

GIFTED AND TALENTED EDUCATION
PROFESSIONAL DEVELOPMENT PACKAGE FOR TEACHERS

E X T E N S I O N

Module 1



Early Childhood



Professor Miraca U.M. Gross

Module 1

Understanding Giftedness Further

Welcome to Extension Module 1: Understanding Giftedness Further. In this Module you'll be introduced to two more models of giftedness, Renzulli's 'three-ring' model and Tannenbaum's 'sea star' model and we will look at the types of gifted student who might be most readily identified by each of these models.

We'll also explore how different levels of intellectual giftedness can affect both learning and social-emotional development.

We'll look further at some of the ways in which gifted children learn and the implications of this for our teaching and curriculum planning - and we'll look a little more deeply at how some of these issues may assist student achievement or possibly lead to underachievement.

Professor Miraca U.M. Gross

Extension Module 1: Early Childhood

Understanding Giftedness Further

Contents

Pre-Test	7
Pre-Test Answers	8
Outcomes	10
Extension Module 1: Part 1	11
Models of giftedness and talent	11
Joseph Renzulli's 'three-ring' model	12
Abraham Tannenbaum's 'sea star' model	16
Reflective/Practical Component	20
Feedback	23
Extension Module 1: Part 2	30
Levels of giftedness	30
How gifted children learn	36
Characteristics of general intellectual giftedness	36
Betts and Neihart revisited	40
Reflective/Practical Component	43
Questions for Reflection	45
References and Further Reading	46

- 1. What are the main criticisms that have been levelled at the Renzulli ‘three-ring’ model of giftedness?**
- 2. What are the main similarities between the Tannenbaum, Renzulli and Gagné models of giftedness and in what ways do they differ?**
- 3. Why is it useful to know a child’s level of giftedness? How would you respond to a colleague who suggests that this is just labelling a child?**
- 4. It is sometimes suggested that gifted children should not be placed in ability or achievement groups but should remain in the regular classroom as models and mentors for other students. What does research tell us about the effectiveness of this?**
- 5. Are the differences among gifted and regular learners more a difference of degree or of kind?**

1. The main criticisms are: Because the Renzulli model is based on the characteristics of creative and productive adults it may fail to identify children who have the **potential** for high performance but are not yet performing at levels commensurate with their ability. It places too much emphasis on task commitment and may disadvantage gifted students who are demotivated or who have not yet been given work with which they can engage productively. Students who are not creatively gifted may not be identified or may not be admitted to programs.

2. **Similarities:** Both the Gagné and Tannenbaum models recognise the importance of personality and environment in the translation of high ability into high performance. Both recognise that giftedness can be sited in any domain of human ability but acknowledge that there must be some threshold level of intelligence (which may differ from domain to domain) for high potential to become high performance. Both view creativity as a valuable quality and see it as one area in which an individual may be gifted - but unlike Renzulli they don't see creativity as a necessary ingredient of giftedness.

Differences: As just indicated, Renzulli's perception of creativity as an essential element of giftedness is not shared by the other two scholars. However, Gagné and Renzulli view much larger proportions of the population as gifted (10-15% in Gagné's model; 15-20% in Renzulli's) than does Tannenbaum who sees gifted individuals as a very small percentage - young people who have the ability to become 'critically acclaimed performers' or 'exemplary producers' of things or ideas.

Gagné and Tannenbaum regard motivation (or lack of motivation) as a catalyst which can facilitate or impede the translation of high potential into high performance whereas Renzulli claims that a very specific form of precisely focussed motivation, which he calls 'task commitment', is a 'necessary ingredient' of giftedness itself.

3. Knowing a student's level of giftedness can help us understand different aspects of his or her cognitive and socio-affective development. Students at different levels of giftedness may require different curriculum and programming responses. Teachers of other special needs students - for example hearing impaired students - recognise that different levels of a condition require different types of response. Calling a child 'severely' hearing impaired or 'highly' gifted is not labelling; it is recognising the particular level of the child's disability or ability and the levels and types of educational response that might be required.

4. In general, students of average academic ability tend not to model on gifted students. Most students are realistically aware that they probably do not have the capacity to perform at levels attained by the very brightest students in the class; therefore they tend not to set personal goals which are unachievable. Instead, students of average ability tend to use, as models of achievable performance, students of approximately their own ability who are doing well in school.

Additionally, gifted students may not be the most effective peer tutors of average ability students. As has been discussed in Core Module 1 and will be discussed further in the present Module, their learning styles are quite different. They process information rather differently from their classmates of average ability. They pass through the stages of learning more speedily, their reasoning can be much more complex and abstract, and they need much less repetition and revision. Some gifted students have little understanding of the ways their age peers of more moderate ability actually learn. When they are asked to assist average ability age-peers, they try to teach them in the ways that they themselves learn and this can actually be quite counter-productive.

5. There are differences in both degree **and** kind.

There are qualitatively different (difference in 'kind') learning characteristics in (a) how time is distributed in solving a problem or completing a task, (b) how thoroughly the gifted learner searches for possible solutions, (c) the kinds of spontaneous relationships the gifted learner identifies, and (d) the form in which new information should be 'chunked' or presented for optimal long-term memory storage - gifted learners tend to take in the whole of a concept at one time and then later retrieve it from long-term memory as a whole.

There are quantitative (difference in 'degree') differences in (a) the preference for working independently, and (b) the preference for learning something new rather than building on what is already known.

If you were not correct in your answers to these five questions you should benefit from at least some of the information that follows in this Module.

If your answers to all five questions were correct you may not need to complete this Module, though we advise that you still skim-read it to check whether it offers you anything new.

The **Specialisation Module** offers further information for you to consider on these and other issues in understanding giftedness and gifted students.

Outcomes

At the completion of this extension module you will be able to:

- analyse similarities and differences among three models of giftedness: Renzulli's 'three-ring' model, Tannenbaum's 'sea star' model and Gagné's Differentiated Model, and evaluate the potential use of each model in your school setting.
- relate the five levels of giftedness to the prevalence of these groups in the population, and appreciate the implications of this for possible underachievement and social isolation.
- plan ways in which you and your colleagues can differentiate the level, pace and degree of complexity of the curriculum you develop for gifted students on the basis of your further understanding of the different ways in which these young people learn.
- expand your understanding of giftedness and the causes of underachievement in gifted students by re-analysing Betts and Neihart's 'Profiles' through the lens of the new knowledge acquired in this Module.

Part 1

Models of giftedness and talent

The model or definition of giftedness which a school adopts will influence both the types of students who will be identified as gifted and the degree to which these students' needs will be met by the school.

In the Core modules of this Professional Development Course we introduced you to François Gagné's Differentiated Model of Giftedness and Talent. The Gagné model has won wide acceptance internationally. It is practical, research-based and teacher-friendly. This model emphasises that talent development is not automatic and that, unfortunately, many gifted students fail to develop their high ability into high achievement.

To recap on what you learned in Core Module 1, the Gagné model defines, as **gifted**, children or adolescents who have the potential to perform, in some area of human ability, at a level more usually achieved by students some years older. It defines as **talented** students whose achievement or performance is **already** at this higher level. The model alerts teachers to the further learning needs of students who are already talented achievers but even more importantly it draws their attention to the needs of **gifted underachievers** - students who certainly have high ability but who, for some reason, have not yet been able to translate their potential into performance.

By placing the student's learning at the heart of his model, Gagné puts us, as teachers, in the driving seat. Gagné makes it clear that a child's learning will not progress optimally unless he or she has the ongoing support of the school. As educators, we have the opportunity - and the obligation - to identify the abilities of the gifted students in our classes and schools and to assist these young people to develop these high abilities into high achievements.

In this Extension Module we will examine and evaluate two other conceptions of giftedness - Renzulli's 'three-ring' model and Tannenbaum's 'sea star' model, which look at ability and achievement from somewhat different perspectives from that of Gagné.

Joseph Renzulli's 'three-ring' model of giftedness

The Gagné model was first published in 1985. Before this time, the definition of giftedness which was most influential in Australia was that developed by Joseph Renzulli in the late 1970s.

Since the late 1950s, researchers internationally in gifted education had been emphasising that giftedness comprises much more than just high academic potential. In 1957, American educators DeHaan and Havighurst identified six fields in which high ability should be sought and developed: intellectual ability, creative thinking, scientific ability, social leadership, mechanical skills and talent in the fine arts.

Why the emphasis on scientific ability and mechanical skills? Well, the Russians had just launched Sputnik! America's supremacy in the space race was being threatened. In response, the USA passed the National Defense Education Act, which encouraged and supported the identification and fostering of young people with special talent in science and maths.

As we know, the Americans put a man on the moon in 1969. Three years later, the United States Office of Education, under its Commissioner of Education, Sidney Marland, altered and expanded DeHaan and Havighurst's categories of giftedness and talent to reflect the changed priorities. This has become known as the Marland definition:

'Gifted children are those capable of high performance with demonstrated achievement and/or potential ability in any one of the following areas, singly or in combination:

general intellectual ability

specific academic aptitude

creative or productive thinking

visual and performing arts

leadership ability

psychomotor ability' (Marland, 1972, p. 2).

The emphasis on the development of science talent had gone. Educators were now encouraged to identify and foster all areas of specific academic ability.

When Renzulli came to develop his own model six years later he wisely affirmed what was now widely accepted - that giftedness was multi-dimensional and could be sited in any area of human ability. However, he placed a new and strong emphasis on the role of creativity and introduced a third factor, which he termed 'task commitment' - 'perseverance, endurance, hard work, dedicated practice, self-confidence and a belief in one's ability to carry out important work' (Renzulli, 1986, p. 69). Task commitment is a very specific form of motivation focussed on the task in hand.

How does Renzulli define giftedness?

‘Giftedness consists of an interaction among three basic clusters of human traits - these clusters being above average general abilities, high levels of task commitment and high levels of creativity. Gifted and talented children are those possessing or capable of possessing this composite set of traits and applying them to any potentially valuable area of human performance. Children who manifest or are capable of developing an interaction among the three clusters require a wide variety of educational opportunities or services that are not ordinarily provided through regular instructional programs’ (Renzulli, 1978, p. 261).

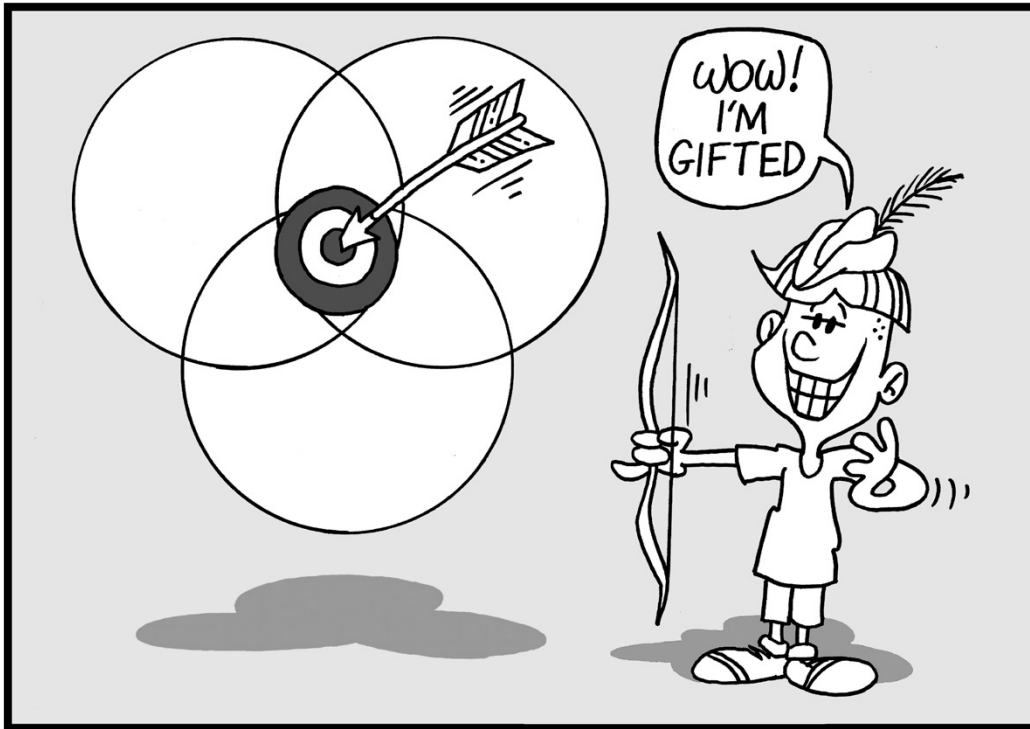
At first glance, this definition seems to have the potential for identifying a wider range of children as gifted than does the Gagné model. But it’s not as clear cut as it seems.

Firstly, Renzulli makes it clear, in later writings, that when he is talking about ‘above average’ general abilities, he is not referring to the upper 50% of children. He is referring to the top 15-20% of people in any area of human endeavour (Renzulli, 1986). That’s not very different from Gagné’s 10-15%.

Secondly, Renzulli emphasises that none of the three ‘clusters’ of traits noted above is **by itself** sufficient to define a child as gifted. Above average ability isn’t enough by itself, nor is creativity, nor is task commitment. ‘It is the interaction among the three clusters that research has shown to be the necessary ingredient for creative/productive accomplishment’ (Renzulli, 1978, p. 182).

Thirdly, as far back as the early 1960s researchers have been aware that above an IQ threshold of 120 - the top 10% of the population - there is virtually no correlation between intelligence and creativity; they are quite different constructs (Getzels & Jackson, 1962). Should we require a child to be gifted in both these unrelated areas before we respond to her learning needs?

Additionally, one of the problems some teachers experience with the Renzulli model is its ambiguity. If it is the **interaction** between the three ‘necessary ingredients’ that makes giftedness, what about a student who has outstanding ability but who is seriously demotivated and not performing in the classroom? Equally, what about the student who is very bright, academically successful and highly motivated but who has very little creativity - certainly not the ‘high levels’ prescribed by Renzulli. Are these students gifted or aren’t they?



Case Study

Ceridwen started to read just before her fourth birthday and her talent developed at a remarkable pace. She entered school at 4 years 10 months with the reading abilities of someone two years older. She is fascinated by fairy tales and legends and has a lively creative imagination.

Ceridwen's teacher, Ms Anderson, placed her on an individualised reading program and gave her tasks which involved creating new situations in the stories she read. What might have happened if Cinderella had kept track of the time and left the ball before midnight? What might have happened if one of the ugly sisters had taken the same shoe size as Cinderella?

After a few months Ceridwen started writing entirely new versions of some classic fairy stories. She dictated them into a tape-recorder and a friendly mum who helped in the class each week typed them up. Renata, Ceridwen's special friend in the class, who is a talented artist, drew illustrations for the books and Mr Cornwall, the school librarian, bound them and put them in the library.

Ceridwen's task commitment developed as a result of the curriculum differentiation offered by Ms Anderson. If she had been asked to work through reading readiness exercises with the other children - or just sit and read by herself while the teacher was working with the other students - she might not have retained her interest in reading at school.

According to the Renzulli model, gifted and talented children are ‘those possessing **or capable of possessing**’ the three clusters of traits - but ‘potential possession’ of motivation or creativity is by no means easy to assess. An added difficulty is Renzulli’s assertion that a child ‘earns the right’ to special services by displaying the above-average ability, high levels of task commitment and high levels of creativity that are the ‘necessary ingredients’ of giftedness (Renzulli & Smith, 1980, p. 10). Should a child have to earn the right to an appropriate education?

Renzulli’s model was developed in the United States at a time when comparatively little research was being undertaken, there or anywhere else, on **underachieving** gifted students. Indeed, Renzulli built his model not on the characteristics of gifted children but on the characteristics of ‘creative/productive’ adults - three groups of architects studied by MacKinnon in the 1950s and the quite remarkably creative and productive ‘great men’ of history - men who were paradigm shifters in science, literature, medicine, law, politics and the arts - who were studied retrospectively in the 19th century by Sir Francis Galton. One might expect architects to be creative, while the remarkable individuals whose lives were studied by Galton - eg Sir Isaac Newton, Shakespeare and Michelangelo - produced works of creative genius and must have been, from the sheer quantity of work they produced, highly task committed. So the characteristics of creativity and motivation noted by MacKinnon (1965) and Galton (1869) were hardly surprising, given the groups they studied!

But demotivated, bored gifted students who are required to work, in school, at levels far below their capability are not necessarily task committed. It’s difficult to commit to a task if it doesn’t engage your interest. It’s hard to become excited about being asked to complete, yet again, work you did successfully months or years before. Critics of Renzulli’s model (eg Jarrell & Borland, 1990) have pointed out that it is doubtful whether models of successful adult productivity can be used to identify child potential.

Renzulli has described children who are spasmodic producers as ‘moving in and out of giftedness’. Gagné would say they are gifted but moving in and out of talent.

Renzulli’s ‘three-ring model’ may be most successful in identifying children whom Gagné would call talented; young people who are successful, motivated achievers who have also been able to bring a creative touch - something new - to their work. Perhaps the three-ring model should be seen as a model of something to work **towards**; the synthesis of high ability, an enthusiastic commitment to work at something that is genuinely worthwhile committing to, and the capacity to contribute to one’s field of talent as well as take from it.

The website of the American National Research Centre on Gifted Education at the University of Connecticut has some useful articles on aspects of the three-ring model, eg:

- ‘The three ring conception of giftedness’ by Joseph Renzulli, at: www.gifted.uconn.edu/sem/semart13.html
- ‘What is this thing called giftedness and how do we develop it? A twenty-five year perspective’ by Joseph Renzulli, at: www.gifted.uconn.edu/sem/semart14.html

Abraham Tannenbaum's 'sea star' model of giftedness

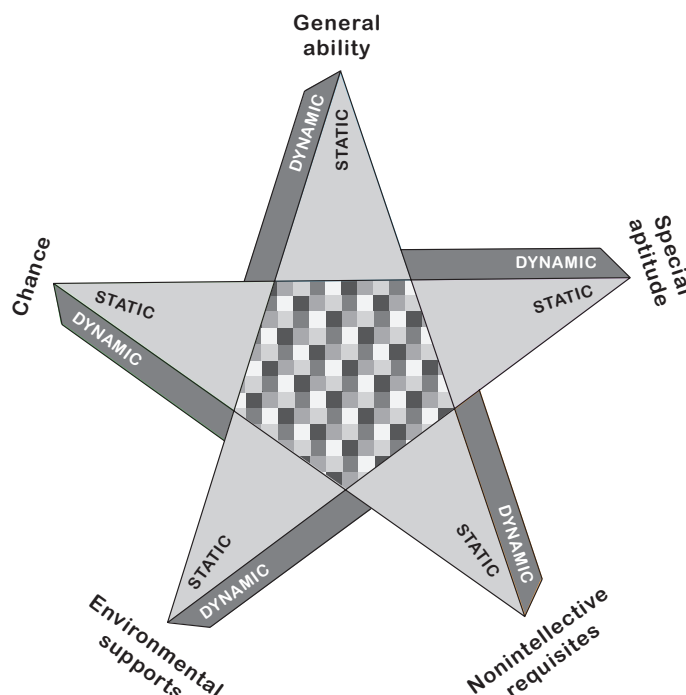
Abraham Tannenbaum's model was developed in the early 1980s and was described in depth in his remarkable book *Gifted children: Psychological and educational perspectives* (Tannenbaum, 1983) which presented one of the best analytical reviews of the research literature in gifted education available at that time. As might be expected, Tannenbaum's model was solidly grounded in psychological and educational research on the characteristics of gifted individuals.

Like Gagné's Differentiated Model of Giftedness and Talent, which it preceded by only two years, Tannenbaum's sea star model of giftedness addresses the relationships between ability and achievement - 'the links between promise and fulfilment' (Tannenbaum, 1983, p. 95) - and clearly identifies the roles of both the child's personality and the environment in which he or she is brought up and educated.

Unlike the Renzulli model, which was derived from the characteristics of creative, productive adult achievers, Tannenbaum's model is firmly based on the characteristics of highly able children and adolescents.

*'Keeping in mind that developed talent exists only in adults, a proposed definition of giftedness in children is the **potential** for becoming critically acclaimed performers or exemplary producers of ideas in spheres of activity which enhance the moral, physical, emotional, social, intellectual or aesthetic life of the community.'* (Tannenbaum, 1983, p. 86)

Tannenbaum believes that children and adolescents who have the potential for succeeding as gifted adults not only require the general and specific abilities mentioned in some of the earlier definitions of giftedness, but also must have facilitative personality attributes and some 'special encounters with the environment' to foster the emergence of talent. The five internal and external variables that 'mesh into excellence' are illustrated by a sea star design with giftedness produced by the overlap of all five factors.



General ability. Tannenbaum points out that the ‘g’ factor, or testable general intelligence, features to some degree in all talent areas. He adds, however, that different levels of intellectual ability are required for various kinds of accomplishment. Very high levels of abstract reasoning ability may be required for certain activities - certain areas of academic study, for example - while somewhat lesser degrees may be required for other activities.

Special ability. For an individual to emerge as gifted, his reasoning ability must be anchored in some specific aptitude. As well as the capacity to think well, gifted people must have special capacities and affinities for particular kinds of work. Some special abilities can be identified in children in the very early years; others do not become apparent until much later in childhood.

Non-intellective factors. Ability alone will not produce outstanding accomplishment. Tannenbaum points out that this requires a confluence of various non-intellective facilitators such as motivation, a secure self-concept, the capacity to stay on task, ‘the willingness to sacrifice short-term satisfactions for the sake of long-term accomplishment’ (p. 88), sound mental health, the desire to show and share one’s talent, and many others.

Environmental factors. Tannenbaum identifies many environmental influences which dictate not only the degree to which the child’s ability will be permitted to develop but even the kinds of talent that a society is willing to honour (or tolerate?) and the amount of investment that the society is willing to make in the cultivation of these talents. These environmental influences include not only the child’s family, peer group, school and community, but also the economic, legal, social and political institutions of the country in which the child is being brought up and educated.



Chance factors. The influence of chance can be crucial to the emergence of an individual’s talent, yet it had not been addressed by previous researchers in gifted education. Chance factors are those entirely unpredictable events in a person’s life which can be critical in permitting exceptional potential to be recognised or encouraged. It may be that the student finds exactly the right teacher at exactly the right stage of her talent development. It may be, on the other hand, that the job market in a young person’s area of talent unexpectedly closes up, so that there is no opportunity for him to fulfil his promise. As Tannenbaum points out, ‘The unexpected can originate anywhere, in the economy, the social milieu, the workplace, the family, and even within the body itself when there is a sudden change in a person’s health status that can affect a career’ (Tannenbaum, 1983, p. 208).

The five ‘arms’ of Tannenbaum’s sea star have both static and dynamic elements. Static elements portray the child as she is at the moment - how she stands in comparison to others at a particular stage in time. However, her level of maths, science or reading achievement, her state of health, and her relationships with family or classmates may well change over time. Dynamic elements, therefore, refer, among other things, to the processes of learning and the social and educational processes which effect the child and which cause, or may lead to, change.

All five arms of Tannenbaum's sea star must be facilitatively present if the child's high abilities are to be translated into high achievements: 'No combination of any four factors can compensate for a serious deficiency in the fifth' (Tannenbaum, 2003, p. 48). Different talent areas may require different 'combinations' of the five factors - but all talent areas require a healthy combination of all five.

While earlier definitions such as those of DeHaan and Havighurst, Marland, and, to some extent, Renzulli, were, in the main, **listings** of the traits or constituents of giftedness, Tannenbaum's model reveals the complex and subtle interweaving of the individual's general and special abilities with personal and environmental variables, moderated by random factors which can assist or hinder the translation of promise into fulfilment.

Producers and performers

In later versions of his model (eg Tannenbaum, 2003) Tannenbaum expands on the characteristics of the two broad types of gifted people he identifies as **producers** and **performers**. **Producers** are people who **develop** either things or ideas. **Performers interpret** or **recreate** these things or ideas. Both producers and performers can operate either **creatively** (bringing something original or new to the process) or **proficiently** (operating with high levels of skill).

Tannenbaum identifies four main areas of human productivity and proficiency: **thoughts and ideas** and **tangibles** (something physical that can be seen, heard, tasted, etc) which are developed by **producers**; and **staged artistry** and **human services** which are provided by performers.

The producer of thoughts (ideas) creatively, for example, may be a philosopher who creates a new theory, a brilliant painter, poet or writer who creates a new work, or an experimental scientist who develops a new process. **Producers of thoughts (ideas) proficiently** may be talented editors who do not themselves produce original writing but who 'can turn chaotic manuscripts into fine literature' (Tannenbaum, 2003, p. 45) or efficiency experts in science or industry who do not develop new ways of working but who can use their superior critical skills as troubleshooters, correcting and improving existing schemes. Put simply, the **creative producer** 'gives birth' to something which has not previously existed. The **proficient producer** uses, very effectively, material which already exists.

Producers of tangibles creatively are people who develop new products; 'people with enough imagination in science and technology to develop such patentable products as the light bulb' (Tannenbaum, 2003, p. 46) or sculptors, architects and design engineers whose main talents lie in the creation of new products. By contrast **producers of tangibles proficiently** are precision workers whose talents lie in high quality production; for example, the jeweller who sets a precious stone in the perfect setting by carrying out a complex design with great skill - even though the design itself was created by someone else.

Performers of staged artistry creatively are not only the choreographer who creates the ballet, the composer who writes the symphony or the writer who creates the children's story. They can also be the dancer who gives her own individual interpretation of the role, the violinist who presents his own understanding of the composer's vision, or the story-teller who changes elements of the story to reflect the characteristics or needs of the audience. **Performers of staged artistry proficiently** include dancers, singers or musicians who give faithful performances of the writers' work with little or no interpretation. Tannenbaum suggests that movie actors whose excellence

consists of carrying out the will of the director and turning movie drama into a ‘director’s art’ are examples of proficient performers, rather than creators, of staged artistry.

Lastly, **performers of human services creatively** may include teachers, political leaders, social workers and other members of the helping professions who work innovatively to develop new techniques or significantly modify techniques in response to the needs of special groups.

Performers of human services proficiently may be teachers who follow guidelines faithfully and successfully, even if they may not themselves create new ideas or processes, doctors who are excellent diagnosticians, and business administrators who may not design or execute original plans but who demonstrate superior managerial skills along established pathways.

With the Tannenbaum model we must keep two things in mind:

- Firstly, the four categories of activity listed above are not intended as a hierarchy. Tannenbaum does not view any one of the four as more valuable than the others to human society; nor does he rate producers above performers (or vice versa) or creativity above proficiency (or vice versa).
- Secondly, Tannenbaum’s view of giftedness is the **potential** for **adult** productivity as either a producer or performer. Very few individuals would completely fulfil their potential in any area, as either a producer or performer, in their childhood or adolescent years. The sea star serves as a guide to the qualities and interventions that the child must possess or experience if her potential is to be translated into performance in later years.



Like Ceridwen, described in this Module, Emily started to read several months before school entry and she entered school reading more like a 6-year-old. Mrs Jarvis, Emily's teacher, gave her a selection of short books to read while she worked with the other children, and encouraged Emily to make up additional stories in her mind about what might happen to the characters.

In the first weeks of school Mrs Jarvis made time to spend a few minutes each day talking with Emily about what she was reading, but as the class became more time-consuming she would quite often forget. The other children didn't share Emily's interests or abilities and Emily began to lose interest in reading alone if there was no one to talk to about the stories. By the end of Term 1 Emily had stopped reading in school.

Emily's reading ability was well beyond the average for her age and she had the creative spark that allowed her to create further story ideas. What she lacked was the task commitment to carry on working independently when she received little support or encouragement from her teacher.

(1) Is Emily gifted? Talented? How would you classify or describe her in terms of Gagné's model, Renzulli's 'three-ring' model and Tannenbaum's 'sea star'? Does one of these models seem to 'explain' Emily and her situation better than the others?

(2) What teaching, curriculum differentiation or programming strategies might Mrs Jarvis have used to foster Emily's high abilities and keep her interest alive?

Hint: What are some of the ideas you encountered in the Core Modules of this Course that could be useful here?



Like Ceridwen, described earlier, Emily started to read several months before school entry and she entered school reading more like a 6-year-old. Mrs Jarvis, Emily's teacher, gave her a selection of short books to read while she worked with the other children, and encouraged Emily to make up additional stories in her mind about what might happen to the characters.

In the first weeks of school Mrs Jarvis made time to spend a few minutes each day talking with Emily about what she was reading, but she has a number of children in the class who have quite severe reading difficulties and it became increasingly difficult for her to find time to differentiate the curriculum for Emily. The other children didn't share Emily's interests or abilities and Emily began to lose interest in reading alone if there was no one to talk to about the stories. By the end of Term 1 Emily had stopped reading in school.

Emily's reading ability was well beyond the average for her age and she had the creative spark that allowed her to create further story ideas. What she lacked was the task commitment to carry on working independently when her teacher was unable to give her the type of learning support she needed.

(1) Is Emily gifted? Talented? How would you classify or describe her in terms of Gagné's model, Renzulli's 'three-ring' model and Tannenbaum's 'sea star'? Does one of these models seem to 'explain' Emily and her situation better than the others?

(2) How could you as an executive staff member assist and support Mrs Jarvis? Firstly, what management strategies would you suggest to her? Secondly, what practical assistance could you offer?

Hint: What are some of the ideas you encountered in the Core Modules of this Course that could be useful here?



Like Ceridwen, described earlier, Emily started to read several months before school entry and she entered school reading more like a 6-year-old. Mrs Jarvis, Emily's teacher, gave her a selection of short books to read while she worked with the other children, and encouraged Emily to make up additional stories in her mind about what might happen to the characters.

In the first weeks of school Mrs Jarvis made time to spend a few minutes each day talking with Emily about what she was reading, but she has a number of children in the class who have quite severe reading difficulties and it became increasingly difficult for her to find time to differentiate the curriculum for Emily. The other children didn't share Emily's interests or abilities and Emily began to lose interest in reading alone if there was no one to talk to about the stories. By the end of Term 1 Emily had stopped reading in school.

Emily's reading ability was well beyond the average for her age and she had the creative spark that allowed her to create further story ideas. What she lacked was the task commitment to carry on working independently when her teacher was unable to give her the type of learning support she needed.

(1) Is Emily gifted? Talented? How would you classify or describe her in terms of Gagné's model, Renzulli's 'three-ring' model and Tannenbaum's 'sea star'? Does one of these models seem to 'explain' Emily and her situation better than the others?

(2) Were you aware, when Emily enrolled in your school, that she was already reading? If you were not aware that you had an early reader enrolling this year, what procedures could you set in place to ensure that the teachers, and you, become aware of this at the start of the year?

(3) How could you, as Principal, assist and support Mrs Jarvis? What procedures could you set in place to support her with materials, time and structure to develop an ongoing special provision for Emily? Are there other talented readers in the early grades of your school? What could you do on a school-wide basis for these students?

Hint: What are some of the ideas you encountered in the Core Modules of this Course that could be useful here?



(1) Is Emily gifted? Talented? How would you classify or describe her in terms of Gagné’s model, Renzulli’s ‘three-ring’ model and Tannenbaum’s ‘sea star’? Does one of these models seem to ‘explain’ Emily and her situation better than the others?

Emily is a student whom Renzulli might describe as ‘moving in and out’ of giftedness. In the first few weeks of school she demonstrated the three-ring model’s ‘necessary ingredients’ of giftedness; **above average ability** in reading - her reading level was at least a year ahead of the other children - the **task commitment** to work at an enjoyable task without ongoing supervision, and the **creative** flair that allowed her to invent new endings to stories. However, later in the year, when her teacher stopped giving Emily feedback about her work, she had no one to talk to about it and she lost the motivation to carry on with something no one else seemed to be interested in. The high ability and creativity were still there but the task commitment was missing.

Gagné takes a different view; he believes that gifted children can move ‘backward’ or ‘forward’ in the talent development process. He would say that Emily was a **talented** reader at the start of the year but had regressed to being **gifted** but no longer talented by the end of Term 1. She no longer had the positive environmental catalysts of a developmentally appropriate reading program and the encouragement of her teacher. She didn’t have the positive environmental catalyst of a peer group with whom she could talk about the books she liked reading. Because of these factors her enjoyment of reading declined and she no longer had the positive intrapersonal catalyst of the motivation to continue reading.

In deciding whether Emily is gifted or not, Tannenbaum would ask whether Emily possesses the **potential** for becoming a critically acclaimed performer or an exemplary producer of ideas or things in adulthood - in her case someone whose command of reading or story writing are acknowledged as excellent. Whether we view Emily as gifted within this model will depend on what we estimate her degree of potential to be and how we define critical acclaim.

(2) What teaching, curriculum differentiation or programming strategies might Mrs Jarvis have used to foster Emily's high abilities and keep her interest alive.

Hint: What are some of the ideas you encountered in the Core Modules of this Course that could be useful here?

Talent identification. It would have helped Emily's situation if the school had discovered, as soon as she enrolled, that she had a special gift for reading and was going to require a differentiated reading program, given that no one else in her class could read.

In Core Module 2, Identification, you were introduced to Micheal Saylor's 'Things My Young Child Has Done' checklist. Some schools give this checklist to parents of all students enrolling in Kindergarten/Reception or Year 1. It can be very useful to have a history of children's development in the pre-school years. If Emily's school had sent this checklist home, her mother would have been able to provide detailed and practical information about her strengths and talents. The school could have been prepared for the arrival of this early reader.

School response. Mrs Jarvis made a very practical and professional response to Emily's advanced reading abilities by providing her with books and materials at her reading level and spending 'quality' time with Emily each day monitoring and developing her abilities. The problem arose when Mrs Jarvis's class management became more complex and she was no longer able to find the time.

If Mrs Jarvis had another advanced reader in her class she could have grouped the two children together and placed both on the advanced program. However, since Emily was the only early reader, Mrs Jarvis might have considered seeking her Principal's approval to allow Emily to go to the Year above for reading - a specific subject acceleration. Mrs Jarvis and the teacher of the next class up would have programmed reading for the same time each day to avoid timetabling difficulties.



(1) Is Emily gifted? Talented? How would you classify or describe her in terms of Gagné’s model, Renzulli’s ‘three-ring’ model and Tannenbaum’s ‘sea star’? Does one of these models seem to ‘explain’ Emily and her situation better than the others?

Emily is a student whom Renzulli might describe as ‘moving in and out’ of giftedness. In the first few weeks of school she demonstrated the three-ring model’s ‘necessary ingredients’ of giftedness; **above average ability** in reading - her reading level was at least a year ahead of the other children - the **task commitment** to work at an enjoyable task without ongoing supervision, and the **creative** flair that allowed her to invent new endings to stories. However, later in the year, when her teacher stopped giving Emily feedback about her work, she had no one to talk to about it and she lost the motivation to carry on with something no one else seemed to be interested in. The high ability and creativity were still there but the task commitment was missing.

Gagné takes a different view; he believes that children can move ‘backward’ or ‘forward’ in the talent development process. He would say that Emily was a **talented** reader at the start of the year but had regressed to being **gifted** but no longer talented by the end of Term 1. She no longer had the positive environmental catalysts of a developmentally appropriate reading program and the encouragement of her teacher. She didn’t have the positive environmental catalyst of a peer group with whom she could talk about the books she liked reading. Because of these factors her enjoyment of reading declined and she no longer had the positive intrapersonal catalyst of the motivation to continue reading.

In deciding whether Emily is gifted or not, Tannenbaum would ask whether Emily possesses the **potential** for becoming a critically acclaimed performer or an exemplary producer of ideas or things in adulthood - in her case someone whose command of reading or story writing are acknowledged as excellent. Whether we view Emily as gifted within this model will depend on what we estimate her degree of potential to be and how we define critical acclaim.

(2) How could you as an executive staff member assist and support Mrs Jarvis? Firstly, what management strategies would you suggest to her? Secondly, what practical assistance could you offer?

Hint: What are some of the ideas you encountered in the Core Modules of this Course that could be useful here?

Talent identification. It is not unusual for gifted students to enter school already reading. Unfortunately, contrary to ‘social mythology’, most parents of early readers **don’t** tell the school. Many are afraid that they will get the name of being ‘pushy mums’. Others have no idea of the time demands of teaching and believe that the teacher will find out for herself.

If you have oversight of Stage 1 students (early years of school) you could encourage parents to alert the school to their children’s strengths and talents by completing a parent nomination form. Micheal Saylor’s ‘Things My Young Child Has Done’ checklist, which we introduced in Core Module 2: Identification, allows parents to give the school a structured history of their child’s development in the pre-school years.

School response. Mrs Jarvis made a very practical and professional response to Emily’s advanced reading abilities by providing her with books and materials at her reading level and spending ‘quality’ time with Emily each day monitoring and developing her abilities. The problem arose when Mrs Jarvis’s class management became more complex and she was no longer able to find the time.

What support could you offer Mrs Jarvis? Could you provide additional out-of-class time to prepare materials for Emily? Could she have additional teacher aide time? Could a friendly parent-helper work with Emily?

If Mrs Jarvis had another advanced reader in her class she could have grouped the two children together and placed both on the advanced program. However, since Emily seems to be the only early reader (but has Mrs Jarvis checked this out?) could you talk with Mrs Jarvis and the teacher of the Year above about a possible subject acceleration in reading? The two teachers could program reading for the same time each day to avoid timetabling difficulties.

(1) Is Emily gifted? Talented? How would you classify or describe her in terms of Gagné’s model, Renzulli’s ‘three-ring’ model and Tannenbaum’s ‘sea star’? Does one of these models seem to ‘explain’ Emily and her situation better than the others?

Emily is a student whom Renzulli might describe as ‘moving in and out’ of giftedness. In the first few weeks of school she demonstrated the three ring model’s ‘necessary ingredients’ of giftedness; **above average ability** in reading - her reading level was at least a year ahead of the other children - the **task commitment** to work at an enjoyable task without ongoing supervision, and the **creative** flair that allowed her to invent new endings to stories. However, later in the year, when her teacher stopped giving Emily feedback about her work, she had no one to talk to about it and she lost the motivation to carry on with something no one else seemed to be interested in. The high ability and creativity were still there but the task commitment was missing.

Gagné takes a different view; he believes that children can move ‘backward’ or ‘forward’ in the talent development process. He would say that Emily was a **talented** reader at the start of the year but had regressed to being **gifted** but no longer talented by the end of Term 1. She no longer had the positive environmental catalysts of a developmentally appropriate reading program and the encouragement of her teacher. She didn’t have the positive environmental catalyst of a peer group with whom she could talk about the books she liked reading. Because of these factors her enjoyment of reading declined and she no longer had the positive intrapersonal catalyst of the motivation to continue reading.

In deciding whether Emily is gifted or not, Tannenbaum would ask whether Emily possesses the **potential** for becoming a critically acclaimed performer or an exemplary producer of ideas or things in adulthood - in her case someone whose command of reading or story writing are acknowledged as excellent. Whether we view Emily as gifted within this model will depend on what we estimate her degree of potential to be and how we define critical acclaim.

(2) Were you aware, when Emily enrolled in your school, that she was already reading? If you were not aware that you had an early reader enrolling this year, what procedures could you set in place to ensure that the teachers, and you, become aware of this at the start of the year?

Talent identification. It is not unusual for gifted students to enter school already reading. Occasionally a parent will tell the school about this when she enrolls her child but unfortunately, contrary to ‘social mythology’, most parents of early readers **don’t** tell the school. Miraca Gross’s Australian research with very highly gifted students found that only 30% of parents felt confident enough to do this (Gross, 2003). The

majority of parents held back for fear that they would get the name of being 'pushy mums'. Some even worried that the Principal or teacher would resent parent 'interference' and might even 'take it out' on their child.

Because of this parent reluctance, principals should put some sort of structure in place to **allow** parents to tell the school about their child's strengths or talents as early as possible. In Core Module 2, you were introduced to Micheal Saylor's 'Things My Young Child Has Done' checklist. Some schools ask all parents to complete this parent nomination form when they enrol their child. This allows parents to give the school a structured history of their children's development in the pre-school years, including early development of reading or numeracy.

(3) How could you, as Principal, assist and support Mrs Jarvis? What procedures could you set in place to support her with materials, time and structure to develop an ongoing special provision for Emily? Are there other talented readers in the early grades of your school? What could you do on a school-wide basis for these students?

Hint: What are some of the ideas you encountered in the Core Modules of this Course that could be useful here?

Mrs Jarvis made a very practical and professional response to Emily's advanced reading abilities by providing her with books and materials at her reading level and spending 'quality' time with Emily each day monitoring and developing her abilities. The problem arose when Mrs Jarvis's class management became more complex and she was no longer able to find the time.

What support could you offer Mrs Jarvis? Could you provide additional out-of-class time to prepare materials for Emily? Could she have additional teacher aide time? Could a friendly parent-helper work with Emily?

Does your school have a gifted education coordinator or enrichment teacher? This teacher could work with Mrs Jarvis to develop a differentiated reading curriculum for Emily. Perhaps the teacher could withdraw Emily from Mrs Jarvis's class during reading time to work with her on a one-to-one basis. Or, from time to time, perhaps she could take her class for reading while Mrs Jarvis worked individually with Emily.

If you are Principal of a 'multi-stream' school (two or more classes at each Year level) and more than one early reader enrolls, you could group these children in the same class. We discussed the benefits of cluster grouping in Core Module 6. It gives the gifted students access to other students of similar abilities and interests and the teacher who has the cluster in her class can develop a differentiated curriculum in their area of special ability - in this case, an advanced reading program.

If Mrs Jarvis had another advanced reader in her class she could have grouped the two children together and placed both on the advanced program. However, since Emily seems to be the only early reader (but has Mrs Jarvis checked this out?) could you talk with Mrs Jarvis and the teacher of the Year above about a possible subject acceleration in reading? The two teachers could program reading for the same time each day to avoid timetabling difficulties.

Cross-grade peer tutoring could also help. A student from an older class could spend half an hour each day with Emily, hearing her read and talking to her about what she was reading. A Year 5 or 6 student who loves reading, and is herself gifted, might understand the needs and interests of this little girl and be happy to give up some of her time to help. (Hint: The older student is unlikely to be disadvantaged; hopefully **her** teacher would be compacting her curriculum and the freed time could be used in this and other ways.)

Part 2

Levels of giftedness

Calling a student ‘moderately’, ‘highly’ or ‘exceptionally’ gifted is not a matter of simplistically ‘labelling’ the student. Rather it is a recognition that a group of gifted students can differ as much, or even more, among themselves as would a group of average ability students, and that different levels of ability require different types and levels of response.

Educators working with hearing impaired students recognise four levels of hearing loss - mild, moderate, severe and profound. A child with a mild hearing impairment can cope quite happily with the regular classroom as long as his teacher is made aware of his impairment, and is prepared to make certain adjustments to her teaching style. The moderately hearing impaired child usually requires medical intervention - the prescription of a hearing aid specifically tailored to her needs - as well as a supportive group of classmates and a sensitive and flexible teacher. However, children who have severe or profound degrees of hearing impairment require more than sound amplification and general assistance and both the curriculum and the teaching methodologies used in the classes in which they are placed must be adapted to their special needs.

Teachers of hearing impaired students have avoided the temptation to treat their clientele as if they were a homogeneous group. Until comparatively recently, however, educators working with gifted students have been trapped in precisely this mind-set. We have developed identification strategies, designed curricula and established special programs based on the assumption that what works for a moderately gifted student would also work for the extremely gifted. Fortunately, this perception is breaking down. We are beginning to acknowledge the need to recognise degrees, as well as types, of giftedness.

The table that follows shows the five levels of intellectual giftedness, the IQ ranges associated with each level, the frequency with which we might expect these children to appear in the population and programming strategies which have been found successful with students at each level.

Levels of Giftedness

Levels of Giftedness	Prevalence	Programming Options
Mildly (115 – 129) (basically)	1:6 to 1:40	<ul style="list-style-type: none"> – Enrichment in regular classroom – Modified curriculum – Curriculum compacting
Moderately (130 – 144)	1:40 to 1:1,000	<ul style="list-style-type: none"> – Advanced work – Challenges within content – Some form of ability grouping – Mentorships – Single subject acceleration – Single grade skip or early entrance to school
Highly (145 – 159)	1:1,000 to 1:10,000	<ul style="list-style-type: none"> – Fast-paced content work in talent area – Ability grouping at least in talent area – Acceleration options – Challenging academic enrichments, e.g. Latin – Mentorships
Exceptionally (160 – 179)	1:10,000 to 1:1 million	<ul style="list-style-type: none"> – Highly individualised programs – High school / university level programs – Advanced placement – Radical acceleration (3+ carefully spaced grade skips) – Ability grouping in specific talent areas – Specific counselling services
Profoundly (180+)	Fewer than 1:1 million	<ul style="list-style-type: none"> – Radical acceleration – Early admission to university – Highly individualised programs – Special program searches – Special counselling services – Ability grouping in specific talent areas

Feldhusen (1993)

As discussed in Part 1 of this Module, Gagné considers students to be gifted if their ability levels place them in the top 15% of the population for their age. In terms of intellectual ability, this means an IQ of 115 or above. Students who are **mildly** intellectually gifted appear in the population at a ratio of somewhere between 1 in 6 and 1 in 40 in the population. This means that every class is likely to have at least a small cluster of such children. They are not too far from the central (average) group of students of their age for whom the 'standard' curriculum is designed and as long as the teacher modifies curriculum and teaching in response to these children's learning characteristics which we outlined in Core Modules 1 and 2 - a faster pace of learning, a more retentive memory, a preference for complex and abstract questions and ideas - they should thrive in a regular classroom setting. All other things being equal, mildly gifted students tend to be popular with their classmates; they are bright enough to be admired but not so bright that they threaten other students' self-image. Often they become class leaders.

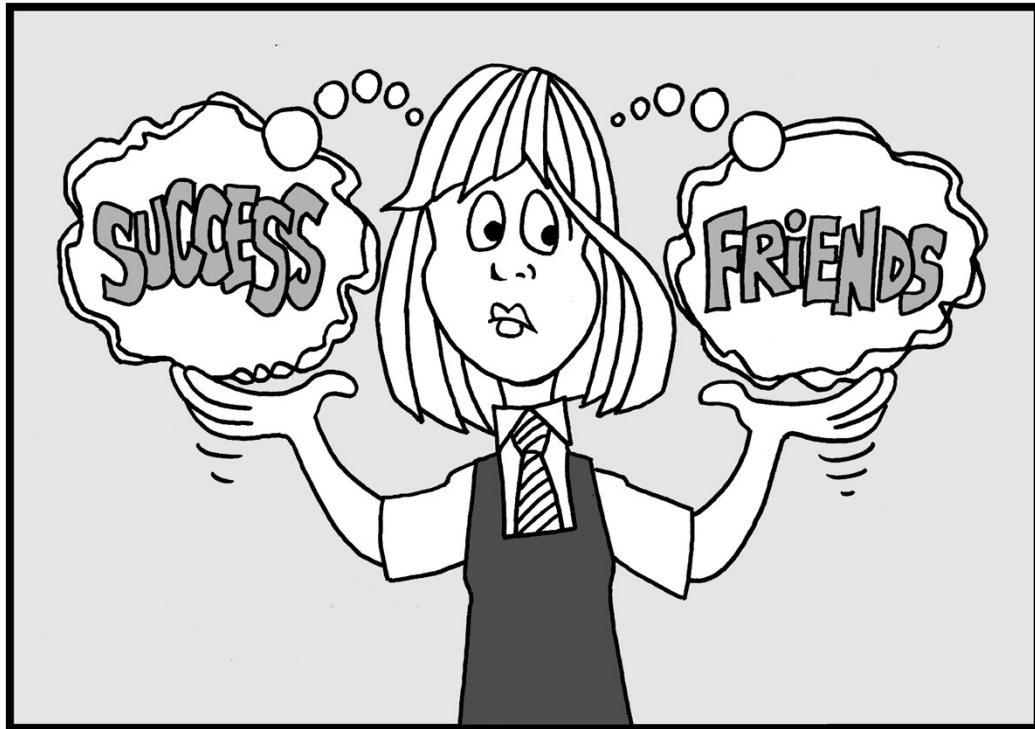
Students who are **moderately** intellectually gifted are a bit thinner on the ground. At the lower end of the range, they appear in a ratio of around 1 in 40. An early childhood or primary school teacher can expect to teach one of these young people, on average, every year or every two years. Secondary school teachers will encounter them rather more often. However, students toward the top of the range with an IQ of 140-145 appear rarely: specifically, these students are between 1 in 200 and 1 in 1000 in the school population.

Moderately gifted students often find the curriculum set for age-peers rather unrewarding. Students at the top end of the range often find it irrelevant; they may have mastered the work of their grade years before. Almost every researcher of note in gifted education advises the development of some form of ability grouping to meet the needs of moderately gifted students. As we discussed in Core Module 3, intellectually gifted students are usually more emotionally mature than their age-peers. Moderate acceleration - a subject acceleration in their main talent area, or a grade-skip - gives them access to students who, although older in chronological age, are at similar academic and emotional developmental stages to those of the gifted student. Karen Rogers' book *Re-forming gifted education: How parents and teachers can match the program to the child* (Rogers, 2002) provides an excellent overview of the academic and social-emotional outcomes, for gifted students, of various forms of acceleration and grouping.

A useful website for access to practical advice and information on acceleration is at: <http://www.nationdeceived.org>. This major American report is having quite an impact on schools' responses to gifted students in the United States and it is equally relevant to Australia.

Highly gifted students definitely require significant curriculum modification and it is extremely difficult to provide such degrees of differentiation in the regular classroom. Ability grouping in at least their areas of special ability is virtually essential. Where this is not practicable - in small schools, for example, or in rural and remote areas - grade advancement or at least subject acceleration in the students' area of special talent is strongly indicated.

With students at this level of ability, and at levels above, it is probably unrealistic to attempt to provide an individually differentiated curriculum within the regular classroom. This places the highly gifted student in a another form of forced-choice dilemma. He can work on the advanced material which excites, challenges and rewards him - but he has to do it on his own as the work is far beyond the capacities of even the brightest of his classmates. Alternatively he can work with his classmates on material which is accessible to them but which he probably passed through years before. No student should have to choose between companionship and intellectual stimulation.



Exceptionally and **profoundly** gifted students are a tiny minority but, like many minorities, they are students at risk. Indeed, they can be placed seriously at risk if the school requires them to move through the grades in lockstep progression with age-peers. These students most definitely require thoughtfully structured and carefully monitored individualised programs of acceleration.

Sixty years ago, in the United States, Professor Leta Stetter Hollingworth conducted a longitudinal study of a group of exceptionally and profoundly gifted young people, tracing their development from childhood through to adulthood. From her research with these and other groups of gifted children she came to describe the IQ range of 125-150 as 'socially optimal intelligence' (Hollingworth, 1926). She found that children scoring within this range were well-balanced, self-confident and outgoing individuals who were able to win the confidence and friendship of age-peers. She claimed, however, that above the level of IQ 160 the difference between the exceptionally gifted child and his or her age-mates is so great that it leads to special problems of development which are correlated with social isolation, and that these difficulties appear particularly acute between the ages of 4 and 9 (Hollingworth, 1931).

Two studies which commenced in the 1980s have made valuable contributions to what we know about the social and emotional development of exceptionally and profoundly gifted students and how these young people can most effectively be educated.

In the United States, Paul Janos compared the socio-affective development of 32 children aged 6-9 with IQs in excess of 164, with that of 49 mildly and moderately gifted age-peers of moderately superior intellectual ability (Janos, 1983). Although the exceptionally gifted were generally rated higher in terms of their academic performance, they were more isolated than their age peers, had greater problems of social development and, in the case of a substantial minority, seemed to lack the motivation to develop their intellectual talents. Janos emphasised, however, that the social isolation experienced by these children was **not** the clinical isolation of emotional

disturbance, but was caused by the absence of a suitable peer group with whom to relate. There are virtually no points of common experience and common interest between a 6-year-old with a mental age of 6 and a 6-year-old with a mental age of 12. Leta Hollingworth would have agreed with Janos's conclusion. She herself emphasised that when exceptionally gifted children who have been rejected by age-peers are removed from the inappropriate grade-placement, and are permitted to work and play with intellectual peers, the loneliness and social isolation disappear and the child is accepted as a valued classmate and friend (Hollingworth, 1942).

A longitudinal Australian study, commenced in 1983, is now in its 22nd year. Miraca Gross has followed 60 children of IQ 160+ from their pre-school or early primary years through to adulthood (Gross, 1993; 2003). The young people are now in their mid or late twenties. With very few exceptions those who were retained full time in the regular classroom were extremely lonely, had very few friends or no friends at all in school, and experienced extreme intellectual frustration and boredom - and, as Hollingworth and Janos found, these difficulties were especially severe in primary school. By contrast, those who were ability grouped and accelerated experienced much higher levels of academic success and reported much greater social satisfaction with their school experience.

Radical acceleration works well with these students because they are extremely bright and, almost without exception, very emotionally mature - although this maturity may not be immediately obvious if they are lonely and miserable at school. Radical acceleration refers to any sequence of accelerative procedures which results in a student graduating from high school three or more years earlier than usual. A single three-year grade skip is **not** recommended. A more practical procedure is a series of three grade advancements each separated by a period of consolidation; however there is a whole 'smorgasbord' of acceleration procedures that can be used. One of the companion papers to this module, 'Radical acceleration and early entry to college: A review of the research' provides an excellent overview of how schools can develop and carry through this form of acceleration.

It is important not to see the borders of these levels of giftedness as 'cut-off points'. We are not suggesting that there should be significant differences in the way teachers respond to students of IQ 129 - the upper end of the mildly gifted range - and IQ 130 - the lower end of the moderately gifted range. However, as indicated above, there **should** be significant differences in the way we respond to the student of IQ 120 (1 in 10 in the population) and the student of IQ 140 (1 in 200).



Case Study

Kate, aged 4, was very lonely in pre-school. She was very bright and socially mature and she had little interest in the games the other girls liked playing. She was fascinated by number and loved counting and finding numerical relationships between things. She noticed one morning that her teacher's coat had buttons in pairs and she spent the next two hours finding other 'pairs' of things in the pre-school. She announced to Ms Foufounis, her teacher, that some pairs were alike, like drumsticks, while other pairs were different - shoes weren't exactly the same because they were curved on different sides, and knives and forks went in pairs but looked, and were used, differently.

Ms Foufounis was intrigued by Kate's unusual enthusiasms and surprisingly long attention span. She suggested to Kate's mum that the little girl be IQ tested. The test showed that Kate was in the moderately gifted range with a full scale IQ of 138. Ms Foufounis arranged for Kate to spend a morning as a visitor in the Kindergarten/Reception class of the local primary school. Kate loved the experience - particularly the games the girls played at morning recess - and clamoured to be allowed to visit the class again.

After two more visits, the primary school Principal suggested to Kate's parents that she leave pre-school and enrol in primary school, even though the year was already half way through. They agreed happily and Kate entered the Kindergarten/ Reception class at the start of Term 3 of the four-term year. She loved the class and her new friends and at the end of the year Kate moved with them into Year 1, a smooth and happy grade advancement.

How gifted students learn

Guest author: Professor Karen Rogers

(This section 'How gifted students learn' has been written by Professor Karen Rogers, Director of Research at the Gifted Education Research, Resource and Information Centre (GERRIC), the University of New South Wales, who has made a special study of the research on gifted students' learning styles.)

Research in gifted education substantiates that there are cognitive and learning characteristics in gifted children that are significantly different from those found in the majority of their age-peers. This research compares the degree of difference when a characteristic or trait appears in both gifted and regular individuals, or the essence of the difference itself when present in the gifted only.

In 1986, Rogers collected all research studies which had then been conducted on the differentiating characteristics of gifted and talented learners. At that time she found 106 studies in which data had been collected and analysed systematically that compared traits or behaviours among the gifted students and the more regular learners in schools. Since that time she has continued to compile all studies that have assessed learning differences among the gifted and talented and their regular counterparts, adding to a current total of 142.

Characteristics of General Intellectual Giftedness

As discussed in Core Module 2, this form of giftedness can be effectively identified using a test of cognitive ability, such as an IQ test. For the 142 studies on differentiating characteristics of this form of giftedness, the average (mean) IQ defining giftedness was 130, but studies ranged in defining it from 124 (one study) to 160 (one study). The distinguishing cognitive and learning characteristics included:

- **Front end analysis:** This term, coined by Robert Sternberg (1982), refers to the time an individual spends sizing up a given problem or task. Sternberg argued that intellectually gifted children and adolescents tend to spend more time on the front end of the task, defining the problem ('problem finding'), predicting which resources will be needed to complete the task or solve the problem, and planning how they will decide if their solution is on the right track. Ludlow and Woodrum (1980) measured this in a series of studies using Mastermind boards. They would set up a series of coloured pegs in a board in a specific series on four succeeding boards and then time gifted and regular students in how long it took each to complete each of the four boards successfully.

On the first board, the gifted children took almost twice the time to complete the board; however, on the succeeding three boards they were significantly faster than the regular children in completing all three boards and doing so successfully. The researchers argued that this was evidence of a differing distribution of time in the process of problem solving.

This difference in gifted learners seems to be a difference in kind, despite the comparative study described above. As Sternberg points out, the gifted learner **distributes** time differently in the problem solving process, and this is the primary focus rather than how much time it actually takes one learner or another to solve the problem.

- **Exhaustive search:** This is another term coined by Robert Sternberg (1982) that refers to how comprehensively an individual checks out possible answers to a question or solutions to a problem. Sternberg noted that intellectually gifted children tend to look for all possible answers or solutions before settling for **one** that ‘would do’ which they found along the way of their search. It is easy to see how this behaviour relates to the redistribution of time mentioned as the first characteristic. Figuring out what one’s problem or task actually **is** may require some searching through types of problems one has encountered before, and possible solutions that were previously successful.

Novel analogies can provide this sort of challenge. To solve the analogy, the student must assume that the initial statement is true, and then analyse the analogy taking this assumption into account. An example is:

‘The statement: Villains are loveable.

The analogy: HERO is to ADMIRATION as VILLAIN is to (a) CONTEMPT, (b) AFFECTION, (c) CRUELTY, (d) KINDNESS’ (Sternberg, 1986).

Sternberg (1977) measured the time taken to map out inferences in verbal analogy problems, finding that intellectually gifted learners tended to encode all attributes to be subjected to the inference process, rather than ‘self-terminate’ as soon as a ‘reasonable’ connection could be found. In other words, gifted learners compared each term individually to each other word among the choices, even when they were reasonably sure of the correct answer, before giving their ‘final’ answer.

Again, as with front end analysis, this difference is considered by researchers to be a qualitative difference in kind, rather than one we see to a greater or lesser degree in learners of varying abilities. Gifted students are significantly more likely to engage in exhaustive search whereas most students will stop their ‘search’ when they get a plausible answer or solution.

- **Analogical reasoning:** This term, also coined by Robert Sternberg (1982) refers to the innate ability of intellectually gifted individuals to make connections between new and old learning spontaneously. Many studies have validated this characteristic by correlating IQ level on an accepted test of intelligence with performance on a test of verbal or figural analogies, such as the Miller Analogies Test, Raven’s Progressive Matrices, and the Naglieri Nonverbal Ability Test. Many researchers (eg O’Connor & Hermelin, 1979) have concluded that gifted learners tend to make significantly more connections between previous learning and newly acquired learning (called ‘application mapping’) and to draw inferences across subject fields when concepts are discovered. As a result they are often described by some teachers as ‘out in left field’, when in fact they may be making connective inferences much deeper and more accurate than other learners will be able to generate.

As with front end analysis and exhaustive search, this behaviour in the gifted appears to be a difference in kind. It is the spontaneity with which this occurs that provides evidence of this argument. Gifted learners tend to make all kinds of connections without being asked to do so. Regular learners can certainly make connections but they are most likely to do so when the teacher provides the scaffolding (ie directly **asks** students to make a connection) for this to occur.

- **Decontextualisation:** This is identified by Sternberg and Davidson (1982) as a qualitative difference in intellectually gifted learners. The term refers to the ability to take in new information **as a whole** within working memory and then store it **as a whole** in long-term memory. When later called upon for retrieval, the information is retrieved within its whole 'context' usually with alacrity, without the student even able to verbalise why he or she 'knows' it.

Among the research studies measuring this capability, many have attempted to identify how students 'figure out' the meaning of an unusual word (not encountered before or made up by the author) within a reading passage. Gifted students were significantly more likely to report intuitive processing as the way the meaning of the word occurred to them, than studying the root and stem of the word for possible clues. They reported taking in the whole of the reading passage and making inferences on word meaning from the passage as a whole (eg Kaye & Sternberg, 1973).

- **Preference for independence in learning:** This cognitive style preference, which includes the desire to be responsible for one's own learning, to be given unstructured learning tasks and assignments (but within a structured learning environment), to work on projects and tasks individually, and to engage in independent study, has been researched consistently since the 1960s by administering learning styles inventories to large groups of gifted and regular students and noting the strength of the differences in preference for independent learning.



In general, the significant differences found include a preference for independent study, followed by a preference to learn through self-instructional materials, and thirdly, the preference among gifted learners to pursue projects of their own choice individually or with **one** other student of similar ability. This difference is most likely a difference in degree. There will be a number of gifted students who do **not** prefer to work or learn independently just as there will be a number of regular students who do desire to work independently. The research tells us that a significantly larger proportion of gifted students than regular students maintain this preference, although the preference is found among both groups.

- **Preference for new learning:** This cognitive style preference can be defined as motivation to learn, zeal, achievement motivation, or through a number of other terms, including 'intellectence', the desire to be engaged with intellectual or abstract ideas and experiences. This often means that the gifted child comes to school expecting to learn something new each day rather than to review and practise previous learning and skills.

What is not known about this preference at the present time is whether depth of knowledge on a singular concept or coverage of multiple topics is significantly different for gifted learners, but many researchers, from Freehill and McDonald (1981) to Ricca (1984) have established the drive to achieve at high levels as a distinguishing characteristic of the gifted. This difference is probably a difference in degree rather than

kind. In the comparative studies previously conducted, there were a number of regular students who did prefer to learn new information rather than practice what was already known, and there were a number of gifted students who preferred building on what they had already learned rather than moving on to something new.



Case Study

Teddy may or may not be a cute little child. He may or may not be well-coordinated and early to walk and turn somersaults. Likewise, he may or may not always have his hand up when the teacher asks something in pre-school or kindergarten, but one thing teachers have noticed about Teddy is that his answers, when he gives them, are usually well developed and thought out. When his teacher or parent suggests a new point of view or something new to be learned, everything about Teddy perks up. He gets intensely interested in people who have unusual ideas or have done extraordinary things and especially wants to know about their lives and motivations. Even in these early years, Teddy seems willing to think things through, to work hard to learn, and does not obviously see himself as 'smarter' than others around him.

Teddy has both endearing and aggravating behaviours in school. He may appear very slow and deliberate at times, especially when quick answers are being sought to low level questions. He sometimes seems to make too much of what was a simple question, coming up with very unusual connections that may seem weird or strange to other children. He runs on his own timelines, which means there are times when he is irritated because he has to stop working on something he is engrossed in and start something new. He is often very systematic and logical, which can make him very uncomfortable with a parent's attempts at creativity. He is not a willing risk-taker and wants structure so that he can almost guarantee how things will turn out. Teddy often feels quite comfortable working on his own and seeks opportunities to create a personal space for himself whenever he begins to feel 'crowded' by others around him. Not only does he answer deep questions fully, but he poses his own deep questions, about God, nature, life, justice, and always with a 'why'. He understands complicated answers to his questions and appears to absorb and remember information as quickly as it can be given to him.

Teddy scores very highly on almost every aptitude and achievement test, and will usually be rated positively in his school performance. Yet, he may be a serious underachiever because he is not being offered enough content nor enough complexity to that content, nor has compacting of his curriculum taken place. Anywhere from 3 to 6 years of Teddy's school life will be spent without being exposed to a single new idea or concept that he does not know already. The only characteristic that may keep Teddy from pure disillusionment with school may be his own perseverance and patience, waiting for the day when school will be 'hard and fun'.

Betts and Neihart revisited

In Core Module 4, we looked at five profiles of gifted underachievers identified by George Betts and Maureen Neihart. The material we have just covered on the learning styles and characteristics of academically gifted students may help us to understand, more fully, some of the causes of underachievement in these groups.

Type 1 students are bright, motivated achievers. However their motivation may be directed mainly towards pleasing, and having a good relationship with, their teachers and other adults rather than towards the full development of their talents. Because they are 'steady' and well organised, teachers often ask them to assist other students who are having difficulties.

However, gifted students are not necessarily talented teachers of other students! Think back to the learning characteristics of gifted students discussed in the previous section. A gifted student who learns holistically, instinctively understanding interrelationships between elements in maths, science or language, may not be able to break down these relationships into component parts and explain them to someone who learns in a 'step by step' progression. A gifted student whose natural problem solving style is to use 'front end analysis' may not understand the regular student's need to 'get on with' what he sees as 'the work'. This can be extremely frustrating for both students and if the teacher is not sensitive to this discrepancy in learning styles, both may begin to resent their time being used in ways which are not productive.

Teachers sometimes ask gifted students to act as 'peer tutors' for average ability students on the grounds that regular students view them as role models. Actually, research contradicts this. Dale Schunk (1987) found that average ability students admire, and model their behaviour on, students of **similar ability to themselves** who are succeeding at what they try to do. They do not choose high ability students as role models.

Betts and Neihart (1988) suggest that these Type 1 gifted students need an accelerated and enriched curriculum, time to develop their personal interests and to develop independent learning skills, and opportunities to work with other gifted students.

Type 2 students are 'challengers' who may be bored, angry and resentful. They often prefer learning independently rather than in groups where the slower processing speed of other students slows them down (review the segment in the previous section on 'preference for independent learning') and they can be tactless and sarcastic towards other group members when this happens. Rogers (1986), in her review of the research on the learning differences between gifted students and their age-peers, reported a number of studies which suggest that gifted students have a stronger internal locus of control; they tend to believe that the capacity to succeed lies strongly within them rather than being a function of environmental factors such as good teachers or a facilitative classroom. They may resent being placed in a situation where they can see that their learning is being

hampered by external sources. These students may be better served by being allowed to work individually on tasks or projects which they design and negotiate with the teacher, or in pairs with ability peers who have similar learning styles. Mentorships - where the school arranges for the student to work on a regular basis with an adult expert in his or her field of interest - can be of enormous benefit to these students.

Type 3 students are the ‘underground’ gifted - students who place enormous value on peer acceptance and who may deliberately underperform in order to achieve this. The difference between the speed of learning of the gifted student and his or her age-peers and the differences in the learning strategies they use can make it difficult for them to work productively in problem solving tasks.

Again, this may relate to the gifted student’s preference for ‘front end analysis’ - taking a greater time to analyse the nature of the problem, plan the sequence of steps that will be taken to work on it and predict what the answer is likely to be, **before** actually beginning the process of problem solving. When this is at variance with the preference of other children to ‘dive’ into the problem and solve it as they go along, the gifted student may be placed in another form of ‘forced-choice dilemma’. Does she work apart from the group, using her own preferred strategies but risk being seen as different or ‘apart’, or does she stay with the group even though their preferred learning style may simply not work for her? If her need for peer acceptance motivates her to stay with the group, she may not learn as effectively as she would on her own.

In Core Module 4 we described Betts and Neihart’s **Type 4**, ‘dropouts’ as ‘physically present in the classroom but intellectually and emotionally quite divorced from it’. They are resentful, depressed and angry with adults and with the system which they feel has failed them by ignoring their needs. These are usually secondary school students although some reach this unhappy stage in the upper years of primary .

Often the ‘dropout’ has interests or even passions which lie outside the curriculum and which are not catered for by the school. However, there may be another cause. Research has found that highly gifted children pass through the Piagetian stages of cognitive development earlier and faster than their age-peers (Rogers, 1986). The majority seem to reach the highest level - the formal operations stage - before age 12, several years before their age-peers will reach this stage. Unfortunately, secondary schools do not respond well to this developmental advancement. Indeed, in many education systems the curriculum presented in the ‘key learning areas’ in the first year of secondary education is largely a review of the curriculum presented in the last year of primary. (For an analysis of just how much work in those Years is revision of previous work, you may want to re-read Miraca Gross’s article ‘To group or not to group: Is that the question?’ which you received as a support article with Core Module 6.) For the gifted learner who has been spending much of his class time waiting for the others to catch up, the realisation that high school may be simply ‘more of the same’ may be the last straw.

Betts and Neihart recommend that ‘dropouts’ be assisted with mentorships and allowed to engage in in-depth study in their field of special interest. It is important to rescue these students before they indeed become dropouts from the system.

Type 5 ‘double-labelled’ or ‘twice-exceptional’ students are indeed a group at risk. These students may be physically disabled (eg gifted hearing impaired or gifted visually impaired students or gifted students with cerebral palsy), emotionally or behaviourally disabled (eg gifted autistic students or gifted students with Attention Deficit Disorder (ADD) or Attention Deficit Hyperactivity Disorder (ADHD)), or students with specific learning disabilities. These students may be very confused about their ability to perform. They are aware that they are very bright and they may also be aware that they are much more emotionally mature than many of their age-peers but they may not understand why there are such discrepancies between the ways they think and the ways in which they express themselves.

It is important that teachers accept that the learning characteristics of gifted students which we have discussed in this Module and in Core Module 1 are also present in twice exceptional students, even if they are not so immediately visible.

Disturbingly, a study of gifted learning disabled students (Reis et al., 1995) found that 50% of them had been made to repeat a year at school and that they felt deeply ashamed about this, knowing that they were bright but performing below their potential. Ironically, researchers have recently suggested that for these students a grade advancement can be combined with remediation because gifted students, even those with learning difficulties, do not need as much repetition of instruction as their age-peers of average ability. For a review of this research, read Sidney Moon and Sally Reis’s chapter on acceleration and twice-exceptional students in Volume 2 of *A nation deceived: Why schools hold back America’s brightest students* (Colangelo, Assouline & Gross, 2004). This is accessible online at: <http://www.nationdeceived.org>

Betts and Neihart strongly recommend that twice-exceptional students be placed in gifted programs. Mentorships, where the gifted student is paired with an adult mentor who will focus on the student’s strengths while assisting him to compensate for his disabilities, are specifically recommended.

Type 6, ‘autonomous learners’, tend to be very self-directed with a strong internal locus of control. In general these are students whose natural learning styles, some of which are discussed in this Module, have been accepted and facilitated by the school. An important goal of gifted programs is to assist all gifted students to become autonomous learners.



Jordan is one of the brightest students your school has had in many years. He is six years old and in Year 1. He is a quiet, reflective little boy who is often seen standing apart in the playground, watching the other boys play but rarely being invited to join the game. Indeed, he doesn't seem interested in joining in. Ms Peters, the Year 2 teacher, once commented, 'He's so detached. He's just watching. He's like an anthropologist studying a strange, different race of people.'

When he does feel like playing, Jordan gravitates towards the girls, who generally accept him but even then he doesn't seem to engage emotionally.

How could what you have learned in this Module help to 'explain' Jordan?

How could what you have learned in this Module help to ‘explain’ Jordan?

Do you know Jordan’s actual level of ability? Is it possible that he is highly gifted - or even at a level higher than that? He may have very little in common with his classmates in the way he learns, his interests, or the games he likes playing. Clearly, they seem strange to him and he may seem strange to them. As discussed in Core Modules 1 and 3, he is probably already able to make social comparisons and he may consciously realise how different he is.

In Extension Module 3: Social and Emotional Development, we will look at the research that shows that intellectually gifted children tend to have different conceptions and expectations of friendship from those of their age-peers. Although he is only in Year 1, Jordan may be looking for the types of friendships enjoyed by Year 3 or 4 students where conversations about shared interests are as important as shared play. He may not be able to find another Year 1 student who is ready for this type of friendship.

As we have discussed earlier, gifted children tend to gravitate towards older children. They provide a better intellectual and social match.

Does your school have a different part of the playground, or even a separate playground, for the K-2/R-2 students? If so, this may be cutting Jordan off from older children with whom he plays outside school and with whom he would prefer to be at recess and lunchtime.

Questions for Reflection

(1) You have now been introduced to three of the best known definitions and models of giftedness. Gagné's Differentiated Model of Giftedness and Talent (DMGT), Renzulli's 'three-ring' model and Tannenbaum's 'sea star' model.

Which model do you believe would be most useful and practical in your school setting? What are your reasons for making this judgement?

(2) Having read, discussed and thought about the learning characteristics of gifted students which we have presented in this Extension Module, are there students in your class, faculty or school whom you had not previously believed might be gifted but whom you might now want to look at more closely?



Resources

References and Further Reading

- Betts, G. T. & Neihart, M. (1988). Profiles of the gifted and talented. *Gifted Child Quarterly*, 32 (2), 248-253.
- Colangelo, N., Assouline, S.G., & Gross, M. U. M. (2004). *A nation deceived: Why schools hold back America's brightest students*. Iowa City: University of Iowa. Available online, at: <http://www.nationdeceived.org>
- DeHaan, R. F. & Havighurst, R. J. (1957). *Educating gifted children*. Chicago: University of Chicago Press.
- Freehill, M. F. & McDonald, J. (1981). Zeal: Essential to superior intellectual achievements? *Gifted Child Quarterly*, 25, 123-127.
- Galton, F. (1869). *Hereditary genius: An inquiry into its laws and consequences*. London: Macmillan.
- Getzels, J. & Jackson, P. (1962). *Creativity and intelligence. Explorations with gifted children*. New York: Wiley.
- Gross, M. U. M. (2003). *Exceptionally gifted children* (2nd edition). London: RoutledgeFalmer
- Gross, M. U. M. & Van Vliet, H. E. (2005). Radical acceleration and early entry to college: A review of the research. *Gifted Child Quarterly*, 49, 154-171.
- Hollingworth, L. S. (1926). *Gifted children: Their nature and nurture*. New York: Macmillan.
- Hollingworth, L. S. (1931). The child of very superior intelligence as a special problem in social adjustment. *Mental Hygiene*, 15 (1), 3-16.
- Hollingworth, L. S. (1942). *Children above IQ 180*. New York: World Book
- Jarrell, R. H., (1990). & Borland, J. H. (1990). The research base for Renzulli's three-ring conception of giftedness. *Journal for the Education of the Gifted*, 13 (4), 288-308.
- Janos, P. M. (1983). The psychological vulnerabilities of children of very superior intellectual ability. Unpublished doctoral dissertation. Ohio State University.
- Kaye, D. B., & Sternberg, R. J. (1983). Development of lexical decomposition ability. Unpublished thesis. New Haven, CT: Yale University.
- Ludlow, B. L., & Woodrum, D. T. (1982). Problem-solving strategies of gifted and average learners on a multiple-discrimination task. *Gifted Child Quarterly*, 26, 99-104.
- MacKinnon, D. W. (1964). The creativity of architects. In C. W. Taylor (Ed.) *Widening horizons in creativity*. New York: Wiley.
- Marland, S. P. (1972). *Education of the gifted and talented, Volume 1, A report to the Congress of the United States by the US Commissioner of Education*. Washington, DC: US Government Printing House.
- O'Connor, M. & Hermelin, B. (1979). Intelligence differences and conceptual judgment. *Psychological Research*, 41, 91-100.
- Reis, S. M., Neu, T. W., & McGuire, J. M. (1995). *Talent in two places: Case studies of high ability students with learning disabilities who have achieved*. Storrs, CT: National Research Center on the Gifted and Talented.
- Renzulli, J. S. (1987). What makes giftedness ? Re-examining a definition. *Phi Delta Kappan*, 60, 180-184, 261.
- Renzulli, J. S. (1986). The three-ring conception of giftedness: A developmental model for creative productivity. In R. J. Sternberg & J. E. Davison (Eds.). *Conceptions of giftedness* (pp. 53-92). New York: Cambridge University Press.
- Renzulli, J. S. & Smith, L. H. (1980). The revolving door model: An alternative approach to identifying and programming for gifted and talented students. *G/C/T*, 15, 4-11.
- Ricca, J. (1984). Learning styles and preferred instructional strategies of gifted students. *Gifted Child Quarterly*, 28, 121-126.
- Rogers, K. B. (1986). Do the gifted think and learn differently? A review of recent research and its implications for instruction. *Journal for the Education of the Gifted*, 10 (1), 17-39.
- Rogers, K. B. (2002). *Re-forming gifted education: How parents and teachers can match the program to the child*. Scottsdale, AZ: Great Potential Press.
- Schunk, D. H. (1987). Peer models and children's behavioral change. *Review of Educational Research*. 57, 149-174.
- Sternberg, R. J. (1977). Component processes in analogical reasoning. *Psychological Review*, 84, 353-378.
- Sternberg, R. J. (1986). *Intelligence applied: Understanding and increasing your intellectual skills*. New York: Harcourt Bruce Jovanovich.
- Sternberg, R. J. & Davidson, J. E. (1982). The mind of the puzzler. *Psychology Today*, 16, 37-44.
- Tannenbaum, A. J. (1983). *Gifted children: Psychological and educational perspectives*. New York: Macmillan.
- Tannenbaum, A. J. (2003). Nature and nurture of giftedness. In N. Colangelo & G. A. Davis (Eds.) *Handbook of gifted education* (3rd edition) (pp. 45-59). Boston: Allyn and Bacon.

Websites

<http://www.gifted.uconn.edu>
(The University of Connecticut)

<http://www.nationdeceived.org>
(Practical advice on acceleration)

Companion articles, reprinted with publishers' permission

Tannenbaum, A. J. (2003). Nature and nurture of giftedness. In N. Colangelo & G. A. Davis (Eds.) *Handbook of gifted education* (3rd edition) (pp. 45-59). Boston: Allyn and Bacon.

Gross, M. U. M. & van Vliet, H. (2005). Radical acceleration and early entry to college: A review of the research. *Gifted Child Quarterly*, 49 (2).