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Skills Demand and Utilisation

AN INTERNATIONAL REVIEW OF APPROACHES
TO MEASUREMENT AND POLICY
DEVELOPMENT

John Buchanan, Linda Scott, Serena Yu,
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*Conducted for the LEED Programme
Organisation for Economic Cooperation and Development (OECD)*

Skills demand and utilisation: an international review of approaches to measurement and policy development

A literature review for the OECD LEED Skills for Competitiveness project by John Buchanan, Linda Scott, Serena Yu, Hanna Schutz and Michelle Jakubauskas

Workplace Research Centre
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TABLE OF CONTENTS

EXECUTIVE SUMMARY	7
INTRODUCTORY REMARKS	10
SECTION ONE: CONCEPTS INFORMING OUR ANALYSIS	12
1.1 The three logics of skill: technical, behavioural and cognitive	12
1.2 Four domains of influence: the limits of training policy	13
1.3 Skill eco-systems and diffusing change	14
SECTION TWO: MEASURES OF SKILL UTILISATION	16
2.1 Recent approaches to defining skill utilisation (especially under-utilisation)	16
2.2. Individual Measures of Skill Utilisation	20
2.3 Employer or Firm Based Measures	21
2.4. Population Level Measures of Skill Utilisation	22
2.5 Summary	23
SECTION THREE: EFFORTS TO IMPROVE SKILL UTILISATION	24
3.1 Improving behavioural skills to make full use of workers' capabilities	24
3.1.1 <i>Grinding through Granite I</i>	25
3.2 Linking workforce with industry development	27
3.2.1 <i>Grinding through Granite II</i>	28
3.2.2. <i>Grinding through Granite III</i>	29
3.3. Skills Ecosystem Strategy Case Studies	30
SECTION FOUR: CONCLUSIONS	34
4.1 Key findings	34
4.2 Implications for further work: getting the questions right	35
4.2.1 <i>Data collection</i>	35
4.2.2 <i>Program design</i>	35
REFERENCES	37
APPENDICES	46
A. Methodology	46
B. Initiatives to improve skill utilisation	47

Figures

Figure 1. Model of perceived skill utilisation as a mediating variable in creating job-related affective wellbeing	20
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Boxes

Box 1. FOCUS POINT: Autoworkers Case Study, Canada	17
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EXECUTIVE SUMMARY

1. Policy context and guiding concepts

In recent times the ambit of skills policy has broadened. The recent preoccupation with supply side issues (e.g. increasing the number of citizens with higher level qualifications), in particular, is being questioned. Demand side matters (e.g. how employers develop and use skills) are now increasingly recognised as being of equal significance. This paper addresses two questions:

- How can skills demand and skills utilisation be best measured at the local level?
- What efforts to improve skills utilisation at the local and regional level have been undertaken in OECD countries in recent times?

The relevant literature is patchy and disparate. In making sense of it the paper is informed by three basic insights:

- The importance of distinguishing between three different aspects of skill - the technical, behavioural and cognitive dimensions.
- The importance of understanding how initiatives in other realms of policy profoundly shape the demand for skills and how they are used in the workplace. In particular, the good or service produced, the settings in which it is produced and the flows of labour drawn on to produce it define the nature of skills challenges. Preoccupation with supply side issues such as the formal provision of training often dramatically over-estimates what skills policy can achieve. This is because it totally neglects the issue of whether, and how, increasingly well-educated citizens have their skills deployed in the workplace.
- The broader social and economic settings define what is and is not possible to achieve better use of skills. The nature of skill eco-systems limits how easily 'good skill utilisation practice' can be diffused within as well as between countries.

2. Measures of skill utilisation

Measurements of skills utilisation are currently ad-hoc and disparate. In terms of carrying out primary and focused research in this field, Livingstone et al (1999,2002,2009) have been investigating three different 'measures of education-jobs matching': entry credential matching (reflecting the increasing proportions of jobs requiring higher and higher entry credentials, which do not necessarily reflect the actual skills required to carry out the job), field of study matching, and subjective matching (the self-perceived match between qualifications and job requirements).

In the wider literature, skills measurement appears to fall into three categories.

- **Individual measures:** worker perceptions of how their skills are used: Measurement at the level of individuals (i.e. through an assessment of individual perceptions of how their skills are used), are usually contained in large scale surveys, as part of a battery of self report questions on a range of issues concerning workers' accounts of their performance and well being. While detailed

information can be collected in this way such measures of skill utilisation are limited by an individual's understanding of the skills required for a particular role.

- **Employer measures:** Employer measures of skill utilisation seek to combine data collected from workers and employers to measure skill utilisation in the workplace. These tools show promise for further development, utilising both qualitative and quantitative research methods, including a workplace case studies. As they are expensive to administer, examples of this approach are rare.
- **Population measures:** Estimates of the extent of skill utilisation within broad populations (eg an industry or nation) are sometimes generated using commonly available labour statistics. Studies of this nature estimate changes in the content and level of skills. These are usually defined by some combination of occupation held by people (and the assumed qualification requirements associated with them) along with the education, training and experience of individuals in those jobs in the population or sub-population of interest. These studies are relatively easy to conduct. Their validity, however, is dependent on the assumptions upon which they are based. The adequacy and accuracy of coding conventions surrounding the occupations to which people are classified is often questionable.

3. Efforts to improve skill utilisation

A wide array of initiatives have been undertaken to improve levels of skills utilisation. These fall into one of three basic types.

(a) Improving behavioural skills to make full use of workers' capabilities

Elements of the employer, union and policy-making communities have had a recurring interest in redesigning work to help individuals and workplaces flourish. At the core of these has been a concern with giving workers the ability to use a wider range of their skills and talents in daily working life. The most recent manifestation of this social movement has been interest in 'high performance' workplaces/work systems. The central concern of these programmes has been to promote new authority relations, supported by new behavioural skills (e.g. competencies concerned with team working). The most recent sustained effort at promoting high performance working arrangements has been in Finland. Success in achieving lasting improvements in workers' role in production and service provision has proved difficult, of limited duration and patchy in diffusion. Similar, smaller scale programmes have operated in Flanders and more recently in Ireland and New Zealand. They too have suffered from similar problems. Systematic evaluations of the impact and operation of these initiatives are rare.

(b) Linking workforce with industry development

There has been longstanding interest amongst some governments and social partners in establishing economies that generate high wage jobs based on the use of 'high skills and high productivity' activity in the workplace. Within this tradition there are two streams. The most developed and long standing has focussed on giving workers the skills needed to fill vacancies created by employers. In more recent times, such interventions are becoming more sophisticated. Instead of being solely pre-occupied with 'training workers' to 'fit' available vacancies attention has also focused on modifying the jobs on offer to ensure they make better use of the skills available in the workforce.

(c) Broadening the focus - initiatives to nurture better skill eco-systems

The success of the above interventions concerned with nurturing 'high performance' and redeploying displaced workers has been limited. This has sparked interest in broadening the ambit of policy concern to include changing jobs and the forces shaping them – and not primarily focussing on workers and promoting more enlightened ways of managing them. In Australia this has been defined as improving skill

eco-systems – the social, political and economic settings within which skills are developed and deployed. Examples of how these initiatives have operated are provided from programmes managed by State level governments in Australia and certain states within the U.S.A. (e.g. New Jersey). A common feature of these interventions has been formation of stakeholder groups to help define and own the problem, in addition to the appointment of brokers to help nurture agreement and identify actions to change underlying problems within a skill eco-system. Assessment of the long term impacts of these interventions has been limited. It remains to be seen how and under what conditions such initiatives result in lasting change.

4. Conclusion and implications for further work

Key findings arising from this project can be summarised as follows:

- There are at least four different dimensions to the under-utilisation of workers' skills;
- Improved approaches to data collection have the potential to drive reform in labour market policy, especially at the local level;
- Achieving change in employers' labour use strategies that is wide-ranging and lasting is difficult.

Analysis of the existing measures and programs promoting skill utilisation has prompted the following recommendations:

(a) Data collection

- Improve the quality of summary, aggregate data by designing supplements to large scale, ongoing labour market surveys;
- Commission more robust sectoral/regional level studies;
- Devise protocols for the conduct of specialised skills utilisation surveys.

Particularly useful source material for this is provided in the recent work of Livingstone on the different dimensions of under-use and Ebert's work on how to use regional level data to identify and improve the connection between improved skill use and prosperity.

(b) Programme design

No generic or 'standard form' initiative can improve the utilisation of skills. Skills policy needs to consider three connected questions when programme objectives, organisational arrangements and funding priorities are being set:

- What skills, or combination thereof, is public policy interested in seeing better utilised: cognitive, behavioural or technical?
- What type of activity are the skills contributing to?
- What type of skill eco-system are the initiatives operating in?

Advances in this domain of policy require the emergence of a new sensibility amongst policy makers as much as specific new ideas for program design. In some cases skills policy interventions may make a transitory difference in some settings as long as particularly favourable circumstances prevail. Typically, however, unless underlying systems of accountability change, old habits are likely to re-emerge. Limits of this nature must be acknowledged if policy to improve skill utilisation is not to fall victim of skills policy in the past (i.e. overselling the potential gains possible and underperforming in achieving actual change).

INTRODUCTORY REMARKS

How skills, productivity and social equity are connected has been a topic of long standing analytical and policy interest (e.g. OECD, 2006). Froy and Giguere (2008) highlight that most consideration has been given to the so-called ‘supply-side’ issues, that is, the levels of educational attainment within a population. Increasing the ‘stock of skills’ has been regarded as the critical objective for improving economic development and social inclusion (e.g. Becker, 2002). This has underpinned widespread interest amongst OECD governments in raising the proportion of their citizens with higher levels of formal educational credentials. As Mayhew & Payne (2004) note, however, the correlation between increased skills and increased productivity may not be as strong as once thought. They suggest instead that external factors including investment, product market growth, and technical innovation bear an equal, if not stronger impact on productivity growth. Unsurprisingly so-called ‘demand side’ matters have received growing attention in recent times (e.g. CFE, 2008 and UKCES, 2010). At its most general level, this literature is concerned with the simple but far-reaching question: what is the use of increased skills within the workforce if they are not fully utilised by employers?

While interest in this topic is growing, a mature literature and protocols concerning data collection on the topic are yet to emerge. This paper provides an overview of this nascent, patchy material. The intended audience is policy makers and researchers interested in how skills can be better harnessed for competitiveness and social inclusion. It has been commissioned to contribute to a larger OECD project on ‘Skills for competitiveness’, an initiative of its Centre for Entrepreneurship, SMEs and Local Development. This project builds on lessons from that Organisation’s Co-operative Action Programme on Local Economic and Employment Development (LEED) study that examined local skills strategies (Froy, Giguere & Hoffer, 2009). That study recommended that skills strategies need to focus on ensuring policymakers:

- Have access to relevant information and data;
- Adhere to balanced and long term strategies to ensure investment in sustainable productivity growth;
- Better map skills provision, for example through ‘careers clusters’ and ‘careers ladders’;
- Build strong relationships with employers and look to the future and anticipate change.

Building on this previous work this current project has been commissioned to help answer two questions:

- How can skills demand and skills utilisation be best measured at the regional level?
- What efforts to improve skills utilisation at the local and regional level have been undertaken in OECD countries in recent times?

The paper is divided into four parts.

Section 1 provides a brief overview of the categories informing our research. This outlines the framework used to help make sense of the patchy literature on skill utilisation. Section 2 provides an overview of different approaches to the measurement of skill utilisation. The focus is on protocols and

conventions followed by those gathering statistical data on this topic. Section 3 summarises the disparate range of initiatives undertaken in various countries to improve the use of skills. As this is a new area of policy concern initiatives directly related to skills utilisation are limited. Consequently this section deals with policies and programs that have grappled with similar issues in the past – especially those directed at (a) changing approaches to the deployment of labour in the workplace – these days often referred to as ‘high performance work practice’ and (b) initiatives directed at actively linking workforce to industry development.

Section 4 concludes the paper by providing an initial assessment of what the readily available literature reveals of relevance to policy makers interested in improving both data collection and practice concerning skill utilisation.

The appendices provide more details on the matters explored within the report. These cover methods used for obtaining studies considered in this paper (Appendix A) as well as tabular summaries of previous initiatives directed at improving skills use (Appendix B).

SECTION ONE: CONCEPTS INFORMING OUR ANALYSIS

‘Skill’ as a topic of analytical and policy concern has generated a considerable literature over the decades. We do not offer a definitive guide to these debates. In the following discussion we simply outline the conceptual insights that have guided our scrutiny of relevant literature. We have found these to be particularly useful in making sense of the small and disparate literature on the dynamics of workforce development and skill utilisation today.

1.1 The three logics of skill: technical, behavioural and cognitive

Much debate on skill has been concerned with the level of skill prevailing in a task or setting. Since the publication for Braverman’s (1974) seminal analysis of the transformation of work, a key question of interest has been: are skill levels rising or falling? To address this question, Mounier (2001) undertook an exhaustive consideration of French debates on the evolution of work and education. He argued that before considering the issue of skill levels, policymakers first need to consider how skills are defined. As he has noted:

“In searching for a homogenous and substantive definition of skills, most attempts have only looked for one logic, which has led them to neglect the social process of defining skills and to assume that skills could be compared through time and space” (Mounier, 2001, p. 34).

What Mounier (2001) offers instead is the notion of ‘three logics’ of skills. A logic is defined as ‘a social force (the interaction between social actors, institutions and social values and norms) acting in a given direction.’ The three logics can be summarised as follows:

- a. *Technical* – this concerns the exercise of labour in the process of production and is determined by particular production methods and technologies. Specifically, it concerns the capacity to undertake particular set tasks (e.g. recognised trade or professional skills);
- b. *Behavioural* – this concerns the ‘personal qualities of the worker to deal with *interpersonal relationships*’, especially authority relations, required for the successful execution of job tasks. For most workers this usually means learning subordinate roles in the process of producing goods and services;
- c. *Cognitive* – this concerns the level and kind of general education and training undertaken by a population to help it understand and act in the world (Mounier, 2001, p 28).

Mounier’s (2001) concepts are anchored in notions of citizenship and labour as an input in production. The state’s interest in the underlying capacity of its citizens is the primary force shaping the development of *cognitive* skills. The development and use of technical and behavioural skills are anchored in the open-ended nature of the employment relationship. In market societies businesses do not hire labour as a fixed quantity – what they hire is the potential of a person to perform on the job. This creates the challenge of developing and deploying labour (Braverman, 1974; Fox, 1974). *Technical* skills primarily concern the development of workers’ potential to perform. *Behavioural* skills primarily concern issues associated with the realisation of labour potential on the job. The combination of these three logics (i.e. cognitive, technical and behavioural) is always time and space-specific ‘because these three logics are embedded in labour relationships and broader social structures’ (Mounier, 2001).

This approach to understanding skill helps clarify how work, education and social structures change the definition of skills and skill requirements over time and space. Indeed, varying emphasis on these three logics of skill contribute to the differences which have arisen in countries such as Germany, The Netherlands and the United Kingdom when dealing with the concepts of skill and competency. In the United Kingdom for example, accreditation for skill typically takes the form of narrow, modularised learning, mapping to a qualifications framework focused on the performance of technical work functions. By contrast, continental European countries such as The Netherlands and Germany engage with a broader, knowledge based definition of competency, relating to one's capability to maximise both work and civic participation (Brockmann et al, 2008). As we show in Section 3 policies directed at improving skills use differ in their object of concern. Some are concerned with making the best use of available technical capability. Many, however, are concerned with making best use of workers' cognitive capabilities by changing their behavioural skills.

1.2 Four domains of influence: the limits of training policy¹

In identifying the role skills policy can play in economic and social development, it is useful to distinguish between four distinct domains of policy influence (Evesson, Bretherton, Buchanan, Rafferty & Considine, 2009). These policy domains are:

- The nature of the service and/or product of interest;
- The context of labour's deployment and development in production/service provision;
- The pools and flows of potential workers and learners; and
- The formal system of vocational education and training.

The first domain concerns the nature of service and product of interest. While 'industry' is often presented as an uncontentious concept, powerful economic and political forces profoundly shape the nature of what economists' label 'output'. Analysis of early childhood education and care, for example, reveals that the nature of the service is highly contested. On the one hand, there is long day care, which is concerned with keeping children safe while parents work. On the other, there are pre-schools and kindergartens primarily concerned with the development of children. What type of service for children prevails will ultimately be determined politically, as the government plays the dominant role as funder and regulator. This threshold issue will profoundly shape skill needs. Continuing the example, if governments choose merely a system of long day care arrangements to primarily help working parents return to (or stay in) the labour market, the set of skill requirements will be very different to those if government is concerned with the development of children as well educated citizens.

The second domain concerns the context in which skills are used. These provide the immediate setting which either nurture or neutralise the orderly development and use of skills. The notion of skill eco-system helps define the context for skill development and use. Typically skills ecosystems involve:

- Business settings (e.g. enterprise design, networks financial system);
- Institutional and policy frameworks (skill and non-skill based);
- Modes of engaging labour (eg standard contracts, labour hire arrangements);
- Structure of jobs (eg job design, work organisation); and

¹ This section draws very heavily on Evesson 2008.

- Level and types of skill formation (eg apprenticeship arrangements, informal on-the-job) (Crouch, Finegold & Sako, 1999; Finegold, 1999; Buchanan et al, 2001).

It is important to highlight the value of the distinction between factors external and internal to the organisation. Factors which are external include funding flows, ownership arrangements, the degree of political leverage held by professional groups (if present) and the nature of consumer demand (uniform or splintered). Organisationally, 'internal' factors that affect the development of skills include employment structures, job design and employee receptiveness to training (Evesson et al 2008; Watson, 2008). For example, in most Australian industries to date most external variables are currently working to undermine orderly approaches to workforce development (Watson et al 2003; Evesson et al, 2009). Factors internal to workplaces also make changes to levels of skill utilisation difficult as they are often under the direct control of employers, many of whom may have little interest in changing current arrangements to make full use of skills held by workers. For example, in the UK, where High Performance Working practices have been identified as a means to achieve better skills utilisation, the reluctance of managers has been acknowledged as a key reason for low take up of these practices (UKCES 2010a).

The source of labour supply is the concern of the third domain. Issues in this domain are commonly defined on the basis of the core labour force categories; for example, employed or unemployed. When considering the role skills policy does and could play in boosting workforce participation, these categories are of limited use. The more finely grained systems of categorisation used by social and health-based researchers are more powerful, although controversial. For example, when considering women 'not in the labour force', understanding the adequacy and affordability of local early childhood education and care is important. And when considering single mothers on pensions, it is important to appreciate the very high incidence of substance abuse, anxiety or depressive disorder (45.2%) among beneficiaries compared with only 19% amongst those receiving no income support (Butterworth, 2003). Mobilising such groups to ensure their skills are better utilised will require that any skills based interventions work in concert with initiatives designed to address the non-skills based issues.

The provision of formal training services is the concern of the fourth domain. A great deal of the public debate on skills policy is taken up with discussion of public and private providers of off-the-job training or with increasing the number of people involved in work-based training positions (for example, traineeships and apprenticeships). Framing the issue in this way overlooks other important models of training services. In making sense of skill policy arrangements particular attention needs to be devoted to understanding how training services models differ on the basis of: ownership (that is, public, private or network), site of service delivery (on the job, off the job or combination of the two) and the ethos pervading the service (that is, education of citizens, training for industry or acculturating worker citizens).

Understanding how each of these domains operates is vital if we are to develop an adequate understanding of how skills requirements are defined and how workers are deployed in meeting them.

1.3 Skill eco-systems and diffusing change

In the 1990's much debate focused on how some countries appeared to be locked in a low-skill equilibrium while others were characterised as being in a virtuous 'high skill equilibrium' (Finegold & Soskice, 1988). Research in the skill eco-system tradition highlighted the significance of high skill networks within allegedly 'low skill countries' (e.g. Finegold, 1999). For example, reputedly 'low skill' anglo-phone countries – such as the U.S.A. – have very distinct high skill economic sectors, with the I.C.T. and biopharmaceutical sectors in California being the most celebrated cases (Crouch, Finegold and Sako, 1999). In analysing issues of workforce development and skill use it is important to understand the dynamic connections between the macro and meso levels (Rubery 1994; Rubery & Grimshaw 2003). While national settings do place significant constraints on what can be achieved, significant diversity within them is possible (Crouch, 2005). These insights are important for drawing out the wider significance of particular interventions directed at improving skill use, especially their transferability within and between countries. In particular, while the experiences of certain initiatives can be instructive, their

relevance for wider diffusion within and beyond a particular national setting and into different skill eco-systems is likely to be limited because of the wider ‘compound governance’ within which they are embedded (Rubery & Grimshaw, 2003; Crouch, 2005; Schmitt, Bosch, Gautie, Mason, Mayhew, Salverda & Westergard-Nielsen, 2008; Applebaum & Schmitt, 2009). The significance of this reality points to two cautions when reflecting on whether successful ‘skill use’ initiatives can be implemented elsewhere. The first is understanding precisely what the conditions of the successful experience have been. The second is carefully assessing how possible it is to replicate the initiative in different settings.² In this context, great weight needs to be given to the Froy et al (2009, p 26) claim: “Skills are [often an] inherently ... local issue.”

² The problem of ‘transferability’ of success has been noted by Crouch (2005) in his observations of the limited achievements amongst countries and regions which have endeavoured to replicate the ‘success’ of the U.S.A. model in general and Silicon Valley in particular by adopting allegedly universally policy prescription in other settings.

SECTION TWO: MEASURES OF SKILL UTILISATION

Section 2 provides an overview of different approaches to the measurement of skill utilisation. Until recent times skill utilisation has received limited attention in the literature as an issue in its own right. We summarise the key elements of this literature in Sections 2.2 – 2.4 below. Before providing this, however, we begin by reporting on three very important recent works which have grappled directly with defining what skill utilisation is and identified the challenges for moving analysis and policy forward on this topic. This is the work of the Canadian academic David Livingstone (and his colleagues), USA researcher Randell Eberts (and his colleagues) and Skills Australia, that country's national authority on workforce development.

2.1 Recent approaches to defining skill utilisation (especially under-utilisation)

Livingstone: different dimensions of skill under-utilisation

The group that has, arguably, devoted most attention to this topic in recent years has been the team of researchers associated with the Canadian academic, David Livingstone (e.g. Livingstone 1999a, 1999b, Livingstone & Oliver 2009). A summary of the kind of work they do is provided in the attached Canadian Auto-workers case study. On the basis of past analysis such as this Livingstone cites four dimensions of skill under-utilisation, or what he refers to as 'measures of education-jobs matching'. These are:

- *Entry credential matching.* Surveys in the literature (Livingstone, 1999; Finnie, 2002) have generally found an increasing proportion of jobs requiring higher and higher entry credentials. In some cases this reflects rising skill requirements. In increasing numbers of cases, however, credentials are used to screen applicants and are in excess of the skill requirements of the job;
- *Performance matching* refers to the performance capability of workers versus the performance level actually required to do the job. Based mostly on worker self-reports and expert analyst ratings of formal education levels in excess of job requirements, numerous surveys (Groot & van den Brink; 2000; Handel, 2003; Handel, 2005; Vaisey, 2006; McGuinness, 2006) have found the incidence of skills underutilisation to affect around 25 percent of respondents, although estimates varied widely from being inconclusive to a range between 10 percent to 55 percent;
- *Field of studies matching* refers to relevance of the area of preparatory education to job requirements. Little has been published in academic journals, although surveys (typically of university graduates) give some insight into the dimension of the education-job match relationship; and
- *Subjective matching* refers to workers' personal evaluation of job requirements against their capabilities. Surveys of workers (Livingstone, 1999; Vaisey, 2006) have indicated job dissatisfaction arising from feelings of over qualification.

Livingstone (2009) also cites the matching of the education required to get a job – information sourced in credential match measures – with the education required to satisfactorily conduct a job – information sourced in performance match measures. Finally, Livingstone (2009) also cites economic class as a source of potential mismatches. Specifically, Livingstone notes the differences over time in the degree of overeducation between occupational groups, citing Clogg and Shockey's (1984) comparison of occupational groups in the U.S. labour force from 1969 to 1980. Clogg and Shockey (1984) found

evidence that managers were the most likely to be overeducated, but that clerical sales, craft and other service workers were becoming increasingly overeducated over time. Livingstone's recommendation for further empirical examination of these final two categories is endorsed by this report.

Livingstone's (2010) conceptual precision is a legacy of years of research examining this topic. While he and his team have generated significant quantitative data, the power of these categories also derives from their use of qualitative research techniques as well. Having distilled these key categories, Livingstone and his team have provided a powerful reference point for defining future data requirements on this topic.

Box 1. FOCUS POINT: Autoworkers Case Study, Canada

The following case study from Livingstone and Wilson (2009) illustrates the complexities of learning which define a worker's stock of skill and knowledge, as well as the tensions between business financial objectives, worker job control, and the utilisation of skill.

The case study investigates the automotive assembly and auto parts manufacturing industry in Canada in 2005, in particular, the General Motors plant in southern Ontario. At that time, 160,000 workers were employed in these industries, contributing over 12 percent of Canada's GDP. Over 75 percent of those workers were employed by General Motors, Ford and Chrysler.

This concentration of workers is illustrative of the business conditions faced by automotive assemblers and manufacturers worldwide, and remains topical today. For Canadian manufacturers in particular, the rise of Asian and Mexican Assembly plants and the abolition of the Canada-US Autopact in 2001, have contributed to the proliferation of a small number of giant firms pursuing lean production systems. These production systems, based on the 'Japanese model', are characterised by investment in automation, declining division of labour (and greater job rotation), and intensification of work. These have clear ramifications on changing skill requirements, as we will now explore.

The first thing of note was the aging workforce. The average age of workers was early 50s, and average seniority over 25 years, a by-product of layoffs and plant closures through the 1990s. The workforce was male dominated, and around a quarter of the workforce are tradespeople, namely electricians, welders, machinists and tool makers. Production workers comprised machine operators and material handlers.

The increased level of automation had reduced the number of production jobs, with work intensification present in the form of rotation between shorter cycle, repetitive tasks with limited autonomy. Trades workers on the other hand, enjoyed greater discretion in their work, moving between settings and engaging in a range of problem solving activities required to maintain a smooth production plant.

Formal educational requirements for auto workers surveyed were relatively low, with over 40 percent not requiring a high school diploma. Of the trades workers, a majority required a high school diploma to enter their apprenticeship training. Licensing for the trades, and certification for machine operators is, however, widespread. Training time for becoming a qualified tradesperson typically takes five years, whereas less than 20 percent of production workers reported needing more than one year to perform their job adequately. Although almost half of all auto workers had not completed high school, a similar proportion had undertaken some form of further education course in the previous year. Nonetheless, and despite extensive formal provisions for further education negotiated by the CAW Union, most learning remains informal, done on-the-job. This ranged from extensive tacit learning of processing techniques, to semi-structured intentional learning as part of apprenticeship training.

The key results relating to skills utilisation came by measuring the credential, relevance, performance and subjective gaps between worker knowledge and that required for the job. The survey found that around a third of all auto workers believed that their credentials exceeded those required to obtain the job (credential gap); or their area of formal study was removed from their actual job (relevance gap); or their self-assessment of their knowledge exceeded that required for average job performance (subjective gap). Of note however is the low incidence of performance gaps amongst trade workers (that is, formally attained knowledge was close to that required for average job performance), compared to around a third of production workers. This is consistent with the training and specialised knowledge attained during apprenticeships. The stock of skills present in the GM plant workforce leverages decades of work experience and deep tacit knowledge, and is not adequately represented by formal educational requirements or attainment. Measures of skill utilisation which ignore this informal learning underestimate worker capabilities, ongoing learning, and changing job conditions. In any case, management concern with intensified production and automation could well risk effective utilisation of skill even amongst those with well matched capabilities and job requirements, and preclude the passing on of these deep reserves of knowledge.

Ebert: higher level technical skills use and regional prosperity

Research by Eberts et al (2006) into the North-Eastern Ohio regional economy illustrates an example for comprehensively measuring skills within a regional development framework. The process begins by nominating five themes deemed important to regional development, and ends with eight 'Dashboard Indicators' for tracking the transformation of a region in terms of improvement in economic outcomes and civil society. The initial five themes related to economic growth and employment, education and workforce, equity and fairness, quality of life, and cooperation and governance. These themes were captured by 40 data variables across 118 U.S metropolitan areas while focusing on the North-Eastern Ohio region. A statistical technique called common factor analysis was used to collapse these 40 variables into 8 weighted factors, namely:

- Skilled workforce, capturing the skill content of local occupations, levels of academic attainment, and the level of innovation;
- Urban assimilation, measuring the ethnic diversity of the region;
- Racial inclusion;
- Legacy of place, measuring the costs of older infrastructure and housing stock, and its association with higher crime rates and demand for public services;
- Income equality;
- Local amenities, including indexes of transportation, recreation and arts services, as well as the presence of a major research university;
- Business dynamics, capturing the vitality of business activity in terms of number of small businesses and the opening and closing of businesses; and
- Urbanisation, including the proportion of the metropolitan population living in the core city, as well as the core city's share of poverty

These 8 weighted factors are shown to be strongly related to measures of regional economic development including employment, output, income per capita and productivity. Eberts et al's (2006) analysis shows that a skilled workforce and strong business dynamics are the most important factors for economic growth, that is, regional growth depends on a high stock of skills being deployed in expanding and innovative industries and firms which demand such skills. High growth regions score well on all 8 measures except for the legacy of place factor. Eberts et al (2006) note that the metropolitan areas that ranked highly on economic measures also scored highly on societal goals such as income equality and racial inclusion.

Eberts et al (2006) approach to measuring regional economic development is predicated on an understanding of local responsiveness to wider market forces and its historical asset base. The statistical methodology would be readily transportable to other regional economies with readily available, reliable data, and could be tailored for specific regional themes. A strong combination of statistical robustness and sound intuition underpin the analysis, allowing for comparison between regions and over time. The variables measuring workforce development and skills utilisation made a significant contribution in the North Eastern Ohio study, and have been captured using readily sourced data.

Skills Australia's Measure of Skill Utilisation

Watson (2008), in a review of labour market and workplace trends in skills use in Australia, utilises a skills ecosystems approach to examining skill levels, whereby the focus is on strong engagement between

industry groups and training organisations. By examining the drivers of skill, as well as the supply side of skill, Watson's (2008) review enables a detailed analysis of skill utilisation that enables stratified conclusions (e.g. both part-time and casual jobs are much less likely to entail high skills usage than permanent jobs, and that they are also less likely to offer opportunities for workplace training). The research draws on the following four different Australian surveys

- The National Centre for Vocational Education Research's (NCVER) 2005 Student Outcome Survey, which contains information on vocational graduates training and study both before and after training;
- The NCVER's 2004 Down the Track Survey, which tracks students two years after graduation;
- The Australian Government and Melbourne Institute's Household, Income and Labour Dynamics in Australia Survey (HILDA), an ongoing longitudinal survey of Australian households; and
- The NCVER's Survey of Employer Use and Views of the Vet System (SEUV), a survey of employers conducted in 2005 to gather information about employer skill needs, and their use of vocational education and training.

In contrast to research published at the time, Watson (2008) was able to harness this combination of data sources to conclude that Australian skill shortages were not as widespread as previously thought. For example, he was able to identify the sectors of the Australian economy where the shortages were most acute, and contrast this with data that 37 per cent of employers were reporting that their employees had skill levels above what was required in their role. Whilst some of Watson's data sources were not fully representative of the Australian employed population, the methodology of combining data from educational and employer sources provides a model for future studies of regional or national skill utilisation.

Building on these findings, Skills Australia, the Australian Government's national advisory body on skills issues, has devised a methodology for examining skills needs and future skills utilisation at the national, regional and sectoral levels (Skills Australia 2009a; 2009b; 2009c; 2010). In planning for the future, it argues more attention needs to be devoted to understanding and nurturing adaptive capacity than providing purportedly precise estimates of likely demand for all occupational groups. This does not mean it has no interest in planning. It argues that occupations most within the gambit of government responsibility and most at risk of market failure are what governments should focus their future planning on. Skills Australia has identified twenty broad occupations in this category, including engineers, nurses, carpenters and joiners.

But the organisation also notes:

"Striving for a perfect demand-supply match appears neither possible more appropriate. Instead, we must be far more cognisant of how employees, employers and labour markets actually behave when developing plans for the workforce" (Skills Australia 2009b, p 7).

Its view on how this can best occur is not to vacate the field and leave the problem to be 'solved' by the market. On the contrary, the organisation is exploring ways in which it can support coordination from across a range of policy areas to ensure not only the better development but also the better use of skills in the workplace. It is particularly interested in building links with innovation policy, sector specific initiatives shaping the type of labour demanded as well as social inclusion policy. Only by engaging with activity in these domains will it be able to ensure better use and not simply improved development of skill.

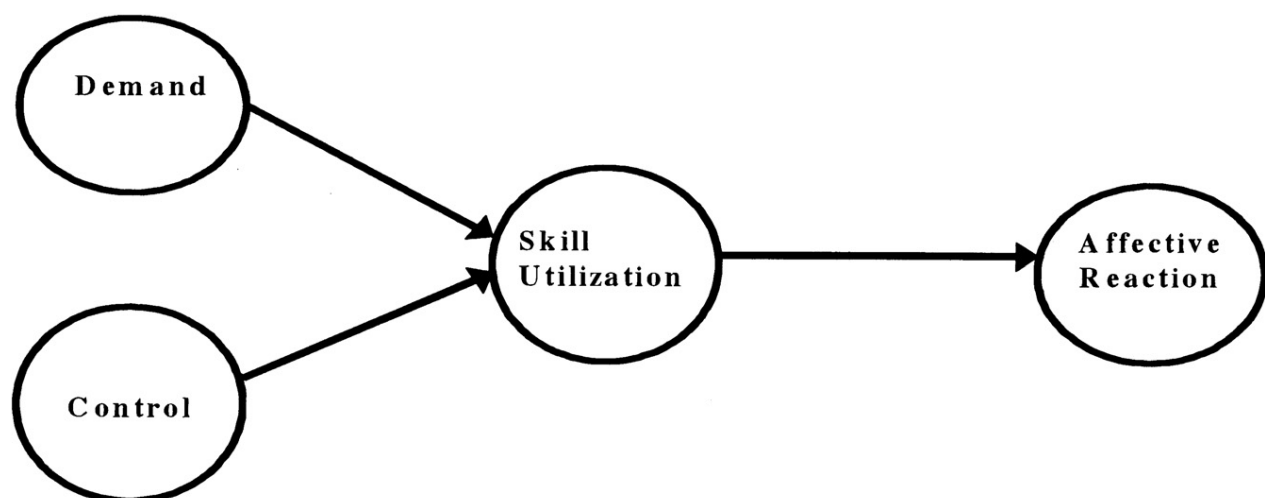
To date few detailed studies have built on these thoughtful formulations of what skill utilisation (and under-utilisation) entails. Consequently the rest of this section provides an overview of how this topic has been considered by those who have endeavoured to measure it from a range of disciplines. These studies

fall into one of three broad categories – those concerned with measuring it at an individual level, those that measure at the workplace level and those that measure at population level using a variety of indicators devised for other purposes.

2.2. Individual Measures of Skill Utilisation

Within the psychological literature, there is a focus on skill utilisation measures for individuals, with the aim of assessing individual performance. For example, Morrison, Cordery, Girardi, and Payne (2005) devised a measure of skill utilisation (see model in Figure 1, below) based on studies with Australian meat packing workers and wastewater treatment plant operators.

Figure 1. Model of perceived skill utilisation as a mediating variable in creating job-related affective wellbeing



Source : Morrison et al's (2005).

This measure assesses an individual's perception of the utilisation and development of their skills and abilities in the workplace, and was adapted by O'Brien and colleagues (1982, 1983). The six item measure uses a 5-point Likert scale³ and asks participants to rate themselves on such things as whether they "use all of the skills, talents, and abilities [they] possess on a regular basis".

A number of similar Likert style measures have been developed to measure individual perception of skill utilisation in the workplaces. These include the Karasek (1985) Job Content Questionnaire (JCQ), while others have been used to examine a diverse array of worker populations, including Israeli reserve infantry soldiers (Meir and Green-Eppel, 1997), New Zealand public sector employees (Mansell and Brough, 2005) and United Kingdom private health insurance workers (Holman, Axtell, Sprigg, Totterdell and Wall, 2010). In a Canadian study, Marchand, Demers and Durand (2006) used data from the Canadian National Health Survey to examine the perceived skill utilisation of 6611 participants at work distributed across 471 occupations (as described by the 1991 Standard Occupational Classification).

These measures provide useful information on self reported wellbeing, and data for the development of psychological models of the relationship between wellbeing at work and organisational performance. In this regard, individual measures of skill utilisation can provide insight into an individual's own understanding of how to improve the quality of their local employment, with the explicit aim of creating individual, not policy level, change. Individual measures also promote understanding of which elements of a workplace employees consider to be the important in promoting productivity. Often perceptions of skill utilisation are asked as a small part of a larger battery of questions, as thus far researchers utilising these types of measures have been typically interested in issues broader than skill utilisation (e.g. Morrison et al,

³ Skills used not at all=1, to skills used a great deal=5.

2005). For example, psychological studies stress that skill utilisation is only one component of the personal qualities of the worker, required to deal successfully with interpersonal relationships at work. Hence, these measures provide little information on the nature of skill utilisation in and of itself. This concern is a critical limitation to the utility of these measures for policymakers.

Another concern is the ability to measure skill utilisation according to Mounier's (2001) notion of the 'three logics' of skills. It is unsurprising, given researchers' lack of interest in devising a specific measure of skill utilisation, that current individual measures of skill utilisation have not attempted to provide a more comprehensive account of the sum of behavioural, technical and cognitive skills Mounier (2001) envisages. With increasing focus in this area, this lack of a focussed measure may be resolved in future.

2.3 Employer or Firm Based Measures

More detailed measures of skill utilisation seek to examine both the demand and supply sides of skill utilisation, with many based on measurement of issues specific to the workplace. For example, the U.K. Skills Survey aims to focus primarily on the job, rather than on the person who fills it (Felstead, Gallie & Green, 2002; Green, Gallie, Felstead, & Zhou, 2006). The survey is based on Ashton et al's (1999) job analysis methods for measuring skills, and seeks to measure generic skills used in varying degrees in all jobs (e.g. literacy skills, number skills, planning, problem-solving and technical 'know-how'). In addition, the U.K. Skills Survey measures three broad indicators of skills:

- Skills derived from training time, or the time taken to train for the current type of work;
- Learning time, or the time taken to learn to do current type of work well. The Learning Time Index is used as a summary measure and ranges from one to six; and
- Formal qualifications required to get and do jobs.

Analysis of results from the 2001 U.K. Skills Survey have explicitly examined information about skills utilised at work (Felstead et al, 2002; Green et al, 2006). Studies such as Felstead et al's (2002) have the useful ability to examine the relative "balance" between skills supply and workforce and employer utilisation. For example, Felstead et al (2002) found that whilst a relative balance of skills demand and supply existed for those jobs requiring high level qualifications, an aggregate imbalance existed for those jobs requiring intermediate and no qualifications. On the basis of their survey, they predicted there were only 2.9 million economically active people aged 20-60 who possessed no qualifications, and 6.5 million jobs for which no qualification would be required to obtain them. This survey has subsequently been updated (U.K. Skills Survey, 2006).

More recent research for the UK Commission for Employment and Skills by Bates et al (2009) has explored the possibility of combining individual and workplace research tools in order to develop a measure to specifically measure skill utilisation in the workplace. Through key informant interviews and a literature review they identified a number of themes that should be explored in order to understand skill utilisation, including supplementary issues such as job design. They assessed the National Employers Skills Survey (NESS, 2007); the Workplace Employment Relations Survey (WERS, 2004); SfBn Employer Survey (2003-05); People and the Bottom Line; and the Future of Work Survey (FoW).

Through this assessment there were a number of recommendations. Bates et al (2009) found that the most appropriate measurement would be a longitudinal survey (however they note the financial challenges to this approach). They see WERS as being the most appropriate vehicle, however as an already lengthy survey, adding an employee component would only increase the burden. It would also be possible to extend the NESS to employees, with this being the most cost effective option. Their final option is the development of a new survey tool using both qualitative and quantitative research methods including a series of case studies. They concede that:

“This might offer the opportunity to explore opportunities for appropriate kinds of policy support which might stimulate more organisations to shift their business strategies upstream and improve organisational demand for and utilisation of skills in the process” (Bates et al, 2009, p. 75).

Whilst the U.K. Skills Survey and other similar measures of skill utilisation overcome some of the limitations of Likert style measures, measures such as these ignore the significant role of skills policy, specifically regarding the core service and/or product of interest and the context of labour’s deployment and development in production/service provision. For example, if a long day care worker envisages their job as keeping children safe while parents work, utilising Evesson et al’s (2008) childcare example previously cited, then their reported notions of the skills concerned with their job will differ dramatically from a long day care worker who envisages their job in a preschool or kindergarten as being primarily concerned with the development of children. Any workplace measure of skill utilisation of a pre-existing job role is only able to provide an individual’s limited insights into the behavioural, technical and cognitive components of skill, given the methodology is reliant on self reporting perceptions of individual skill utilisation. For example, when individuals’ views conflict, both views are afforded equal weight in these measures, with no clear means of resolving the issues this conflict presents for policy makers. As a specific example, the U.K. Skills Survey’s measurement of the generic skills, training time, learning time and qualifications required for a role in a child care centre that seek to keep children safe while parents work is not a measure of the skills utilisation for a role in a preschool and kindergarten primarily concerned with the development of children.

2.4. Population Level Measures of Skill Utilisation

In measurements of skill utilisation of a population, skills and skill levels are usually defined as some combination of education, training and experience (Livingstone, 2009; Toner, 2009). Examples of researchers combining national statistical collection series to measure changes in skill levels is provided by Toner, 2009:

- Employment distribution by level of occupation (Cully 1999);
- Employment distribution by educational attainment (Colecchia & Papaconstantinou, 1966);
- Wage differentials by educational attainment or occupation (Goldin & Katz, 2007).

Examples of these measures are the General Education Development (GED) Scale from North America, which measures reasoning, mathematical and language skills, and the Specific Vocational Preparation Scale (SVP), which measures time required to learn the skills and knowledge for an average job performance (Livingstone, 2009). These measures only seek to measure changes in skill levels, and hence do not cover either the demand side of skill utilisation policy.

On the demand side, occupational classifications may also rank occupations from most to least skilled, based on years of formal education, the period of training, or the number of years of experience required “for competent performance of an occupation” (ABS, 2006, p. 4). The U.S. Department of Labor has designed a multifaceted taxonomy of skills, comprising of elements such as ‘social perceptiveness’, ‘problem identification’, ‘equipment selection’, ‘identification of key causes’, and ‘management of financial resources’ (Esposto, 1998). Whilst these measures do not specifically examine skill utilisation, measuring changes in levels of education relative to the labour market arguably provide some insight into both the supply and demand sides of skill utilisation. They involve, however, significant simplifying assumptions. These include the conception that acquisition of knowledge and skills is captured in terms of formal and further education, and that all individuals employed in each occupation do have the level and scope of the skill required to ‘competently’ perform their occupation.

While some have argued strongly that the relationship between educational qualifications and income can be used to determine skill levels, this focus often precludes discussion of the factors inhibiting access

to formal education, and the learning which occurs outside the formal system (Livingstone, 1999). In addition, Howell and Wolff (1991) point out that whilst some skills require little formal education but are highly paid (e.g. professional basketball) and others require many years of schooling but are poorly remunerated (e.g. professional philosophers), it has long been accepted practice to assume that both relative earnings and educational attainment are good indices of relative 'skill'. Within population based measures, recognition of informal education (such as on-the-job training, perhaps with a mentor) or non-taught informal learning (intentional or tacit) is much less prevalent.

Whilst population based measures are able to assist policymakers by generating conclusions about regional skill levels, they assume many equivalencies. As Hanushek and Woessmann (2007) and Toner (2009) highlight, measures of skill based on national statistical collections assume educational and qualification equivalencies across countries and through time. A lack of consideration of the quality of education and skills achieved limits the relevancy of these measures. A lack of consideration of time neglects the increasing trend towards inflation in credential and certification requirements (Howell & Wolff, 1991). Finally, there remains a relative lack of empirical work on employment-led, rather than training-led, skill formation (Ekos Research Associates, 1993; Hanushek and Woessmann, 2007). For any serious measure of local skill utilisation, measures must take into account educational quality, local contextual factors, and work-led skill formation.

2.5 Summary

There exist a large number of methodologies for potentially measuring skill utilisation, each with relative merits and deficits. As discussed, Livingstone (2009) review of the empirical studies of skills utilisation, classifying them in the following four dimensions, provides a most useful framework of analysis. Some measures offer promising ways forward but there is still much work to do in order to ensure skill utilisation is measured more comprehensively and systematically in future.

SECTION THREE: EFFORTS TO IMPROVE SKILL UTILISATION

While improving skill utilisation is a relatively new object of policy concern, issues relevant to how it can be achieved have been explored in initiatives which have had a slightly different focus. We focus on two in particular: those concerned with achieving ‘high performance’ and those concerned with promoting economic prosperity by harnessing the capabilities of more highly skilled workers.

These different types of initiatives are concerned with utilising different types of skills. As we noted in Section 1, when thinking about skills it is useful to distinguish between three distinct dimensions: the cognitive, the technical and the behavioural. Much general education discourse is concerned with the development of fundamental cognitive capabilities. Much VET policy and practice is concerned with technical abilities. In more recent times there has been an interest in so-called ‘generic’ or ‘employability’ skills (Grugulis, Warhurst & Keep, 2004). These primarily concern behavioural skills – things like showing initiative, the capacity to share information and the ability to work in teams. Using these categories we can see how initiatives outwardly concerned with different policy objectives (i.e. ‘high performance’ and ‘high wage, high skill’ growth) have much to offer policy makers interested in improving skill utilisation. In essence, many initiatives concerned with achieving ‘high performance’ are concerned with *improving behavioural skills* to ensure *best use* is made of workers *cognitive and technical capabilities*. Recent initiatives in this tradition are examined in Section 3.1. The other relevant tradition has been concerned with creating high paying jobs based on highly productive workers - productive because they apply high order skills on this job. This tradition has endeavoured to *develop **and harness** higher levels of cognitive and technical capability* to achieve economic renewal. We consider initiatives of this nature in Section 3.2.

Documentation on initiatives of most relevance to those interested in improving skill utilisation is scarce. In this Section we summarise only the most recent initiatives and draw on information that is publicly available. As this is a new area of policy concern the initiatives are limited and, in some cases, in the early stages of development. Further details about our processes for identifying relevant initiatives and deciding on what to include and why are provided in Appendix A. A table summarising the key features of the initiatives discussed is provided in Appendix B.

3.1 Improving behavioural skills to make full use of workers’ capabilities

The challenge: redesigning work to nurture flourishing individuals and workplaces

Since at least the dawn of the industrial revolution elements of the business community, the union movement and public officials have been interested in redesigning work to help individuals and workplaces flourish. From Robert Owen’s experiment in New Lanark in the early nineteenth century to the MIT’s ‘Made in America’ work late last century (Dertouzos, 1989), history is littered with initiatives directed at making better use of people’s capability at work (Rose, 1990). Such initiatives have usually had the dual aims of work humanisation and ‘high performance’. Despite literally decades of endeavour a recurring theme of these initiatives is that their achievements are short lived and diffusion beyond a limited core of firms and workplaces is limited. These features appear to be evident in the most recent crop of initiatives in this tradition.

3.1.1 Grinding through Granite I

Recent initiatives to promote high performance workplaces

The Finnish Workplace Development Programme

Finland's workplace innovation programme has received international recognition as being a leading workplace innovation programme (Payne, 2004). This programme is managed by the Finnish Ministry of Labour, and aims to:

“...promote performance and the quality of working life (QWL) by furthering innovation-supporting modes of operation and employee skills at Finnish workplaces. This objective also includes raising the level of employability and the ability to cope at work and reinforcing workplace development expertise in Finland” (Alasoini, 2003).

The initial programme ran from 1996 to 2003. In this time, 670 projects were funded, 135,000 employees were involved and 1,600 Finnish workplaces participated (Alasoini et al, 2005). Activities forming part of the programme include research, seminars and liaising with stakeholders to build up national infrastructure, as well as selected enterprise level workplace development projects. Enterprise level projects aimed to address issues such as job design, improving work practices, external networking, developing expertise, and introducing new forms of work organisation and the role of management.

In 2004 the Finnish government entered into a new phase of the project, referred to as the Development Programme for the Improvement of Productivity of Work and the Quality of Working Life (Tykes, 2009). The current phase of the project:

“...promotes the modes of operation of Finnish companies and other work organizations, with an eye to simultaneous enhancement of productivity and the quality of working life. This is called qualitatively sustainable productivity growth. Development activity in the programme projects is based on cooperation between the management and staff of the workplaces concerned. The current phase of the project has a budget of over 70 million euros and already over 1000 projects have been funded so far” (Tykes, accessed 10.12.2009).

The majority of evaluations undertaken on both stages of the programme suggest it has had a positive impact in relation to team work, personnel competence, access to training and learning and cooperation between employees and supervisors (Ramstad, 2001; Rissanen et al., 2003). For example, data from the High-Involvement Innovation Practice survey carried out by the Finnish Workplace Development Programme support the view that the projects have improved the development of team work and increased the level of support management provides to employees (Alasoini et al, 2008). However, Payne (2006) argues there are difficulties in measuring the impact of such programmes through self report surveys alone. He also calls for greater employee participation in the design of individual projects.

In addition to the Finnish Workplace Development Programme, there are a range of other, more aspirational initiatives. While often ostensibly aimed at nurturing ‘high performance’, central program such as these is the desire to more ensure more workers make better use of their skills, especially their cognitive capacities and higher order behavioural skills, especially the ability to work both autonomously and as a team player.

The Flanders Synergy Programme

In the national context of a high incidence of early retirement and expected skills shortages, the Flemish Government in 2001 announced that improving productivity, innovation and working life are important economic and social goals for the future of Belgium (Pact for Vilvoorde of 2001). In this Pact ‘social partners’ agreed to productivity or ‘workability’ by addressing the quality of work, the quality of

the organisation of work and career quality” (Alasoini et al, 2008, p. 35). As part of this, a government funded research programme (STV-Innovation and Work Programme) has developed a tool to measure the progress of the ‘workability’. The monitor samples a representative group of the labour market and contains measures based on four indicators: levels of stress at work, wellbeing at work, learning opportunities and work family balance. Underlying these indicators are the characteristics of work seen as risk factors: workload; emotional load; skill task variety; job autonomy; social support and physical working conditions (Alasoini et al, 2008).

In 2006, in support of the strategic goals of the Pact of Vilvoorde, the Flemish Government in partnership with the European Social Fund introduced a regionally based workplace innovation programme in the Dutch-speaking region of Flanders (Alasoini et al, 2008). The programme was developed around the concept that workplace innovation can be a means to improve the wellbeing of employees as well as improve the performance of the company. Over two rounds of the project, just under thirty enterprise based projects have been supported. The key activities of the enterprise level projects include promoting new forms of work organisation, improving client-orientation in the company structure and organisation, increasing autonomy for workers, introducing self-steering teams and promoting competence development and employee participation in the enterprise (Alasoini, 2008).

Importantly, empirical assessments of the Flanders Synergy Programme have been conducted. Initial assessments have found a link between the Programme and a moderate improvement in the rate of ‘workability’ in the second wave. However, Huys (2008) cautions these findings, arguing that given the relatively small scale of the programme, it may be too ambitious to link the improvements in the workability with the programme.

The Workplace Innovation Fund – Ireland

In 2007 Ireland introduced the Workplace Innovation Fund as part of its National Workplace Strategy. Ireland’s national skill strategy aims to “transform Ireland’s workplaces into *Workplaces of the Future*, by promoting greater levels of partnership-led change and innovation in our places of work, regardless of size or sector” (Enterprise Ireland, 2008). The Workplace Innovation Fund has been allocated six million euros over three years and is administered by Enterprise Ireland. The objective of the Workplace Innovation Fund is to:

“...help small and medium sized enterprises boost their productivity and performance by embracing and embedding innovative workplace practices, while developing employee participation and empowerment as enablers of change and creativity” (Enterprise Ireland, accessed 17.12.2009).

A range of activities are supported by the programme, including enterprise level projects in the private sector (mostly small to medium enterprises - SMEs), social partner initiatives and a public awareness campaign promoting the goals of the programme (Alasoini et al, 2008).

At the level of the enterprise, activities aim to support improved partnerships between management and employees, enhance capacity for change among employees, build employee commitment to a better workplace and introduce new human resources processes to support business. These activities support re-designing work arrangements, providing support to an oft-neglected component of skill utilisation. A broader goal of the programme is to improve employee well being, motivation and commitment the workplace. A key component of the Workplace Innovation program is the way in which it promotes employee and management collaboration (Alasoini et al, 2008), and this sets it apart from many other international examples.

Workplace Productivity Project – New Zealand

The Workplace Productivity Working Group (WPWG) was established by the New Zealand Government in 2004. It is comprised of industry, business, union and government agency representatives and its goal is to provide advice to the New Zealand Government on “... ways that New Zealand can deliver a high wage, high value economy for the benefit of all New Zealanders” (New Zealand Ministry of Economic Development, 2009).

The Working Group oversees the Workplace Productivity Project – New Zealand’s national workforce development and innovation programme. The Workplace Productivity Project aims to promote innovation by activities such as raising public awareness about what productivity means, using diagnostic tools to assist firms in determining how organisation are performing in the area of skill utilisation and making recommendations regarding areas they could improve (WPWG, 2004). Under the initiative, enterprises are assisted by specialists in how to implement changes to drive their own high skilled and high productivity agenda.

In its 2004 report, the WPWG developed a comprehensive list of what it considered to be the key drivers of productivity for New Zealand enterprises. These are: effective leadership and management capability; productive workplace cultures and positive working environments; innovation through technology and ideas; workforce development; the organisation of work structures to maximise staff skills; collaboration between companies within and across sectors and analysis and measurement of workplace structures and current practices. These productivity drivers are the focus of individual project activities that take place at the level of the enterprise, with a number of individual case study examples available publicly.

The literature contains very few evaluations of the efficacy of these programs, providing little insight into the lasting legacies of these programs. A recurring pattern of initiatives of this type is that diffusion of ‘high performance’ beyond a few leading sites is always limited (e.g. Kersley et al 2006, 95). More importantly many workplaces appear to revert to old habits after the initial flurry of enthusiasm about ‘workplace reform’ passes (e.g. Buchanan & Hall, 2002). These basic insights alone offer important warnings for those interested in improving the use of skills on the job. Common sense about the benefits of making the best use of people not being common practice indicates that there are forces beyond the immediate workplace shaping under-utilisation outcomes (Bryson, Forth & Kirby 2005). Reflections on interventions that have endeavoured to effect change beyond the workplace to its internal operations could, potentially, offer lessons on how this limitation could be overcome.

3.2 Linking workforce with industry development

The challenge: harnessing skills for economic renewal

There has been a longstanding interest amongst public officials and the social partners in establishing economies based on developing and using more ‘high skills’ to underpinning more ‘highly productive, high wage workers’. Within this tradition there are two streams. The most developed and long standing has focussed on giving workers the skills needed to fill vacancies created by employers. The assumption has been that more closely linking training with vacancies results in better utilisation of labour. At a national level arguably the most advanced example of this approach was of active labour market policy in Sweden as specified in the Rehn-Meidner model (Pontusson, 1992; Blyth, 2000). Over the years less ambitious endeavours have occurred in the U.S.A. around job training partnership initiatives (Osterman, 1988). Examples of recent initiatives in this tradition which are evolving to also tackle problems of job design are summarised in Section 3.2.1. below. In more recent times there has been emerging interest in not just changing workers but changing jobs so that skills are better utilised. A summary of these nascent developments is provided in Section 3.2.2. below.

3.2.1 Grinding through Granite II

Integrated workforce development strategies to redeploy displaced, disadvantaged labour

For many decades one of the most common elements of labour market policy has involved endeavours to more successfully redeploy displaced workers. Without intervention of this nature the skills of displaced workers can remain under-utilised for extended periods. In a very detailed and considered assessment of U.S. experience with this realm of policy, Paul Osterman (1988, p 103) identified four key findings:

1. 'Early notification of layoffs or closings improves the chance of effective interventions';
2. 'On-site worker assistance centres are frequently better than programs that are distant from the workplace';
3. 'Counselling and placement assistance are as important if not more so than training';
4. 'Co-operative efforts between labour and management work best'.

In more recent years U.S. policy in this area has focused on promoting more locally based initiatives. Harrison and Weiss (1998) examined several of these experiences and identified what works best, building their analysis on ten case studies of various ways community networks have come together to assist in developing local workforces. Like Osterman (1988) they noted that focussing on changing individuals often missed the point: the problems in the maintenance of underutilised labour and skills was more often than not embedded in the structure of jobs. As an example, in Texas when a local Levi Strauss factory closed, displacing 1000 workers—mostly Hispanic women, an existing group of community-based organisations, in conjunction with other partners from both the private and public sectors, began a grassroots, democratically run organisation called QUEST (Quality Employment Through Skills Training). Sectoral skill needs (that is, local industry skill gaps) were identified, and training programs were developed and run to impart the required skills to community members in the relevant occupations. The significant elements of the program are its great success compared with those of other programs. It was particularly effective in giving participants skills in demand and then placing them in jobs. Osterman and Lautsch (1996) suggest that an important ingredient of their success has been the grassroots, democratic political pressure that these organisations were able to inject into the process. This has been a 'from the ground up' project and, consequently, may not lend itself to being implanted into a community from above as part of an 'anti-poverty' program. There have been attempts to replicate QUEST but to date none have been evaluated (Buchanan & Evesson, 2004).

Both the strengths and limitations of initiatives of this nature are evident in the most recent examples of this type of program from Texas and Singapore. We have included them in this overview because both have endeavoured to move beyond merely 'training' based solutions to increase utilisation of displaced workers. Both have endeavoured to build new intermediary structures that broker links between displaced workers and firms needing labour. These intermediaries have helped employers redesign work as well as help workers change their skill sets to ensure a better of matching of labour supply and demand and resulting a higher level of skill utilisation than would otherwise have prevailed.

Texas, United States Industry Clusters and Workforce Innovation Partnership

An example of a skills utilisation and workforce development programme embedded in a broader regional development programme can be found in Texas, United States of America (U.S.A.). Texas has implemented a Regional Cluster Initiative involving the development of strategies to promote industry development in the region (Texas Workforce Commission, 2008). Currently the industries targeted are advanced technologies and manufacturing, aerospace and defence, biotechnology and life sciences, information and computer technology, petroleum refining and chemical products, and energy. Running

along side this initiative is Texas' workforce development programme, overseen by the Texas Workforce Commission and run by 28 regionally based Workforce Development Boards. The initiative operates in partnership with local training providers and economic development partners and aims to assist employers with identifying customised training. It also offers other services not related to skill utilisation, such as legal advice and business services. Under the programme, employees can receive assistance including training, career information and temporary assistance. The scheme is referred to by the Workforce Commission as being a market led approach whereby "local employers and workers by collaborating with educational institutions, economic development groups, businesses, and other state agencies to provide customized skills training and jobs" (Texas Workforce Commission, p. 5). No evaluations of the program were available at the time of writing, again leading to questions about its replicability in differing contexts.

Workplace reform for over forties in Singapore

Similarly to Norway and the rest of Scandinavia, Singapore has long taken an interest in workforce development and workforce innovation to maintain its highly competitive workforce (Alasoini et al, 2008). A number of programmes implemented in the 1990s focussed on up-skilling the workforce with skills deemed 'best practice' (e.g. the On-The Job Training Scheme) and transferable skills such as literacy, problem solving, learning to learn and organisational effectiveness (the Critical Enabling Skills Training Program - CREST) (Singapore Workforce Development Agency, 2006).

Over the past decade, Singapore has broadened its policy focus to look at employer demand for skills, specifically via the Work Redesign Programme. This initiative was launched in 2001 with the aim of assisting companies improve work practices and job content with a focus on boosting productivity and job satisfaction. The methods of job redesign include job enrichment, rotation and teamwork. Another unique scheme, the Advantage Scheme Plus, aims to encourage employers to better utilise the skills of its over-forty workforce. Operating on a tender basis, companies apply for grants to assist with employing, training and retaining workers aged over forty. Once accepted into the programme, the enterprise can choose to work with consultants or on its own to implement programmes that facilitate integration between employees, training, job design and work organisational structures that better suit the over forty age group (Singapore Workforce Development Agency, 2006). A key element of the programme is to provide incentives for employers to hire employees over the age of sixty-two and to adopt active career management and training programs to utilise the skills of employees in this age group (Singapore Workforce Development Agency, 2006).

Again, evaluations of the impact of this program are not easily accessible. While elements of these programs have clearly built on insights from about the limitations of early styles of intervention, it is still quite unclear whether the increased in engaging with and encouraging change amongst employer practice has, as a matter of practice, been successful.

3.2.2. Grinding through Granite III

Recent initiatives to nurture better skill eco-systems

While there is not much evidence on the impact of the interventions considered so far, that which is available indicates that nurturing 'high performance' and redeploying displaced workers has had limited, short lived impacts at best. This has sparked interest in broadening the ambit of policy concern to include changing jobs and the forces shaping them – and not just focussing on workers and promoting more enlightened ways of managing them. The nature of this challenge is captured by contrasting two regional economies, both with highly developed systems of workforce development, often involving skills that have been tacitly developed. Southern Ontario, in Canada, is recognised as a region rich in deep, often tacit skills associated with automotive manufacturing. Restructuring of the world automotive industry has resulted in the disappearance of many jobs that made use of the capability. How this capability can be better used – or at the very least built upon - as this local economy evolves is a major challenge. Silicon Valley in California offers an example of where good use has been made of often tacit skills in local

economic development. A range of policy initiatives have been pursued in a variety of jurisdictions that have endeavoured to realise the potential of skill embedded in places like southern Ontario so that they can become more like Silicon Valley.⁴

Reflecting on issues of this nature, policy makers in Australia, the U.K. and part of the U.S.A. have grappled with how best to improve what are sometime referred to as skill eco-systems – the social, political and economic settings within which skills are developed and deployed. The following section provides examples from programs managed by State level governments in Australia, Scotland and as well as some States in the U.S.A.

3.3. Skills Ecosystem Strategy Case Studies

The National Disability Services Project⁵

The National Disability Services project was introduced in the second phase of the skills ecosystem initiative, funded by the Australian Federal Government. The project aims to enhance the services provided to people with a disability by increasing recruitment and retention in the disability sector workforce and addressing changing skill requirements and employment conditions in the sector.

The first phase (conducted in 2007/2008) of the project aimed to enhance the understanding of the labour market characteristics of the disability workforce amongst disability organisations (NDS, 2009). This was done through the awareness raising workshops which encouraged disability organisations to consider workforce sustainability and development issues that impact on their own enterprise.

The second phase (conducted in 2008/2009) of the project is currently underway and involves 13 pilot site demonstrations. The 13 disability service providers involved in the pilot projects have developed individual strategies which address issues unique to their workforce. These issues include high turnover, the gender and age profile mix of the workforce and broader challenges associated with rapid service growth. The pilot strategies focus on strengthening stakeholder cohesion amongst local training providers and improving staff engagement. The workforce strategies implemented often involve the review of current job descriptions and working arrangements. Job design is a key focus of all of the pilot program's strategies (NDS, 2009)

Bedford is one of the 13 participating disability service providers involved in the pilots programs. Bedford is one of Australia's largest non-profit disability services organisations and offers disability services including employment, training, residential services and life-skills for people with a disability. The workforce issues affecting Bedford were identified as: difficulties in recruiting and training staff in regional areas; a lack of organisation understanding of regional demographics; and the lack of necessary competencies held amongst the workforce and the drivers of the workforce. To address these issues, the organisation's skills ecosystem strategy involved data and information gathering and analysis to identify workforce and demographic trends (such as turnover details, staffing levels and student destination data) (NDS, 2009). In response to the trends identified in the data, the organisation has looked at individual job design issues amongst its workforce and introduced a targeted marketing campaign to promote the sector amongst students.

'Taking Pride in the Red Meat Industry'⁶

Another skills ecosystem initiative is taking place in the Australian Meat and Livestock industry. The inability to attract and maintain a skilled workforce is a serious threat to the sustainability of the meat

⁴ Further details of the challenges in southern Ontario are provided in Livingstone et al 2009.

⁵ <http://www.ndsqldprojects.net/nwp/index.htm>, accessed 07/01/2010

⁶ http://www.skillecosystem.net/profiles/1163569331_15946.php#Pride, accessed 07/01/2010

industry as meat processing enterprises experience consistent levels of high turn over and growing skills shortages. Skills shortages in the meat industry have the potential to impact on the international competitiveness and long term viability of the industry.

The meat industry's skill ecosystem strategy aimed to address the challenge of recruitment into the industry by the introduction of a cross industry traineeship. The aim of the cross industry traineeship is to attract workers who may have broader aspirations than meat processing alone into the sector. Rather than simply undertaking a traineeship in meat processing, trainees rotate and learn broad skills in farm production, meat retailing as well as meat processing.

*Cross Utilities Industry Recruitment Strategy*⁷

The utilities industry is facing the prospect of growing skills shortages in regional locations as a result of large numbers of the workforce entering retirement in the next five to ten years. The Utilities and Electro technology Industry ecosystem strategy is endeavouring to increase the number of entry level employees to the industry to offset those leaving the workforce. The project aims to attract people into the sector who are not currently fully engaged in the workforce or who would not normally consider a role in the utilities industry. The strategy aims to create purpose designed jobs to give people access to work and training on infrastructure maintenance and auditing, and thereby entry into the industry.

Similar to the meat industry project discussed briefly above, the utilities industry has developed a cross-utilities traineeship, through which it is hoped that a larger supply of labour will enter the utilities industry. Trainees are offered the chance to develop skills in the areas of energy utilities and water supply (and eventually local government will be included). The traineeship offers both on the job and off the job training and leads to a vocational qualification (specifically, a Certificate II in Utilities).

*Bundaberg Horticulture Workforce Development Plan*⁸

The Bundaberg Horticultural Workforce Development Strategy (2007) sets out a series of initial steps the industry is planning to take to tackle growing skill shortages in the horticulture sector in the region. The plan was developed by a steering committee broadly representative of industry, growers and local workforce as well as training providers. The actions articulated in the plan are aimed at improving the supply of appropriately skilled labour which will enable the horticulture sector in the Bundaberg region to continue to grow (DET & DPI, 2007).

The first step outlined in the strategy is to build a skilled rural workforce in the Bundaberg Horticulture Industry. Under the Workforce Development Plan, this will be achieved by the identification and communication of effective management and business options that meet the needs of the horticultural enterprises in the region in combination with the communication of emerging employment, training and workplace relations services to assist enterprises in their ongoing skill needs. The second key focus of the plan is to enhance business management, leadership and supervisory capacity of the industry through the establishment of skills mentoring programs and small business management skills programs. The development of existing industry networks is also encouraged in the plan, with a focus on developing collaborative and innovative approaches to production. The plan also highlights the importance of enhancing the technical and operational skills of people working or intending to work in the industry. This will be done through activities such as the introduction of a cadetship program for existing employees in the industry and improving the links between industry and local schools delivering agricultural programs. The strategy identifies the development of collaborative processes such as consultation amongst industry

⁷ <http://www.uensw.com.au/media/targeting-skills.pdf>, accessed 07/01/2010

⁸ http://www.dpi.qld.gov.au/documents/BusinessAndTrade_BusinessDevelopment/Bundaberg-3247-SFS-p1-2.pdf, accessed 07/01/2010

partners as a key goal. Aligned with this is the aim of ensuring that regional training providers are responsive to emerging skill needs of industry.

The distinctiveness of this initiative is that it accepted by all players concerned with the issue of skill utilisation that (a) all need to change their ways and (b) all need to do so in a coordinated fashion. What is most striking about the initiative is that the change is not just directed at work and education institutions – employers are offering themselves as a site of explicit intervention and policy concern.

Queensland, Australia's Skill Plan

In 2006, in the face of emerging skills and labour shortages, an Australian state government authority implemented both short and long term measures through a state based Skills Plan. The key goal of the plan was to ensure training provided through training providers was responsive to the needs of the labour market (Queensland Government, 2006). These measures were further built on in the Skills Plan 2008 (DET, 2008).

The Skills Plan 2008 involved the development and implementation of skill formation strategies in an approach led by industry, involving the State, unions, employers, and employer and associations (Construction Skills Queensland, 2006). As part of the program, stakeholders have worked together to develop a skill strategy addressing future skills shortages within and across industries. Adopting an industry led approach is seen to be central to the skill formation strategies, as flexible and responsive workforce planning and development requires the knowledge, input and support of all key players to be successful.

To date over 35 individual skill formation strategies have been introduced in Queensland industries and communities (DET, 2009). The approach adopted in the individual strategy depends on the industry, context and future needs of the industry or sector. In some circumstances the strategy adopted for the particular industry or enterprise may involve a focus on up-skilling and training new and existing workers and encouraging people into particular career paths. Alternatively, the strategy may relate to individual factors at the level of the workplace or in the given sector and may involve workplace planning, changing the design and structure of jobs and the workplace environment. The Sustainable Energy Skills Formation Strategy, discussed below, is an example of one of these initiatives.

*The Sustainable Energy Skills Formation Strategy (SFS)*⁹

Queensland, like other Australian states, has witnessed the emergence of a growing 'green' sustainable energy sector. The Queensland Government in collaboration with sustainable energy industry partners commenced working on a skill formation strategy in October 2007 in order to plan for the skill needs of this growing sector and to develop the capability of the industry's workforce (DET, 2009b).

A workforce strategy for the sustainable energy sector was seen to be crucial due to the industry's potential for job growth in combination with a shrinking labour supply due to the ageing of the workforce, declines in apprenticeship completion rates and competition from other industries. The Skill Formation Strategy is still in the developmental stage and is expected to be completed by October 2010. The plan will then be transitioned across the industry from October 2010. Developing the strategy involves a collaborative approach with sustainable energy partners. The Sustainable Energy Skills Formation Strategy Manager leading the development of the Strategy has outlined that the key issues to be included in the plan will be the impacts of changing regulation, sustainable living technologies and the associated changes in skills demand (Anderson, 2009).

State energy utilities services offer the on-the-job training component and the trainees are employed by local Group Training Organisations. Initially, there will be two round of trainee intakes of between 12 –

⁹ <http://www.trainandemploy.qld.gov.au/resources/industry/pdf/skills-formation-energy.pdf>, accessed 07/01/2010

18 trainees. The utilities skills ecosystem initiative also specifically aims to encourage people of Australian indigenous background to start careers in the utilities industry.

Changing the use of skill in the workplace in Scotland

Scotland has invested more in education and training than the other nations of the United Kingdom and subsequently has a highly qualified workforce (Scottish Executive, 2007). Despite this, Scotland's economic growth rate and productivity is behind that of the United Kingdom as a whole (Scottish Executive, 2007). In this context, Scotland implemented a skills strategy which has a much broader focus than the supply side focus of the Leitch Review (2006), acknowledging that simply boosting qualifications will not be successful "unless employers and individuals maximise the benefits that they can derive from these skills" (Scottish Executive, 2007, p. 13). The strategy is set out in 'Skills for Scotland' (2007), a policy which aims to encourage employer demand for skill, to increase the skill base through the provision of high quality training (with a particular focus on certain skill sets such as literacy, numeracy, core skills and communication in the context of informal and formal training), and to change how skills are used in the workplace. Attention is also given to job design and work organisation, referencing Scandinavian examples in this area. At this stage, Scotland's approach is in the form of a strategy only, being driven by the Skill Utilisation Leadership Group - a partnership of industry and government representatives formed to drive the skills utilisation agenda (Davis, 2008).

Reflecting a shift in focus within skills policy towards employer demand for skills and a concern about whether employee skills are used effectively, the Scottish government and other governments in the UK asked the UK Commission for Employment and Skills to assess the role skills utilisation plays in productivity and business performance. In order to take this forward the UK Commission carried out a research project, with a focus on High Performance Working (HPW), that sought to establish how the use of coherent people management practices, business development and good management and leadership can improve skills utilisation and how the uptake of these practices could be stimulated by public policy (UKCES, 2010).

Assessment

The common feature of these interventions has been:

- formation of stakeholder groups to help define and own the problem;
- appointment of a broker to help nurture agreement and identify actions to change underlying problems within a skill eco-system;
- limited support for such interventions (i.e. the skill eco-system brokers usually only have short tenure – one to two years at most). There is limited organisational or research support for these initiatives other than very talented and committed public servant engagement, primarily in a 'secretariat role'.

Assessment of the long term impacts of these interventions has been limited. It remains to be seen how and under what conditions such initiative result in lasting change. In Australia, the national advisory body, Skills Australia, is overseeing a policy development process which actively coordinates all arms of policy (e.g. immigration, innovation, social inclusion) to help provide the best possible supportive environment for the reforming different skill eco-systems. Recently established by the Australian Government, it had only just released its first 'National Workforce Development Plan' partially informed by these principles (Skills Australia, 2009a; 2009b; 2009c, 2010). This new national framework will provide a significantly more supportive environment for regional and local skill utilisation initiatives than has prevailed in the past.

SECTION FOUR: CONCLUSIONS

4.1 Key findings

There is now growing recognition that pursuing policies directed at deepening the supply of skills are unlikely to achieve their full potential unless they are supported by initiatives to ensure higher levels of human capability are used at work. Currently the measurement of skills in use is patchy and marked by different approaches to data collection. This makes coherent aggregation of current statistics difficult, which in turn creates serious challenges for those interested in developing a decent analysis of key issues on this topic. The task of policy development is made all the more difficult because initiatives directed at improving skill utilisation are even harder to find. In an effort to make the best of this situation we have gathered information on initiatives that have grappled with issues similar to those concerned with better deployment of skills on the job. The problem here has been that not only are such programs also scarce, where they have been implemented; few comprehensive evaluations of them have been conducted.

Despite these limitations we have identified three key findings arising from the literature considered in this paper.

Key finding 1: *There are at least four different dimensions to the under-utilisation of workers' skills.* As noted at the beginning of Section Two, Livingstone and his colleagues in Canada have generated genuinely new and robust ways of defining potential mismatches in the skill utilisation process, categorising past research into the following four key categories entry credential matching, performance matching, field of studies matching and subjective matching. In addition, Livingstone (2009) cites the matching of the education required to get a job and economic class as further important sources of potential mismatches. This work deserves greater recognition. It provides a powerful starting point for all future consideration of this topic, and important potential pitfalls for policymakers to be aware of.

Key finding 2: Improved approaches to data collection have the potential to drive reform in labour market policy, especially at the local level. Despite the limitations of current data sets, a number of researchers have shown the pressing need to change current policy priorities on the basis of available data. At the level of problem definition, Watson (2008) has shown how consideration of data from a wide array of sources reveals current approaches to workforce development are failing a very profound way to makes best use of workers capabilities. At the local level Eberts et al's work on regions within Ohio, U.S.A., reveal how current data can be used to help ensure approaches to local economic development can be more effectively informed by evidence. Improved data collection will, however, be necessary if lasting and thorough-going change in labour market policy, especially at the local level, is to be achieved. As Section 2 revealed, there is a need to reach agreement on, or commence the process of, establishing standards concerning the critical issues identified with such precision by Livingstone and his colleagues.

Key finding 3: *Achieving change in employers' labour use strategies that is wide-spread and lasting is difficult.* Although the available evidence on potentially relevant program interventions was limited, it all highlighted the depth of the policy challenge. Over the years generations of public officials as well as enlightened social partners have endeavoured to nurture high performance workplaces. Equally, there are decades of experience in endeavouring to help workers and employers meet each others needs – especially where displaced, disadvantaged workers are involved. And the recent, limited experience with programs directed at endeavouring to change skill eco-systems has highlighted the same issue. In short, it is very difficult to change the way employers' define their skill requirements and make use of the talent and skills of their workers. To put our findings bluntly: improving skill utilisation is akin to 'grinding through

granite'. Successful change will only be possible with better data and a different approach to the development and deployment labour. These are matters that concern more than education, skills and labour market policy. We identify the pre-requisites for further progress in the next section.

4.2 Implications for further work: getting the questions right

The benefit of reflecting on a disparate and patchy literature is that while precise prescriptions for reform cannot be formulated, the material considered can help clarify how to further improvements in this realm of analysis and policy can be achieved. Our suggestions are as follows.

4.2.1 Data collection

While some measures offer promising ways forward (e.g. Skills Australia, 2009a; 2009b; 2009c; 2010), there is still much work to do in order to ensure skill utilisation is measured more comprehensively and systematically in future. On the basis of the measures discussed, it is critical to improve the quality of summary, aggregate data by designing supplements to large scale, ongoing labour market surveys. Making better use of current labour market surveys would be a good place to start. These include those that collect information from workers, for example supplementary questions to national for labour force surveys – much like the annual supplement for data on labour mobility currently gathered in Australia. Surveys of employers are regularly undertaken to gather data on wages is regularly collected by central statistical agencies. Annual supplementary batteries of questions could be included in these to help deepen our understanding employers' needs and what use they are making of their workers' skills.

4.2.2 Programme design

The evidence considered in this report clearly establishes there is no generic or 'standard form' initiative that can improve the utilisation of skills. From the material considered it is clear that skills policy needs to consider three connected questions when program objectives, organisational arrangements and funding priorities are being set.

(a) *What type of skills is public policy interested in seeing better utilised: cognitive, behavioural or technical?*

If the interest is in primarily getting more out of workers at their current level of cognitive and technical capability, priority will need to focus on improving the ability of managers and employees to work more effectively on the job. This has major implications for training managers, team leaders and workers in teamwork/problem solving skills. It is important to note, however, that the experience with programs directed at nurturing 'high performance' work practices is not encouraging. These studies reveal that achieving meaningful, lasting change of this nature that is widely diffused is difficult, if not impossible, to sustain. Factors beyond the immediate initiative, such as inadequate staffing levels, arbitrary reductions of supervisory overheads and close monitoring of workers through management information systems often overwhelm any initial positive changes associated with such initiatives. Even if problems of this nature can be overcome, it is important to consider whether the key policy priority is to get more out of workers by merely 'reforming' their 'behavioural' skills. If the interest is in developing and using higher level cognitive and technical skills this requires consideration of the next question.

(b) *What type of activity are the skills contributing to?*

As SKOPE researchers have noted for many years, the skills question is a third order issue. It is settled after questions concerning product market and work organisation are answered. We highlighted this issue by reflecting on the example of children's services. If this is defined as a problem primarily concerned with 'warehousing children' while working parents are in paid employment this generates fairly elementary skill requirements. On the other hand, if the problem is defined as one concerning quality early childhood education for young citizens this generates a very different set of skill requirements. In many of

the displaced worker programs the nature of jobs is taken as given and skills policy merely works to make it easier for employers to hire hard to place workers. The case of the skill eco-system pilots, however, identified that it was often the jobs and not the workers that need to change. Changing skill eco-systems is, however, particularly challenging. If the ambition is to address skills problems at source then the efficacy of interventions will be increased by successfully answering our final question.

(c) *What type of skill eco-systems are the initiatives operating in?*

As time passes labour market structures change. In some cases the level of technical and cognitive capability required of workers rises, in others it falls – i.e. there are tendencies of both up-skilling and deskilling. Skills policy can respond by either accommodating such developments or actively working to help change the nature of work. Without supportive policies, however, skills policy on its own can make little difference. The United Kingdom experience is instructive in this regard (e.g. Payne & Keep, 2005; Lloyd & Payne, 2006). After years of boosting the supply of qualified workers reports of under-utilised labour abound. In Scotland, that part of the United Kingdom with one of the highest qualified populations of young people, the problem is particularly evident. But equally changing practice at workplace, sectoral and regional level is extremely difficult. While the skill eco-system pilots have generated much to reflect on, examples of deep-seated, ongoing change are difficult to find. This is not just a function of policy in this area being at a relatively early stage of development. It is also a function of the difficulty of the task.

Given these findings, policy makers interested in improving the utilisation of skills need to pay close attention to the broader policy mix in which they are embedded. To date policies that have focused primarily on training provision or ‘high performance’ have neglected these wider determinants shaping the problems they are grappling with. At the very least there is a need to link initiatives on skill utilisation with industry development. The space opening up around innovation policy provides a potentially useful opportunity for achieving this. Innovation policy itself is, however, at a nascent stage of development.

This conclusion points as much to a need for a new sensibility amongst policy makers, as it does to the need for them to consider any particular new program or data collection initiatives. If change in the broad mix of policies and practices that shape skill eco-systems cannot be made, greater realism is needed in the realm of skills policy aspiration, design and execution. In some cases skills policy interventions may make a transitory difference in some settings as long as particularly favourable circumstances prevail. But unless underlying systems of accountability change, old habits are likely to re-emerge. Limits of this nature need to be acknowledged if policy on improved skill utilisation is not to oversell what it can achieve. In Australia a new framework, recently published by the government body Skills Australia (2010), is endeavouring to grapple with these connections. It is a world leading attempt, but remains to be seen how successful it will be in redefining the axes around which skill development and use evolve.

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APPENDICES

A. Methodology

The research team initially conducted a range of international experts in December 2009 to solicit advice on international examples of skill utilisation measures, policies and programs. In response to this, the research team conducted three interviews with Anne Green, (U.K.) Geoff Mason (U.K.), Jonathan Payne (U.K.) and Phil Toner (Australia). All other experts consulted emailed responses.

Following this, a literature and policy search was conducted, with significant assistance from the OECD Secretariat. Whilst the review is international, the focus was on local and regional programs from the following countries, as member states of the OECD: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. Materials were consolidated into tables, and a qualitative exploration of each case was undertaken. Qualitative cases allow for the exploration of more subtle issues than is possible with survey based information. A widely recognised problem with qualitative research, however, is that it is often difficult to draw strong conclusions because it is unclear how 'representative' the cases are of the phenomenon of interest. One way to ensure the best use of case study material is to be systematic in the selection of the cases included in the analysis. The 'crucial' or 'limit' case basis of case selection provides one such basis for research design, and was used to select each case in this Report.

The crucial case methodology involves examining a particular instance or situation that is widely recognised as providing the leading example of the phenomenon of interest. If the phenomenon is well developed or evident in the crucial case, then it is reasonable to conclude that, in cases at the limit, the phenomenon of interest exists or is emerging – even though it may not be widespread. If, on the other hand, the phenomenon is not as developed in the crucial case, this raises serious questions about the incidence of the phenomenon more generally. This is because if it does not occur where it is supposed to be, then it is unlikely to be working in settings where it is widely recognised as unlikely to be present.¹⁰

Identifying 'limit' or 'crucial' case is central for the validity of this research strategy. When studying issues associated with skills and labour management one usually has to rely on key informants or conventional wisdom as gleaned from recognised sources. In this project both were drawn upon.

¹⁰ Further details on the notion of 'crucial' cases in qualitative research are provided in Clyde Mitchell, 'Case and Situation Analysis', *Sociological Review*, no 31, 1983. Examples of the use of limit case styles of analysis come from philosophical theories of reading developed by Louis Althusser and Etienne Balibar, *Reading Capital*, New Left Books, London 1970 (for example, Part I where they outline how Marx studied Ricardo very closely as the 'limit case' of liberal political economy). A similar concept of limiting case is used by Pontusson in his study of social democracy in Sweden as a crucial case test for the viability of social democratic politics. See J Pontusson, *The Limits of Social Democracy: Investment Politics in Sweden*, Cornell University Press, Ithaca 1992 (especially at p 162). A similar research strategy was also followed by J Kitay and R Lansbury, *Changing Employment Relations*, Oxford University Press, Melbourne, 1997, pp 7-9.

B. Initiatives to improve skill utilisation

INITIATIVES AIMED AT PROMOTING THE USE OF SKILL			
Program	Description	Reference	Country/ Region of operation
Recent initiatives to promote high performance workplaces			
Finnish Workplace Development Programme	This state funded program is run by Ministry of Labour and aims to promote performance and the quality of working life (QWL). It aims to further innovation-supporting modes of operation and employee skills in Finnish workplaces and public sector organisations.	Alasoini, T., Heikkilä, A. and Ramstad, E. (2008) 'High-involvement innovation practices at Finnish workplaces', <i>International Journal of Productivity and Performance Management</i> , 57:6, pp. 449-459	Finland
The Flanders Synergy Programme, Belgium	Enterprises are assisted in the implementation of new forms of work organisation and workplace innovation. Enterprises are supported to undertake activities that improve the wellbeing of employees as well as improve the performance of the company.	Alasoini, T., Ramstad, E., Hanhikie, T. & Rouhiainen, N. (2008) 'Learning Across Boundaries: Workplace Development Strategies of Singapore, Flanders and Ireland in Comparison', <i>Work-In-Net</i> , Helsinki.	Flanders, Belgium
Working — Learning — Developing Skills. Potential for Innovation in a Modern Working Environment"	The Federal Ministry of Labour funds a range of different projects aimed at promoting innovative workplaces, with a focus on developing the competencies of workforce and maintaining the link between work and continuous learning.	Federal Ministry of Education and Research (2002) 'Innovative Development of Work – The Future of Work', Bonn	Germany
VINNOVA's Working Life initiatives	The Swedish Governmental Agency for Innovation Systems undertakes activities which aim to foster innovation and change at firm level. These activities include various aspects of work organisation, operational management and industrial and organisational change. Four programmes are currently running in this area, including efforts aimed at the development of productive workplaces, programmes relating to leadership and working life issues and establishment of firms, programmes involving the undertaking of research based strategic development in newly established firms and research relating to skills and the labour market.	Vinnova (2009) 'Working Life', http://www.vinnova.se/en/Activities/Working-Life/ accessed 6.1.2010	Sweden

Advantage! Scheme	Under this initiative, Singapore's Workforce Development Agency supports companies to employ, train and integrate employees over 40 years of age at work. The ADVANTAGE! scheme helps employers adopt practices which maximise the strengths of employees in the over 40 age group. These include adopting employment practices that do not discriminate by age, moving away from seniority-based wage structures, and re-employing retiring workers. The projects cover the following areas: work scope, work processes, integration programmes and wage restructuring.	Singapore Workforce Development Agency (2006) 'Fact Sheet on Advantage! Scheme', Singapore Workforce Development Agency, http://app2.wda.gov.sg/web/Contents/Contents.aspx?Id=72 , accessed 16.12.09	Singapore
The Workplace Productivity Working Group (WPWG) and the Workplace Productivity Project	The WPWG was established by the New Zealand Government in 2004. The group is comprised of industry, business, union and government agency representatives. The goal of the group is to "determine ways that New Zealand can deliver a high wage, high value economy for the benefit of all New Zealanders". The Workplace Productivity Project promotes innovation led activities such as raising public awareness about what productivity means, using diagnostic tools to assist firms in determining how they are performing and in what areas they could do better and providing assistance to firms in how to implement changes in order to drive their own individual high skilled and high productivity agenda.	New Zealand Ministry of Economic Development (2009) 'Workplace Productivity Project - Report to Government', New Zealand Ministry of Economic Development, http://www.med.govt.nz/templates/Page_____38220.aspx , accessed 11.01.10	New Zealand
The Netherlands Centre for Social Innovation	The mission of the Netherlands Centre for Social Innovation is "to support and initiate innovation in the areas of management, organisation and work in private companies and public organizations by executing concrete actions and experiments, disseminating knowledge, supporting practically applied research and formulating relevant questions for academic research in order to combine efforts for better use of technology and talents". The Centre considers human aspects of work to be central to social innovation and productivity and has a focus on organisational measures to reduce mental work load and improve opportunities for employees to develop.	NCSI (2010) 'Activities', Netherlands Centrum voor Social Innovatie http://www.ncsi.nl/English/Activities/ accessed 18.12.2009	The Netherlands
The Workplace Innovation Fund	Ireland's Workplace Innovation Fund is a component of Ireland's National Workplace Strategy. This initiative is administered by Enterprise Ireland and aims to assist enterprises integrate innovative work practices and increase employee participation as a means of enhancing productivity.	Enterprise Ireland (2009) 'Workplace Innovation Fund', http://www.enterpriseireland.com/Grow/Finance/Workplace+Innovation.htm accessed 17.12.2009	Ireland

Japan's Third Science and Technology Plan	Japan's Science and Technology strategy aims to foster human resource development embedded in a competitive research environment. The education and skills training programmes are shaped by the key focus areas proposed by the Plan, including life sciences, information technology, environment and nanotechnology and materials.	ILO (2000) 'High Performance Work Research Project: Research Project Overview' http://www.ilo.org/public/english/employment/skills/workplace/case/caseow.htm accessed 14.1.10) p. 29	Japan
Recent initiatives to better deploy displaced, disadvantaged labour			
JobsFirstNYC's Sunset Park Alliance	Jobs First aims to assist unemployed young adults into work by building community relationships between public and private sector organisations and employers. In addition to building partnerships and collaborative networks, this initiative aims to increase resources, create a comprehensive system of youth services, and improve the quality of these services to provide better options to young adults.	JobsFirstNYC (2009) 'Projects' http://www.jobsfirstnyc.org/projects.php , accessed 12.12.2009	New York, United States
Seattle Jobs Initiative	The Seattle Jobs Initiative aims to assist low income earners into meaningful employment through a step by step process, involving assistance with housing, child care and transport, as well as training through local community organisations and training providers.	Seattle Jobs Initiative (2009) 'About SJI', http://www.seattlejobsinitiative.com/about/index.html , accessed 07.01.09	Seattle, United States
Boston Skill Works	This initiative aims to help low wage earners find family-friendly jobs, and businesses find and retain skilled workers. The program is underpinned by capacity building initiatives for providers, workforce partnerships between all stakeholders in specific industries, and public policy advocacy. The initiative has a particular focus on developing career ladders, including transitions to higher education, while supporting career advancement through connections to training providers and employers	SkillWorks (2009) 'About SkillWorks', http://www.skill-works.org/about.php , accessed 07.01.09	Boston, United States
Poland – Skills for Employability	This is an alliance between corporate and non-profit organisations which aims to foster employability skills and IT skills in Poland. The programme has a specific focus on people from rural backgrounds, the unemployed and people living with a disability. The alliance partners are: Foundation Supporting Physically Disabled Mathematicians and IT Specialists Microsoft, Randstad, State Street, Cisco and Comptia's Creating Futures Foundation.	European Alliance on Skills for Employability (2009) 'News: Polish chapter was launched in the presence of EU Commissioner Vladimir Spidla (Press release) http://www.employabilityalliance.eu/news2.php?id=11 , accessed 12.12.2009	Poland

Texas Industry Clusters and Workforce Development Programme	Texas' workforce development programme is overseen by the Texas Workforce Commission and run by 28 regionally based Workforce Development Boards. The initiative operates in partnership with local training providers and economic development partners and aims to assist employers with identifying customised training. In conjunction with this workforce development initiative, Texas has implemented a Regional Cluster Initiative which aims to foster the development of strategies to promote industry development in the region.	Texas Workforce Commission (2008) 'Engines of the Texas Economy', http://www.twc.state.tx.us/news/ticluster.html , accessed 18.12.09	Texas, United States
Recent initiatives to nurture better skills eco-systems			
Skills Plan 2008	The Queensland Skills Plan was adopted in 2008 and includes short and long term measures to address impending and current shortages in the Queensland labour market. The five key measures of the Skills Plan are to: develop the basic skills of the workforce reduce underemployment by engaging unemployed and underemployed people improve youth transitions by enhancing training and education outcomes enhance the vocational, education and training system increase career pathways into professions	DET (2008) 'Queensland Skills Plan 2008', Department of Education and Training, Brisbane	Queensland, Australia
The Welsh Assembly Government's Workforce Development Programme	The aim of the programme is to help organisations re-skill and up-skill their workforce to match the skill set required to grow and develop their organisation. The programme provides organisations with a Human Research Development advisor who assists management and employees to identify their training needs such as matching training to the goals of the organisation and connecting it with relevant training institutions. The HRD advisor assists the enterprise to determine the most suitable form of learning for the company such as work based learning or leadership and management development.	Welsh Assembly Government (2009) 'Workforce Development Programme - Free skills advice and guidance for your Business/Organisation', http://wales.gov.uk/topics/educationandskills/foremployers/skillspeoplesuccess/workforcedev/?lang=en , accessed 04.01.09	Wales, United Kingdom
Skills for Scotland Strategy	'Skills for Scotland' (2007) is a formulation of Scotland's skills policy which aims to encourage employer demand for skill, to increase the skill base through the provision of high quality training (with a particular focus on certain skill sets such as literacy, numeracy, core skills and communication in the context of informal and formal training), and to change how skills are used in the workplace. Attention is also given to job design and work organisation.	Scottish Executive (2007) 'Skills for Scotland: A Lifelong Skills Strategy', The Scottish Government, Edinburgh. Payne, J. (2009) Divergent skills policy trajectories in England and Scotland after Leitch, Policy Studies, 30, 5, 473-494.	Scotland, United Kingdom

Austria's Territorial Employment Pacts	Territorial Employment Pacts have been operating in all nine Austrian provinces since 1997. They are regional partnership contracts which aim to: identify difficulties facing the region in relation to employment policies and to develop an integrated strategy to address those difficulties. The strategies aim to improve the co-ordination of job-creation measures and to implement measures to boost employment.	TEP (2009) 'Territorial Employment Pacts in Austria' http://www.pakte.at/teps/kurz.html accessed 14.1.2009	Austria
The Workforce Innovation in Regional Economic Development (WIRED) initiative	<p>The Workforce Innovation in Regional Economic Development (WIRED) initiative was implemented in 2006 by the Department of Labor (U.S.A). This approach is a combination of workforce development and economic development activities.</p> <p>The projects follow the following six step process –</p> <ol style="list-style-type: none"> 1. Definition of the regional economy by identifying the surrounding communities that share common characteristics, looking beyond traditional political boundaries. 2. Creation of a leadership group that represents the major assets of a region and provides a forum for regional economic decision-making. 3. Conducting a regional assessment to fully map the area's assets and identify the strengths, weaknesses, opportunities and risks based on those assets. 4. Developing an economic vision based on those strengths and assets and gain support for that vision from the broad-based regional partnership. 5. Building a strategy and corresponding implementation plan that identifies specific goals and tasks and provides a blueprint for how to achieve the region's economic vision. 6. Identifying resources -- both to support the region's plan and invest in the region's economy. 	ETA (2007) 'Workforce Innovation in Regional Economic Development', Employment and Training Administration http://www.doleta.gov/wired/files/WIRED_overview.pdf accessed 11.12.2009	United States of America
Empower Baltimore Management Corporation (EBMC)	The Baltimore Empowerment Zone management Corporation has developed a customized training program for area hospitals to support disadvantaged empowerment zone residents. It is focussed on four main areas: job creation, community capacity, quality of life (crime and housing), and workforce development	The Jacob France Institute (2003)'The Potential Workforce Development Implications Of The Development of The East Baltimore Biotech Park And The UMB Research Park', Report prepared for the Empower Baltimore Management Corporation, http://www.biosciencebaltimore.com/Media/Clinch_Report.pdf accessed 10.03.2010	United States of America

The Wisconsin Regional Training Partnership	An industry led initiative in the region of Wisconsin aims to help local companies modernize plants and adopt new workplace practices; to upgrade the skills of current workers; and to recruit, train, and mentor new employees. Between 1995 and 2000, the WRTP's worksite-partners invested more than \$100 million in education and training. According to the Centre on Wisconsin Strategy (COWS) this investment has paid off in the form of higher productivity, higher wages, and the creation of some 6,000 new jobs.	COWS (2003) 'The Wisconsin Regional Training Partnership', The Centre on Wisconsin Strategy, http://www.cows.org/collab_projects_detail.asp?id=3 , accessed 16.12.2009	Wisconsin, United States
Australia's Skills Ecosystem Initiative	The initiative takes a holistic approach to skill supply and usage in the context of broader skills ecosystems. There have been two phases of the programme since it commenced in 2003. The activities of each project develop organically, depending on the needs facing the industry, sector or region. A key characteristic of this programme is its industry led nature. Some of the activities that have been undertaken to date include: the reshaping of work arrangements in the NSW racing industry, better integrating training providers and enterprises in the NSW water industry and the redesigning of work roles in the health sector.	Alcorso, C. (2008) 'The Skills Ecosystem Approach to Engaging Employers in Skill Formation', Paper delivered at the 21st Scottish Forum on Lifelong Learning: 'Skills Utilisation and Successful Skills Strategy', Glasgow, 1 December.	New South Wales, Australia

