



CIDREE

Consortium of Institutions for Development
and Research in Education in Europe

Curriculum Provision for Exceptionally Able Students

Report of a CIDREE collaborative project

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Introduction

In recent years, international education policy and practice has moved towards a more inclusive school environment. This policy and practice presents a challenge for schools and teachers in developing appropriate curriculum to meet the diversity of students' learning needs. Amid this diversity are students who have exceptional ability. It is with this in mind that a 1994 Council of Europe recommendation¹ highlighted the special educational needs of young people with exceptional potential. The recommendation also emphasised the importance of offering students in this group the necessary assistance and support.

Gifted children should be able to benefit from appropriate educational conditions that would allow them to develop fully their abilities, for their own benefit and for the benefit of society as a whole. No country can indeed afford to waste talents and it would be a waste of human resources not to identify in good time any intellectual or potentialities.

While, there is no universally agreed term for students who generally would be described as 'exceptionally able'. Some descriptions include *genius, gifted, very bright, high-flyer, very able* and *talented*. The terms *exceptionally able* and *gifted and talented* are used interchangeably in this report to describe the students in question. It is estimated that across most European countries 3-10% of the school population are exceptionally able students.² Although identification criteria differ between these countries it is worth noting that identification of students with exceptional ability is complicated by the fact that many underachieve for a number of reasons, such as, having a learning disability, dual exceptionality or being socially disadvantaged. While many exceptionally able students are happy, well adjusted and successful, others may remain invisible and may not be seen as individuals with unique intellectual, social, and emotional needs.

This report is the product of a collaborative project that explored a range of practices and projects which address the learning needs of students with exceptional ability.

¹ Council of Europe recommendation 1248 (1994) on education for gifted children – for more details see <http://assembly.coe.int/main.asp?Link=/documents/adoptedtext/ta94/erec1248.htm>

² Specific Educational Measures to Promote all Forms of Giftedness at School in Europe, Eurydice, (P5:2006)

Exceptionally able students require greater extension of breadth and depth of learning activities than is normally provided for the main cohort of students. The participants in the project; the National Council for Curriculum and Assessment (NCCA), Ireland, Schweizerische Koordinationsstelle für Bildungsforschung (SKBF/CSRE), Switzerland, and Instituut voor Leerplan-Ontwikkeling (SLO), the Netherlands, set out to bring together some of the experiences of schools and teachers in their respective countries in providing curriculum provision for students with exceptional ability. The report captures these experiences in a range of case studies which describe in rich detail projects and practices at national, regional, school and classroom levels. Resulting from the differences within the education systems of the participating countries some of these levels are more applicable than others. The Swiss case studies for example don't refer to national policy as each canton oversees their own education policy and therefore this report describes the policy and practices of one canton, Lucerne.

Contents

The report is presented in four sections. The first section outlines the project, describing its aims and expected outcomes. It explores the methodology used in the project, namely the case study approach. The second section describes the different educational contexts and how each provides (in a general way) for exceptionally able students. The third section contains six case studies, two for each participating country. This format captures good practice in curriculum design and implementation at the national, regional, school and classroom levels. The case studies in the Netherlands and the Canton of Lucerne refer to projects/practice in primary education and the case studies in Ireland refer to projects/practice at lower secondary education (post-primary). Section four presents the project outcomes - using the case studies the project team has identified commonalities which it considers key elements of successful curriculum provision for the students in question.

Section One: Outline of the Project

Purpose of the project

The project sets out to identify and share examples of good practice in addressing the learning needs of exceptionally able students. These practices focus is on curriculum provision that offers more advanced levels of complexity and difficulty, enhances creative teaching and learning and provides personalised learning paths.

Methodology

The project group communicated through emails and met twice, in Dublin October 2008 and June 2009. At the initial stage, each agency provided background information in relation to the:

- structure of their education system
- role of their organisation within the education system and the structure of the organisation itself
- consultation policy of their organisation in relation to curriculum development for example, what agencies or groups does the organisation usually consult? Is there legislation which requires the organisation to involve certain partners within the system?

In preparation for the initial meeting, each agency provided additional information on the specific policy and provision for exceptionally able students. This documentation was circulated prior to the first meeting.

Meeting one (October 2008)

The first meeting took place in Dublin, 3rd October 2009. At the meeting the aims as described in the original proposal, were refined and the precise methodology to be used was discussed. It was decided that a case study methodology would be the best approach to capture the different curriculum provision. The meeting allowed the partner agencies an opportunity to explore how participation in the project might advance their own work. During this meeting, it was agreed that participants would provide examples of good practice in the areas of curriculum provision for exceptionally able learners at some or all of the following levels

- **The classroom level** explores how particular curriculum provision is implemented within the classroom. This includes reference to learning environments that are mixed-ability as well as those in ability grouping settings.
- **The school level** considers the organisation and planning involved in implementing curriculum provision for the students in question.
- **The regional level** describes practices where a group of schools work together in designing, planning or implementing the curriculum provision.
- **The national level** describes the policy context within which many of the projects operate.

To facilitate a consistency among the case studies it was decided to develop a template for each of the four levels (see Appendix Two). Prior to the meeting in June 2009 templates for the case studies were circulated to the project group, enabling them to describe examples at the four levels of good practice in this area.

Meeting two (June 2009)

The final meeting took place in Dublin in June 2009. In preparation for the meeting a final draft of the case studies from each organisation was circulated to the project group. Discussion in relation to the case studies focused on whether they required any additional information or whether they contained areas of duplication. Consideration was also given to whether the case studies reflected a clear representation of good practice at classroom, school, regional and national levels. The second part of the meeting focused on an attempt to draw out the key messages emerging from the case studies. This served as the basis for identifying key elements of possible future approaches in curriculum design.

Outcomes of the project

Having established examples of good practice, it is intended that other colleague agencies will access the case studies and adapt elements to meet their particular localised requirements. To maximise access, the report will be published on the CIDREE website, www.cidree.org.

Section Two: Background Information

Introduction

This section looks at the general and specific education context in which provision for exceptionally able students is made, within each country. To gather the specific information on provision for exceptionally able students a template (see Appendix One) was used and it looked at the following information:

- legislative recognition and regulations – whether this group of students is referred to in legislation.
- the general educational philosophy towards exceptionally able students.
- terminology and identification criteria -preferred terms used when referring to the students in question and the criteria for placing students in this category. Whether this group of students are included in the population of those students with special educational needs?
- specific provision - the general education provision arrangements used for this group of student
- Types of teacher training in this area and resource materials available to teachers.

1.The Netherlands

Education system – general information

The statutory equality of public and private schools is an important feature of the Dutch education system. Education policy is coordinated by the Dutch Ministry of Education, Culture and Science, together with municipal governments. There are public, special (religious), and private schools. The first two are government-financed and officially free of charge, though schools can ask for a parental contribution. The central curriculum policy has turned into processes of decentralisation and an increase in local autonomy. Schools are given more scope for the development of education in line with the specific needs and local environment of their students.

Compulsory education in the Netherlands starts at the age of five, although in practice, most schools accept children from the age of four. Between the ages of five (four) to twelve, children attend an elementary school. At the end of primary education, the vast

majority of schools administer the *Cito tests*³ (this is an annual achievement test which covers the main school subjects). The results of this test are used to recommend to parents the most appropriate type of secondary education for their child.

Secondary education, which begins at the age of twelve, is offered at several levels. VMBO programmes (four years) combine general and vocational education, after which students can continue in senior secondary vocational education and training (MBO) lasting one to four years. The two programmes of general education that grant admission to higher education are HAVO (five years) and VWO (six years). Students are enrolled according to their ability, and although VWO is more rigorous, both HAVO and VWO can be characterised as selective types of secondary education. There are a few private schools that place gifted students in separate settings such as Leonardo schools (see page 26).

³ Cito, founded in 1968 by the Dutch government, Cito was one of the earliest national institutes for educational measurement. Cito became fully privatised in 1999.

Setting the context: The Netherlands

Legislative requirements

Exceptionally able students are not explicitly referred to in national legislation. The school legislation states that 'an undisturbed development of each child has to be guaranteed'. Schools have the responsibility to provide a challenging environment so that every student can reach their full potential. However, there have been some reforms in the education system that affects education for gifted students. A policy letter 'Stimulating Excellence in Primary Education' (August 2006) issued by the State Secretary for Education made 10 million euros available to promote the education of gifted students in primary schools. Schools were invited to submit project proposals for funding to develop and implement educational programmes for gifted and talented students. The Dutch government has also set aside 25 million euro for experimental research to stimulate the development of evidence based programmes and practices (Giftedness is one the main themes).

Terminology and definition

The term *gifted and talented* and sometimes the term *excellency* is used to describe this group of students. In the Netherlands giftedness is usually described using the multi-factors model of Mönks.⁴ This model asserts that a gifted student should have the following personality characteristics:

- High intellectual abilities: intelligence, measured with a performance of intelligence and usually expressed by an intelligence quotients (IQ), above average.
- Task orientation and persistence (motivation): perseverance to accomplish a task.

⁴ *International handbook of research and development of giftedness and talent*, K.A. Heller, F.J. Monks and A.H. Passow (Eds.) (1993). Oxford: Pergamon Press Ltd..

<ul style="list-style-type: none"> ▪ Creativity: the ability of an original and inventive ways to devise solutions to problems. <p>Mönks states that these three factors are also influenced by three environmental factors - the family, school and friends (the environment). Howard Gardner's⁵ theory of multiple intelligences is also used to describe gifted and talented students.</p>	
<p>Classification criteria</p>	<p>The policy letter 'Stimulating Excellency in Primary Education' described this group of students as those with an intelligent quotient (IQ) score greater than 120 as moderately gifted and those with an IQ score higher than 130 as highly gifted. It is estimated that about 10% of the total population in primary and secondary education are gifted and approximately 2.5% are highly gifted.</p>
<p>Types of educational measures</p>	<p>In primary and secondary education a range of approaches are used for example</p> <ul style="list-style-type: none"> ▪ differentiated provision ▪ acceleration (for example, skipping classes) ▪ compacting ▪ enrichment ▪ individualised support ▪ ability grouping ▪ special programmes ▪ non-school based activities.
<p>Teacher education</p>	<p>All institutes that provide initial teacher education offer at least one module on gifted and talented education. Two institutes provide extensive modules which include reference to theoretical models of giftedness, identification processes, guidance, compacting, enrichment, and special programmes. At the Center for Giftedness, University of Nijmegen, teachers have the possibility to become specialist in gifted education after completing a two-year post academic programme from the ECHA (European Council for High Ability).</p>
<p>Learning</p>	<p>There is an enormous amount of material available. Most of the</p>

⁵ Frames Of Mind: The Theory of Multiple Intelligences, H. Gardner (1993). New York: Basic Books

resources	materials are developed by publishers who classify the materials as being suitable for gifted students, for more details see www.infohoogbegaafd.nl/hbpo/leermiddelen . School advisory agencies also develop materials. Every school is autonomous in their decision on what materials to use for students.
National teacher guidelines/reports	There are no national teacher guidelines in the Netherlands but experts in the field of giftedness have published the <i>Handboek Hoogbegaafdheid</i> (Handbook of Giftedness) (Van Gerven, 2009).
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2. Switzerland – Canton of Lucerne

Education system – general information

Switzerland has a largely decentralised education system. Most decisions on the running of primary and secondary schools are taken at cantonal level (there are twenty-three cantons). The cantons also provide the bulk of educational funding. The minimum age for primary school is about six years in all cantons (Obwalden, where it is five years and three months). Compulsory education ends at the end of ninth grade, students are usually fifteen or sixteen years old. Each canton has its own head of education, all of whom combine to make up the Swiss Conference of Cantonal Ministers of Education (EDK in German). The EDK plays an important role in discussing and coordinating education policy, and in stressing certain key values. The case studies in this report refer to the policy and practices for gifted and talented learners in the canton of Lucerne. While provision is provided for gifted and talented learners throughout the education system the case studies here describe a range of practices at primary education.

Setting the context: Canton of Lucerne	
Legislative requirements	<p>§ 8 of the Swiss law for elementary school education states that students who are capable of higher achievements ought to be supported. The regulation suggests that support might be given through the following approaches:</p> <ul style="list-style-type: none"> a) general tuition in the mainstream class b) acceleration c) enrichment activities d) the concept of integration.
General educational philosophy towards gifted and talented students	
<p>In the canton of Lucerne the main support for gifted and talented students takes place in the mainstream class and this is underpinned by the teachers' positive attitude towards students with diverse learning needs. There is a focus on teaching and learning that enables <i>all</i> students to reach their potential including gifted and talented students.</p>	
Terminology and definition	<p>The term, 'promoting gifted and talented students' refers to supporting students with particular gifts in the cognitive area as well as in social, artistic, musical, sporting and emotional skills and abilities. Talented and gifted students are not considered to be part of special education, although there are talented and gifted students with special educational needs.</p>
Classification criteria	<p>Gifted and talented students are identified through psychological assessment to establish high cognitive potential, as well as observations made by teachers. These take into account social, artistic, intellectual, creative, motor skills, musical, sporting, and emotional abilities. Students who qualify for the programme are expected to be (very) good performers at school, to be able to study independently.</p>
Types of	<p>The following education provision arrangements are used in schools:</p>

educational measures	<ul style="list-style-type: none"> ▪ individual support ▪ starting school at an earlier age ▪ acceleration of the compulsory schooling (grade skipping) ▪ compacting the required curriculum ▪ enriching general tuition with extended requirements ▪ dispensation from certain parts of the school tuition <p>Parents usually take the responsibility for non-school based activities.</p>
Teacher Education	<p>The importance of supporting talent is covered in initial teacher education. Competences in how to arrange a tuition which supports talent are taught. Optional continuing education is offered.</p>
Learning resources	<p>The following resource materials are available to principals and teachers:</p> <ul style="list-style-type: none"> ▪ <i>Gifted Children in our Elementary Schools. Recognising and Supporting Talents</i> ▪ <i>Acceleration Measures. Supporting Gifted Children</i> ▪ <i>Development of a Concept for Supporting Talents</i> ▪ <i>Supporting Talent at Elementary Schools: Quality Standards</i> ▪ <i>Underachievers. Learned Journal for Supporting Talent.</i>
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3. Ireland

Education system – general information

The Department of Education and Science, under the control of the Minister for Education and Science, is in overall control of policy and funding. Education is compulsory for all children in Ireland from the ages of six to 16, or until students have completed three years of second level education. Nevertheless, it is most common to start primary education aged four or five. Secondary education is generally completed at one of three types of school funded by the state

- Voluntary secondary schools, or "secondary schools", are owned and managed by religious communities or private organisations.
- Vocational schools are owned and managed by Vocational Education Committees.
- Comprehensive schools or community schools were established in the 1960s, often by amalgamating voluntary secondary and vocational schools.

The case studies described in this report refer to projects and/or practices at the junior cycle of post-primary (lower secondary) education.

Setting the context: Ireland

Legislative requirements

The Education Act, (1998) makes provision for the education of *all* students, including those with a disability or other special educational need. ‘Special educational needs’ are defined in the Act as referring to the *needs of students who have a disability and the educational needs of exceptionally able students.*’ However, a more recent act, the Education for Persons with Special Educational Needs (EPSEN) Act, (2004)⁶ in its reference to disability does not explicitly refer to exceptionally able students.

General description of exceptionally able students	Students who are classified as exceptionally able belong on a continuum of students with specific educational requirements.
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Terminology and definition

The term *exceptionally able* is used to describe students who demonstrate very high levels of attainment in one or more of the following areas:

- general intellectual ability or talent
- specific academic aptitude or talent
- visual and performing arts and sports
- leadership ability
- creative and productive thinking
- mechanical ingenuity.

Exceptionally Able Students: Draft Guidelines for Students (2007:8)

⁶ 52. —Section 2(1) of the Act of 1998 is amended by substituting the following definition for disability - *disability means, in relation to a person, a restriction in the capacity of the person to participate in and benefit from education on account of an enduring physical, sensory, mental health or learning disability, or any other condition which results in a person learning differently from a person without that condition and cognate words shall be construed accordingly.*

Classification criteria	
<p>The two main approaches to identification are observation of characteristics and assessment. However, identification and assessment procedures for the exceptionally able child are not as clearly differentiated as in other areas of special education. A multi-focus definition is promoted as it recognises the central importance of atypical development in the lives of exceptionally able students and implies the need to go beyond traditional psychometrically-based testing to explore their educational, emotional and psychological needs. Consideration is given to students that may be underachieving due to boredom, lack of interest or perfectionism.</p>	
Special education	Exceptionally able students are included in the population of students with special educational needs.
Types of educational measures	<p>In primary and post-primary education mixed-ability classes are the arrangements generally used to cater for the different needs of <i>all</i> students. A variety of approaches are used for exceptionally able students but all require carefully planned differentiation:</p> <ul style="list-style-type: none"> ▪ Working with older students for some subjects. ▪ Compacting – students move faster through the programmes of study. ▪ Target grouping – the teacher allows certain students to skip core work and move straight into extension tasks.
Teacher education	In general, teaching education colleges offer initial training courses in the area of exceptional ability, and this is usually presented as a module in special education.
Learning resources <i>Exceptionally Able Students: Draft Guidelines for Teachers</i> (2007) available to access at www.ncca.ie	
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Section Three: The Case Studies

Introduction

This section describes the six case studies, two for each participating country. It looks at project and practices at the national, regional, school and classroom levels.

1. The Netherlands - abstracts

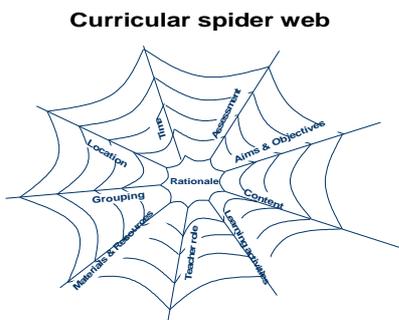
The first case study starts by describing a national project run by the National High Ability Information Centre to capture good practice in curriculum provision for exceptionally able students. Within this context it goes on to describe a regional network of schools that come together to improve the education provision for gifted and talented students. All the schools have adaptive education programmes for gifted children that focus on pull-out programmes - this is where students are withdrawn from the mainstream classroom to work with a teacher in learning activities that are based on enrichment activities.

The second case study describes education provision provided through specialised schools for gifted and talented students, known as *Leonardo* schools. There are 46 Leonardo schools and 8 colleges at the moment in the Netherlands. At the Leonardo schools appropriate education is offered to highly intelligent children, usually children with an Intelligence Quotient (IQ) score greater than 130. The case study also looks at one particular Leonardo school in Venlo.

Case Study One	
National level	
Project title	<i>Good Practices for the Gifted Student</i> The National High Ability Information Centre for primary education.
Background to the project	The Ministry of Education, Culture and Science was founded the National High Ability Information Centre in January 2000. for primary education, The Centre has two parts to it – Gifted and talented education at primary level is overseen by the SLO and at secondary level it is overseen by the Educational Development and Consultancy (CPS) The main goal of the National High Ability Information Centre is to gather information on good policy and practice in the area of giftedness, and to disseminate it to the public. Their website disseminates these good practices see www.infohoogbegaafd.nl .
Timescale	January 2008 - December 2009
Overall project aims	
The overall project aims are to: <ul style="list-style-type: none"> ▪ organise a national congress on giftedness (every two years) ▪ organise and support a network of schools ▪ collect and disseminate examples of good practice in teaching and learning for gifted students ▪ advise the Ministry of Education, Culture and Science on matters relating to giftedness. 	
Publications/information available related to the project	A publication with descriptions of several good practices of adaptive curriculum designed to meet the needs of gifted students is available at www.infohoogbegaafd.nl .

Resources

To describe good practices, ‘the curricular spider web’ Akker, J. Van Den (2003)⁷ is used. The core and the nine threads of the spider web refer to the ten parts of a curriculum, each concerning an aspect of learning and the learning programme for students.



Rationale – why are they learning?

Aims and objectives – Towards which goals are they learning?

Content – What are they learning?

Learning activities – How are they learning?

Teacher role – How is the teacher facilitating their learning?

Materials and resources – With what are they learning?

Grouping – With whom are they learning?

Location – Where are they learning?

Time – When are they learning?

Assessment – How is their learning assessed?

The rationale serves as a central link, connecting all other curriculum components. Ideally, these are also connected to each other, providing consistency and coherence.

Contact details

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⁷ Akker, J. Van Den, Kuiper, W. and Hameoyer, U. (eds) *Curriculum Perspectives: An introduction* cited in *Curriculum landscapes and trends* (pp. 29-44), The Netherlands, Dordrecht: Kluwer Academic Publishers, 2003

Regional level	
Working within the national project as described above, this section looks at a regional network of schools that are using adaptive education for gifted children, including the development of pull-out programmes.	
Project title	<i>Adaptive Education for Gifted Children</i> <i>Pull out programmes for students – enrichment activities</i>
Funding	The Dutch Ministry of Education, Culture and Sciences
Agencies/Support Services	<ul style="list-style-type: none"> ▪ The Netherlands National Institute for Curriculum Development (SLO). ▪ Education Development and Consultancy (CPS).
Brief description of the project	This is a collaborative project developed and implemented by both the SLO and the CPS. The aim of the project is to support schools in improving their education provision for gifted students through participating in a regional network of schools. The main focus of the project is on the development of pull-out programmes to facilitate enrichment activities.
Overall project aims	<p>The aims of the project are to</p> <ul style="list-style-type: none"> ▪ develop a set of quality standards (in accordance to the standards developed for secondary education). ▪ develop a self-assessment instrument for schools to use for reviewing and planning their gifted programmes in primary education ▪ establish a study programme on pull-out programmes for gifted children for the pilot schools and network schools. ▪ establish a pilot project of support for 10 primary schools to assist them in catering for

	<p>their gifted and talented learners.</p> <ul style="list-style-type: none"> ▪ provide guidance on pull-out programmes with specific problems in the field of giftedness, for schools that participate in the network of coordinators
Brief description of the schools involved in the project	<p>The schools involved range in size (from 150 students to 800 students) and consist of students from a variety of socio-economic backgrounds. All the schools have pull-out programmes for their gifted and talented students. These vary in duration and organisation, but are quite similar in content and learning activities. Most programmes focus on the following topics:</p> <ul style="list-style-type: none"> ▪ social and emotional development ▪ critical and creative thinking ▪ philosophy ▪ learning to learn (metacognition) ▪ projects on topics based on student choice.
Target group	<p>The target group of students participating in the pull-out programmes were students with an IQ > 120, both boys and girls, aged between 4 and 12 years old (approximately, 240 students).</p>
Organisation structure of group /	<p>Students work collaboratively in groups setting in enrichment activities. These groups are organised differently depending on the size of the schools, for example some smaller schools have one enrichment class catering for children from 4 years to 12 years old. Other schools organise children into two or three groups according to their age.</p>
Timescale	<p>The duration of the project was from March 2008 to May 2009.</p>

Resources	<p>A diversity of learning materials available for enrichment in the regular classroom, for example</p> <ul style="list-style-type: none"> ▪ Mathematics: Block-it, 24-Game, 3D-Brick ▪ Linguistics (Dutch): Slimme taal (Clever language), Taaltoppers (Aces in linguistics) ▪ Learning to learn: Zelfstandig leren: productontwikkeling (Working independently: product development), Creatief denken (Creative thinking). <p>A complete list of materials is available online: www.infohoogbegaafd.nl/hbpo/leermiddelen</p>
Curriculum materials available	<ul style="list-style-type: none"> ▪ Study programme of the National High Ability Information Centre Primary Education. SLO: http://www.infohoogbegaafd.nl/hbpo/school/00007/ ▪ Special programmes for curriculum compacting for four mathematical methods and eight language methods. SLO: http://www.slo.nl/compacten ▪ Guide for gifted children in education "Checklist Hoogbegaafdenwijzer": http://www.infohoogbegaafd.nl/hbpo/school/00007/ ▪ Self-assessment instrument http://www.cps.nl
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Case Study Two

National level

The practice

The Leonardo school

Background

The first Leonardo School started in August 2007. These are private schools that receive state funding and also receive funding from private companies. Currently, there are 42 Leonardo schools and 8 colleges. Within the next five years, the Leonardo Foundation aims to bring into realisation a network of Leonardo schools (120) and 60 colleges throughout the Netherlands. Within this time limit, it is hoped that the schools will be acknowledged by the government as a form of special education, like schools for children with severe learning difficulties (the additional financing they receive from companies would be no longer necessary).

Brief description

Leonardo schools offer appropriate education to highly intelligent children, usually students with an IQ over 130. Students also have to take a personality test to determine whether they are capable of individual and group learning. Students receive lessons from native speakers in English from the age of 4 and Spanish from the age of 8. Special areas of interest are provided such as information technology, science, learning to learn, and learning to start your own business. Linguistic (Dutch) and mathematical lessons are adjusted to the student's individual level and the pace of learning. Much attention is given to art, philosophy and culture, as well as space for music lessons and mental exercises. 'Leonardo time' is time for students to pursue their own interests. Sport projects are also a part of the curriculum.

Organisation/ structure of group	Students work in a range of different classroom organisations such as <ul style="list-style-type: none"> ▪ small groups (e.g. during art, music) ▪ whole class (e.g. during learning to learn and learning to start your own business) ▪ individually (e.g. during Leonardo time).
Teaching and learning	Leonardo Schools are based on the theory of ‘The Visual-Spatial Learner’ by Linda Kreger-Silverman, ⁸ which states that gifted and talented students build up their knowledge in larger units and all at once. As a result they are more suited to top-down learning strategies. Curriculum compacting is used but acceleration in the form of skipping a grade is not necessary as students are offered interesting programmes, supplementary enrichment materials and challenging assignments.
Cross-curricular/Extra-curricular links	The Leonardo schools are keen to develop close links with organisations outside of the school - this can be a one-day visit to a museum, working with a cooperation partner (as with the Technical University of Eindhoven which initialised a Leonardo Lab) or the participation in a large project like the nature project in the <i>Joamerdal in Venlo</i> .
The role of parents	Parents participate in the parent council and in different committees. They help with the schools newsletter, drive children to outside organisations.
Assessment of student learning and outcomes/ impact of the practice	The Leonardo school in common with other schools administers the Cito tests. In November and May, the Leonardo schools hold portfolio meetings with the parents and students.

⁸ Kreger-Silverman, Linda, *The Visual-Spatial Learner* Denver, DeLeon, 2002

School and classroom level

This section looks at a particular Leonardo School in the area of Venlo.

<p>Brief description of the school</p>	<p>Situated in Venlo this school is part of the Kerobei Foundation for Catholic primary education under which there are 20 primary schools and 2 special needs schools. This school has 4 teachers, 5 subject teachers (English, music, chess, Spanish and creative orientation), a manager and 4 internal support teachers that are charged with the coordination and the planning of services (such as with a range of external social workers, authorities and advisors) for the students with special need. One of the teachers is also a mentor for student teachers and an ICT expert. A project manager is responsible for the entire organisation of the Leonardo school Venlo.</p>
<p>Target group</p>	<p>The Leonardo school in Venlo is a school for students from 6 to 13 years old with an IQ >130. These students find that regular primary education does not meet their specific educational needs sufficiently. These specific needs are related to the high ability of each student. The attainment targets for primary education form the basis for the lessons as well as for the assessments. Nevertheless, the school also meet specific educational needs of individual students at the level of secondary education. Students get the opportunity to enrich their knowledge and skills.</p>
<p>Grouping students</p>	<p>The Leonardo School in Venlo has 64 students from 4 years old to 12 years old. Based on their age, students are divided into several groups so that they can learn at their own, individual level. Each group contains about 16 pupils.</p>

Exemplar materials

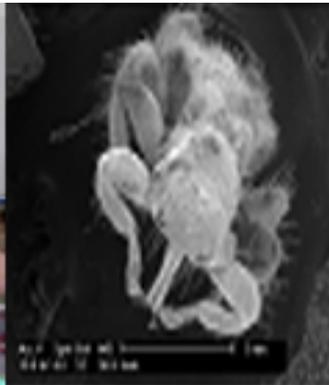
Some pictures of children of the Leonardo School in Venlo.



1. Students visiting the lab of the Technical University of Eindhoven Children working individually in the classroom



2. Pictures of the art project at the Museum Van Bommel Van Dam



3. Three pictures of the DSM project about the environment

Professional development	<p>The Leonardo coordinator, teachers and subject teachers are required to take summer courses given by specially trained teachers. The subject of the courses are diverse such as</p> <ul style="list-style-type: none">▪ The Leonardo concept▪ Top down learning, Deep level learning▪ Learning to learn, Learning to start your own business▪ ICT, Music, Writing and assessment skills▪ Communication/dealing with high ability and science. <p>The courses take about 15 days. Qualified Leonardo teachers have a so-called LB-status which is regarded as a senior teacher.</p>
<p>More information about Leonardo Schools can be found on the websites www.Leonardostichting.nl and www.leonardoschoolvenlo.nl.</p>	

2. Switzerland: Canton of Lucerne

Case studies – abstracts

The first case study starts by outlining the work of a regional network which offers support for professionals and other relevant personnel working with gifted and talented students. The network is coordinated by the Swiss Coordination Centre for research in education (SCCRE). The case study goes on to describe the practice within a network of primary schools who use a specialised resource room known as the Dolphin room. During dolphin-time students study independently or are coached by a specially trained teacher based on their interests and abilities. The key learning area(s) covered during dolphin-time changes periodically and is determined by the school parliament. This case study also looks at how one school in Gettnau is using their dolphin room.

The second case study looks at a regional practice used in primary schools that create a learning environment for students with difficulties as well as with high ability in mathematics. This practice encourages a learning environment that promotes self-guided problem-solving in mathematics with differentiated learning pace and outcomes. Working in the learning environment stimulates creativity and opens up new ways of thinking and working by *all* students. This case study also looks at one of these learning environments called *Math-Project*, which focuses on using a combination of three particular approaches to the teaching and learning of mathematics.

Case Study Three	
Regional level – Canton level	
Brief description of the project	The network for Giftedness (Netzwerk Begabungsfoerderung) is a service of the Swiss Coordination Unit for Research in Education. This is a regional network among the German-speaking Swiss cantons which brings together professionals and other relevant personnel who are interested in the area of giftedness. It includes experts, teachers, parents, project-manager and consultants who are engaged or interested in supporting gifted children.
Funding	The pilot operation for 2000-2003 was co-financed by the 20 German speaking Cantons. After a transition phrase, the EDK regional secretaries of the German-speaking cantons are now funding the network.
Overall project aims	<p>The network aims to</p> <ul style="list-style-type: none"> ▪ connect experts, teachers, parents and others engaged in supporting gifted and talented learners. ▪ provide guidelines to the members (about 400 in 2009). The main means of dissemination is through the network's website. ▪ organise an annual congress on various themes about supporting of gifted and talented learners, for example, <ul style="list-style-type: none"> ○ <i>Wise heads and golden hands - above average talented trainees in vocational education</i> (Michael Niederhauser) ○ <i>Natural talent in high school and wake up to discover, encourage and challenge</i> (Prof. Dr. Peter Labudde), ▪ Exchange information by means of four newsletters each year.

Resource material	<ol style="list-style-type: none"> 1. Discover talented children in our schools: and conveying of talents (3rd edition March 2004) 2. Concept Development Begabungsförderung (March 2004) 3. Skipping a class: must be taken then (January 2004) 4. Giftedness in the elementary schools: quality, (August 2005)
Further details	For further details on the network 'support for gifted learners' see www.begabungsforderung.ch
Contact details	
Organisation:	Schweizerische Koordinationsstelle für Bildungsforschung (SKBF/CSRE)
Contact person:	Silvia Grossenbacher
Email address:	Silvia.Grossenbacher@skbf-csre.ch

Regional level	
Dolphin rooms	
Brief description of the practice	Throughout the canton of Lucerne a network of primary schools are using a specially equipped resource room, known as the Dolphin room. These rooms are used to support gifted and talented learners. One of the most important initial impulses for the project is the hiring of a specially trained teacher in the area of gifted and talented. Dolphin-rooms are so called because the name was selected as the winner from a school-wide contest.
Target group	Students are selected to participate in the Dolphin room through teacher observation. Once identified, students must agree to follow the dolphin-hours and permission from parents is also sought. Up to 20% of all students partake in the dolphin- hours. Students range from 7 years old to 12 years old.
Timescale	Usually the timescale includes a period of up to two hours a week of autonomous work or work with a partner over approximately seven weeks. Some schools run a workshop which lasts five weeks for two hours a week.
Teaching and learning	Students are withdrawn from their main classroom to work together in the Dolphin room and are not grouped by ability. They usually work in two groups with a maximum of 8 students in each group. Students are either involved in self-activity tasks or teacher-guided tasks, both of which are based on the students' interests and abilities. Learning tasks are differentiated by outcome, by support and by interest.

Professional development

The specialised teacher undertakes professional development leading to a diploma – ‘Specialist in Gifted Education’. The University of Teacher Education Lucerne in co-operation with the European Council of High Ability (ECHA) provides this training to enable the participants to arrange their tuition according to the needs of talented students. There are two possible courses available in this area see table 1 below.

Table 1: Professional development courses

Name of course	Duration	Hours	Credit points
Certificate of advanced Studies (CAS)	One year	450 working hours	15 credit points
Master of Advanced Studies (MAS) consecutively to the CAS	One and half years	1800 working hours	60 credit points (including CAS)

Assessment of student learning

During the activities in the Dolphin room students are encouraged to reflect on their own learning and work using self-assessment. Students give feedback on their own project, and they are also involved in peer-to-peer assessment on their companions' projects.

Students keep their own portfolio as evidence of their learning. The results of independent learning and workshops are presented to other classes, parents, and authorities or displayed throughout the school. A range of assessment methods are used to demonstrate students' achievements such as video presentations, PowerPoint presentations, portfolios, and exhibition of products.

For more details see: Schools using Dolphin rooms are linked by a network for more details see www.schulen-luzern.ch/netzwek/page/schulen/gettnau.html.

School and classroom levels

This section describes one school in Gettnau that is using a Dolphin room as provision for gifted and talented students.

Brief description of the school

Gettnau is a small village with 1000 inhabitants in a rural surrounding. In the local primary school there are 80 students ranging from kindergarten to 6th class. There are approximately 12 teachers (some part-time) and one special needs assistant. The school is very active in promoting Giftedness, they run a Dolphin room and adopt Gardner's multiple intelligences approach to teaching and learning.

The practice – Dolphin room

Dolphin-hours are a regular feature in this school. Two small groups of exceptionally able students study independently or coached by the specially trained teacher for two hours each Friday afternoon. They work on activities that are based on their interests and abilities. The school team evaluates how the work in the Dolphin room is going throughout the year.

Exemplar materials

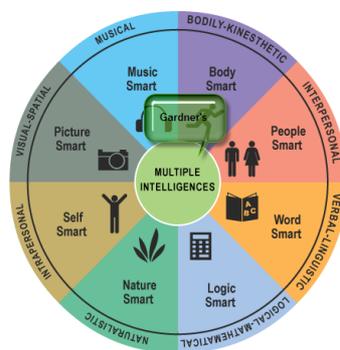
Students' achievements are presented inside and outside the school. The bumble-bee box in the photograph, for example, has been constructed by a group of students at the Gettnau primary school. Students are involved in a project studying the living-conditions of the bumble-bee. Here, a boy is explaining the bumble-bees-box to visitors.



Gardner's multiple intelligence

The school decided to promote the different intelligences from Gardner's multiple intelligences. Each year the school selects one or two intelligences as an annual theme and promotes it at a whole-school level. Students are encouraged to develop their skills in the chosen area of intelligence(s).

- School Year 04/05 was the year of "moving PC" (Logical - mathematical and physical – and kinesthetic intelligences). This included the training of teachers, modules in the field of integrated computer science education and sports inputs in developing movement. The school held a school-wide Olympics.
- School Year 05/06 continued these themes - "PC continues to move" (Logical - mathematical and physical - kinesthetic intelligence). Existing approaches were expanded, strengthened and consolidated.
- School Year 06/07 became year of "The Nature's Trail" (naturalist intelligence). Topics included Pond restoration, 'children are planning with their environment' this involved students researching and visiting their local environment.
- School Year 07/08 was called "Our dream is a Lesebaum" (Linguistic Intelligence) This involved many reading activities: with all-class reading.
- School Year 08/09 was the year of "Theaterli - theater there - Theater Yes!" (Intrapersonal and interpersonal intelligence) Each class performed its own project (KG: Four-Color country; 1. / 2. Kl: Pina re-dance, 3. / 4 K: The mystery of the seven pearls; 5. / 6. Kl: Circus Frog King)
- School Year 09/10: adopted the area of "Kugelrund but healthy" (Spatial Intelligence).



Case Study Four

Learning Environments for students with difficulties as well as with high ability in mathematics.

Brief description	This practice encourages a learning environment that promotes self-guided problem-solving in mathematics with differentiation on learning targets and the pace students work at. Students of very different abilities in mathematics work within a given problem or question in an autonomous way.
Planning	Teachers planning a mathematical learning environment use a particular mathematics schoolbook called <i>Das Zahlenbuch</i> . This book provides a huge choice of learning environments that are appropriate for students in 1 st to 6 th class.
Timescale	Learning environments are offered to students for two or more hours, once a week, depending on the age of the students and the complexity of the themes students are working on.
Target group	All students from a range of age groups are involved. Students are not withdrawn from their main classroom as they work together in a mixed-ability setting.
Teaching and learning	Tasks are differentiated by outcome and by supports. The approaches of German didactics of Eric Ch. Wittmann and his research team (Mathe 2000) are often used. For more details: http://www.mathematik.uni-dortmund.de/ieem/mathe2000/engl.html
Assessment of student learning	Students are encouraged to self-assess particularly at the beginning of a learning environment. Students are organised into small groups known as a 'Circle' where they exchange their plans, progress, and intermediate results.

Outcomes/ Impact of the practice	When the learning environment project was evaluated, the findings indicated that students embraced the opportunity to have a greater say in how and what they learned.
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School and Classroom levels

This section looks at how one school is using a learning environment called the MATH-Project which focuses on a differentiated approach to teaching and learning in mathematics.

Name of project	The MATH-Project
School description	Lupsingen is a municipality in the district of Liestal in the canton of Basel-Country in Switzerland. Lupsingen has 1,300 inhabitants, and in the primary school there are approximately 90 students and 10 teachers. There are 3 special needs assistants.
Description of the Project	The MATH-Project is an initiative which combines three mathematics methods and is designed by two universities of teacher education - the University of Teacher Education of Berne and Aarau. Both of these universities provide the teacher professional development for this project.
Publications/information available related to the project	For more examples for all classes of primary school in the project report: Hengartner E. (Ed.) 2006. Lernumgebungen für Rechenschwache bis Hochbegabte. Natürliche Differenzierung im Mathematikunterricht. Zug (Klett und Balmer), or: http://www.mathe-projekt.ch/index2.htm (in German)
Timescale	The project started in 2001 and is without a fixed end.

3. Ireland

Case Studies – abstracts

The first case study outlines the development of national guidelines for teachers of exceptionally able students by the National Council for Curriculum and Assessment (NCCA). It looks at the various stages involved in the design and development of the guidelines. The second case study looks at how a regional project uses these guidelines as a base for a small-scale project, called *Equality of Challenge*. The project primarily focuses on catering for exceptionally able students within mainstream teaching and learning environment. The case study finally looks at one school involved in the project.

Case Study Five	
<p>National level This section describes how national guidelines for teachers of exceptionally able students were developed.</p>	
National policy context	<p>The National Council for Curriculum and Assessment (NCCA) is responsible for advising the Minister for Education and Science on curriculum and syllabuses for students with a disability or other special educational needs (Education Act, 1998). In fulfilling its remit, the NCCA has developed national draft guidelines for teachers of exceptionally able students <i>Exceptionally Able Students: Draft Guidelines for Teachers</i> (2007).</p>
Brief description	<p>The guidelines were produced by the NCCA in collaboration with the Council for Curriculum, Examination and Assessment (CCEA), Northern Ireland. Due to difference in the education systems North and South, the guidelines for each jurisdiction are customised for use in that context. In order to draw upon most recent research and good practice in this area, a comprehensive literature review was compiled, <i>Gifted and Talented in (and out) of the classroom</i> in 2006. The findings of the literature review are reflected throughout the draft guidelines.</p>
Overall aims	<p>The draft guidelines are designed to</p> <ul style="list-style-type: none"> ▪ raise awareness of the social, emotional and academic needs of exceptionally able students and to assist teachers in planning their teaching and learning. ▪ support school management and teachers to <ul style="list-style-type: none"> – audit and review school policy and practice – differentiate the curriculum – develop effective strategies

	<ul style="list-style-type: none"> - further develop an inclusive school ethos. ▪ provide models of good practice which support and nurture the development of exceptionally able students.
Funding	<ul style="list-style-type: none"> ▪ National Council for Curriculum and Assessment (NCCA) ▪ Council for Curriculum, Examination and Assessment (CCEA)
Planning	<p>Preparation stage</p> <ul style="list-style-type: none"> ▪ preparing the literature review and outlining material for each chapter <p>Developing stage</p> <ul style="list-style-type: none"> ▪ consulting with Special Education Steering Committee (NCCA) ▪ consulting with parents and students (case studies) ▪ consulting with other relevant organisations for example the Irish Association for Gifted Children and Centre for Talented Youth in Ireland ▪ customising guidelines for each jurisdiction <p>Design stage</p> <ul style="list-style-type: none"> ▪ draft guidelines were designed for hardcopy publication and web publishing <p>Dissemination stage</p> <ul style="list-style-type: none"> ▪ every primary, special and post-primary school received hardcopies of the draft guidelines, in 2007
Timescale	<p>Preparation work started in 2005 and the draft guidelines were developed during 2006 and published in 2007.</p>

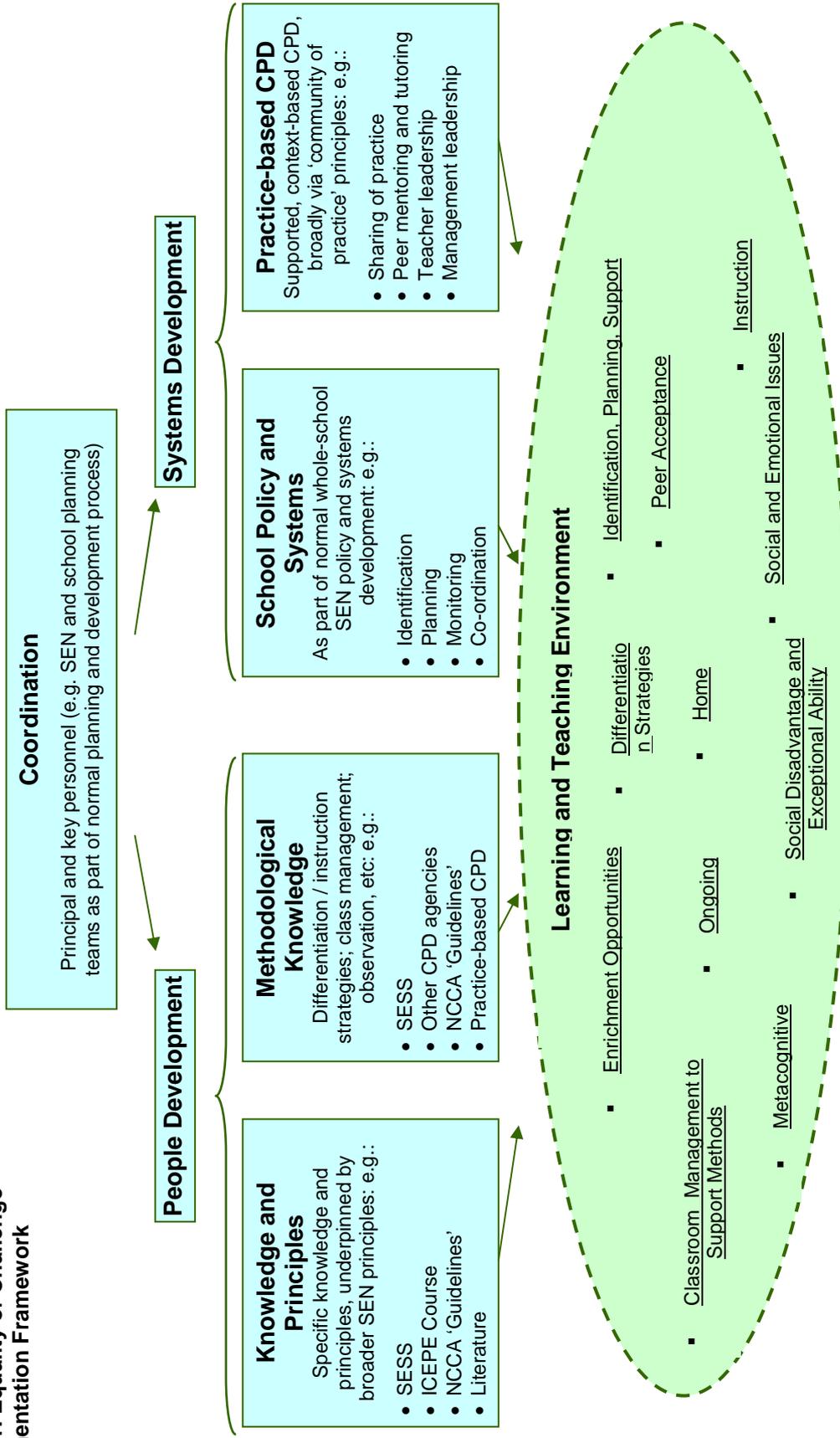
Outcomes/ Impact – Consultation	<p>Over a nine week period, the NCCA consulted with those individuals, schools and organisations having an interest and involvement in the provision of education for exceptionally able students. A consultation questionnaire was sent to all schools (primary, lower secondary and special schools). Teachers, parents and other relevant personnel could also complete the questionnaire online, at the NCCA website. Once the feedback was collated a report on the consultation was produced outlining the findings. The findings indicated that the draft guidelines have the potential to contribute to assisting schools in making provision for exceptionally able students. Respondents believed that the guidelines succeed best in supporting school management and teachers to audit and review school policy and practice. The guidelines succeed least in supporting school management and teachers to 'differentiate the curriculum' and respondents requested more examples of differentiation, particularly for teaching different age groups or subjects.</p>
<p>Materials available</p> <p><i>Exceptionally Able Students: Draft Guidelines for Teachers</i> can be assessed from the link below: http://www.ncca.ie/uploadedfiles/publications/Except%20Able_Glines.pdf</p> <p><i>Draft Report on the Consultation (2008)</i> can be assessed from the link below: http://www.ncca.ie/uploadedfiles/publications/ex%20able%20final%20rpt.pdf</p> <p><i>Gifted and Talented in (and out) of the classroom (2006)</i> can be assessed from the link below: http://www.ncca.ie/uploadedfiles/publications/gifted%20and%20talented%20children.pdf</p>	
<p>Contact details</p>	
Organisation	National Council for Curriculum and Assessment (NCCA)
Contact person	Susan Dennison
Email address	info@ncca.ie

Case Study Six	
Regional level	
Project title	'Equality of Challenge' project.
Brief description of the project	<p>'Equality of Challenge' is a project run by the Special Education Support Service (SESS) which is working directly with three post-primary schools within a local region to address the needs of students with exceptional ability and dual exceptionality.</p> <p>A range of continuing professional development (CPD) methods is used by SESS, with an emphasis on the provision of guidance, support and scaffolding for school-based CPD based on the 'communities of practice' concept. The project explores how general principles of learning and teaching, relevant to the target cohort of students, can be applied in the Irish context. It aims to provide framework which can be generalised and used by schools and teachers in developing their provision for exceptionally able and dual exceptional students (see www.sess.ie/equality-challenge).</p>
Funding	<p>Special Education Support Service (SESS): The role of the SESS is to enhance the quality of teaching and learning in relation to special education provision. The service co-ordinates, develops and delivers a range of professional development initiatives and support structures for school personnel working with students with special educational needs in mainstream primary and post-primary schools, special schools and special classes. The SESS operates under the remit of the Department of Education and Science. For more details see www.sess.ie.</p>

<p>Overall aims</p> <p>The project aims to develop:</p> <ul style="list-style-type: none"> ▪ professional knowledge and awareness of identification, and learning and teaching in relation to exceptionally able and dual exceptional students. ▪ examples of school policy and system development which assists in the identification and assessment of exceptionally able students. ▪ examples of differentiated teaching approaches based on an established inclusion policy. ▪ exemplars of strategies for developing the metacognitive skills of exceptionally able and dual exceptional students. ▪ awareness of social and emotional issues related to exceptional ability and dual exceptionality, and the addressing of students' needs in this area. ▪ models and examples of school-based sustainable enrichment activities. ▪ examples of systems for identifying and supporting socially-disadvantaged exceptionally able and dual exceptional students. ▪ models of effective CPD which can be replicated and used in other schools. 	
Target group	The target group are boys and girls in junior cycle (lower secondary), aged between 12 and 16 years, who have been identified as being exceptionally able and/or dual exceptionally able based on a range of evidence including teacher observation, school-based assessment and psychologists' recommendations.
Professional development	A range of professional development supports is provided by SESS. These include ongoing support and advice by SESS personnel; CPD-related meetings for teachers; an online course - <i>Teaching Gifted and Talented Students: Rising to the challenge of highly able students</i> www.icepe.ie ; the development of a resource on metacognition strategies and a teacher workshop. There is strong emphasis on school-based CPD within the 'communities of practice' concept.
Planning	The project concept was developed by SESS. The

	<p>implementation strategy is based on a collaborative approach between the schools and SESS. A distributed model of planning and school-based CPD was proposed by SESS to schools. Considerable flexibilities are allowed for a school's particular contextual circumstances. An Implementation Framework (see Figure. 1) was drawn up by SESS to guide the planning and implementation of this approach.</p>
Resources	<ul style="list-style-type: none"> ▪ Exceptionally Able Students: Draft Guidelines for Teachers, (NCCA, 2007) ▪ Metacognition for the Classroom and Beyond: Differentiation and Support for Learners (SESS, 2009) ▪ Inclusion of students with Special Educational Needs: Post-Primary Guidelines (DES, 2007) ▪ Materials from on-line ICEP Europe course.
Timescale	<p>The initiative ran in three schools during the 2008-10 academic years. It is planned to expand it to 10 other schools for the 2010-12 schools years.</p>
Contact details	
Organisation	Special Education Support Service
Contact person	Tom Daly
Email address	tdaly@sess.ie

Figure 1: Equality of Challenge Implementation Framework



School and classroom levels	
This section describes how one school is implementing the regional project Equality of Challenge.	
Brief description of the school	This is a Catholic voluntary secondary school is located a large town.
School policy	The school has a policy on Special Educational Needs and within this, reference is made to provision for exceptionally able and dual exceptional students. The impetus for getting involved in this project was the need to give extra support to exceptionally able and dual exceptional students.
The practice	The 'Equality of Challenge' project aims to provide a framework and generate exemplars which can be used by schools and teachers in developing their provision for exceptionally able and dual exceptional students.
Professional development	<ul style="list-style-type: none"> • The need for CPD in this field was identified through the schools' planning processes. • A whole-school seminar on Inclusion was provided by SESS, in which a framework for differentiation was outlined. • The principal actively led the development of pedagogical approaches within the school, largely along the 'communities of practice' principle. • The principal and a lead teacher attended in-service meetings hosted by SESS • A group of teachers and the principal completed the online course - <i>Teaching Gifted and Talented Students: Rising to the challenge of highly able students</i> (ICEP Europe). • Teachers attended a workshop, organised by SESS, on strategies for the metacognitive development of students
Funding	School management paid for some online course fees, and SESS paid for others. Other CPD inputs were funded by SESS.

Planning	As a first step a school review identified the need to develop a structure for continuous professional development for teachers (CPD) in this area within the school. This involved all teachers attending a course provided by the SESS on differentiated teaching and learning. A follow up course on differentiation was provided by the Second Level Support Service (SLSS) team.
Timescale	This initiative was initially a two-year project. The school will continue to be involved in the initiative for a further two years and will contribute its learning to date to the ongoing project.
Target group	<p>Students are in mixed-ability classes in first year. Both boys and girls (average age 12 years old) who have scored within the top10% using an IQ test such as the Wechsler Intelligence Scale for Children (WISC) are targeted. The school uses a range of other diagnostic tests to determine a student's suitability for participating in the project, such as</p> <ul style="list-style-type: none"> ▪ Wide Range Achievement Test 4 (WRAT4) (a commercially produced test measuring the basic academic skills of reading, spelling, and mathematical computation) ▪ Vernon's Graded Word Spelling Test (a commercially produced standardised test designed to assess spelling attainment and progress from age 5 to 18+ years). <p>And teacher observation is also considered.</p>
Teaching and learning	<p>Teachers use a range of teaching and learning methods including the following</p> <ul style="list-style-type: none"> ▪ higher order thinking ▪ multiple intelligence ▪ additional differentiation strategies for example extension and enrichment. <p>The approach that teachers find the most useful is the differentiated approach of <i>must, should and could</i>, identifying the 'could' level as the extension for exceptionally able and dual exceptional students.</p> <p>All subject teachers of first year students are using the differentiation approach of <i>must, should and could</i> know in their classes. For example, during English class, students are</p>

	<p>studying the topic fictional writing and are exploring the area of <i>Myths and Legends</i>. After students have read a selection of Anthony Horowitz myths their task is to create a myth of their own. The teacher shares the following differentiated success criteria with students to support them in creating their own myth.</p> <ul style="list-style-type: none"> ▪ Your myth must follow a logical plot line, create and sustain character and setting, develop a message for its readers, and be clearly and neatly presented. ▪ Your myth should reflect the pattern of the myths studied in class, sustain the development of its central characters and its central theme. ▪ Your myth could explain a force of nature or behaviours common to ‘people kind’.
<p>Assessment of student learning</p> <p>Peer assessment is encouraged and the assessment for learning strategy of <i>Two stars and a wish</i>. The latter asks a student to identify two positive aspects of the work of another student and then to express a wish about what might be done in the future to improve another aspect of the work. The teacher models this strategy several times, using samples of student work, before asking the students to use the strategy in pairs. Students check their process and those who have implemented the strategy successfully are asked to demonstrate it to the whole group.</p>	
<p>Next steps for the ‘Equality Challenge’ project in the school</p>	

Developing metacognitive skills	<p>Working with the SESS, the school is now developing ways to develop the students' metacognition skills. This includes ways to support students to reflect on their learning, to 'think about their thinking'. Training in metacognitive skills such as monitoring and self-reflection is important for exceptionally able and dual exceptional students, as they are often used to getting things right the first time. Demonstrating that learning is a cycle, for example that it is acceptable to revisit a piece of work, that there is value in taking risks and making mistakes, are important insights.</p> <p>Currently, students are using a learning diary which encourages them to take control of their own learning. After a task students use their journals to answer the following questions</p> <ul style="list-style-type: none">▪ <i>What I have learnt that is new?</i>▪ <i>What I might have learnt better if.....?</i>▪ <i>What I found difficult?</i> <p>These questions are based on the concept of the 'KWL Grid' – in any given topic students are asked what they currently know (K); what (W) they want to know; and after the topic is completed students are asked what they have learned (L).</p>
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Section Four: Project Outcomes

The case studies represent examples of good practice and they also provide a more detailed view on how schools and teachers deal with issues such as differentiation (matching teaching and learning approaches to the students' needs and interests) enrichment (promoting learning outside the curriculum experiences) and compacting (enabling students to move faster through core work, allowing them to move into more advanced work). Creating a more detailed view has allowed the project team to draw out commonalities from the experiences which could be considered key elements of successful curriculum provision for the students in question.

It is the policy in the countries who participated in this project that students with exceptional ability receive their education in the mainstream classroom. This is an integrative model, where the needs of exceptionally able students are met first and foremost by means of a teaching and learning approach which is responsive to the individual needs of *all* students. This is a common policy approach shared with most other European countries.⁹

In the participating countries differentiated provision is a widely used approach and it is generally practised within the mainstream mixed-ability classes. However, as the case studies demonstrate, differentiated provision is also used in settings where students are grouped according to their ability or less commonly, in specialised schools, such as the Leonardo schools in the Netherlands.

The case studies report the use of a range of approaches to demonstrating student learning; these include video and power point-presentations, portfolios, and exhibition of products. Another key feature of effective curriculum provision for exceptionally able students is recognition of the need for professional development for teachers in the specialised area of exceptional ability. Most of the case studies note the importance of staff training. A collaborative approach underpins all the case studies, and this takes many forms – collaboration between teachers and parents, collaboration between class teacher and the specialised teacher and collaboration between students.

⁹ Specific Educational Measures to Promote all Forms of Giftedness at School in Europe, Eurydice, (2006) for more details see http://eacea.ec.europa.eu/ressources/eurydice/pdf/0_integral/082EN.pdf

In exploring the case studies several key elements emerge as critical for designing successful curriculum for the students in question. The key elements identified are

- A. Teaching and learning approaches
- B. Assessment of student learning
- C. Professional development
- D. A collaborative approach

A. Teaching and learning approaches

The key teaching and learning strategies included are autonomous working and learning, workshops, compacting, enrichment and portfolio work. From the school and classroom level case studies, one of the main themes emerging relates to the importance of using a range of appropriate teaching and learning approaches for exceptionally able students. These include approaches such as differentiation, enrichment and curriculum compacting.

Using differentiation

In most of the case studies, as previously stated, the needs of exceptionally able students are best delivered as part of the mainstream differentiated classroom provision. There appear to be a number of ways that differentiation can be planned for and used in the classroom. Differentiation can take the form of adapting the content (what is being taught), the process (how it is being taught) and/or the product (how it is being assessed). In the 'Equality of Challenge' project (Ireland, see page 46) teachers differentiate the content using a sliding scale of what students *must*, *should* and *could* know. For example while studying a poem, all students *must* know the poet's name, some students *should* know a little about the poet's bibliography and a few students *could* know about other poets that that write in the same style. This project also differentiates by choice, students can select from questions of varying complexity to suit their ability. In the MATH-project (Canton of Lucerne, see page 40) all students work at their own pace and can produce a range of appropriate (outcomes) solutions to a common mathematical problem. In this instance, students are in the mixed-ability class are working on the same content, the same mathematical problem but the expected outcomes are differentiated so exceptionally able students can extend their thinking and can work at a fast pace. In many instances students do not need all the small steps explained to them and they can deduce the next step in the mathematical process.

Enrichment activities

Enrichment takes place when students engage in learning activities which are outside the mainstream curriculum, for example in areas such as philosophy or nature sciences. These activities allow exceptionally able students to study areas that build on their own interests in greater breadth. In the Leonardo schools (the Netherlands, see page 26) students have the opportunity to explore areas of interest such as music or starting your own business. The practice for enrichment activities is possible within the mainstream class or through some form of withdrawal where students work in small groups. In the cases studies from the Netherlands and the canton of Lucerne the model of withdrawal is referred to as 'pull-out' programmes.

Pull-out programmes

During pull-out programmes students come out of the mainstream classroom to work in enrichment activities in a resource type room. In the canton of Lucerne this room is known as the Dolphin-room (see page 34). Each week exceptionally able students work in small groups in the Dolphin-room supported by the special education teacher and the extension activities vary from time to time. In the adaptive education for gifted children project (the Netherlands, page 21) all the schools have pull-out programmes for their exceptionally able students. The different programmes in the Dutch schools vary in duration and organisation but in content and learning activities they are quite similar. Most programmes focus on the following topics - Social emotional development, Critical and creative thinking, and Learning to learn (metacognition).

B. Assessment of student learning

Because the manner in which the students experience the process of learning is as important as the products of learning, all of the initiatives described in the case studies give significant attention to the levels of involvement students have with decisions made about their learning. In some cases, students select the content for their learning from a range of areas such as music, philosophy and computers. Students have the opportunity to work at their own pace on their own and to work as part of a group. In the 'Equality of Challenge' (Ireland, see page 46) project differentiation by outcome is used when teachers assess students' achievements. Teachers provide assessment feedback based on the level of complexity of the students' responses. The

Leonardo schools (the Netherlands, page 26) use the Cito test, to monitor student development in the areas of reading comprehension, spelling, listening and reading, vocabulary, mathematics, social studies and information processing. Portfolios are used in a number of projects, including the Dolphin-room and in the Leonardo schools as a means of discussion student progress with parents. The Leonardo schools (the Netherlands, page 26) use portfolios as a basis for parent/teacher conferencing. Twice a year, assessment information is shared at parent/teacher meetings and parents are informed about the progress of their child.

Self-assessment and Peer assessment

The 'Equality of Challenge' (Ireland, page 46) project encourages peer assessment and the assessment for learning strategy of *Two stars and a wish* is used. In this approach, students identify two positive aspects of the work of a peer and then express a wish about what the peer might do next time in order to improve another aspect of the work. During the Dolphin-time (Canton of Lucerne, page 34) students are involved in self-assessment as they reflect and comment on their own projects and are involved in peer-to-peer assessment on their companions' projects.

C. Professional development

All of the projects described in the case studies refer to some form of teacher education in the area of exceptional ability. During the 'Equality of Challenge' project (Ireland, page 46) and the Adaptive education for gifted children project (the Netherlands, page 21) teachers receive in-service from the national support services. The professional development is provided at during pre-service and/or at in-service. There is also some discussion of whether the professional development should be compulsory or voluntary in nature.

In the case of the Dolphin room project (Canton of Lucerne, page 34) the specialised teacher has to have a diploma in the area and is trained as a 'Specialist in Gifted Education'. In relation to compulsory continuing professional development, teachers involved in the Leonardo schools (the Netherlands, see page 26) have to participate in a summer course and cover a range of topics in the area of exceptional ability such as top down learning, deep level learning, learning to learn, ICT and music.

In other instances, teachers embark on voluntary training prior to the project. For example, in the 'Equality of Challenge' (page 46) project teachers took an online course, *Teaching gifted and talented students: rising to the challenge of highly able students*, provided by the Institute of Child Education and Psychology (ICEP). Teachers are part of school-based model of continuing professional development (CPD) based on the concept of 'communities of practice', where teachers undertake the online course as a group rather than as individuals. Teachers in the canton of Lucerne and the Netherlands often undertake programmes of study in this area over a 1 to 2 year period offered by the European Council of High Ability (ECHA) for more details see www.echa.info.

D. A collaborative approach

The need for good communication between the class teacher and the specialised teacher underpins many of the projects. This link presents as a necessity to ensure continuity between the work that takes place within the mainstream classroom and the pull-out programmes. Parents play a vital role in supporting the work that occurs in all instances, in some case parents sign a declaration that they would support their child to participate in the project. Throughout the various case studies evidence emerges that several different 'links' are made within the school and outside the school. In the Leonardo schools many projects are linked to outside organisations, such as, the visits to the Technical University of Eindhoven.

Appendices

Appendix One: Setting the context template

Appendix Two: Case study templates

- National and regional levels
- School and classroom levels

Appendix One: Setting the Context <i>Please give a short description under each heading.</i>		
Contact details	Agency: Contact for the Exceptionally Able project: E-mail address:	
General description of exceptionally able students	<i>What is the general educational 'philosophy' towards exceptionally able students?</i>	
Terminology and definition	<i>What is the preferred term used when referring to this group of students?</i>	
	<i>What areas of development (affective, cognitive, social, artistic, etc.) forms of intelligence and abilities are covered by this term?</i>	
Classification criteria	<i>Are there formal criteria for placing students in this category?</i> <i>These might include criteria such as</i> <ul style="list-style-type: none"> ▪ <i>performance in aptitude tests or tests of potential ability</i> ▪ <i>measured attainment and/or performance (as demonstrated)</i> 	
	<i>Does the criteria take account of the following aspects:</i> <ul style="list-style-type: none"> ▪ <i>Inter/personal/emotional</i> ▪ <i>Psychomotor ability</i> ▪ <i>Intellectual</i> ▪ <i>Artistic</i> 	

Special education	<i>Is this group of students included specifically in the population of those with special educational needs?</i>	
Legislative requirements	<i>Is this group of students referred to in legislation? And if so, what entitlements does it offer?</i>	
Types of educational measures	<p><i>Which of the following education provision arrangements are used for this group of students:</i></p> <ul style="list-style-type: none"> ▪ <i>Differentiated provision</i> ▪ <i>Acceleration</i> ▪ <i>Mixed ability classes</i> ▪ <i>Compacting – moving faster to more advanced work</i> ▪ <i>Allowing students to skip core work into extension tasks</i> ▪ <i>Withdrawal</i> ▪ <i>Non-school based activities</i> <p><i>Does the age of pupils or the level of education influence the types of measures taken?</i></p>	
Types of educational measures	<p><i>Which of the following education provision arrangements are used for this group of students:</i></p> <ul style="list-style-type: none"> ▪ <i>Differentiated provision</i> ▪ <i>Acceleration</i> ▪ <i>Mixed ability classes</i> ▪ <i>Compacting – moving faster to more advanced work</i> ▪ <i>Allowing students to skip core work into extension tasks</i> ▪ <i>Withdrawal</i> ▪ <i>Non-school based activities</i> <p><i>Does the age of pupils or the level of education influence the types of measures taken?</i></p>	
Teacher Education	<i>How does initial teacher education prepare teachers to teach this group of students?</i>	
	<p><i>Are there modules or provision of in-service training?</i></p> <ul style="list-style-type: none"> ▪ <i>are these on a mandatory or optional basis?</i> 	

Learning resources	<i>What kind of resource materials is available to teachers?</i> <i>If there is such material who decides what is needed, who designs it and how is it distributed to schools/teachers (is there training associated with its use)?</i>	
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Appendix Two: Case study template

<p>National and regional levels</p> <p>The purpose of this template is to gather information on policy/practice established at the national/regional levels that exemplifies good project in the provision for exceptionally able students.</p> <p><i>The questions used in the template should act as prompts and responses need not be confined to these specific topic. If relevant, include any information on teaching and learning materials and/or reports generated during this case study (state where they may be accessed).</i></p>	
Keywords/Key concepts	<i>Keyword/key concepts - List the keywords used in this case study.</i>
<p>National policy information</p> <p>This section should refer to the information on the context template already supplied</p>	
Policy context	<i>Briefly describe the national policy as it relates to the provision of exceptionally able students.</i>
Legislative requirements	<i>Is this group of students referred to in legislation? If so, what entitlements does it offer?</i>
National teacher guidelines/reports	<i>What teacher guidelines and/or reports have been produced in this area?</i>
<p>Regional Information</p>	
Project title	
Funding	<i>Where does the funding come from for this project?</i>
Agencies/Support Services	<i>List the other agencies/support services involved in the project and describe their role.</i>
Overall project aims	<p><i>A statement of the agreed purpose of the project describing the outcome the project is to achieve. Please include 3-6 project aims.</i></p> <p>This project will:</p>
Brief description of the project	<i>An outline of the main phases of the project and output of each phase. Identify the phases and outputs separately.</i>

	<p>Project phrases:</p> <p>Project outcomes:</p> <p>How does the project link with the mainstream curriculum?</p>
Contact details of person who has overall responsibility for the project	<p><i>Contact details of the contact person or representative for this project.</i></p> <p>Name:</p> <p>Job title:</p> <p>Email address:</p> <p>Phone number:</p> <p>Institution:</p> <p>Address:</p>
Target group	<p><i>Give a brief description of the group of students participating in the project.</i></p> <p>What criteria are used to select students?</p> <p>How many students are involved?</p> <p>What is the age range of students?</p>
Planning	<p><i>What kind of planning is involved in the project?</i></p> <p>Give an outline of the phases of planning involved in the project; include the main personnel involved at the different phases. Make reference to the involvement of students and parents/guardians in the planning process.</p> <p>Phrases of planning</p> <p>Design phase:</p> <p>Implementation phase:</p> <p>Evaluative phases:</p>
Timescale	<p><i>Outline the duration of the project, indicating the time allocated to the project on a weekly or daily basis.</i></p>
Resources	<p><i>List the resources required for implementing this project.</i></p>

Organisation/structure of group	<p><i>Describe briefly how the students are organised during the project.</i></p> <p>Are students withdrawn from their main classroom to work together?</p> <p>Are the students grouped by ability?</p>
Outcomes/ Impact of the project	<p><i>Describe how the outcomes of the project are measured. If the project was evaluated give a brief description of the findings. If no formal evaluation took place refer in general terms to the challenges and successes of the project.</i></p> <p><i>Make reference to students' outcome - including pieces of student's work, video footage etc....</i></p>
Curriculum materials available	<p><i>List exemplar materials used in this project.</i></p> <p>How can this material be accessed?</p>
Recognising learning	<p><i>Do students have the opportunity to gain a qualification from successfully achieved the outcomes of this practice?</i></p>
Brief description of the schools involved in the project	<p><i>Give a brief description of the types of schools involved.</i></p> <p>Location and socio-economic background.</p> <p>Number and profile of students.</p> <p>How many teachers?</p> <p>How many special needs assistants?</p>
Professional development	<p><i>Describe the professional development in this area that teachers either received at pre-service and/or at in-service</i></p> <p>Who provided this training?</p> <p>What was the nature of the training?</p> <p>How long did the training last?</p> <p>Did teachers receive accreditation for their training?</p>
General comments	

School and classroom level	
<p>The purpose of this template is to gather information on activities or practices operating at the classroom level that exemplifies good practice in meeting the needs of exceptionally able students. In completing the template it is necessary to make reference to the regional/national project that the classroom practice derives from.</p> <p>The template consists of three sections</p> <ol style="list-style-type: none"> 1. The practice – describes the activity in the classroom 2. The school – describes the school context 3. The project – describe the larger project that the practice is derived from. <p><i>The questions used in the template should act as prompts and responses need not be confined to these specific topics.</i></p>	
Practice	
The practice	<i>Describe the main focus of the activity or practice?</i>
Keywords	<p><i>Keywords- describe the keywords used in this practice</i></p> <p>What are the key learning area(s) covered in this practice e.g. English</p> <p>What are the key teaching and learning strategies used in this practice e.g. acceleration</p>
Planning	<p><i>What kind of planning is involved in the practice?</i></p> <p>Give an outline of the phases of planning involved in the practice; include the main personnel involved at the different phases. Make reference to the involvement of students and parents/guardians in the planning process.</p> <p>Phases of planning</p> <p>Design phase:</p> <p>Implementation phase:</p> <p>Evaluative phases:</p>
Timescale	<i>Outline the duration of the practice, indicating the time allocated to the practice on a weekly or daily basis.</i>
Target group	<p><i>Give a brief description of the group of students participating in the project.</i></p> <p>What criteria are used to select students?</p> <p>How many students are involved?</p> <p>What is the age range of students?</p>
Organisation/structure	<i>Describe briefly how the students are organised during the</i>

Organisation/structure of group	<p><i>Describe briefly how the students are organised during the practice.</i></p> <p>Are students withdrawn from their main classroom to work together?</p> <p>Are the students grouped by ability?</p>
Teaching and learning	<p><i>What are the key teaching and learning aspects that the practice focuses on? Describe any other ways of thinking about teaching and learning that are adapted in the practice.</i></p> <p>How are tasks differentiated for this group? By outcome, by support etc.</p> <p>What other teaching and learning theories are employed in the project? e.g. Bloom's Taxonomy of Educational Objectives, Gardner's Model of Multiple Intelligences.</p> <p>What other strategies are used? compacting, acceleration etc.</p> <p>Is acceleration used? If so what measures are in place to support students socially and emotionally?</p>
Cross-curricular/Extra-curricular links	<p><i>Please state any links between the practice and other subject areas, projects, clubs or organisations in and out of school.</i></p>
Assessment of student learning	<p><i>Describe how students' learning is assessed, making reference to both formative and summative assessment (assessment for learning and assessment of learning).</i></p> <p>How is assessment used to inform the teaching and learning in this practice?</p> <p>What efforts are made to encourage students to self-assess?</p> <p>List assessment tools that are used to demonstrate student achievement.</p> <p>What methods of reporting students' progress to parents/guardians are used?</p>
Outcomes/ Impact of the practice	<p><i>Describe how the outcomes of the practice are measured. If the practice was evaluated give a brief description of the findings. If no formal evaluation took place refer in general terms to the challenges and successes of the practice.</i></p>

Exemplar materials	<p><i>List exemplar materials resulting from this practice.</i></p> <p>This may include video footage, teaching materials, or pieces of students' work.</p>
School information	
Brief description of the school	<p><i>Give a brief description of the school.</i></p> <p>Location and socio-economic background.</p> <p>Number and profile of students.</p> <p>How many teachers?</p> <p>How many special needs assistants?</p>
School policy	<p><i>Give a brief description of the school's policy in the area of exceptional ability.</i></p>
Professional development	<p><i>Describe the professional development in this area that teachers either received at pre-service and/or at in-service</i></p> <p>Who provided this training?</p> <p>What was the nature of the training?</p> <p>How long did the training last?</p> <p>Did teachers receive accreditation for their training?</p>