SEVEN PROBLEMS WITH THE 'SCARCE SKILLS' DISCOURSE IN SOUTH AFRICA

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ABSTRACT

The concept of 'scarce skills' features prominently in South Africa's national development discourse. Over the past decade, the 'scarce skills' concept has been used to frame debate about the relationship between post-school education and training and the economy. In this article, we compare education policy documents articulating 'scarce skills' perspectives with plans from four occupational sectors and general labour market data and analysis. In our analysis, we identify ideological, theoretical, conceptual and methodological limitations to the 'scarce skills' discourse. Each limitation contributes to a reduced and myopic understanding of the complex and dynamic relationship between post-school education and the economy. We conclude by sharing three arguments which post-school institutions could draw on to respond to the skills discourse.

Keywords: skills, scarce skills, skills gap, post-school education, vocational education, training

INTRODUCTION

The article traces a familiar storyline: government policy identifies economic growth as its top priority and identifies education and skills development as critical to promoting such growth. In this model, 'skills shortages' are seen as explaining the persistence of poverty, inequality, and unemployment, while 'skills development' is identified as a solution to these problems. Institutions of education are then tasked with market responsive education and training.

The 'scarce skills' discourse has been used for nearly 40 years to explain the persistence of poverty, unemployment, inequality and lacklustre economic growth in South Africa. Data on social skills in South Africa are troubling: nearly half of South African families live below the poverty line; unemployment has stood at 35 per cent for nearly two decades; and since the

global financial crisis, economic growth has yet to regain its footing. Recognizing the extent of the development challenge, and writing within the broader vision of the National Development Plan 2030, the Department for Higher Education and Training (DHET) and Sector Education and Training Authorities (SETAs) have, over the past five years, produced several documents which identify 'scarce skills' or, more recently, 'occupations in high demand'.

In this article we trace the most recent iteration of the 'scarce skills' discourse in South Africa through a review of DHET and SETA documents organized around four main questions. Through the review we sought to identify the extent to which there was: (i) a common definition of scarce skills, (ii) a common method for determining scarce skills, (iii) agreement about the importance of 'scarce skills' and (iv) agreement among policy documents, data sources and analytical research on the relative scarcity of skills in the South African economy. Based on our review, we identified seven major problems with the 'scarce skills' discourse. Problems included significant heterogeneity in the methodology, definitions and analytical strategies used for thinking about occupational demand and explicit disagreement among industry stakeholders with the 'scarce skills' discourse.

The 'scarce skills' discourse offers an explicit challenge to post-school institutions: it seeks to influence higher education funding, programming and mission so that it is oriented around market demands. While we agree that one role of post-school education is to help youth develop 'marketable' skills, we contend that South Africa requires a broader skills development vision. The article concludes with a discussion on how Post-School Education and Training (PSET) institutions could articulate an alternative vision for skills development.

Meeting national development goals through skills development

The concept of 'scarce skills' has had a far reaching influence on legislation and government policy (e.g., Skills Development Act, 1998; the National Skills Development Strategy; National Skills Fund; the DHET White Paper on Post-School Education and Training; the National Development Plan 2030); the establishment of new departments, authorities and councils (the Department for Higher Education and Training; TVET Colleges; Sector Education and Training Authorities; Human Resource Development Council); and on DHET research initiatives and funding.

The Department for Higher Education and Training (DHET) and Sector Education and Training Authorities (SETAs) are at the forefront of South Africa's skills debate. The *White Paper for Post-School Education and Training* identifies the expansion of access to TVET Colleges as DHET's top priority and identifies the purpose of TVET College education as providing school leavers with the 'skills, knowledge and attitudes necessary for employment in

the labour market', (DHET 2013, 11). SETAs are industry bodies with a mandate from government to strengthen links between institutions of education and specific industries. SETAs represent industry, provide training, and submit annual Sector Skills Plans (SSPs) to DHET which identify 'scarce' skills. SETA SSPs are a response the Skills Development Act, which requires annual submission of SSPs to DHET, organized within the framework of the National Skills Development Strategy. The relationship outlined in this paragraph shows how national development priorities (through legislation and presidential initiative) are institutionalized (through DHET and SETAs) and normalized (through language framing research, planning and reporting activities).

In November 2014, DHET gazetted *List of occupations in high demand: 2014*, which stated that 'identifying current and future skills demand as accurately as possible is extremely important if the goals of NDP are to be met', (DHET 2014b, 7). A subsequent document, *Framework for the Annual Report on Skills Supply and Demand in South Africa*, argues that remedying the dysfunctional skills planning environment in South Africa requires,

> The provision of credible information, analysis and signals on the demand and supply of skills; and [an] effective and efficient skills planning capability that can forecast the optimal mix of intermediate and high skills graduate numbers and qualifications with the best probability of balancing demand and supply. (DHET 2015a, 4).

Completing the developmental hypothesis, the document adds, 'The above [skills planning] would in turn, direct the allocation of [government] resources that would relate to optimal economic growth, shared resources and social equity', (DHET 2015a, 4). DHET plans to regularly publish a 'list of occupations in high demand'. The first two iterations of the list (DHET 2014a; DHET 2014b) draw heavily on SETA SSPs to identify skills and occupations which are 'critical', 'pivotal', or 'in demand'.[1]

Research description

Our research grounded in both normative and empirical perspectives. We agree that skills development can and should play a role in the promotion of human and national well-being. Further, we agree that in the design of explicit projects, such as a special infrastructure project, identifying skills needs is important. Our main critique of the 'scarce skills' discourse is that it offers an uncritical and disingenuous conceptualization of the education-economy relationship: one that suggests that market-responsive skills development will solve broad developmental problems and one which offers a reductive and instrumental role for higher education. In order to interrogate the scarce skills discourse in South Africa, we conducted a review of key

documents and labour market data framed by four questions.

- In key DHET and SETA documents, is there an agreed on definition of 'scarce skills' and an agreed on methodology for identifying scarce skills and the extent of their scarcity?
- What biases, values, and perspectives inform key DHET and SETA documents and methodologies?
- How do DHET and SETA documents compare with labour market data and external analysis of labour market trends?
- In key documents, to what extent are alternative perspectives voiced? Are variables other than skills identified as affecting the economy and labour market?

To answer these questions, we conducted a critical review of four key DHET documents and of Sector Skills Plans (SSPs) completed by four SETAs. DHET documents reviewed include the *White Paper for Post School Education and Training, List of Occupations in Demand: 2014, List of Occupations in Demand: 2015 (DRAFT)* and *Framework for the Annual Report on Skills Supply and Demand in South Africa.* Each list identifies over 100 specific occupations, which have been identified to be in high demand in South Africa. The SSPs reviewed are from SETAs representing the manufacturing and engineering industries (merSETA), the chemical industry (CHIETA), the financial services industry (FASSET), and the Wholesale and Retail industry (W&RSETA). We choose to review SETA SSPs for the following reason: SSPs provide detail on the data, methods and analysis used to identify scarce skills and occupations in demand which are then drawn on to inform DHET 'scarce skills' lists. We deliberately selected SETAs from different industries in an effort to look at different patterns of labour force growth, decline and composition. DHET policy (with its focus on producing more professionals, engineers and artisans) appears to privilege merSETA and CHIETA industries. However, both sectors are experiencing sluggish employment growth. Alternatively, the FASSET and W&R sectors have experienced recent employment growth, the former in professional jobs and the latter in jobs which are often insecure and offer low wages. We deliberately selected SETAs representing different sectors, growth, and capital/labour intensive compositions to ensure that we draw on diverse perspectives and experiences in our analysis. In order to locate our review within the broader context, we reviewed labour market data from Statistics South Africa, and various reports and studies completed by the Labour Market Intelligence Partnership (LMIP). Since the 'scarce skills' discourse draws on concepts, and seeks to address issues, from a number of knowledge fields, we draw on these same fields to conduct our analysis. For example, human

capital theories and assumptions have been critiqued from mainstream economic, political economic and sociological perspectives.

LIMITS OF THE SCARCE SKILLS ARGUMENT

This section offers a brief discussion of the 'scarce skills' debate in South Africa and internationally. The scarce skills discourse has been in South Africa, since the 1980s and even earlier (Chisholm 1984; Kraak 1989; Meth 1979; Webster and Leger 1992). For example Webster and Leger (1992) emphasized the importance of reconceptualising skills formation in light of racial divisions of labour in the workplace arising out of the historical monopolization of skilled labour by white workers. The critical issue being that skilled trades were dominated by white workers while black workers generally performed semi-skilled work in spite of actually doing the work in the workplace. Chisholm (1984, 405) associated the skills discourse with a broader project, a discourse of legitimation which not only secures 'the support of certain categories of black workers' but also legitimates the 'continued exploitation of workers'. Both conceptualizations use 'scarce skills' to legitimate social and economic inequality and blame individuals, as opposed to structural conditions, for the problems of society.

Almost 30 years later, 'scarce skills' remains one of the main concepts used to describe the education-economy relationship. The NDP (2011) argues that South Africa faces a severe skills shortage which if not resolved could place heavy constraints on economic growth and significantly limit South Africa's potential to compete with other countries in the world or take advantage of growth opportunities provided by technological advancement which depends on skill. This formulation is pervasive and heard regularly in mass media, television talk shows and radio programmes. Skills shortages, or gaps (i.e., absence of qualified labour to fill vacant positions) and mismatches (i.e., when those who are seeking employment do not have the skills or qualification requested of vacant positions), as well as information asymmetry (i.e., when potential employees or employers do not have information which could improve matching), are some of the main issues identified by mainstream labour economists engaging in the skills discourse.

Often the skills issue is discussed as a 'frictional' misalignment between 'supply' and 'demand': a lag in the skilling of labour to market demand (i.e. open positions, or higher wages). The skills issue is framed by mainstream labour economists like this when the problem is actually more about a systemic misalignment, as Lehulere (2013) argued. This misalignment therefore must be discovered ex post, it cannot be taken as given or axiomatic. The reasons for supply not meeting demand are related to the structure of the economy, the pace of industrial restructuring, insertion of technology and decision making at the level of a plant or workplace.

It is not a linear relationship between supply and demand. Amsden (2010) argues that emphasizing supply provision or expansion without dealing with demand side restructuring may prove futile for countries seeking to widen employment opportunities.

A more critical body of scholarship questions the skills discourse as applied in the South African context (Allais and Nathan 2014; Vally and Motala 2014). These writings question the basic assumptions of the linear relationship between education, skills and the economy; the theory and evidence supporting human capital and productivist paradigms; and arguments privileging 'employability' training and 'responsive' education and skills development as a response to structural unemployment. Treat and Motala (2014) identify over a dozen factors, unrelated to education and skills, which contribute to pervasive unemployment in South Africa, while Vally and Motala argue that 'a wide of range of exogenous factors and social relations circumscribe the potential value of education and training [to economic and social development]' (Vally and Motala 2014, 32).

International literature echoes South African critics of the skills discourse. Krugman (2012) has identified 'skills' as a zombie discourse: a solution which keeps returning even as all available empirical evidence should have discredited it long ago. Lloyd and Payne (2010) draw on a political economy rationale in differentiating between a high-skill/high-wage economy and a low skill/low-wage economy. In the latter, low wages are an integral feature of cost-cutting competitive strategies followed by many sectors and businesses. Notably, the profit motive incentivizes the reduction of cost which may take the form of depressing wages, the use of cost-effective employment strategies (casualization and contract work) and using technology and capital to transform modes of production. Collins (2013) in *The end of middle class work: No more escapes* identifies several structural factors which are likely to lead to an increasingly bifurcated and unequal labor force – a trend evidenced in South Africa's labour market data. Recent increases in graduate unemployment and of 'over-educated' youth doing low-skill or semi-skilled work, are offered as evidence that education alone will not solve the jobs crisis or transform the economy. The next section provides an overview of the SETA SSPs we reviewed for this article.

SETA SECTOR SKILLS PLANS

SETAs are sector-specific representative bodies with two main goals: to provide data and analysis on workplace skills needs and to build sector-specific skills through various programmes. SETAs derive their legislative mandate from the Skills Development Act (1998). The Act requires that each SETA develop a Sector Skills Plan (SSP), identifying scarce skills, on an annual basis. The DHET White Paper (2013, 61) states that DHET, 'working with SETAs,

will use ... information on skills demand to map supply against demand, to establish where there is insufficient capacity to deliver this supply, and to determine strategies to address this shortfall'. Most SSPs follow a similar format which includes sections on sector profile (characteristics of the labour force), economic performance, demand for skills, supply of skills, skills needs, and SETA skills interventions. Several SETAs use labour force projection models to project the demand for new and replacement workers in specific sectors, occupational types, and occupations.

All SETAs are required to identify 'scarce skills' and in this exercise identify specific occupations and the need for certain types of skill within specific occupation. Many SSPs also identify other types of skills in demand, including professional skills (i.e., managers) and general skills (i.e., literacy, financial literacy). SSPs discuss issues of redress by providing, at varied levels, disaggregated figures of workers by race, gender and disability. Such analysis highlights the difficulty, for example, of finding black South African males to fill accounting vacancies (FASSET 2014). Table 1 offers an overview and general data from SETA SSPs reviewed in this research: CHIETA, FASSET, MerSETA, and W&RSETA.

Table 1: Snapshot of SSP data from four SETAs[2]

	CHIETA (2014)	**FASSET (2014)**	**merSETA (2014)**	**W&RSETA (2011)**
Overview	Chemical Industries (i.e., petroleum, pharma, fertilizer, glass, explosives, chemicals)	Finance, Accounting, Management Consulting and Other Financial Services.	Manufacturing, Engineering and Related Service Sector (i.e., metals, automotive, machinery, plastics)	Wholesale and retail (i.e., most stores in malls)
Labour trends	150 000 workers. Declining trend. Capital intensive.	120 000 workers. Steady growth. Knowledge/labour intensive.	642 000 workers. Declining trend. Capital intensive.	3.2 m workers. Grew by 400 000 workers over 5 years.
Labour projection	Ltd. / replacement growth 20 000 p.a.	Project 9 00 jobs to be filled p.a.	Projected decline	Limited / uncertain growth
Education profile		Majority of workers (69%) have a degree.	Majority of workers (90%) have a Grade 12 qualification or below.	Majority of workers (90%) have a Grade 12 qualification or below.
Wage status	A mix of high and low wage work.	More than half of jobs are well-paying.	A mix of high and low wage work.	Most jobs are low paying. Informal sector accounts for 33% of workers.

Sources: SETA SSPs. Stats SA (2015) and LMIP (2014) also referenced to cross-check sector trends.

The two capital intensive SETAs, CHIETA and merSETA, indicated that their industries had been hard hit by the global financial crisis, global competition and declining demand from China. Consistent with a two decade trend of decline, quarter 2 of 2015 posted a loss of over 23 000 manufacturing jobs (Stats SA 2015). The financial services and wholesale and retail sectors each realized steady near-term employment growth; however, new vacancies generally

required workers with different profiles. FASSET industries employ a small number of workers, 120 000, many of whom have post-secondary qualifications and degrees and earn wages which place them in South Africa's top two income quintiles. The W&R sector employs *twenty* times as many workers as FASSET (3.2 million), representing 22 per cent of South Africa's employed workers. The majority (over 90%) of workers in the W&R sector (which includes jobs at grocery stores and restaurants) have either a high school diploma or lower. Many of the jobs in the W&R sector are paid as little as R40 000 annually and are contract (i.e., insecure jobs) with few benefits. Nearly one-third of jobs in the W&R sector are in the informal economy and analysis is mixed of the extent to which recent growth in this sector will be sustained, taper off, or, alternatively, decline (W&RSETA 2014). In general, the SSPs reviewed offered a detailed and nuanced discussion on the issues and trends facing specific sectors. In our comparison of SETA SSPs and labour market data and analysis with DHET scarce skills documents, we identified several issues. The next section outlines the seven problems we identified with the skills discourse in South Africa.

THE SEVEN PROBLEMS

Problem 1: 'Scarce skills' has become a discursive practice

The use of 'skills shortages' as an explanation for unemployment and sluggish economic growth in South Africa and as a critique of 'unresponsive' post-school institutions (see Wedekind 2014) is pervasive – to the extent that major government policy documents and initiatives make addressing 'acute skills shortages' a core goal of education policy (DHET 2013, 12). The 'skills shortage' diagnosis is so certain that evidence underlying the 'scarce skills' claims is generally left unexamined in the popular media and in policy discourse. In our analysis, this qualifies 'scarce skills' as a discursive practice. A discursive practice 'refers to the rules by which discourses are formed, rules that govern what can be said and what must remain unsaid, who can speak with authority, and who must listen', (McLaren 2008, 72). In South Africa, the phrase 'scarce skills' promotes a particular conception of the relationship between education and the economy: one which argues that human capital formation can alleviate poverty, inequality and unemployment and defines the relevance of education in terms of the extent to which it serves the market. This discursive practice, scarce skills, promotes a particular 'regime of truth' – a construction of social reality which reflects the perspectives, values, and interests of capital. In our analysis, the use of 'scarce skills' in South Africa has been normalized to such an extent in South Africa that it is no longer questioned: major pieces of government legislation, policy documents, sector reviews, strategic plans, and well-funded

research activities draw on a scarce skills perspective.

It is notable that both merSETA and CHIETA SSPs stated that many industry players disagreed with the premise of the 'scarce skills' discourse. A recent merSETA SSP (2013) states,

> Since 2012 industry has no longer unanimously supported the concept of 'scarce skills': Because of the very limited recovery from the economic recession, and the increasing challenges facing companies competing against imports, the demand for new skills has dropped to levels only slightly higher than those required to cover replacement demand. (2013, xxx)

According to CHIETA (2014), the overall impression in the Chemical Sector is that it is not experiencing major skills shortages, but that scarcity is being experienced more at the specialization level within some occupations. These reports, considered alongside labour market data, evidence the extent to which a 'scarce skills' discourse promotes an incomplete, inaccurate, or simply false characterization of the complex realities facing specific sectors. SETAs are, by law, required to produce 'scarce skills' lists: in producing these lists, however, they also reject the discourse and identify alternative explanations for the problems facing industry and employment in South Africa.

Problem 2: The 'skills' argument is based on contested theory and ignores non-skill factors influencing the economy

In discussing this problem, we affirm, but do not revisit well-known international and South African critiques of neoliberal capitalism, human capital theory and productivist theories (Allais 2012; Vally and Motala 2014). Instead we will look at two very specific questions:

- in the medium term, could skills development solve mass unemployment in South Africa? and
- what non-skills factors influence labour market trends?

According to Statistics South Africa (2015), in a labour force of 20.9 million people, 15.7 m are employed in the formal sector or informal sector, 5.2 m people are unemployed, and a further 2.4 million people are 'discouraged work-seekers'. The DHET methodology for identifying 'occupations in demand' includes reviewing SETA SSPs and vacancy data from various sources. In 2012, the Department of Labour identified 60 000 vacancies, while merSETA and CHIETA SSPs identified 20 000 and 3 000 vacancies to be filled in 2014 (DoL 2013). Troublingly, vacancies identified in these same reports are much smaller than reported

retrenchments (over 500 000, 100 000, and 27 000, respectively). More damningly, these figures are two orders of magnitude smaller that the number of unemployed and discouraged workers in South Africa. Bhorat and Tian (2014) project that only two sectors, FASSET and Community Service/Public Service are expected to meet government targets. Notably the former employs less than 150 000 workers and the latter, the public sector, requires increased government expenditure to ensure employment growth. Vacancy data shows that unemployment co-exists with job vacancies, which suggests possibilities for improved matching. However, improved matching would not address the broader structural issues which contribute to mass unemployment.

Unlike DHET policy documents, SETA SSPs highlight the influence of non-skills factors on labour demand. Such factors include: economic globalization, technological change, increased informalization and casualization of work, changes in government policy and regulation, crime and critiques of government (e.g., corruption, delivery of basic services, uncertainty). All SSPs identified 'increased casualization' as a broad trend affecting their sector: temporary work accounts for 31 per cent of employment in the merSETA sector. merSETA, CHIETA, and W&RSETA SSPs identified technological change as a major threat to future labour growth. In capital intensive industries, lower costs of capital investments may displace the need for increasing labor supply and ongoing conflict between unions and industry may hasten this shift towards more capital-intensive modes of productions. In the services sector, which has realized significant recent labour force growth, growth in e-retailing and other technological changes (associated with inventory and supply-chain management) may reduce the need for sales staff and mid-level management positions. The W&RSETA SSP opines that, in spite of the expected growth in e-retail jobs, the increased utilization of technology is likely to lead to an overall decline in labour demand in the W&R sector (W&RSETA 2011). Government regulation and legislation is also identified as impacting the creation and destruction of, and demand for, different occupations as identified in the following excerpts:

> The major risk for fuel retailers [petrol stations] is the eventual deregulation. When this happens, there will be major retrenchments in the industry. (W&RSETA 2011, 27).
>
> Recent changes in legislation have decreased the demand for registered auditors and financial services professionals .... Increased complexity of business practices and the tax system (e.g., environmental compliance laws) have increased demand for more sophisticated tax professionals. (FASSET 2014, 13).

W&RSETA (2011) and FASSET (2104) note that changes in consumer credit legislation, tax law (e.g., progressivity of tax rates) and social protection (e.g., social security or social grants)

impact household consumption, which in turn effect industries dealing with consumer goods. Many SETAs critique government delivery of services, such as 'uncertainty with regard to electricity supply' as negatively influencing the demand for labour (MerSETA 2014, 49). All SETAs identified the extent to which non-skill factors affect labour demand and spoke to the limitations of supply-side skills development in expanding employment.

Problem 3: The conceptualization of 'skill' is narrowed when skill is defined as 'occupation'

The DHET *List of occupations in high demand: 2014* is a response to the NDP admonition that DHET identify 'current and future skills demand as accurately as possible', (DHET, 2014b, 7). In responding to this mandate, 'skill' is reclassified as 'occupation'. We observe three problems with equating skills with occupation. First, for a skill to be included on SETA 'scarce skills' lists or the *List of occupations in high demand: 2014*, an occupation must be identified as one of the 1 448 occupations identified in the *Organising Framework of Occupations (2013).* As such, discourse on skills (and post-school education reform) is framed from within the limitations of the Organising Framework of Occupations (OFO). One example of these limitations: the OFO identifies 'University Lecturer', as well as 'Hospital', 'Industrial', and 'Retail' Pharmacists as occupations, all four of which are included on the lists of occupations in high demand in 2014 and 2015. What is problematic about this? No one, we hope, hires a 'University Lecturer', absent a specified field of expertise. And, for a national level skills planning exercise, differentiating between three different types of pharmacists seems unnecessarily specific.

A second concern: an occupational shortage is different from a skills shortage. To be qualified to fill a vacancy, an applicant may not only need a certain skill (or related qualification or experience), but may also need additional (professional or legal) certifications and affiliations. The CHIETA SSP notes, 'The fact that many engineers do not complete their candidacy programmes and do not register as professional engineers leads to shortages in positions that require professional registration. Similarly there is a shortage of engineers with the government certificate of competency', (CHIETA 2014, 105). Varied hiring practices exemplify the extent to which capital reformulates the demand for skill. In a study including students and academic staff involved in a degree-bearing Non-Destructive Testing (NDT) programme, interviewees indicated that businesses prefer hiring certificate holding (as opposed to degree holding) professionals: the former can be hired for a lower salary (CERT 2015). In these two examples, skills shortages are not reflective of problem with PSET but instead reflect social expectations and iterative reconstructions of 'occupation'.

The third, and from our perspective, most fundamental problem is that occupation is a blunt and highly inflexible way to define 'skill' – particularly if there is a desire for a broader conceptualization of 'skills' in South African economy and society. While any definition of skill is likely to reflect a particular set of values (see Allais 2012 for discussion), by starting with a simple definition of skill (e.g., 'the ability to do something well; expertise') it is possible to engage in a much broader discussion than if one starts with 'occupation'. Using a broader conceptualization, education could also be identified as supporting foundational, cognitive, non-cognitive and life skills, or providing skills and certifications which are transferrable across occupations and fields (Adams 2011; UNESCO 2012). A broader conceptualization could also better speak skills development priorities in adult and community education and for workers with a Grade 12 or lower education – such as the majority of workers in the W&RSETA, the merSETA and in the informal sector.

It should be disconcerting that skills discourse does not offer the conceptual tools required to grapple with two of the major trends in the South African economy: the significant, and simultaneous, growth in the number of tertiary sector workers and informal sector workers. Of the South African labor market from 2001–2012, Bhorat et al. (2013, 30) note,

> High- and medium-skilled occupations such as managers, professionals and service and sales workers have seen significant employment gains. In turn, craft and trade workers, and operators and assemblers experienced no significant employment growth, and the economy experienced a declining proportion of medium-skilled workers in the primary and secondary sectors.

While many professional jobs privilege specific degrees and qualifications (e.g., Electrical Engineer), many tertiary sector jobs also require transferrable, cognitive and non-cognitive skills (e.g., effective oral and written communication, solving non-routine problems, emotional intelligence, project and team management) many of which can be developed though a broad-based liberal arts education. On the other end, the informal sector, over the past two decades, has grown from one million to over 2.5 m workers. The W&RSETA (2011) notes that it is difficult to estimate the employment provided by informal businesses, including spaza shops; however, referencing Rasool (2008), the SSP suggests that in 2008 there were over 100 000 spaza shops which provided up to 300 000 jobs. The W&RSETA SSP (2011, 114) later notes, however, that, 'although informalisation is seen in some quarters as having the potential to create jobs, the nature of informal work is survivalist and not conducive to job creation'. CERT (2015) and Baatjes (2015) provide several examples of 'outside of the formal economy' livelihood activities – many of which could be strengthened though targeted skills development.

Problem 4: Methodologies for identifying scarce skills/occupations is highly contested and implemented in a highly inconsistent fashion

This section identifies two challenges: general limitations to modeling occupational demand and specific issue with the methods used to construct the *List of occupations in high demand: 2014*. Manpower planning, now largely supplanted by labour market intelligence models, seeks to project future demand for labour. Manpower planning is seen as desirable for the following reasons: (i) many occupations are not substitutable (i.e., a doctor cannot quickly become an engineer), (ii) education and training places are inelastic (i.e., the number of engineering schools cannot be quickly increased), and (iii) it takes many years to develop skilled professionals (Colclough 1990). However, most critics contend that the rapidly changing occupational structure in advanced capitalist economies makes it virtually impossible for the state to make accurate assessments of future skills requirements (Klees 1986; Psacharopoulos 199; Windham 1975). As such, most labour market projection exercises track broad industry trends as opposed to changes in specific occupations. For example, the Labour Market Intelligence Partnership (LMIP 2014) projects labour demand by sector and by stylized categories and characteristics used in census data (e.g., tertiary sector worker and high skill worker; educational attainment). In 2013, the U.S. Department of Labor, Bureau of Labor Statistics (BLS) completed an exercise designed to project occupational demand (for over 1 000 occupations in the U.S.) over the next decade (BLS, 2013a). The effort is notable for its reliance on an extensive body of baseline data. Notably, BLS identifies the exercise as a 'projection', rather than a 'forecast' meant to identify the effects of 'longer term trends' as opposed to 'predicting actual [employment] outcomes', (BLS 2013b, 6). This caveat is shared in most projections exercises, even those which seek to project demand for only one occupation. Outside of the BLS effort, there are few examples of models which seek to project demand down to the occupational level.

DHET has produced three iterations of the list of 'occupations in high demand'. DHET (2015b, 4) identifies an occupation to be in high demand if it shows 'relatively strong employment growth' or if it is identified to be 'experiencing shortages in the labour market'. While the methodology varies with each list, common elements across all lists are (i) to be included on the list an occupation must be identified by the OFO, (ii) recent labour market and vacancy data inform the creation of the list, and (iii) SETA reports and industry experts are consulted with to identify scarce and pivotal skills in particular sectors. SETA SSPs identify pivotal (or critical) skills (i.e., occupations identified by industry stakeholders as 'pivotal' to the success of their businesses/industry) and scarce skills using a variety of methodologies (i.e., consultation with sector leaders, identifying hard to fill vacancies, etc.). The SSPs reviewed

note that the 'scarce skills' lists reflect best guesses, as opposed to being the result of a rigorous analytic process. The merSETA SSP states, 'the development of [former] "scarce skills" lists ... did not in fact reflect genuinely "scarce occupations" with any level of accuracy' (2012, 129). It goes on, stating, 'the priority skills list presented in the SSP 2012/13 was not scientifically confirmed or quantified'. Instead the list was based on industry stakeholders' 'intimate knowledge of working in the various sectors' and that added to the list were 'skills that their companies were struggling to find, which are difficult to train for and which are very important for the growth of the sector' (merSETA 2012, 130).

Among SSPs there is some heterogeneity in criteria used to determine whether an occupation is determined to be in high demand. Is the occupation selected because it is pivotal (i.e., critical to the functioning of an industry) or scarce (i.e., a hard to fill vacancy)? Is the scarcity relative (i.e., qualified workers are not attracted to fill the position) or absolute (i.e., the absence of qualified workers)? Is there disagreement about which occupations are pivotal? On the last point, of a stakeholder consultation, the FASSET SSP notes, 'some [FASSET members] reckoned that the need for high-level financial professionals in the private sector may be overstated. These bodies emphasized that the need for mid-level finance and accounting skills is more acute', (FASSET 2014, 105). The W&RSETA (2014) offers several lists with scarce occupations and critical skills sub-divided by different demands in large and medium companies. In a separate list, the SETA identifies the need for different types of management, soft, technical and other types of skills (W&RSETA 2013). These issues align with the critique of Woolard, Kneebone and Lee (2003) who argue that data provided by SETAs is not reliable as SSPs are often developed internally in companies, are the responsibility of junior officials (or consultants), and are often not properly assessed for quality. Our review determined that not only are there severe limitations of methods which seek to project occupational demand, but that there are significant differences in methods used by DHET and SETAs to define and identify occupations in demand. DHET (2015b) appears to try and address some of these methodological concerns; however, the method used for 'document review' and how the document review informed the construction of the final list is unclear.

Problem 5: Theory and methods used to determine scarcity reflect discursive biases

Up until the development of the 2015 list, DHET and SETA methodologies used to identify occupations in demand reflect two notable biases. First, the criteria used to identify occupations in demand favour professional and formal sector occupations. For example, the first two iterations of the list privileged occupations requiring more than three years of post-secondary

study (DHET 2014a; DHET 2014b). Second, source documents, stakeholder consultations and the structure of industry groups (i.e., SETA) focus on the perspectives of dominant businesses and industries and from government to the exclusion of the informal sector, small businesses and poor and working class communities (DHET 2014a; DHET 2014b). Initial iterations of *the List* were critiqued for their bias toward occupations in Science, Technology. Engineering, and Mathematics (STEM) fields, in business and commerce and those classified as vocational or artisanal (Ngcwangu and Balwanz 2014). The most recent iteration of the list (2015) appears to be deliberate in the inclusion of occupations in the public sector, social services and the arts as well as occupations which require no more than a basic education. For example, occupations included in the 2015 list, which were absent in the 2014 list include: Social Work and Counselling Professionals, Lawyers, Creative and Performing Artists Not Elsewhere Classified, Child Care Workers, Sewing Machine Operators, Cleaners and Helpers in Offices, Hotels and Other Establishments and Odd Jobs Person (DHET 2015b). Some stakeholders may applaud the inclusion of occupations which appear to more broadly represent the economy of South Africa. However, in this newest iteration, the List appears to be less responsive to its initial purpose – of differentiating and identifying skills which are truly scarce, or truly required to promote economic growth.

Further, by focusing on occupations as opposed to 'skills' the List continues to omit skills development which may greatly benefit adults with a Grade 12 or below level of education. Notably, three of four SETAs called for strengthening foundational skills (e.g., reading, writing, mathematics), general cognitive skills, life skills (e.g., understanding employee rights, personal finances, HIV/AIDS awareness) and technology skills (FASSET 2014; MerSETA 2014; W&RSETA 2011; W&RSETA 2013). Balwanz and Hlatswayo (2015) identify similar priorities expressed by citizens of Sedibeng, a deindustrializing poor and working class community south of Johannesburg. To offer an example: in the current, occupation-focused framework, post-school institutions are seen as responsible for preparing some learners for the occupation of Financial Manager (as identified in DHET lists and FASSET 2014). A broader perspective on financial literacy skills, such as articulated the W&RSETA (2011) and W&RSETA (2013) identifies financial literacy as an important skill and one which all youth and adult learners could have the opportunity to develop. Given the increasing level of consumer debt (i.e., mortgage bonds, car loans, credit card debt, student loan debt) in South Africa and extensive evidence of financial mismanagement in South Africa schools, a strong argument can be made for PSET institutions to focus just as much on the financial literacy of all students as they do on training professional financial managers and accountants.

In our view, the trouble with the 'scarce skills' lists may come from equal parts methods

and discourse. The methods seek to answer too many different questions (i.e., simultaneously identify scarce and critical occupations), draw on sources using a variety of different methods to answer these questions (i.e., labour market data, SETA SSPs, industry consultation), and serve a paradigm of economic change which suggests a future of an increasing number of professional, well-paying jobs. Adherence to this criterion may be one reason why the list does not include numbers associated with occupations in demand. For example, the 'Occupations in high demand list' (DHET 2014b) includes 'Accountants' and 'Sales Assistants'. However, vacancy analyses conducted by FASSET and W&RSETA identify shortages of 400 accountants and 30,000 sales assistants, respectively. The scarce skills discourse envisions a future of more professional jobs in a growing economy. Labour market data and SETA projections suggest that low-wage and insecure jobs may grow much faster than professional jobs. The growth of the 'precariat' is seen in this analysis of U.S. labour force data as well. According to BLS analysis, 11 of the top 25 occupations projected to realize the most job growth over the next decade offer a median wage below the U.S. poverty threshold for a family of four. Less than half of the occupations on this same list require more than a secondary school education (BLS 2013, 10). Such inconvenient data contradicts the 'scarce skills' message and development hypothesis.

Problem 6: 'Scarce skills' promotes a misguided conceptualization of education and education reform priorities

The focus on scarce skills promotes a reductive understanding education which emphasizes prescriptive learning and a qualifications and occupational-preparation focus. Troublingly, the skills discourse does not address what is recognized as one of the most critical issues facing education in South Africa: the poor quality of education in too many schools at all levels. Allais (2012, 640) argues that a vision for improving quality in TVET colleges must start with a focus on 'building strong institutions, curricula, and lecturers'. She continues, noting, 'protecting vocational education from the immediate short-term needs of employers and from a narrow labour market focus may be the best way of improving it, in the absence of strong social policy and well-regulated occupations'. SETA SSPs are highly critical of the poor state of basic, secondary, adults and tertiary education. Arguments framed from within the 'scarce skills' discourse have little to offer which it come to discussing improving educational quality.

As discussed earlier, many SETA SSPs as well as other analyses of labour market data and trends (Bhorat 2013) argue in favour of alternative conceptualizations of, or frameworks for, skills and emphasize the growing importance of skills which are transferrable across occupations and industries. Several initiatives (i.e., the grounding programme at the University

of Fort Hare and trans-disciplinary research led out of the Mapungubwe Institute) offer counter-examples to the individuating scarce skills discourse. Both of these initiatives emphasize a humanistic and liberal arts education which promotes broad exposure to varied sources of knowledge across academic and practical fields. Notably, they also emphasize roles for institutions of higher education beyond that envisioned in the skills discourse: the production of new knowledge, the critique of society, and the development of critical citizens.

Problem 7: The evolution of occupations and skills appears to be better illustrated by models which emphasize co-construction and partnership as opposed to supply and demand

Several documents we reviewed identify how post-school institutions work with public and private sector stakeholders to create new understandings of occupation and construct new understandings of knowledge and skills related to vocation. In these documents, skills are neither scarce nor in surplus: rather, skills are regularly reconstructed to meet varied demands of a dynamic economy, industry and society. Wedekind and Muterero (2014) and Kruss et al. (2014) review partnerships between institutions of education with the sugar, auto-parts and solar energy industries to co-create employee training programmes skills. Far from identifying 'scarce occupations' this research instead offers a critique of institutions of education (i.e., PSET focus on qualifications and research which steers the system away from a focus on teaching and practice based knowledge) and identifies new priorities (i.e., flexibility, work integrated learning, having staff with field-based experience). Reflecting on this research, Kruss et al. (2014, 19) note,

> One external interface mechanism that is historically and currently very effective is the system of co-operative learning pioneered in the technikons and developed in the universities of technology. The potential for such mechanisms to be replicated and extended to universities and colleges is high.

MerSETA (2014) and CHIETA (2014) echo this analysis by arguing the need for more work integrated learning and better partnerships between university and industry. The logic put forth in many SSPs is that skill cannot be separated from context and that interaction between education and society can support the co-construction of new skill. The decision by the University of Johannesburg, Faculty of Education to partner with the Gauteng Department of Education to lengthen the duration of classroom experience provided to teacher trainees follows this same logic. Work-integrated learning, on the job training, practical experience, mentorship, university-industry partnership: these concepts are not new, just scarce.

DISCUSSION

This article provides a critique of the use of 'scarce skills' to frame the problems facing education and society in South Africa. We agree that skills development and post-school education and training institutions can and should play a critical role in promoting progress toward human and national development and well-being in South Africa. However, as indicated in this review, we identify several problems with the 'scarce skills' discourse and argue in favour of a broader conceptualization of skill and how it may contribute to the development of South Africa and South Africans. We conclude with three points.

First, we contend that PSET institutions must critique, and offer an alternative to, the 'growth-first' agenda articulated though the National Development Plan 2030. The critique can be empirical and normative. On empirical grounds, a growth first agenda is an insufficient response to poverty, inequality and unemployment. On normative grounds, we should question whether placing GDP growth, that is, growth in national consumption, should be South Africa's apex developmental goal. One alternative to a growth first agenda is to make increasing national and human well-being a developmental priority. Alternative measures, like the *Social Progress Index*, recognize the contribution of jobs and income to human and national well-being, but also identify other factors contributing to well-being. In the example of the Social Progress Index, well-being is indexed and organized around three criteria: the extent to which a country contributes to (i) fulfilling basic human needs, (ii) providing foundations for well-being, and (iii) providing opportunity (Social Progress Index 2014). Here economic growth and job growth is not intrinsic goods, nor are they ends in and of themselves. Rather growth and jobs are embedded in, and subordinated to, a broader developmental agenda.

Second, we believe that the 'skills development' activities expected of PSET institutions must come from a much broader conceptualization of skills. While there is no one best framework, existing literature identifies foundational/basic, cognitive, non-cognitive, life and technical (or field specific) skills as broad categories for skills. A broader conceptualization could even promote research and debate with the explicit aim of improving youth employability and matching of youth to existing job opportunities (Papier 2015). We also contend that PSET institutions move away from a supply/demand concept and toward one focusing on co-construction and partnership. The latter conceptualization recognizes that 'skills development' and 'occupational preparation' is often best done in a social context and involving players in education, local communities, professional associations and businesses. Such a vision requires that universities and TVET colleges have the physical and conceptual tools and resources to implement such activities.

Finally, in our analysis, we find that the debate over skills and occupations frequently misses an important ingredient: *the interests of students and future workers*. We agree that young people need information and guidance on education, skills development and career paths (CERT 2015). For example, in a study of youth perspectives on TVET, Needham and Papier (2011) found youth to be generally ill-informed about the tertiary education choices and specifically about further study and career options in vocational education in training. However, while disseminating information and providing guidance is important, it is also important that education systems ensure that young people are exposed to a variety of different types of knowledge, occupational fields, and skills development opportunities and given space, through authentic and deep learning experiences, to identify their strengths, weaknesses and interests (Halpern 2013). The difference between information dissemination and authentic exposure and learning is similar to the difference between studying Biology (e.g., going to lectures, reading books, passing exams) and practicing to be a Biologist (e.g., designing and conducting experiments on disease transmission).

We argue that a post-school education and training system which speaks to some of these issues and challenges is more likely to serve the broad and diverse developmental priorities of South Africa, its communities and its people.

NOTES

1. We note that 'pivotal' has two meanings in South Africa skills discourse (i) that an occupation is 'critical' to the functioning of an industry and (ii) per NSDS III, that it is a Professional, Vocational, and Technical Academic Learning (PIVOTAL) programme, which promotes qualification in an occupation.
2. SSPs reviewed were published in 2014, with the exception of the W&RSETA, which only had a full SSP for 2011. We reviewed W&RSETA updates published in 2013 and 2014, and, as well, reviewed W&R data from the Quarterly Labour Force Survey (Stats SA 2015).

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