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Education, Science and Skills Development (ESSD)

Research that skills the nation

ESSD was established in August 2005. In the last year the unit's focus was on consolidating and creating coherence among the different dimensions of its research programme. Good progress has been made in this regard, with the diverse skills and expertise in the programme being utilised to frame research questions and approaches.

The research focus of ESSD spans three major social domains:

- Education
- The world of work
- Science and innovation studies.

The education domain involves research in primary, secondary and tertiary education and its research focuses on access, quality, relevance and equity in education. The world of work encompasses research on labour markets, skills and human resource development and in this way seeks to address the key national imperatives of improving equitable access to skills acquisition, raising employment opportunities and sustaining economic growth. Research on science and innovation studies the link between innovation and social and economic development, increasingly in a comparative fashion with other latecomer economies in Asia and Latin America. The distinctive contribution of ESSD is to research issues at the education, work and innovation system interface and to produce comprehensive, integrated and holistic analyses of the pathways of learners and workers within and between these systems.

Completed and ongoing projects Education assessment studies

Two major studies were completed during the year. The grade 8 study for the Western Cape Education Department involved the HSRC in the design of innovative new assessment instruments in the three main languages of the Western Cape and mathematics. These instruments were

administered to 75 000 learners and then subjected to detailed diagnostic scoring, coding, data capturing, analysis and reporting. The detailed diagnostic information has revealed the extent to which learners at grade 8 in this province are (not) able to construct responses at grade level, as well as the nature of gaps in performing basic literacy and numeracy functions, and more complex reasoning processes. The data also demonstrates that for weak students the use of multiple choice item-based assessment, which offers students the possibility of guessing, is entirely inadequate. Under such circumstances, multiple-choice item testing is likely to offer an inflated notion of achievement, rather than actual performance or ability. This has serious implications for assessment across the entire education system of the country.

The HSRC independently evaluated a school-support programme, *Mvelezandivho*, sponsored by a large international mining house. This programme is taking place over a five-year period in 28 schools in six provinces where the mining company has interests. The intention is to improve the school conditions and learner performance of the children of its employees. The mid-term evaluation of 2006 showed major improvements in the systems and procedures that a range of service providers had been able to develop for schools and districts thus far. These were being implemented through an extended mentoring and training programme, mainly in the areas of school and curriculum management, teaching practice and learning area contents. The findings also revealed that the next challenge would be the constructive implementation of such systems and procedures, before learner performance would consistently benefit from it

Research and development into teacher education

The ESSD research programme continues to participate, together with four other organisations, in the research and development programme into teacher education in South

Africa. The HSRC is responsible for 12 of the 19 projects in the programme, seven of which are concerned with teacher supply and demand, two with beginning teachers, one with teacher education and institutional change in South Africa, one with principals' management of curriculum and instruction, and one with teacher education and the recognition of prior learning. All but one of the components of the study will be published by March 2008.

Tracing the progress of higher-education students
 ESSD, together with the Council on Higher Education (CHE), initiated a tracer study of a cohort of higher education students for the period 2000 – 2002, profiling and analysing factors influencing transition of students through higher education and into the labour market. The study received funding from Ford Foundation. Seven higher-education institutions, reflecting the different characteristic features of South African higher education, were identified. The survey included 34 000 respondents (20 000 leavers and 14 000 graduates). To date, seven case-study reports have been completed and a synthesis report is being prepared.

Table 1: Percentage change in Grade 12 learner aspiration to enter HE, 2001 and 2005, by race

Survey	Black African	Coloured	Indian/Asian	White	Total
2001 aspiration survey	85,4	69,5	91,7	81,3	84,1
2005 aspiration survey	53,5	43,9	65,0	59,1	53,8
Percentage change between 2001 and 2005	(37,4)	(36,8)	(29,1)	(27,3)	(36,0)

Table 2: Grade 12 learner aspiration to proceed to HE within three years and in 2006, by race, 2005

Category of aspirant HE student	Black African	Coloured	Indian/Asian	White	Total
Planning to enter HE within three years (% of total)	53,5	43,9	65,0	59,1	53,8
Planning to enter HE in 2006 (% of those planning to enter HE)	94,6	93,2	91,9	83,6	93,4
Planning to enter HE in 2006 (% of total)	42,1	31,1	50,6	41,0	41,5

Evaluation of literacy in primary schools in Limpopo
 After two years of negotiations with the Limpopo Department of Education and Irish Aid, ESSD has been contracted to conduct a literacy evaluation of primary schools in this province. This ongoing study involves a two-year study to evaluate literacy and curriculum materials in

terms of their literacy demands on learners, and scrutinising classroom practices for efficacy in advancing adequate literacy development of learners. This is a complex project, owing to the extent of linguistic and community diversity in the province as well as the high incidence of rural and multi-grade classrooms. At the same time, this project offers valuable insights into literacy difficulties in early primary classrooms under similar conditions to those found in other southern Africa classrooms. For this reason the findings will have interest to the immediate stakeholders within South Africa and also the education and development community in the SADC region.

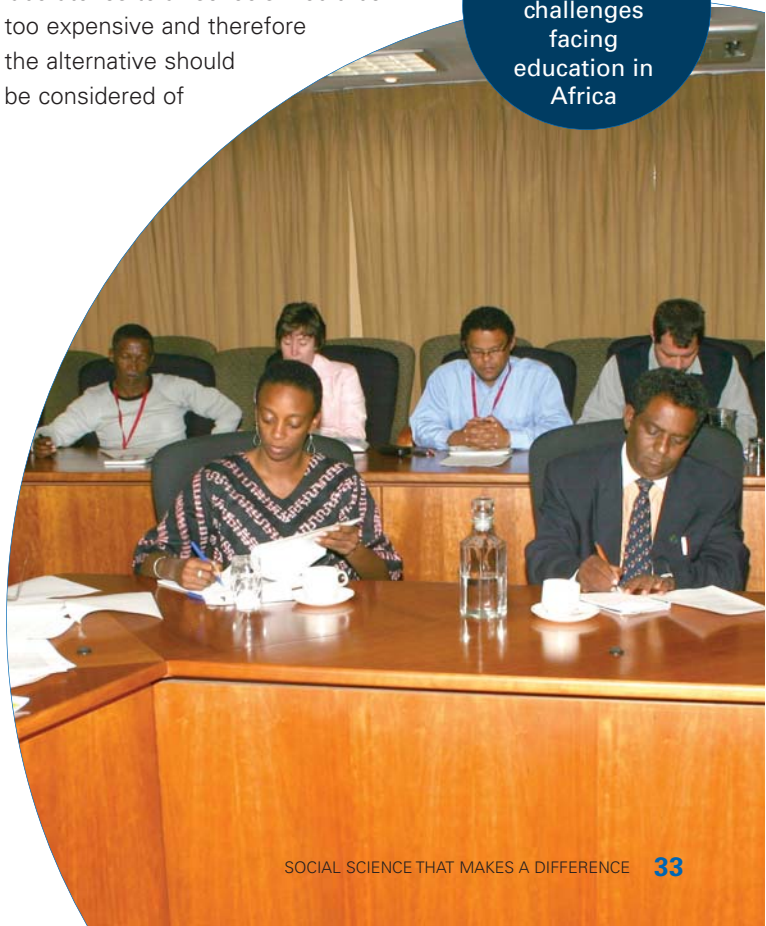
Tracking, monitoring and evaluation of Youth into Science Strategy

The Department of Science and Technology (DST) commissioned a three-year study, to be completed in 2009, to set up a tracking, monitoring and evaluation system to measure the impact and effectiveness of its Youth into Science Strategy. The strategy aims to enhance participation and performance of school-going youth and undergraduates in science, technology, engineering and mathematics.

Facilities and resources to improve teaching of sciences

The National Advisory Council on Innovation commissioned a study into the facilities and physical resources required to enhance and improve teaching of the sciences at the senior secondary level. Such resources could be a leverage point to improve the teaching of and performance in this subject. The study found that the provision of laboratories to all schools would be too expensive and therefore the alternative should be considered of

Participants in a panel discussion on challenges facing education in Africa





science equipment kits that could provide students with the necessary experience of science phenomena.

Labour, job creation and economic growth

The two-year research programme for the Department of Labour, to be completed in March 2008, will review a number of areas:

- the impact of labour legislation on job creation, small business development, and economic growth
- the impact of sectoral determinations on working conditions and poverty
- employment in the informal economy
- the impact of the Employment Equity Act
- a range of issues to do with the National Skills Development Strategy.

Skills development projects

ESSD is involved in five skills development projects, to be completed in March 2008. These are:

- Identification of scarce and critical skills
- Sector-specific research and related skills requirements
- Learnerships
- Measuring the pool of designated groups that are suitably qualified in various sectors and occupational categories
- National Skills Survey 2007 of small, medium and large firms.

In addition, ESSD has been commissioned to write the *State of skills* series for the Department of Labour in 2005, 2006 and 2007. The 2007 edition, to be completed by March 2008, will carry the research findings of all five projects listed above.

Impact of SETA learnership programmes

The broad aim of a study for the Wholesale and Retail SETA was to evaluate and determine the impact of its learnership programmes. The specific objectives were to investigate the internal efficiency of the learnership programme; the post-learnership employment of learners; and challenges faced by learners, employers and training providers.

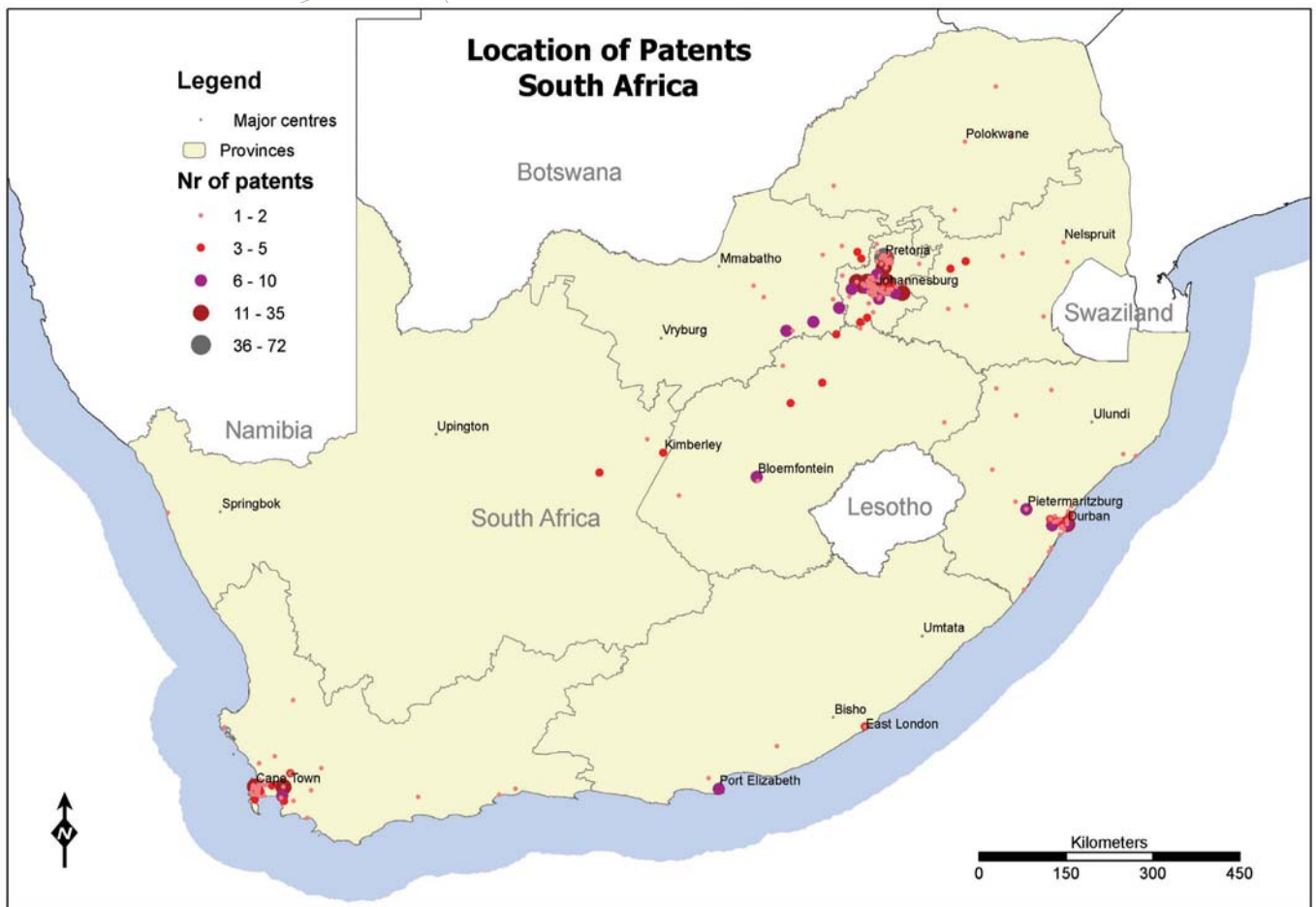
One of the main findings of the study showed that just a third of unemployed learners were employed on completion of their learnerships. The fact that the employment uptake rate for learners who terminated their learnerships was higher than for the learners who completed their learnerships was an important finding. The low post-learnership employment rate challenges the approach of provider-driven versus employer-driven learnerships.

Implementation of internships and mentorships in the public service

This study for the Department of Public Service and Administration resulted in two guidebooks for use across government departments at the national and provincial level, namely *Guidelines for internship in the Public Service* and *Guidelines for mentorship in the Public Service*.

Local and provincial innovation systems

ESSD conducted research for the National Advisory Council on Innovation (NACI) on the local and provincial innovation systems. The study analysed the integration of productive and knowledge-based activities in South Africa at the provincial level. It discussed the existence of regional as opposed to sectoral innovation systems, and laid the basis for a proper estimation of a knowledge production function in the future.



Value of DST's human capital programmes

A project on the extraction of value from existing human capital instruments, commissioned by DST, sought to assess the value of the department's involvement to participants in its human capital programmes. A survey and interviews of participants in the Innovation Post-doctoral Fellowship Programme, the Professional Development Programme and Centres of Excellence showed that the programmes have been of great benefit to all participants, but pointed to a number of areas for improvement. The findings, which have been presented to senior management in the Department, will inform future roll-out of these programmes beyond this mid-term review of its value to participants.

Influence of SET graduates on the National System of Innovation

A study on the career trajectories of doctoral graduates sought to determine, at an individual level, what differences investments in graduate studies in science, engineering and technology (SET) have made (directly and indirectly) to the National System of Innovation. The surprising finding was that doctoral graduates, if not employed by the academic sector, do not immediately enter the SET labour market and might require other training before finding employment. It is important to see

the doctoral training both for the specific knowledge it embodies as well as a set of high level analytical skills which could be used in different situations.

Contribution to *Micro-economic development synthesis report*

ESSD continued working with the Western Cape Department of Economic Development and Tourism and contributed to the second *Micro-economic development strategy (MEDS) synthesis report*. This built on work done for the first *Synthesis report* published in 2005 and deepened the analysis of regional knowledge intensification and innovation in the Western Cape.

It underlined the importance of innovation for higher growth and equitable development, thus validating the research focus of Innovation Studies in ESSD.

Contribution to the *Provincial economic review & outlook*

ESSD contributed to the Provincial Treasury's flagship publication on regional economic trends, and contributed a chapter on the sectoral and employment outlook. It discussed the export performance of the Western Cape in a global context and analysed the relative position of the province *vis-à-vis* competitors from dynamic Asian economies.

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It concluded with a discussion of knowledge intensification across skill levels as a modern strategy of job creation and sustainable competitiveness in a province with much traditional primary sector and industrial activity.

Impact of research

ESSD is involved in many multi-year projects; many of these started during the financial year, the results of which will be available during the 2007/08 financial year. However, being in the key areas of concern in the country – namely education and skills development – the work of ESSD continues to inform policy and practice debates. A few examples of impact are:

- Upon completion of the Ethiopian language education study, the Ethiopian Ministry of Education determined that the findings of the study should form the basis of the new language policy recommendations for primary schools in that country.
- An FET conference provided a rare opportunity for representatives of all 50 FET colleges,

provincial FET directorates, the Department of Labour and other education and training stakeholders to share insights around the HSRC research and to be informed on Department of Education and Department of Labour initiatives. The robust debates at this forum showed the importance of bringing together key policymakers and practitioners to inform these debates.

- The publication of the medical profession monograph generated considerable interest in the media, called attention to the plight of health services in the rural areas and raised the implications of the feminisation of the medical schools.
- The results from the Western Cape Education Department study raised concerns about the performance of learners and the researchers were invited to meet with the provincial authorities on the intervention strategies that need to be implemented to improve performance.

Future developments

A number of research projects commenced during the 2006/07 financial year continue into the 2007/08 financial year. In addition to our present research projects we will also be looking at areas of youth unemployment, and literacy and numeracy development in the foundation phase of school. A Regional Achievement project, which is a large-scale empirical study focusing in on the role played by teacher skills and practice in southern African students' learning, is also in the pipeline.

Our challenge during the course of this year is to set up inter-disciplinary studies that utilise the research skills present in our research programme.

Facts 'n Figures

Only a third of unemployed learners got jobs on completion of SETA learnerships



Specialist researchers 2006/07

Mr Fabian Arends

MBA, University of KwaZulu-Natal
Education Management Information Systems specialist; general and further education and training policy analysis, educator supply and demand analysis, design and analysis of education indicators, statistical analysis and modelling



Dr Bongani Bantwini

PhD, University of Illinois at Urbana-Champaign, USA
DST/THUTHUKA mathematics and science development, youth camps tracking and evaluation, network of science centres tracking and evaluation, National Science Week evaluation



Dr Mignonne Breier

PhD, University of Cape Town
Higher education, professional education, medical, nursing and teacher education, recognition of prior learning, curriculum in higher education



Professor Linda Chisholm

PhD, University of the Witwatersrand
Comparative education, basic education, curriculum, gender, migration



Mr Michael Cosser

MA, University of the Witwatersrand
Higher education, quality assurance, provincial human resources development profiles and strategies, student tracer studies, SAQA and NQF, literary stylistics, discourse analysis



Dr Rènette du Toit

DLitt et Phil, University of Johannesburg
Career psychology, vocational identity, skills development, labour market research



Dr Johan Erasmus

PhD, University of Potchefstroom
Labour market research and skills development



Dr Kathleen Heugh

PhD, Stockholm University
Language and literacy policy and planning, mother tongue, bilingual and multilingual education.



Dr Andre Kraak

DPhil, University of the Western Cape
Labour market analysis, technical and higher education and skills development



Dr Glenda Kruss

DPhil, University of Ulster
Higher education policy, private higher education, higher education responsiveness, higher education and innovation



Mr Moeketsi Letseka

MEd, University of the Witwatersrand
Higher education



Mr Jo Lorentzen

PhD, European University Institute
Science, technology and innovation



Ms Percy Moleke

MA (Economics) Georgia State University
Labour market analysis, education and work, labour market training/skills development



Dr Jeffy Mukora

BSc, MSc, PhD, Edinburgh University
Labour market analysis, national qualification frameworks (NQFs) and skills development



Dr Andrew Paterson

PhD, University of Cape Town
ICT training, enterprise training, ICT applications in education, agricultural and rural education



Dr Cas Prinsloo

DLitt et Phil (Psychology), University of South Africa
Assessment theory, education evaluation, factors influencing school functioning and learner performance, psychometrics, research methodology



Ms Jocelyn Vass

MA, University of Manchester
HIV/AIDS impact on economic sectors and the workplace, labour market vulnerabilities and employment equity



Ms Mariette Visser

BA Hons, University of Pretoria
World of work, surveys, database development, data analysis and indicator development. higher education, learnerships and skills development

