Patrick Griffin
Kerry Woods *Editors*

Understanding Students with Additional Needs as Learners

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Preface

This book celebrates the results of a project that began in 2004 because a Down syndrome student was excluded from a class during an assessment practical teaching exercise of a student teacher. It ended with seven doctoral studies over a 10-year period describing a curriculum for students with disabilities, or as we prefer to call them – students with additional needs – **SWANs**. Along the journey, hundreds of teachers, thousands of students and numerous administrators have become absorbed in the ideas behind the project. One state government adopted the project through Karen Underwood as a co-investigator and absorbed the assessment work of the SWANs into a package called ABLES. This helped to disseminate the work of the project into government and independent schools nationally.

The volume presents the narrative of the origins of the Students with Additional Needs (SWANs) research project that was conducted over more than 10 years. It discusses the context in which the idea for the SWANs study emerged and the importance of critical incidents in stimulating research and development. It illustrates the events in a school classroom in 2004 involving a student teacher evaluation class, a supervising teacher who did not know how to include a student with additional needs in classroom activities, and the inadequacy of materials available for mainstream teachers who had students with additional needs in the classroom.

Back Story

This research program had an interesting beginning. I was at a school evaluating a student teacher (or teacher candidate as they are now known and we will use the terms teacher, teacher candidate and student to avoid confusion) deliver a lesson on fractions in her final teaching round. The lesson started out well. The teacher candidate had the students' attention and they were engaged in the class activities to do with fractions and decimals in year six. About halfway through the lesson the students began to agitate, wave and shout a student's name. They were obviously

distracted by activities outside. Through the window I could see a student and an adult. The student was playing on the playground equipment, and having a great time gesturing and calling out the names of the students in the class. The other students told me he was out in 'free time' because he could not 'do fractions'. I asked the teacher why he was excluded. She explained that the adult was a teacher aide employed to look after the student who had Down syndrome and to help him with his learning. I asked why he was not in the class along with the teacher aide, following what was happening with the rest of the class. I was shocked at the answer. The teacher explained that if the student was inside the class, he would be disruptive and it was not fair to the teacher candidate to have such a student in the class while she was being evaluated.

I asked how the teacher candidate would get experience with students with disabilities if they were excluded during evaluation lessons. She had no answer except to say again that it was unfair to the teacher candidate to have to cope with this student during an evaluation lesson. It was ironic that the student was already being disruptive and this teacher candidate had already lost control of the class. So the net effect for the teacher candidate of removing the student with Down syndrome was zero. After the lesson I met with the teacher candidate to discuss my evaluation report. We discussed different strategies for dealing with disruptive students regardless of disability. The candidate told me that she had never had any training or any assistance in teaching students with special needs. As it turned out, neither had the teacher who was expected to coach and to develop this teacher candidate. We all agreed that this was not a satisfactory situation.

I left and drove to the Victorian Department of Education and Training headquarters to meet with a former Master's degree student, Karen Underwood, who was working in the Student Wellbeing Division. I knew that Karen had a daughter experiencing learning difficulties. Karen explained that most mainstream teachers have almost no skill, no training, no resources, and no encouragement to work effectively with students with additional needs.

We decided that we would try to develop something to support teachers of students with additional needs (SWANs). It took several weeks to prepare a proposal for partnership funding from the Australia Research Council (ARC). The proposal centred on every student having a right to appropriate intervention. Essentially, we proposed a partnership between the University of Melbourne and the Department of Education and Training (the Department). An ARC Linkage project required the industry partner to make both a cash and in-kind contribution to the project. The initial aim was to help mainstream teachers work effectively with students with additional needs in the classroom. We submitted our proposal and budget to the Australian Research Council, but the application was unsuccessful. So Karen negotiated with her supervisors inside the Department to use the initial cash commitment to begin a project independent of the ARC to develop curriculum support materials. The leaders of the Student Wellbeing Division at the Department gave their support to her work and ours. In the meantime, we continued to redevelop the research proposal. The first application was submitted in 2003. The second application was submitted one year later and was successful. The aim of that project was to build

learning progressions and to assist teachers to place every student on a learning trajectory so that instructional intervention strategies could be developed to enable students to make progress. As can be seen in the articles in this volume, at the outset of this work it was understood that many students do not make positive progress at all and were not expected to learn the same curriculum as students without additional needs. Teaching students with severe intellectual disability and multiple co-occurring disabilities was a particular challenge for mainstream teachers and even for special education schools and their staff.

A steering committee was formed with members of the Department, members of the Principals Association for Specialist Schools (PASS), and other school principals, academics, assessment specialists, special education teachers, and members of the research team. The initial research team included myself, Karen Underwood, Kerry Woods, Bernadette Coles-Janess, and Eileen Roberts. Kerry, Bernadette and Eileen began their doctoral studies, which are reported in this volume, and the project was the harbinger of a change in education for students with special needs and a project that lasted more than 10 years.

The project focused on three broad areas of learning: Kerry's doctorate led the research into communication, language, and literacy, Bernadette examined interpersonal skills, and Eileen examined personal learning skills. After 3 years we decided to resubmit to the ARC for a further round of studies as part of a second Linkage project. By this time Kerry had become eligible to be research supervisor, and she then supervised the doctoral studies of Lindsey Gale, Toshiko Kamei, Jane Strickland, and Emily White who worked on learning areas related to movement, thinking and problem-solving, numeracy, and digital literacy, respectively. The chapters in this volume outline each of their contributions to the overall definition of SWANs learning progressions, and the contribution Karen Underwood made to extending the Victorian school curriculum to ensure the learning of all students was acknowledged.

One doctoral student had a unique experience. Eileen Roberts took time out from her doctoral studies to have children and returned after several years to complete a doctoral dissertation. During the interval her work had become adopted by government policy so she had to rewrite her conclusion to reflect changes that the project had made in the intervening period. The project covered two waves of research, each funded by the Australian Research Council and the Victorian Education Department.

A doctoral candidate in the first group, Kerry Woods, became accredited to supervise other doctoral students within 2 years of completing her own study. Her capacity to complete this task was aided by the way in which the study pioneered a different approach to supervision of higher degree research candidates. People expressing a desire to complete their doctorate in this area were given an opportunity to study a particular aspect of the SWANs project. They were each required to complete their study using the same or very similar methods addressing very different aspects of the education of SWANs. The different chapters in this book illustrate how this work was distributed across the doctoral candidates who learned to work as a team in solving problems of assessment, teaching, and

reporting on cognitive progress of the SWANs. The typical isolation of doctoral candidates all studying their own topic had no role in this project. This was a collaborative team approach involving supervision by Kerry Woods and myself to the completion of doctoral dissertations by each of the leading authors of the chapters in the book.

If it were not for one particular teacher candidate encountering a student with Down syndrome and a classroom teacher who had no ability to help or to intervene appropriately with the teacher candidate or the student, this project might not exist. If it were not for the willingness of the Victorian Department of Education and Training to become involved and to contribute to the project, largely through Karen Underwood's leadership, this project would not exist. The identity of the student with Down syndrome, the training of the teacher candidate, and the incapacity of the classroom teacher to meet the needs of either the candidate or the student have been forgotten as they were representative of the situation in teaching, assessment, and learning for many students with additional needs.

A number of happy coincidences thus led to the collaboration of the Department of Education with the University of Melbourne on the SWANs project. Karen Underwood's undergraduate and postgraduate studies, teaching, consultancy, and Department of Education and Training roles all contributed to the development of a foundation for blending teaching and research. The impact of a single critical incident sparked a collaboration that stretched for more than 10 years and produced the assessments, learning progressions, and support materials for students with additional needs described in the chapters of this book.

The path that led to the work on the design of curriculum support resources for students with additional needs stretched out over even more than the 10 years of the SWANs project. Karen's work as a teacher of students with additional needs largely influenced the applied nature of the research. As a newly minted English teacher (in the late 1970s), keen to succeed in a secondary school with a high number of students with learning difficulties, she drew on her studies of linguistics to ensure lessons met the diverse learning needs of the students. She taught what she thought the students were ready to learn. This was a deliberate behaviour management strategy at the time, but, as teachers know, teaching students skills and knowledge they are ready to learn makes them more likely to participate in classroom activities.

Being 'good' with 'difficult' students was what teaching meant to her and resulted in the establishment of a learning centre of around a hundred students in a mainstream secondary school in the early to mid-1990s. The learning centre was staffed by teacher aides skilled in working with students with disability, two primary school teachers, and herself. Their vision was to ensure all students stayed in school, and to support that goal they wrote and resourced hundreds of individual learning plans. They adapted curriculum for every learning area from Year 7 to Victorian Certificate of Education (Years 11 and 12) level for students with cognitive, developmental, motor, sensory, and severe behavioural disabilities. Not all of their work would be judged as successful by today's standards, but all their students had a tailored learning experience in all of their learning areas.

At that time, there was no process to guide adaptation of curriculum other than to attempt to meet individual student needs based on the student's classroom teachers' requests for assistance, but the programs were thoughtful and personalised and consequently reduced the number of outbursts and disruptive behaviours among students. Over successive years the school gained a reputation for doing well with students with learning difficulties. It seemed clear to them that much of the source of 'difficulty' was in the rigidity of the curriculum and classroom programs and their failure to meet students' needs as learners. An unanticipated outcome of the work was the number of families and students that sought access to the school in the hope of being included in the learning centre program. The principal often voiced his concern that they would build a reputation for the school that might not be sustainable over time. Karen's self-described naïveté in believing that others merely needed to carry on the work without any mentoring and coaching or, more importantly, documenting processes and protocols impacted the program's continuation at the school and taught her lessons that guided the consequent development of the *Towards Foundation* Victorian Curriculum work supported by the Department of Education and Training from 2003.

As a result of the classroom incident with the Down syndrome student, I visited Karen at the Department of Education and Training offices in 2003 to talk about ways to support teachers of students with additional needs. The Student Wellbeing Division gave its support to participation in the Australian Research Council Linkage proposal to build new, criterion-referenced frameworks to identify the abilities, rather than disabilities, of students with learning difficulties. It was agreed that she would take the role of partner investigator and that we would develop assessment, reporting, and curriculum support materials that were closely integrated and placed strong emphasis on ease of use by teachers. This volume brings together the insights of a teacher experienced in special needs, a research agenda, and the catalytic impact of a critical incident in a classroom.

The nature of the study has its methodological origins in the work of the Education Department of Victoria in the development of literacy and numeracy profiles in both first and second English language for students and adults. Each of these projects was marked by at least one developmental progression, empirically developed and trialled with adults and children where relevant. It was the development of these progressions as a manifestation of underlying latent constructs that each of the doctoral candidates was required to follow. In 1987 Glaser's definition of criterion-referenced assessment had few examples of 'stages of increasing competence'. The work of Sir Paul Black in 1987, in developing the UK Task Group of Assessment and Teaching (TGAT), took a similar approach to developmental progressions, but in the UK, these were tied to be year and age levels. At the University of Indiana, Jerry Harsty was experimenting rubric-like descriptions of increasing reading competence. Meetings between Sir Paul Black and myself and between Jerry Harsty and another doctoral student, Patricia Smith, in 1987 led to a consolidated approach to the methodology of developing progressions. So this project has international origins in methodology and the work of these progenitors helped to shape this project.

Comments by readers of the various papers have indicated that the project needed two things: a consolidated collection of the research and an international perspective in order to obtain the global impact that the candidates' doctoral studies deserve. That's the purpose of this book. With exposure to educators at university and schools, SWANs all round the world can benefit from the work. A detailed analysis of the project follows in the subsequent 14 chapters.

Parkville, VIC, Australia Patrick Griffin

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About the Editors

Patrick Griffin held the Chair of Education (Assessment) at the University of Melbourne and was the Founding Director of the Assessment Research Centre. His work includes more than 40 years in teaching and research in education measurement. He focuses on item response modelling applications in interpretive frameworks for performance assessment, problem solving and higher order competency assessment and performance reporting. He was the measurement team leader for UNESCO in the SACMEQ project and a World Bank consultant in Vietnam, Philippines and China. He retired from university of Melbourne in 2015. He still leads several national and international studies of problem solving, literacy and numeracy and was the Executive Director of the Assessment and Teaching of 21st Century Skills project in which he pioneered the assessment of collaborative problem solving. His research into reliable rubrics is on display through the doctoral students' work in this volume on the work with special needs students.

Kerry Woods devoted 16 years to understanding how teachers observe their students and use formal and informal sources of assessment data to guide their classroom planning and teaching. Her doctoral research investigated the design and validation of criterion-referenced assessments of communication and literacy to support personalised learning for students with diverse additional needs. In collaboration with fellow academics and school and policy leaders, her research led to the development of an integrated program of advice and support for teachers of students with disability. She is currently an honorary Senior Fellow of the Assessment Research Centre, Melbourne Graduate School of Education at the University of Melbourne.

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Chapter 1
Profiling Developmental Learning for Students with Additional Needs (SWANs)

Patrick Griffin

1.1 Introduction

At the beginning of the SWANs project, it was estimated that almost 600,000 Australian people have an intellectual disability (Australian Institute of Health and Welfare, 2003) and of these approximately 360,000 were between the ages of 5 and 18 years. In addition, there was a growing incidence and identification of autism, Down syndrome and other genetic disorders, indicating a corollary need to assist schools, teachers and support professionals to educate students with a wide range of disabilities including intellectual and developmental disability.

Traditionally, there have been numerous attempts to assess students with intellectual disability based on the measurement of intelligence (IQ) or diagnosis of a medical condition associated with a syndrome (e.g., Down syndrome, Fragile X). The American Association on Mental Retardation (1992) defined intellectual disability as sub-average intellectual functioning linked with impairment in adaptive behavior. The Association's definition placed emphasis on three key areas – intellectual functioning measured by IQ scores, difficulties in adaptive behaviour, and onset before age 18 – but later shifted so that less reliance was placed upon IQ scores and increasing attention was paid to functional and environmental considerations. This was appropriate, when the many degrees and manifestations of intellectual disability are taken into account. Persons who are severely intellectually disabled are able to learn only the most basic skills. Those who are mildly intellectually disabled can learn so much that, as adults, some are no longer identified as having a disability. Intellectual disability is not a single 'disease' or brain disorder. Nor is it a static condition that, once diagnosed in infancy, may not alter by puberty.

IQ tests do not encompass current educational thinking about individual differences, unique learning styles and practical aspects of demonstrating appropriate

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social behaviours in various contexts. In the Australian state of Victoria, the first context for the SWANs research, students in mainstream schooling are assessed against curriculum-based frameworks of learning that describe the knowledge, skills and behaviours that are considered essential to prepare them for further education, work and life, and the developmental standards through which they might be expected to progress. However, at the beginning of the SWANs research these standards did not extend to describe expected developmental pathways for students with intellectual disability and other additional learning needs. Rather, in each school and for each student a program support group, comprising the student (where feasible), parents or carers, school principal and class teachers, worked to identify patterns of strengths, skills and abilities for the student. This relied very strongly on the judgment and expertise of the people who formed the support group which, in the integrated classroom or smaller schools, was too often limited to experience of relatively few students with similar disabilities. In contrast to students in mainstream schooling without additional learning needs, there was minimal systematic information about expected developmental standards or effective intervention strategies available to assist teachers in planning an appropriate curriculum-based instructional program for students with intellectual disability and additional needs.

In Australia, schools are required by legislation to enrol students with a range of disabilities. Indeed, the *Disability Standards for Education 2005* set out the obligation of schools to ensure that students with disability have access to educational opportunities without experiencing discrimination (Australian Government, 2005). Most teachers in mainstream schools can expect to have at least one student with a disability in their class each year. As we embarked on the SWANs research, it was clear that there was a widespread need for work that could support schools and teachers to meet their obligations to students.

To meet the expectations set out in the *Disability Standards for Education 2005*, it was important that our work focused on learning areas prioritized for all Australian students. Several dimensions of knowledge, skill, and behavior had been identified in the national curriculum guidelines as important general capabilities for all students (Australian Curriculum Assessment and Reporting Authority [ACARA], 2013). The general capabilities encompassed literacy, numeracy, ICT capability, personal and social capability, critical and creative thinking, and ethical and intercultural understanding (ACARA). They were conceived as an integrated set of skills and behaviours that students build and use in their learning and, more broadly, in their lives and community participation. Schools were charged with the responsibility to assess and teach these capabilities, blended within learning areas, for all students including those who have disabilities (ACARA). Indeed, the Australian *Disability Standards for Education 2005* obliged schools to ensure their students with disabilities could access and participate in educational opportunities and experiences on the same basis as students without disabilities to the fullest extent possible.

While asserting the rights of students with disability to equitable access to curriculum and learning opportunities, however, it was widely acknowledged that some students require adjustments to the levels of complexity of the general capabilities

identified in the school curriculum and also to the ways in which they are taught. By extension, teachers and schools required support to understand how to assess and teach these important capabilities to students whose capacity to learn is impeded or complicated by disability. The form and extent of these adjustments to the methods of assessment and teaching are likely to vary with the form and severity of disability experienced by individual students, and with the special education experience and knowledge of teachers. However, like the teacher and teacher candidate described in the preface to this book, many teachers have little or no formal training in working with students with disability and additional learning needs and they struggle to support the learning of these students. There was an urgent need to provide teachers with guidance about appropriate goals and intervention strategies for students with a range of disabilities. So, based on both personal observation and review of literature together with policy and school environments, there appeared to be a need to develop and validate a framework and procedures to support the identification and understanding of the learning needs of students with additional needs across areas of skill and understanding identified in the national curriculum documents as general capabilities and as priority learning areas in the Victorian Curriculum. Further, there was a need to define a set of developmental continua describing learning for students with additional learning needs in specified areas of skill and understanding, and to identify effective intervention strategies that accelerate student progress along the developmental continua and examine how these relate to types of additional learning needs, teachers' special education knowledge and experience, and school context. Finally, there was a need to monitor teacher adoption rate of such approaches to assessment and intervention in both mainstream and special education schools.

In its first phase, the research took an innovative approach to measurement of development among students with additional needs, although one that is well-grounded in current work on assessment of standards of learning for students without disability in mainstream schools. The challenge for educators was to identify students' emerging skills and to scaffold that learning by providing appropriate and timely intervention (Vygotsky, 1996). A primary aim was the development of an assessment protocol based on a functional (not aged-based or norm-referenced) profile that provides guidelines for teachers on targeted intervention strategies to assist the education of students with a range of additional needs. The research design was based on a model for defining competence-based frameworks (Griffin, Smith, & Martin, 2003). It relied on a specialist panel of subject matter experts (in this case, experienced special education teachers) emulating a partial credit latent trait model (Masters, 1982) to define the relative discriminating power of components of complex observation structures in a range of settings. The procedure had been evaluated (e.g., Griffin, Gillis, & Calvitto, 2004a) and shown to approximate item response partial credit model outcomes.

In the past decades, developmental progressions have been defined in almost every area of learning. However, assessment procedures for students with intellectual disability and additional learning needs have remained primarily norm-referenced. While norm-referenced monitoring is important for funding and

legislative purposes, it is recognised that the skills and social development of students with additional needs must also be monitored for development of tailored instructional programs. The approach thus drew on the practical expertise of subject matter experts and combined profiling with the work of specialist teachers of students with additional learning needs. This was expected to make the results available to all teachers of students with additional needs, whether they were working in mainstream classes or specialist schools. The project also studied the efficacy of a monitoring structure to assist teachers in planning, assessment and reporting to teachers, parents, and students. It provided a standard communication procedure across schools, classes, and teachers. Internationally, this extends work attempted by Griffin, Smith, and Ridge (2001) for North American schools when mainstream profiles were adapted to special education classes. The work reinforced an understanding that a student with a disability should not be considered a 'less developed' version of his or her mainstream peers, but rather as a student who has 'developed differently' (Vygotsky, 1993, p. 30) with idiosyncratic patterns of strengths and abilities. As such, assessment and report materials developed for mainstream students are likely to prove inadequate to the task of supporting the education of many students with additional needs. Moreover, assessment instruments and report formats used for students with additional needs are often interpreted in ways that make sense to clinicians, but not to teachers, students, or parents. An intent of this work was to collaborate closely with school leaders and teachers to ensure that all materials could be used and interpreted with ease by classroom teachers and did not demand specialist expertise.

Borrowing from the work of special education teachers and subject matter experts, workshops were organized to examine materials and observations and draft statements of competencies for defining developmental pathways. In this first phase of the research, we focused on skills in communication, language and literacy learning, social processes, and personal learning skills. A panel of subject matter experts was identified as an advisory group for the research, to be led by Karen Underwood and other representative of the Victorian Department of Education and Training. The group's role was to assist in identifying evidence of development for purposes of observation and drafting statements in unambiguous, teacher-friendly language according to rubrics described by Griffin (2004). The evidence framework consisted of components (areas of interest), indicators (broad statements of observable behaviours) and developmental criteria (indicative of relative performance quality). The latter are specific, ordered categories or standards describing how well actions or tasks are demonstrated. This process was based on a procedure later outlined by Griffin, Robertson, and Francis (2018).

Panels of specialist subject matter experts critiqued components, indicators, and criteria relevant to their areas of expertise, and reviewed all materials with the intention of making changes and incidentally developing a sense of ownership. The panels offered critical appraisal as a means of revising indicators and structure of the framework. Next, teachers used draft surveys based on the indicators and criteria (i.e., rubrics) to record their observations of students with additional learning needs. These were piloted with a small sample of students to identify flaws, operating

procedures, ease of use, communication capacity, planning and curriculum implications, and gaps or redundancies. It was important at each step in the process to ascertain the workload for teachers and seek their advice regarding how materials are best used in classrooms.

The instruments were used by independent observers, teachers, principals and specialists, initially as a questionnaire or observation survey format in which items represented indicators and response choices – developmental criteria. Observers chose the criterion that best represented a student's performance for each indicator. Choices were then coded as a partial credit scale and calibrated using the Rasch (1960) model. The calibration sample had to be sufficiently large and representative of the target population to ascertain how each indicator performed. This is a confirmatory approach using the multi-dimensional partial credit model (Eq. 1.1). Analyses were undertaken on indicators including differential item functioning (an examination of bias) and fit to the model. This was a core part of the project, involving mathematical modeling of indicators and estimation of student ability against item demand and discrimination.

A probabilistic developmental Rasch partial credit model (Masters, 1982) was used to examine cohesion of developmental criteria and their mapping onto developmental continua. The analysis empirically identified the number and nature of the continua. Each indicator (i) can be described in terms of a set of k ordered categories that describe the level of quality exhibited in student performance. The indicators were collected into D cohesive groups called strands or dimensions. The Multidimensional Random Coefficients Multinomial Logit (MRCML) model (Adams, Wilson, & Wang, 1997) was used to estimate student ability within each strand as shown below:

$$\Pr\left(X_{ik}=1;A;b;\xi/\theta\right)=\frac{\exp\left(b_{ik}\theta+a_{ik}^{'}\xi\right)}{\sum_{j=0}^{k_i}\exp\left(b_{ij}\theta+a_{ij}^{'}\xi\right)} \tag{1.1}$$

where $\boldsymbol{\theta}^{'}=(\theta_1,\theta_2,\cdots\theta_D)$ is a vector of ability parameters, one on each of D latent dimensions representing strands or dimensions of development profiles. This enabled the team to examine and confirm the range of different developmental pathways. The item (or indicator) parameters are modeled through a vector $\xi^{'}=(\xi_1,\xi_2,\cdots,\xi_P)$ of P parameters. A design vector, $\mathbf{a}_{ik}$, $(i=1,\ldots,I;\ k=0,1,\ldots,K^i)$, links each item response to indicator parameters ξ and b_{ik} is the identity of indicator i score category k.

The dimensions were expressed as traits represented by indicative behaviors, and were used to model developmental processes even when these processes were embedded in components of a single complex task or a series of interrelated observation schedules used by teachers. Earlier work on profiling (Griffin, 1990) illustrated that a simple logistic model (Rasch, 1960) could be used to identify underlying latent traits in teacher observations of literacy and numeracy in mainstream classrooms. This was repeated with profiles of second language development (Griffin

et al., 2003). The current project extended the work into the domain of developmental learning among students with additional needs and employed a measurement methodology seeking empirical confirmation of the multidimensionality of the developmental domains. The model was implemented through the computer software *ConQuest* (Wu, Adams, & Wilson, 1998), which allowed for a family of models, including facets and multi-dimensional models, to be fitted.

Quality criteria were plotted according to increasing demand using the approach published by Griffin, Woods, and Dulhunty (2004b). Levels of progressive development were identified from the data, defined by subject matter experts and verified by the specialist panel. These were then back translated (Griffin, Woods & Dulhunty) as a validity check. The hypothesized and derived frameworks were directly compared, and back translation afforded the opportunity for researchers to check the judgment-based framework against the empirically-derived framework. The extent of match was argued to be evidence of validity. When linked to person and item separation indices (Wright & Masters, 1983) it added to the construct validity of the standards-referenced scales. At this stage, subject matter experts identified intervention strategies for each level. The extent to which they could do this was seen as a further source of evidence for validity.

At the conclusion of the first phase of the SWANs research, observation surveys had been developed and trialed in schools by large samples of teachers. A series of studies had been undertaken to identify reliability of teacher judgments, and relationships of classroom practices, resources, teacher characteristics, and school context to student development. The project developed an online assessment and reporting program that teachers in both mainstream and special education schools use to record their observations of student learning in these skill domains, report and monitor student progress over time, and link information about student proficiency to instructional advice.[1]

This phase of the SWANs research took more than 3 years and yielded three doctoral studies (Coles-Janess & Griffin, 2009; Roberts & Griffin, 2009; Woods, 2010; Woods & Griffin, 2013). The second phase of the project was even more ambitious. It extended the work to include additional learning areas as part of four further doctoral studies, tailored a version of the materials for use in early childhood settings, and engaged schools and teachers from other Australian states and territories. The SWANs materials are provided to Victorian schools as part of the Abilities Based Learning and Education Support (ABLES) resources for students with additional needs (Victorian Department of Education and Training, 2019). From their release at the start of 2011 to the end of 2018, they had been used in 2276 Australian schools to monitor learning for almost 50,000 students.

The emphasis of the SWANs research was the design and validation of protocols for assessment and reporting to inform teachers' planning and implementation of learning programs for students with additional needs. It did not focus on the nature,

[1] Access to the SWANs program and materials can be obtained via the Assessment Research Centre at the Melbourne Graduate School of Education.

diagnosis, or treatment of disabilities but instead strove to help teachers recognize every student as a learner, regardless of the nature or severity of disability and the way that might complicate or impede learning. The project design relied on the input of a specialist panel of experienced teachers of students with additional needs working within the framework of a partial credit latent trait model (Masters, 1982) to define the relative discriminating power of components of complex observation structures in a range of settings. It drew together the work of assessment specialists, school leaders and teachers, specialist professionals, and curriculum and policy leaders. Other chapters in this volume provide details of the seven SWANs doctoral studies and their conversion to the ABLES curriculum and support resources.

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Patrick Griffin held the Chair of Education (Assessment) at The University of Melbourne and was the founding director of the Assessment Research Centre. His work includes more than 40 years in teaching and research in education measurement. He focuses on item response modelling applications in interpretive frameworks for performance assessment, problem solving and higher order competency assessment and performance reporting. He was the measurement team leader for UNESCO in the SACMEQ project and a World Bank consultant in Vietnam, Philippines and China. He retired from the University of Melbourne in 2015. He still leads several national and international studies of problem solving, literacy and numeracy and was the Executive Director of the Assessment and Teaching of 21st Century Skills project in which he pioneered the assessment of collaborative problem solving. His research into reliable rubrics is on display through the doctoral students' work in this volume on the work with special needs students.

Chapter 2
Competence Assessment

Patrick Griffin

2.1 Introduction

Competence assessments encourage and entice educators to draw 'can do' conclusions about student learning. It is common to describe students' progress in terms of things they are now able to do that they could not once do, and we commonly use 'can do' statements to describe competences: 'can add, subtract, read….' There is seduction to such statements and we are drawn into believing that these competences can be assessed by simple observation of people performing specific tasks.

Such an approach is based on a belief that certainty can be attained in describing human ability and development. This chapter argues that a *probabilistic* model of competence can link three fundamental approaches to teaching and learning and provide an appropriate framework for reporting. This is especially important when goals of education include such things as creativity, teamwork, communication and other somewhat difficult attributes to observe in action. What is clear is that there are specific prerequisite matters that need to be attended to in developing a competence-based approach to assessment.

1. Specify with greater clarity the desirable *outcomes* of education programs. These outcomes must include a broad range of cognitive, interpersonal, communication and higher-order skills and will need to address the kinds of general competencies identified in national goals of schooling such as those recently espoused in Australia.
2. Specify *frameworks,* which make clear what is meant by developing competence or achievement. These need to be used as frames of reference for interpreting assessment and identifying how to improve learning.

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