed are dependent on the organisation of work and are learnt socially (Lloyd & Payne, 2003; Grugulis & Stoyanova, 2011; Green, Hogarth, Thorn, Macleod, Warhurst, Willis & Mackay, 2017; Guile & Unwin, 2019).

The notion of supply and demand also creates problems in the funding system, ironically making it harder for education providers to be responsive to the needs in the economy. Funding mechanisms, particularly those in the public sector, frequently do not support building the long-term provision of, and strong institutions for, vocational education, because funding is allocated per student per programme. This approach, which could work for short-term interventions, makes long-term institutional stability difficult. Ironically, this also makes responsiveness impossible, including for urgent short-term training interventions.

Designing a curriculum takes time and requires expertise. Offering one takes time. Engaging with industry and local communities to determine needs requires dedicated staff time. Implementing lecturer training, upgrading and retraining require dedicated time. When institutions are entirely dependent on short-term funding linked to demand, it is impossible for them to be responsive. They simply have no spare capacity for curriculum design or research. There is also no time for lecturers to teach themselves something new, no or few permanent staff who can sit down and plan, and no staff with the capacity to engage with industry and communities. This is largely because each staff member has a salary that is narrowly tied to a specific course.

This problem can be seen internationally in countries that have mimicked the Australian competency-based training system (Wheelahan & Moodie, 2016; Allais & Marock, 2020). However, in South Africa, it is aggravated dramatically by the existence of different qualification systems in the overall vocational education system, all of which coexist, are funded differently and have different time frames, curriculum specifications and assessment mechanisms (Allais et al., 2021).

In short, the problems described above, including the conflation of time horizons in our current systems for demand analysis, qualification design, and funding, are not simple bureaucratic problems; nor can they be attributed to the lack of vehicles for employers' voices to be expressed. Rather, the problems are derived from thinking about skills through a concept borrowed from commodity markets. The notion of supply and demand creates a conception of 'skills' as something to be specified by actors in the economy in order to be 'produced' by actors in the education system. It also leads to a belief in linear skills-planning.

We need instead to view education as residing *inside* the economy in a number of ways. By this I do not mean that skills should be developed primarily in workplaces, as opposed to education and training systems, although there are indeed many aspects or components of work that can be learnt only in workplaces. Instead, what I mean is that social and economic factors shape everything about education systems. They shape people's access to education because of variations in the quality of education that people can access and because of the duration of that education (how long people can afford to stay in education or out of employment). Socio-economic factors are also key to educational success (Allais, Cooper & Shalem, 2019). Labour markets shape both the length of time people want to stay in education and whether they are obligated to stay in it.

The nature of the economy also shapes the relative number of enrolments in general education compared to vocational education, the relative size of university enrolments and the nature and extent of on-the-job training. In wealthy countries, vocational education systems are shaped by:

- the types of production that dominate;
- the structure of the labour market and the ways in which it is regulated;
- the role of social policy;
- the extent and nature of redistribution in the economy (Hall & Soskice, 2001; Iverson & Stephens, 2008; Busemeyer & Trampusch, 2012).

In poor countries, in contrast, positional competition for credentials has negative effects on vocational education. This is because employers tend to hire potential workers with a secondary education, considering them as having more potential as they have been more successful to date; professional and higher-level jobs are filled by graduates (Allais, 2020a; 2020b).

Implications for policy and research

Our systems do not work as intended because there are serious limitations to how well we can determine up front the skills that will be needed in the medium and long terms. A key implication of moving away from thinking about supply and demand of skills is to view education as both further from and closer to the economy, depending on the time horizons under consideration.

When thinking about the *long term*, education should be further from the economy in order to develop more holistic analysis of the development of knowledge and skills that a society needs and also the development of society in order to nurture the development of knowledge, skills and expertise. Bodies of knowledge that underpin the ability to perform work and which are acquired through substantial educational processes are crucial to performing work with autonomy. However, there is no simple relationship between specific tasks in workplaces and such bodies of knowledge. When planning for the long term, responding to employer-

specified demands or an analysis of labour market trends works against the interests of both prospective workers and employers because it tends to lead to narrow qualifications and curricula, which is particularly problematic given the changing world of work.

Planning that requires *short-term* responses in providing skills and knowledge requires ongoing and direct relationships to be in place between education providers and employers, and institutional capacity in both. The shift should therefore be towards embedding education players in economic planning and development processes, whether at a company, sectoral or national level. For example, where there are industrial planning processes, policy-makers from education systems, educational providers and/or labour market intermediaries should be involved in these and other processes concerned with building the economy. This should ensure that decisions related to industrial transformation both support and are supported by the provision of skills.

Employers in the Skills Dialogues argued that they are alienated from the systems, and most participants suggested tighter, more focused engagement and representation by those stakeholders and role-players most directly involved. An example was the engagement between employers and unions in a collective agenda for supporting workplace transformation through skills development that was given expression in the Masterplan process in the clothing and textile industry. In this context, DHET has played an active role in the Masterplan process and the social partners appear to be reaching agreement on key approaches, including the establishment of joint projects to support improved productivity. The stakeholders involved here are not national associations relatively removed from the 'coalface' but those with a direct stake in the specific process under discussion.

This type of more focused, directed engagement may lead to far better outcomes than the generic 'partnership' models that have existed between colleges and industry to date. Indeed, partnerships need to be located in any analysis of the broader institutional arrangements in societies and economies that shape the way in which skills are developed and the opportunities for using skills. These should include, in the South African context, the different institutions that offer education and training, the institutions that regulate and coordinate, and the organisations where employment happens. They should also include industrial development processes such as the Masterplan processes driven by the Department of Trade, Industry, and Competition (DTIC), and other partners and processes both within and outside of government.

The COVID Skills Strategy also provides some examples of how to start moving away from simplistic ideas of supply and demand (DHET, 2022). One is a recommendation for two specific short-term adjustments to quality assurance requirements for qualifications and programmes in targeted sectors and to funding mechanisms to ensure that funding is directed at immediate training needs (related to demand). These models will be implemented only for the required skills associated with interventions that are aligned with the Economic Recovery and Reconstruction Plans (ERRP) where there is support from industry bodies or government

departments. Consequently, the initial focus of this intervention is primarily in the digital space (and, within this, those skills related to the global business service industry). Another example is directing short-term urgent funding towards increasing enrolment in specific identified qualifications. A key point here is that the ERRP is focused specifically on creating demand – on structural economic change. Whether or not the ERRP will be implemented successfully is another matter entirely, but this point is important because successful vocational education fundamentally requires structural economic change.

Besides developing more focused and specific partnerships and engagements, another implication is the need for more targeted industry or sector-specific skills strategies and more targeted funding and incentive mechanisms. The current mechanisms are blunt and one-size-fits-all; they therefore do not take sufficient cognisance of the specific needs of different sectors and industries. Instead of skills being seen as an 'add-on' at the end, or a list of projected skills to be 'produced' in order to support an industrial development strategy, crucial decisions relating to such matters as changing work organisation and technology need to incorporate a focus on skills.

This, in turn, requires a better balance between coordination and lending support to a flourishing system of provision, on the one hand, and a more flexible system that also supports institution-building, on the other. Both education providers and employers need to develop better insights into one another's needs and capacities. This means that they need to be supported to work together on the provision and delivery of specific programmes and to ensure that formal programmes and on-the-job training complement each other. This requires strong education institutions which can offer broad vocational qualifications that include:

- components of general education and of locally needed skills;
- shorter programmes that are recognised by employers and professional associations; and
- less formal, responsive short courses.

Building institutions that can offer this range of programmes in dynamic and meaningful partnerships with employers and communities requires long-term funding and a focus on institution-building as opposed to regulating and quality assuring. This approach reinforces the need for a long-term perspective.

Conclusion

In conclusion, I suggest that the frenzy of policy rules and tools seen in South Africa and internationally regarding skills anticipation systems and the policy aspirations for improving relationships between demand and supply are evidence not that they can achieve their goals, but, on the contrary, that they cannot. The factors which lead to apparently neater 'fits' between education systems and labour markets in some countries, and to low youth unemployment, are

the product of a range of specific political, economic and social arrangements. Policies that treat skills as exogenous to the economy in an attempt to create these goals end up producing layers of regulatory institutions that come with many sets of problems that then preoccupy policy-makers and researchers and divert them from creating the necessary neater 'fits'. This is why we need to go beyond thinking about the supply and demand of skills.

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