Defining, Assessing and Measuring Generic Competences

A thesis submitted in fulfilment of the requirements of the degree of
Doctor of Philosophy
in the School of Education
Faculty of Education, Humanities, Law and Theology
Flinders University of South Australia

David D Curtis
B.Sc. (Hons), Grad. Dip. Inst. Uses of Computers,
M.Ed.St., M.A., Ed.D.

February 2010

Declaration

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Abstract

This thesis reports an investigation into generic skills, a class of skills that appear to be broadly applicable to many work, social and civic contexts. Two major generic skills schemes were proposed in Australia, namely the key competencies (Australian Education Council. Mayer Committee, 1992) and the employability skills initiative (Australian Chamber of Commerce and Industry & Business Council of Australia, 2002). The implementation of these schemes is reviewed and several difficulties in their implementation are identified. The most significant issues are thought to be the definition and assessment of these skills.

The issue of definition occurs for generic skills as a class of constructs and arises in relation to each skill proposed as generic. Generic skills could be perceived as representations of either general intelligence or as particular kinds of intelligence. They could also be seen as components of competence. The representation of generic skills as aspects of competence, involving the deployment of cognitive and metacognitive processes, appears to be a fruitful approach to the investigation of generic skills.

In addition to defining generic skills as a class of constructs, each generic skill requires definition. For the research reported in this thesis, one commonly recognised generic skill, problem solving, is selected for investigation. Problem solving is defined as a set of processes that are deployed in identifying, defining, planning, executing, monitoring and evaluating problems and their solutions.

The second major issue identified in the implementation of generic skills schemes is assessment. A body of literature on assessment is reviewed. Assessment is found to serve two major sets of purposes, namely summative and formative. A variety of methods has been used in the assessment of generic skills, most of these methods having been designed for the summative assessment of generic skills achievement. There would appear to be a role for assessment methods that seek to enhance generic skills performance, and this is a focus of the research reported here.

Two studies are undertaken into the assessment of problem solving. In the first, the definition of problem solving, based upon notions of competence, is used to develop and validate a problem solving assessment instrument. The instrument is used as one element of a particular assessment process. In this process, students assess their own problem solving performance on routine assessment tasks that they undertake within their courses. They submit their work, including both the

substantive course-related tasks and their assessment of their problem solving performance on that task. Their self-assessment is validated by their lecturer and they receive feedback on that assessment. The results of the first study indicate that the problem-solving assessment instrument, based on a cognitive theory of problem solving, does provides a valid basis for the assessment and measurement of problem solving performance, although some improvements to the instrument are foreshadowed.

In the second study, a revised version of the problem solving assessment instrument developed in the first study is used. In this study, students use the problem solving assessment tool on a series of course-related assessment tasks over an academic year, receiving feedback on each assessment. The purpose of this study is to test the proposition that repeated assessment and feedback cycles might lead to improved problem solving performance. Evidence for such improvement is reported.

It is concluded that existing course-related activities can be used as vehicles for the development of students' problem solving skills. The development of generic skills (problem solving in this instance) would appear to depend upon two elements of an assessment regime. First, the assessment target needs to be defined in terms of an underlying construct that is operationalised through an assessment tool that focuses student attention on its key elements. Second, the development of problem solving proficiency is related to repeated assessment and feedback cycles, that is, to the implementation of a formative assessment approach.

Acknowledgments

I am indebted to many people who have supported and encouraged the investigation reported in this thesis.

Professor John Keeves, my principal supervisor, has been a mentor and an inspiration for more than a decade. He has given generously of his time and expertise and I join a large group of students from around the globe who are in John's debt.

Professor Mike Lawson, co-supervisor in this research, has influenced my learning and thinking for more than two decades. He alerted me to the importance of psychology as a foundation discipline in the study of numerous education issues and his influence has continued through this research.

I would also like to acknowledge the support of a generous scholarship, the Premier's Award for Post-graduate Research into Lifelong Learning. This scholarship was administered through the Centre for Lifelong Learning and Development under the leadership of Professor Denis Ralph. The encouragement provided by Denis, staff and other post-graduate candidates of the Centre has been especially valued.

I am pleased to acknowledge the support from teaching staff and students who participated in the studies. Mr Rob Denton of Torrens Valley Institute of Technical and Further Education was enthusiastic in facilitating the first of the two studies reported in this thesis. He and his colleagues and students were important contributors to this study. Ms Sharmil Randhawa of Flinders University and Ms Lyn Villis of the South East Institute of Technical and Further Education facilitated the second of the studies reported in this thesis. To those teaching staff and their students I am very grateful.

Contents

Tables

Figures

Acronyms

Names and titles are used in full at their first reference. Subsequently, the following acronyms are used.

ABS	The Australian Bureau of Statistics
ACCI	The Australian Chamber of Commerce and Industry
ACER	The Australian Council for Educational Research
AiG	The Australian Industry Group
ANTA	Australian National Training Authority
AVCC	Australian Vice-Chancellors Committee (now Universities Australia)
BCA	The Business Council of Australia
BHERT	Business Higher Education Round-Table
CBI	The Confederation of British Industry
CRESST	Center for Research in Evaluation, Standards, and Student Testing (USA)
CTT	Classical Test Theory
DEET	Department of Employment, Education, Training
DEETYA	Department of Employment, Education, Training and Youth Affairs
DEEWR	Department of Education, Employment and Workplace Relations
DeSeCo	Definition and Selection of Competencies (OECD project)
DEST	Department of Education, Science and Training
DETE	The (South Australian) Department of Education, Training and Employment
DETYA	(Australian) Department of Education, Training and Youth Affairs
GSA	Graduate Skills Assessment
IRT	Item Response Theory
MCEETYA	Ministerial Council on Education, Employment, Training and Youth Affairs
NCVER	The National Centre for Vocational Education Research
NQC	National Quality Council
NTB	National Training Board
NTQC	National Training Quality Council
OECD	Organisation for Economic Cooperation and Development
PISA	Programme for International Student Assessment (OECD program)
SACE	The South Australian Certificate of Education
SCANS	Secretary's Commission on Achieving Necessary Skills (USA)
TAFE	Technical and Further Education (often, College of...)
TST	True Score Theory
UNESCO	United Nations Educational, Scientific and Cultural Organisation
USA	United States of America