IN SEARCH OF ACADEMIC EXCELLENCE

An Evaluation of the Work of CTYI

by

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I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of Masters in Education is entirely my own work and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

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Date: 11th Oct 96

This thesis is dedicated to the memory of my father, Thomas O' Reilly, 1925 - 1995.

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ABSTRACT

This thesis examines the work of the Irish Centre for Talented Youth (CTYI) over a two year period between the years 1994-1996. It evaluates the means by which CTYI identify academically talented 12-16 year olds and explores the rigorous and challenging coursework that it provides for the highly able student. The research is both quantitative and qualitative in focus, assessing how students, instructors and other key programme personnel view the CTYI experience. The Centre offers fast paced enrichment courses during the Summer and on Saturday mornings throughout the year. Participants on these courses are assessed in terms of both academic and social satisfaction. Comparative analysis between students who took part in a CTYI programme and those enrolled in secondary schools is conducted using the Myers-Briggs Type Indicator, a self review personality measure representing behavioural preferences and preferred self-descriptive adjectives. The thesis concludes with the current status of education for the academically talented in Ireland with recommendations for future practice.

CHAPTER 1

Introduction

The Johns Hopkins Experience

For over 15 years now, the Center for Talented Youth at Johns Hopkins University (CTY) has been evolving in response to demands from students and their parents for rigorous programmes which challenge students at the pace and level dictated by their abilities (Durden and Tangherlini, 1993, p. 10). CTY was formally established in 1979 as an education centre for academically able children and adolescents. Since then, it has identified over 300,000 highly-able seventh-grade pupils by means of regional, national and international talent searches, providing educational and career guidance to pupils who have qualified. The main activities for these highly able students are three-week residential summer programmes, which have taken place since 1980. By the summer of 1992, over 3,500 pupils from all over the United States and some 30 other countries had participated in these programmes, which are located at five college sites in New York, Pennsylvania, Massachusetts, and California, as well as on the Johns Hopkins campus in Baltimore.

At the core of CTY's approach to learning is Julian Stanley's (1976) discovery that students demonstrating ability in the top percentile for their age group on a standardised test of aptitude (e.g., the Scholastic Aptitude Test) are capable of learning material usually reserved for much older students at an accelerated pace. Many instructional techniques are borrowed from the university setting, but modified for use with adolescents (Tangherlini and Durden, 1993). Teachers are seen as mentors, to lead class discussions and to bring the best out of students to enable them to reach their full potential.

Optimal Match

At the heart of CTY's instructional approach is a characteristic common to all effective approaches in nurturing intellectual talents: The Optimal Match Principle (Durden and

Tangherlini, 1992). Simply stated, an appropriate education experience is one which challenges the individual to perform at a level just beyond his or her cognitive grasp (Redding, 1989). Once a student has mastered a subject on a given level, he or she must be allowed to proceed to the next stage. An optimal match is the adjustment of an appropriately challenging curriculum to match a student's demonstrated pace and level of learning. Nancy and Robinson (1982) believe that the optimal match assumes the following principles:-

- Learning is sequential, developmental and relatively predictable; one can assess a student's progress in mastery of orderly sets of concepts and skills.

- Once a learner has mastered a given level or stage of understanding, it is time to proceed to the next level. Delay will result in boredom, while too rapid a pace will cause confusion and discouragement. An optimal match, an appropriate challenge, results in conceptual depth, intellectual excitement, and growth.

- There are substantial differences in skills and knowledge among children of a given age that primarily reflect differences in their rate of learning. Individual differences characterise not only general intelligence, but more importantly for educational purposes, specific subject areas, e.g. mathematics, foreign languages, literature and science. One student may be more advanced in some domains than in others. Providing for the optimal match involves taking these differences into account.

Durden and Mills (1992) point out that CTY advocates that schools aspire to the ideal of achieving the optimal match between each student's needs and the school system. If the student demonstrates a high level of ability in a particular subject, or a high level of interest and achievement, then these needs exist. If they cannot be adequately met within a school programme, some degree of intervention is needed.

Origins of the Irish Centre for Talented Youth

In 1992, the Irish Centre for Talented Youth (CTYI) was established at Dublin City University to meet a long-felt need in Irish education by providing recognition, encouragement, and challenge for intellectually talented students, in addition to guidance for their parents and teachers. The Centre is committed to nurturing and challenging academically talented young people, and assisting them to fulfil their academic potential. The Irish Centre for Talented Youth has a five-fold mission, with the following aims:-

1. To identify through national and international talent searches pre-college children who reason extremely well mathematically and/or verbally;

2. To provide talented youth both from Ireland and overseas with challenging and invigorating coursework and related educational opportunities through an annual summer programme, and selected experiences during the school year;

3. To provide teacher training and support services to schools participating in the CTYI programme;

4. To assist parents in advancing talented students by providing access to information and resources;

5. To research and evaluate talent development and the effectiveness of programme models and curriculum provision.

Under the guidance of Programme Director Dr. Sheila Gilheany, the courses on offer would be fast-paced and cover material in more depth and at greater levels of complexity than is usual at post-primary school. Students would also have access to subjects they would not normally cover, and the courses would be of first-year university standard under the tutelage of an experienced instructor with an expert subject knowledge. CTYI

programmes are designed to address the talents most closely associated with academic accomplishment and professional attainment in society.

Aims and objectives of this research

The primary aim of this research is to look at the various components that constitute the work of CTYI, and analyse them, both individually and collectively. This constitutes an evaluation of the programme which will determine the effectiveness of CTYI in attaining their objectives. The main focus of the research will examine the work of the Centre in adhering to its mission statement over a two-year period, from 1994 to 1996.

In Chapter 2, the research will look at some key areas in the education of highly talented students to give an overview of the project. While there are many issues in the education of the academically able that are relevant today, this research will focus on areas that are critical in understanding the work of CTYI. Firstly, an overview of the historical background to gifted education will be presented, including an examination of the growth of intelligence tests and some different theories of intelligence, with emphasis on the works of Alfred Binet, Lewis Terman, and Julian Stanley. The areas of acceleration and enrichment will be analysed, outlining the work of the Study of Mathematically Precocious Youth (SMPY) in pioneering the use of fast-paced classes to advance the techniques of highly able young students. Classes for the talented student depend on the ability of a good instructor to motivate and inspire them. This research examines the factors that make a good instructor for the highly-able student, including recommendations from senior staff at CTY at Johns Hopkins University. The influence of family in providing an environment conducive to academic growth is a crucial issue in the development of any student. This research explores studies of families of gifted students, with particular attention paid to birth order and environmental factors. Finally, the literature on programme evaluation is reviewed in an attempt to determine what

constitutes an appropriate evaluation for a programme like CTYI. This will look at the issues involved in meeting student needs and aspirations.

CTYI aims to identify post-primary students who exhibit excellent ability in mathematical and/or verbal reasoning through a nationally conducted talent search. Chapter 3 will examine this identification procedure, beginning with an overview of the Talent Search itself. This involves a definition of what a talent search actually is, and a historical perspective of the topic itself. The main body of this chapter will be student responses to the talent search questionnaire for 1995 and 1996. All students who participated in the Scholastic Aptitude Test under the auspices of CTYI were sent a copy of this questionnaire, and the results are analysed here. The questionnaire was designed specifically for Irish Talent Search participants, and primarily for the purposes of this research. The questionnaire contains demographic information and questions that aim to ascertain the perceptions of the talented student in terms of his/her home and school life. The responses will be examined, firstly with regard to the overall group who participated in the test, this group having already been identified as talented through nomination by their parents, teachers, or school counsellors. The data will then be analysed in terms of qualifiers for the summer programme and non-qualifiers. The research hopes to identify differences between these groups in terms of the highest level of education achieved by their parents, their opinions on subjects at school, leisure interests, and aspirations for the future. The research will also look at the make-up of the qualifiers for the programme, contrasting Mathematics and Verbal qualifiers with Mathematics only and Verbal only qualifiers on the SAT.

The CTYI summer programme runs two three-week sessions over a six week period during the months of July and August. It offers intensive fast-paced instruction in academic courses for talented students who qualify on the SAT in Ireland and overseas. Chapter 4 evaluates this challenging coursework using a questionnaire administered to the

students of the summer programme in 1995. This questionnaire analyses the CTYI course in terms of academic and campus life. On the academic side, the level of satisfaction and the performance of the instructor and teaching assistant are rated by the students. This research aims to find out how students on the summer programme view the atmosphere at CTYI compared to that of school. It also views the level of intellectual challenge and stimulation within the framework of CTYI. Some 25% of the students on the summer programme are American. This research aims to examine their experience and contrast it with that of the Irish students. Outside of classtime, the students' activities are co-ordinated by a large residential staff. As their social experience constitutes a major part of their time at CTYI, this research looks at the level of satisfaction with their residential experience, and examines whether coming on the programme has had any influence on their self-confidence. The academic, residential and leisure facilities offered by Dublin City University are also looked at in terms of their contribution to the overall enjoyment and well-being of the students during the programme.

Many students and staff return to CTYI year after year. Chapter 5 examines the impact that CTYI has had on their lives to date. This is done through taped interviews with 30 students who had attended the summer course every year since the inaugural year of 1993. The research was interested in finding out the academic effects of coming on the programme for these students. It was also interested in finding out what these students thought about the different atmosphere in the classes at CTYI, the teaching style, and the pace of the classes. This research is qualitative in focus, and attempts to reinforce the quantitative data of the Summer Course Evaluation Questionnaire. The students were also asked to outline the social effects of the programme on their lives. Having experienced the programme for three years, it was believed that this could have had significant impact on their social development. The research was also interested in the reasons they may have had for returning to the programme each year, and whether they felt that the academic or

the social side of the programme was more important. The programme is also evaluated through observation of the daily routine, and discussions with people who influence the lives of the students during their time on campus, both in and out of class. Finally, the chapter contains an interview with the programme director, Dr. Sheila Gilheany, in an attempt to record her vision of the work of the Irish Centre for Talented Youth. It was hoped to analyse her responses, and evaluate whether they were in line with the students' perceptions of the course. This interview also served to gain valuable insights into CTYI's future, and the path the Centre intends to follow to take it there.

During the year, CTYI organises Saturday classes for talented students in various subjects. These courses are ten weeks in duration, and aim to broaden the students' minds in a variety of areas they would not normally tackle at school. Chapter 6 aims to look at the students involved in these classes in order to ascertain their achievements, ambitions, and level of satisfaction. This would be achieved through administering a questionnaire to the students on the first and last days of the programme. Saturday classes offer something of a year-round commitment from CTYI to address the needs of the talented student. This chapter assesses the impact of these classes, and whether they contribute to the development of self-direction in learning for the talented adolescent. The research also hopes to assess the level of comfort with ability of the students at the start of the ten week programme, and once again at the end.

Jung's (1923) theory of psychological types is based on four mental processes - two perception processes (**sensing** and **intuition**) and two judgement processes (**thinking** and **feeling**). Each thought that comes into our consciousness must be encoded and interpreted by the Perception process, either through the senses or by intuition. They are then in turn, evaluated and analysed by the Judgement processes, thinking and feeling. This personality theory was developed further by Katherine Briggs and Isabel Myers to form the Myers-Briggs Type Indicator (MBTI), a personality measure using a series of forced questions

representing behavioural preferences and preferred self-descriptive adjectives. The aim of the MBTI is to identify from self-report of easily recognised reactions the basic preferences of people with regard to perception and judgement. The MBTI contains four separate indices, extroversion-introversion (EI), sensing-intuition (SN), thinking-feeling (TF), and judgement-perception (JP). A main objective of the MBTI is to identify four basic preferences from each index so that the four indices yield sixteen possible combinations, called types, denoted by the four letters of the preferences, e.g. INTJ, ESFP. Chapter 7 reviews the administration of the MBTI to participants on the CTYI summer programme and children in regular schools. The results are analysed between the two groups to see if they yield significant differences in the four preferences and in the sixteen types. If one takes teaching style into account, the implications of these differences could be far-reaching. This chapter contrasts the results of CTYI students with males and females from an overall school population, and also between American and Irish students who attended the CTYI summer programme.

Note:

The Irish Centre for Talented Youth, like its counterpart at Johns Hopkins University, does not advocate using the term ***"gifted"*** *when referring to their students. They feel that this term should be reserved for individuals who have made significant contributions to the advancement of knowledge and practice. However, the term can mean many things to different people, and it is impossible to assess the literature in the area of academic excellence without coming across the phrase. The term* ***"gifted"*** *is used occasionally in this thesis in the context of works of other authors who use it in its more general sense.*

CHAPTER 2

Background to the Research

Historical overview

In his work Hereditary Genius (1869), Sir Francis Galton focused on subjects of exceptionally high mental ability, Galton believed that two general qualities existed that distinguished the more from the less intellectually able. The first was energy, as Galton believed that intellectually gifted individuals were characterised by high levels of energy. The second quality was sensitivity, Galton observing that the more heightened the senses, the greater the range of information on which intelligence could act. Galton designed psychophysical tests which he felt could determine excellence. One of these tests was weight discrimination, whereby blindfolded subjects were given identically sized boxes of differing weight, and asked to arrange them in order of weight. The weights formed a geometric series of heaviness, and the examiner recorded the finest interval which the subjects could discriminate. Galton believed that similar geometric sequences could be used to test the other senses. There was little correlation between these mental tests. But Galton's tests, however flawed from a methodological point of view, did succeed in adding to the understanding of human intelligence.

Binet and Simon (1916) theorised that intelligent thought was composed of three distinct elements: direction, adaptation and criticism. The Binet tests consisted of a variety of exercises to measure higher-order thinking abilities. One such exercise could be a test to determine whether two year old children could match different shapes to their corresponding slots on a board. Suitable tests for six year olds could be word definition, or "odd-one-out" puzzles. By fourteen, tests would involve reasoning and ingenuity. Binet's theory was much closer in its conception to real-world intelligence than was Galton's. His test items, distant as they were from real-world problem-solving and decision-making techniques, were better predictors than were those suggested by Galton (Sternberg 1993).

The work of Lewis Terman (1877 - 1956)

In 1916, Terman converted the Binet Test into an Intelligence Quotient (IQ) calculated by dividing mental age by chronological age and multiplying by 100. Terman believed IQ to be constant, making it possible to predict the IQ of an adult in childhood. The Terman test, known as the Stanford-Binet Scale, became, and to a large extent still is, the definitive test of intelligence. Its items are arranged in blocks of six, covering the age levels two to fourteen years, with additional tests for average and superior adult levels.

Terman pioneered the use of IQ in detecting high levels of intelligence, and in 1925 designed one of the first complex studies to determine indicators of high intellectual ability. His long-term study investigated the lives of 1528 school children with an IQ of 135 or higher. In early practice, the term "genius" (Galton, 1869) was used to denote people of highly superior ability, but the huge influence of Terman's studies saw a gradual shift to the term "gifted" (Feldhusen and Jarwan, 1993). The research did determine several differences between gifted and less gifted students. For example, gifted children were often able to walk about one month earlier, and their language development began about 4 months earlier than less gifted children (Perleth, Lehwald and Browder, 1993). Parental interviews suggested that these children could be characterised by rapid comprehension, familiarity with things, large vocabularies, excellent memories, and an unusual interest in numerical relationships (Terman and Oden, 1947).

One important outcome of Terman's research was that precocious children were no longer thought of as mutants who possessed some kind of freakish power bestowed upon them by accident (Tannenbaum, 1993). Up until Terman's study was published, a common misconception was that eminent individuals were in some way psychotic or pathological (see Lombroso, 1910; Lange-Eichbaum, 1932; Becker, 1978). Terman and his associates found that highly gifted children, far from being sickly, unstable and anti-social, were in

fact intellectually, physically and emotionally superior to average children, and that this superiority was maintained into adulthood (Terman and Oden, 1959)

Government definitions of high ability

The Marland Report (1972), a definition of giftedness by the US Office of Education is probably the most quoted publication in any research into giftedness. The report declared that

gifted and talented children are those identified by professionally qualified persons, who by virtue of outstanding abilities are capable of high performance. These are children who require differentiated educational programmes and/or services beyond those normally provided by the regular school programme in order to realise their contribution to self and society.

Children capable of high-performance include those with demonstrated achievement and/or potential ability in any of the following areas, singly or in combination:-

- General Intellectual Ability
- Specific Academic Aptitude
- Creative or Productive Thinking
- Leadership Ability
- Visual and Performing Arts
- Psychomotor Ability

The Irish definition as offered by the report of The Special Education Review Committee in 1993 owes much to Marland's definition, with each of the above categories represented, and a separate section on mechanical aptitude included.

In the UK, the schools inspectorate (HMI, 1977) also developed a definition of the "gifted child". They were interested in investigating the situation of unusually-able youngsters in

British schools. Their definition was a lot more specific than that of the US. According to this definition, gifted children are those:-

- who are generally recognised by their school as being of superior all-round intellectual ability, confirmed where possible by a reliable, individual intelligence test, giving an IQ of 130 or more;

  or

- who exhibit a markedly superior developmental level of performance and achievement, which has been reasonably consistent from earlier years;

  or

- of whom fairly confident predication are being made as to continual rapid progress towards outstanding achievement in either academic areas or in music, sport, dance or art

  and

- whose abilities are not primarily attributable to purely physical development.

Components of intelligence

Spearman (1904) sought out empirical tests of the similarities and differences between various mental tests and school performance measures. Many of these seemingly diverse tests had strong correlations. This led him to postulate a general intelligence factor known as "*g*". the relationship between tests was attributed to the general factor between tests. Systematic differences between each test were accounted for by postulating different specific factors of intelligence, known as "*s*", which the various tests also measured. The concept that intelligence is categorised by general underlying ability and certain task-specific abilities has been developed by British researchers (see Burt, 1968).

Renzulli's (1978) "three-ring" model of giftedness was highly influential in the field, delineating the following as the basic components for the construct:-

1. Above average ability

2. Task commitment

3. Creativity.

Taking above-average ability to incorporate high intelligence, this theory points towards a general factor in intelligence. Studies by Tannenbaum (1983) recognising general ability, special ability, non-intellective factors, environment factors and chance factors as components of giftedness, and Sternberg and Davidson (1986) also point towards portraying giftedness as a general condition and construct.

Other studies point towards special talents or attributes. The widespread use of traditional instruments like the Revised Stanford-Binet Test has led to practitioners suggesting alternative approaches, and in the process creating a receptive scientific environment for imaginative and inventive constructs (Elkind, 1971; McClelland, 1973; Bracken, 1987). However, the most publicised work of recent years must be that of Howard Gardner (1983), who proposes the theory that the human organism possesses seven distinct units of mental functioning, which he labels as "intelligences". He also asserts that these separate intelligences have their own specific sets of abilities which can be observed and measured. Gardner's theory is discussed further in relation to the Myers-Briggs Type Indicator in Chapter 7. Gardner's seven intelligences are described in the following table (Gardner & Hatch, 1989):-

Gardner's Seven Intelligences
Logical/mathematical Sensitivity to, and capacity to discern, logical or numerical patterns; ability to handle long chains of reasoning END STATES: Scientist, Mathematician
Linguistic Sensitivity to the sounds, rhythms and meanings of words; END STATES: Poet, journalist
Musical Abilities to produce and appreciate rhythm, pitch and timbre; appreciation of the forms of musical expressiveness. END STATES: Composer, Violinist
Spatial Capacities to perceive the visual-spatial world accurately and to perform transformations on one's initial perceptions END STATES: Navigator, Sculptor
Bodily- kinaesthetic Abilities to control one's body movements and to handle objects skilfully END STATES: Dancer, Athlete
Interpersonal Capacities to discern and respond appropriately to the moods, temperaments, motivations and desires of other people END STATES: Therapist, Salesperson
Intrapersonal Access to one's own feelings and the ability to discriminate among them and draw upon them to guide behaviour; knowledge of one's own strengths, weaknesses, desires and intelligences. END STATES: Person with detailed and accurate self-knowledge

Test types

Intelligence tests

Intelligence tests can be divided into four categories: Individual, Group, Verbal and Non-Verbal. Individual tests are administered personally to one individual, while group tests can be administered to a group of people simultaneously. Verbal tests require reading or language skills, while non-verbal tests do not require language and are useful for those with limited verbal skills. Despite criticisms, intelligence tests remain the strongest indicators of intellectual ability (Gallagher, 1975; Snyderman and Rothman, 1988), and

the most accurate method of identifying gifted children. The Stanford-Binet Intelligence Scale (as discussed earlier) is the most widely used individual test, along with the Weischler Intelligence Scale for Children (WISC-R), which test ages between six and sixteen. Both of these are verbal/individual tests. A popular non-verbal group/individual intelligence test is the Raven Progressive Matrices (RPM), which covers an age range from five to adult. It consists of 60 matrices, graded in difficulty, and is used as an identification measure for the CTYI Young Students Programme.

Aptitude and achievement tests

Standardised achievement tests are used to measure how much students have learned of given subject matter, and can measure the high level of achievement in talented students. They can be group or individual tests. Standardised Achievement Tests provide national norms based on performance in a large sample. Because of the low ceiling on most grade-level achievement tests, Feldhusen and Jarwan (1992) recommend a high-level test for identification of gifted children. The Differential Aptitude Test (DAT) is an aptitude battery which can be used with Junior and Senior high school students in the United States, and post-primary students in Ireland. It measures verbal reasoning, numerical ability, abstract reasoning, space relations and accuracy. Stanley (1984) suggested using the test as a screening method for intellectually talented students at the end of the seventh grade (12 - 13 years). Reliability and validity of the DAT are high, and the test is viewed as an excellent measure of special ability. The Scholastic Aptitude Test (SAT) has been used as a college entrance exam since 1926. The Centre for Talented Youth uses the SAT as an off-level test for identifying young people with exceptionally high mathematical and verbal ability at seventh and eight grade/first and second year level. The SAT is a highly reliable and valid test for the assessment of verbally and quantitatively precocious youth. For further discussion of the Scholastic Aptitude test see chapter 3.

Acceleration and enrichment

Pressey (1949, pg. 2) defined acceleration as "progress through an educational programme at rates faster or at ages younger than conventional". Three assumptions can be identified in this definition. Firstly, it presupposes an educational programme in which content, tasks and skills are defined for each level of instruction. Secondly, it assumes that there is a pace of instruction that may at least be inferred to be suitable for most students. Thirdly, and most importantly for this research, it assumes that some children are capable of mastering the standard curriculum faster, and thus are capable of more rapid progress. Pressey's definition sets two criteria for accelerated advancement: higher-than-average achievement, and the ability to master the material at faster rates compared to age-level classmates (Southern, Jones and Stanley, 1993).

While acceleration is defined as more rapid than typical advancement within a given curriculum, enrichment can be regarded as a process that extends instruction beyond the bounds of that curriculum Passow (1958) identifies four guidelines for the development of enrichment programmes. He suggested the curriculum be modified in 4 ways:-

1. Greater depth
2. Tempo or pace altered
3. Broadening the range of materials
4. Development of process models

Educational enrichment offers students the opportunity to undertake original research, and to solve problems which would be beyond the interests and abilities of the rest of the class. As there is an indefinite number of possibilities for subject content within an enrichment programme, authors have often used student interest as the major factor for selecting original content. Caplin (1979) describes this as vertical enrichment, while Renzulli (1977) describes enrichment as the study of content above and beyond the

curriculum, and asserts that student interest and learning style should be used to determine the course of study in programmes for the gifted.

Acceleration options

Sisk (1988) identifies some acceleration options open to students in the United States. These include ***Advanced Placement classes*** (AP) which allow talented students to study college-level courses, and receive college credit while still enrolled in high school. Longitudinal studies have shown that AP students are more likely than non-AP students to select an academic career, graduate early and apply to selective colleges (Advanced Placement Programme, 1991). Another option is that of ***Correspondence courses***, taken from major universities while at high school level. This provides opportunities for students from rural areas to have limited access to college facilities. ***Early entrance to elementary school,*** or ***early entrance to college*** are other forms of acceleration. Brody, Assouline and Stanley (1990) found that students who enter college between two to four years earlier than normal make good grades, graduate early and often win awards. ***Extra load*** is a form of acceleration where students can take as many high school courses as they wish, which may include time out for students to take college courses and receive credit. Finally there are ***fast-paced classes*** where students learn content far more rapidly than in traditional approaches. From 1971 the Study of Mathematically Precocious Youth (SMPY, a predecessor of CTY) has pioneered the use of fast-paced classes in Mathematics (George and Denhan, 1976; Stanley, 1976). According to Robinson (1983), they emphasise acceleration for three reasons:-

1. Learning is a sequential and developmental process;
2. There is a large difference in learning status among individuals at any age;
3. The acquisition and development of knowledge follows predictable sequences, and children progress through these sequences at varying rates.

SMPY also pioneered the ***Diagnostic Testing-Prescriptive Instruction*** (DT-PI) approach to accelerate students. Benbow (1986) describes this technique as suitable in individual and group settings. It involves administering standardised tests followed by analysis of items missed to determine weaknesses, and then designing an instructional programme targeting these weaknesses. Finally the subjects are retested on a parallel test to determine mastery. The students then move on to a higher level, and repeat the process.

Acceleration or Enrichment?

Studies of acceleration contain an overall message: acceleration contributes to achievement (see Gallagher, 1975; Daurio, 1979; Kulik and Kulik, 1984). In terms of social and emotional development, no harmful effects have been listed (Keys, 1938; Pressey, 1949; Hobson, 1963; Daurio, 1979). There is much debate over whether enrichment or acceleration is the best means of developing the potential of the talented child. Renzulli (1979) questioned whether progressing through the curriculum at a faster pace than usual met any of the important needs of gifted students. Stanley (1978) on the other hand believes that enrichment eventually leads to frustration as the talented student will need to accelerate at some stage during the enrichment programme. Daurio concluded that acceleration seems to be the more feasible method for meeting the needs of gifted students. However, if enrichment exists in the form of original curriculum and problem-solving beyond the boundaries of the regular curriculum, it may be viewed as acceleration (McLeod and Cropley, 1989, pg. 195). Fox (1979) observed that the two terms are complementary rather than conflicting. In the case of Ireland and CTYI, skipping a year in secondary school is not that viable an option unless it is the transition year which follows the Junior Certificate. CTYI offers fast-paced classes in an intensive learning environment. The content matter may be more in-depth than the student would be used to

at school, or the student may be exposed to new areas with which they may not be familiar. In this way, the classes at CTYI are both accelerative and enriching.

Families of the talented adolescent

Much of the early research into talented adolescents centres around their IQ scores (Terman, 1925; Hollingworth, 1942). There have been few studies investigating family relationships or processes within the family (Cornell, 1981). In 1975, Zajonc and Markus introduced their "confluence model" to predict children's intelligence on the basis of the number and age spans of children in the family. Elder children and children from smaller families tend to be more intelligent than other children. The eldest child benefits from the adult-level intellectual environment created by the presence of two parents and no other children. In contrast, younger children grow up in an environment with a lower average intellectual level due to the presence of their non-adult siblings.

Birth order

As far back as 1869, Galton noted that a high number of eminent individuals had been the eldest children in their families. Galton pointed out that first-born children are more likely to be treated as companions that as subordinates by their parents, that they are given more responsibility at an earlier age, and therefore are more likely to develop independence of thought. Albert (1980) observed that 75% of presidents, prime ministers and Nobel laureates occupied special positions in their families. By special he meant they were either the eldest, the oldest surviving, or the youngest born after several years. Albert theorised that birth order can determine the child's psychological role within a family, with the first-born receiving greater encouragement to adopt the role of leader or seek his or her own independence. He proposed that where the first-born child already possesses a special aptitude, these family dynamics may combine with the child's gift to encourage the

development of his or her potential. Pfouts (1980) believed that first-born children have more and closer interaction with their parents than children born further down the family line, and that this results in superior language acquisition.

Gross (1993, p. 103) notes a predominance of first-born children in her literature review on exceptionally gifted children. Terman (1925) noted that 60% of children in his sample were the eldest in their families. Hollingworth in her famous study (1942) of children with high IQs noted that ten out of eleven children surveyed were eldest or only children. Kincaid (1969) reported on 561 children with IQ above 150 and found that 50% were either first-born or only children, and that the mean number of children in the families was 2.7. Barbe (1956) studied family backgrounds of children with high ability and found that parents of these children tended to be better educated than the parents of children of average and below average intelligence, with a significantly lower divorce rate. Barbe also reported that gifted children were often first-born, and that their families were typically small. A study of the National Merit Scholarship Competition in the United States (Altus 1966) showed that among this group, whose mean scores were three standard deviations above the general population, 60% of finalists were first-born. More recently. Silverman and Kearney (1989) studying Colorado children with IQ above 170 reported that 65% of these children were eldest or only children. In Gross' own study she found 29 of the 40 children (72.5 %) to be first-born.

Cicirelli (1976) concluded from other research that models concerned only with characteristics of the family such as number and birth order of children are too simple to have more than limited value. For example, parents frequently have higher achievement expectations for their first-born and may treat the child differently as an infant (Sutton-Smith & Rosenberg, 1970).

Environmental factors

Environmental factors too are critical. McGillivray (1964) found that high achievers' parents rated higher in knowledgeability and interest in both their children's education and various extracurricular activities. Roe (1983) found that in eminent individuals, at least one of the parents tended to be well-educated and of high ability, deeply committed or emotionally intense.

Bloom's renowned study (1985) looked at the lives of 120 young men and women who reached world-class levels of achievement. He concluded that their achievement was made possible by intensive encouragement and teaching, combined with hours of perseverance and patience from their parents. Most of Bloom's subjects came from stable homes where the parents were devoted to the children and prepared to dedicate family time and resources to facilitate their achievements. These parents valued the area of talent development, encouraged and supervised study, and modelled an achieving lifestyle. Colangelo and Dettman (1983) describe the home environment as vital in enabling the highly- able child fulfil their potential.

While the home backgrounds of some eminent individuals are characterised by "conflict, incongruity, rejection, frustration and turbulence" (Albert 1991), little research has been performed on whether talented children from unstable homes fulfil their potential. A key reason for this is because these children may not have been identified initially, and are less likely to enrol in programmes due to lack of encouragement or the necessary finances. In Cheyney's study (1962), the author reports that only 69% of parents in the high socio-economic group recognise their child's high intelligence, while 93% of the parents in the low socio-economic group were aware of their child's exceptional intelligence. However, 87% of the high socio-economic group made special efforts to encourage their child and provide enrichment facilities, while only 69 % of the low socio-economic group made

similar efforts for their child. Cornell (1981, p. 14) reports that Cheyney's study implies that while parents in the low socio-economic group were more likely to be aware of their child's intelligence, they are less likely to follow up and encourage the child to make use of their abilities.

Teaching the academically able

Described by Baldwin (1993) as the person who can cause the programme to fail or succeed, and by Borland (1989, p. 169) as "the most important component of any programme for the gifted", the teacher plays a vital role in the development of the talented adolescent. As Nelson and Cleland (1971, p. 439) put it, "*It is the teacher who sets the environment which inspires or destroys self-confidence, encourages or suppresses interests, and facilitates or frustrates achievement*". Quite simply, the teacher is the most important factor in a programme for gifted and talented students, and serves as a facilitator of learning (Perino & Perino, 1981).

Requirements

Who are the effective teachers of highly talented students? Many educators and writers have addressed this issue. Ward (1961, p. 155) believes that they "*should be deviant with respect to those qualities common to the gifted group*". Newland (1976, p. 148) agrees, stating that "*the intellectual capability of teachers of the gifted should be appropriate to the educational level of their pupils*".

Theoretically, this is a sound principle, however teacher training has traditionally been a self-selection process. While hopefully this process will screen out unsuitable candidates, the question remains as to whether the remainder make suitable teachers of the highly able, since according to Mandell and Fiscus, "*Not everyone should teach gifted students*". Gallagher (1985) writes that while the teacher should possess "superior

intellectual ability", even more importantly they should possess the enthusiasm to seek new ideas in the search for new knowledge. Borland (1989, p. 156) too believes that high intellectual ability is a necessity for teachers of the gifted. He cites four reasons summarised as follows:-

1. Constant interaction with highly knowledgeable and quick-thinking children requires considerable mental ability simply to keep up with such individuals and to perform well in a classroom amongst them.

2. Teachers of the gifted require a secure sense of self-esteem with respect to their own intellectual capabilities. It seems logical that a teacher who is clearly less intelligent than his students is more likely to feel threatened than one who, while admitting that some students know more than he/she does about certain things, is very comfortable with his/her own ability.

3. To serve as an effective role model for these students, the teacher must encourage them to challenge themselves intellectually. They must seek their own truths, preserve their own knowledge under the guidance of an individual who appreciates the subtle joys of intellectual life. For this to happen, the teacher must have a high level of intellectual attainment.

4. The teacher plays a vital role in designing an appropriate curriculum for these students. Structuring contents, skills and tasks for all students requires high ability in itself.

Howley, Howley and Pendarvis (1986) assert that the effective teacher of the gifted should have a strong background in at least one particular area. This is critical for CTYI as Dr. Sheila Gilheany points out: "*The first criterion I look for in an instructor is expert subject knowledge in their own particular field*".

Characteristics

Clark (1983) identified characteristics important for success in teaching the academically talented. They must exhibit the ability to

- understand the characteristics, needs and problems of the gifted
- develop a curriculum through which individual needs can be met and group interaction developed
- create an environment in which the gifted feel safe and yet challenged
- help learners acquire skills in higher levels of cognitive thinking, intuitive development and self-evaluation
- nurture creativity
- encourage a sense of social awareness and responsibility

Thompson and Ramsey (1987) conducted a state-wide survey of public school teachers employed in programs for gifted and talented students and identified characteristics of successful teachers of the gifted. Listed in order of frequency, characteristics cited were flexibility, creativity, intelligence, enthusiasm, willingness to work, a broad knowledge base, an interest in the gifted, understanding nature, organised, patient, having a good sense of humour and possessing the ability to work with students.

The CTY experience

CTY in the US invited fifteen of its senior staff members to give their views on what constituted a successful teacher for highly-able students. They used their expertise from working on summer programmes across the US to decide on the characteristics of a good teacher to these students, and came up with a list of qualities shown below. Modified slightly here to suit an Irish, and in particular, a CTYI context:-

* **Knowledge of subject**

The instructor needs to be a subject specialist, knowing his/her material and hopefully inspiring others to delve deeper into this area.

* **Mental flexibility**

The ability to stretch the boundaries of their subject to incorporate other areas, and to give students the chance to get a grasp of a subject they may be exploring for the first time

* **Using textbooks objectively**

School teachers often live and die by the motto "if it's not in the book, it doesn't exist". This is not, and cannot be the case at CTYI. Knowing the limitations of any textbook is a key factor in the effectiveness of a teacher for the gifted. The student must be encouraged to question and criticise the materials at his/her disposal.

* **An awareness of what excellence is and an ability to demand it**

The teacher must set a high standard for work in his specialist discipline and push the students to the extent that they can hope to attain it.

* **An acceptance of their own limitations**

All too often teachers feel intimidated or threatened by the pupils in their classes. They fear that they do not know enough, and will be "caught out", so that instead of admitting they don't know the answer they try to bluff their way through. A good CTYI teacher lets the student know that they may not have the answer readily available, but promises to research it in time for the next lesson.

* **Both interesting and interested**

The ability to communicate your love of a subject is a fine art which requires practice, but it is equally important to be able to stand back and let the students tell their own stories and reveal how they perceive things.

* **The teacher is first among equals**

Rather than the traditional teacher-pupil structure in which the teacher gives information and the students take notes, the teacher should be capable of bringing the students on a voyage of discovery from which he/she can also benefit.

* **Ability to learn from the classroom**

Gives the students the credit they deserve. Becomes involved and hopes to gain new insights from the student's suggestions.

* **Builder of community**

The teacher is responsible for the atmosphere in the class. He must create an environment where creativity is rewarded and excellence can thrive.

* **Not limited to one teaching method**

No matter how good a teacher may be, if he/she only has one way of presenting material, then it is going to be a long three weeks for the student. The teacher must therefore be familiar with and put into practice a variety of approaches and teaching strategies.

* **Sense of humour**

The teacher must be able to laugh with the class, to be aware of the dynamics of the class and be able to lighten the mood where necessary to help the students relax.

* **The teacher must enjoy teaching**

The teacher clearly enjoys being in the classroom, understands the interplay and talks to students in an informative and careful way. The teacher is good at brining his point across and can communicate to others about the special capabilities of each student.

* **Personal and professional growth**

The teacher is always open to new experience to broaden his/her mind, both personally and professionally. the students serve as a constant reminder of the new generation and the new experiences that lie ahead.

Ethnographic studies

A study by Story (1985) involved an ethnographic design using direct observation and interviews with teachers in the field to discover patterns of behaviour in teachers of the gifted as they guided students involved in independent studies. Six categories of behaviour were established:-

- Teachers of the gifted provide for positive relationships which support learning for gifted children
- The quality and quantity of verbal interaction is a key factor in successful treating of gifted children
- Teachers of the gifted are flexible with their use of time and scheduling according to students' needs
- Teachers of the gifted are process-oriented with children's creative productivity the ultimate goal
- Teachers of the gifted provide or suggest appropriate environmental factors based upon children's independent study interest
- The teacher of the gifted displays "gifted behaviour" as brought to bear upon his/her professional responsibilities

In her review of the literature, Story (1985) asserts that the characteristic deemed most desirable in a selected teacher is that he/she be a facilitator of learning. Stanley (1980) expresses his concern about the futility of training teachers for the gifted because of the teachers' inability to meet the demands of each gifted student. He advocates the use of the term co-ordinator of the gifted to analyse the students' educational needs and to arrange for instruction to meet those needs.

A final point

A fact that is often overlooked is that all teachers who have highly talented students in their classes are teachers of the gifted and need to be viewed as such by both themselves and others (Sheehan, 1988). In view of the fact that the highly-able student requires added stimulation, there is a need to prepare all training teachers to deal with them and to provide in-service courses for all teachers in regular schools to increase awareness. Such preparation would be invaluable in enabling these teachers to gain an understanding of the special needs of the highly able student and to provide new learning experience for their students.

Evaluating programmes for the academically talented

Overview

In analysing the literature of evaluation, one is offered various definitions of the topic itself. The most well- known of these originates from Tyler (1950) who describes evaluation as "*the process of determining to what extent the educational objectives are actually being realised*". While additions to this definition to include merit or worth have been offered by Stake (1967), Scriven (1967) and Stufflebeam (1968), the substance of evaluation remains the same. "*Evaluation is the process of delineating, obtaining and applying descriptive and judgmental information - concerning the merit of some*

object's goals, plans, processes and products in order to serve decision-making and accountability" (Stufflebeam 1978). As Borland (1989) has pointed out, program evaluation consists of critical judgement to determine whether important program goals have been achieved.

Formative or summative evaluation

"The evaluation literature is full of recommendations, models, and admonitions about appropriate practice. Indeed the literature can easily overwhelm anyone trying to decide on fundamental concerns for designing a useful and valid evaluation plan" (Tomlinson & Callahan, 1994). Scriven (1967) was the first to label evaluations as either summative or formative. Summative evaluation would involve measuring outcomes of established programs, while formative evaluation is conducted to improve new programs in transition. Three questions that may be asked in formative evaluation are

1. What are the project's objectives?

2. How does the team plan to achieve them?

3. To what extent are the objectives attained?

Summative, on the other hand, was concerned with providing potential user's and other interested parties with systematic and objective information. This would help them to decide whether or not it was worth investing their own time, effort and money in the particular project. Traditionally, the literature has favoured summative evaluation, but lately the trend has swung towards formative evaluation (Carter and Hamilton 1993). Naturally, the basis of evaluation with CTYI would be formative, as the program is only in the fourth year of existence. The emphasis would be improvement of the program. Cronbach (1982) was responsible for expanding the concept of formative evaluation to include the measurement of program outcomes for the purpose of program improvement.

In Cronbach's model, it is assumed that the program addresses a significant social need and will continue to exist.

Educational evaluation

Perhaps the best review of the literature on educational evaluation was conducted by Nevo (1983). He bases his study by conceptualising evaluations as represented by the following questions:-

1. How is evaluation designed?
2. What are the functions of evaluation?
3. What are the objects of evaluation?
4. What kinds of information should be collected regarding each object?
5. What criteria should be used to judge the merit of an object?
6. Who should be served by an evaluation?
7. What is the process of doing an evaluation?
8. Who should do an evaluation?
9. By what standards should an evaluation be judged?

At the present state of the art in evaluation, it looks like either the evaluator will be wise not to declare allegiance to either a quantitative scientific summative methodology or a qualitative naturalistic descriptive methodology (Cronbach et al 1980)

Firstly, the evaluator must meet with the decision-maker to determine evaluation objects. When these have been selected, the evaluation team selects criteria suitable for making judgements about these objects. These criteria can be outcome-oriented or process-oriented (Tomlinson & Callahan, 1994). Outcome-oriented data can show whether

student-affective and academic growth has occurred as part of program participation . The basic steps of outcome-oriented evaluation are listed by Carter and Hamilton (1985) as:-

1. Identifying or measuring expected outcomes,

2. Creating a research design that answers the questions posed,

3. Collecting and analysing data

4. Evaluating the objects in the light of this data and making recommendations.

Process-oriented data shows whether the program is functioning as it should. Process-oriented analysis is usually qualitative in measure, while outcome-oriented analysis often involves utilising a research design that requires data collection and analysis. In process-oriented evaluation much attention is focused on content. Content analysis is defined as an inspection of existing print material to evaluate program components (Carter & Hamilton, 1985). These components would include identification procedures, program goals and objectives, and curriculum. Tomlinson and Callahan (1994) recommend that as well as the above, one should also use communication between different parties, i.e., school and home observation data as part of a program evaluation for the gifted.

Curriculum may be evaluated through an outcomes approach. When the objectives are specified, the effectiveness can be judged on student performance, i.e. what the student can do now that he was unable to do before the program. Appropriate research designs can be employed to answer questions about the curriculum. An important dilemma revolves around the idea that the gifted will meet the objectives, primarily as a result of the curriculum. The problem here relates to what Borland describes as the "Sanskrit Effect". For example, students in a program for the gifted are exposed to the special curriculum, a year of instruction in Sanskrit, while students in a comparison group

receive no Sanskrit tuition. At the end of the academic year, a test of knowledge of Sanskrit is given to both groups, where it is found that the experimental group significantly outperformed the comparison group, thereby leading to the "dubious" conclusion that the program is an effective form of special education for the gifted.

Evaluation design

"A design is a plan which dictates when and from whom measurements will be gathered during the course of an evaluation" (Fitzgibbon & Morris, 1987). Carter (1986) identifies three reasons why evaluation design for the gifted must be judged against criteria different from experimental designs based in the laboratory. Firstly, field-based evaluations must be structured around administrative constraints such as time, money and logistics. Secondly, sponsors of program evaluations desire to know how effective their program is in their setting. Thirdly, it is often impossible to judge whether outcomes are due to the program or some other variables. He identifies three types of evaluation design:-

Casual comparative design, which involves two naturally-formed groups, one which has experienced a treatment and one which has not (realistically, the only comparative equivalent group to CTYI students are those who sat the SAT, qualified for the courses but did not choose to attend the program).

Correlational design, which is useful where there is no available comparison group. This would involve regression analysis, but lacks control.

Quasi-experimental designs, which use the ability to establish links between programs and outcomes by making observations of program participants before and after the program. The main example of this approach is a time series design which involves measuring the performance of a single group of subjects at periodic intervals. This approach is also advocated by Tomlinson and Callahan (1994) and Fitzgibbon and Morris (1987). Another

technique of quasi-experimental study is the use of a non-equivalent control group (Carter 1986).

An evaluation design is a way of gathering comparative information so that results from the program being evaluated can be placed within a context for judgement of their size and worth. This helps the evaluator to predict how things might have been had the program not taken place. Usually this is accomplished by tests given to those not participating in the program, Finding a suitable design is a difficult task. Fitzgibbon and Morris (1987) try to make this problem a little easier by telling us to find the design that provides the most credible information in the situation at hand and then to try to follow directions as faithfully as possible for its implementation. In their experience, they see the problems associated with evaluation design as:-

- Programs viewed as one-shot enterprises
- Evaluators are often called in too late
- Because of ethical and political concerns it is often difficult to accomplish the most thorough designs
- Social science research is still in its infancy
- Educational researchers never seem to agree on an appropriate design.

They recommend five types of evaluation design for use with special education programs:-

- Use of non-equivalent control group design
- Evaluate program components
- Compare diverse programs in terms of some common indicators, i.e. satisfaction with program outcomes

- Compare program outcomes to pre-established criteria
- Theory-based evaluation focusing on program implementation.

This holds the staff responsible for operating the program that they have promised.

Evaluation consequences

Hunsaker and Callahan (1991) identify four consequences and program variables which should be considered in a program evaluation. These include impact on other school components, effect on students not in the program, functional adequacy of the program, and cost-effectiveness.

They believe that the primary goal of evaluation has traditionally been to provide information that permits the assessment of worth or merit of the objects of the evaluation. They further identify four categories of data that hold potential for providing such information:-

Descriptive evaluation - this describes what is in the program; includes definition, philosophy, curriculum, personnel and budget.

Prescriptive evaluation - investigates whether the program is actually needed. The data collected includes documentation on the specific needs of a program, documentation that the particular approach is appropriate and documentation that the particular program is feasible. Unfortunately the authors provide no indication as to what this documentation might be.

Informative evaluation and summative evaluation have been reviewed elsewhere in the literature.

Goal-free evaluation

"Evaluation is what it is, the determination of merit or worth, and what it is used for is another matter" (Scriven, 1980). Here the author, a pioneer in evaluation studies makes a bold statement. He is not interested in the consequences of the evaluation, preferring to leave such matters to a decision-maker. He advocates evaluators to conduct "goal-free" evaluations. Goal-free evaluators begin their evaluations totally blind to stated goals. The goal-free evaluator avoids contact with program staff, whose bias the conceptualisation of the evaluation questions. Evaluators have to discover what effect the program has, and match effects against the needs of those whom they affect. Goal-free evaluation is usually qualitative and is probably most similar to Stake's 1967 case-study approach. However, the latter has criticised Scriven, stating, in 1975, that goal-free evaluation is an unattainable goal, or rather one that only Mike Scriven himself could achieve. Though Scriven remains the first and only major evaluation theory to have an explicit and general theory of valuing, his logic of evaluation - selecting criteria of merit-setting standards and assessing performance - is always implicit in evaluation, but rarely appreciated by evaluators.

Stake (1975) offers us a model of responsive evaluation. This is less reliant on formal communication. Stake himself describes this type of evaluation as " a series of observations and negotiations". The evaluator invites people to observe the program, finds out what is of value to the audience and gathers expressions of worth from various individuals whose points of view differ. Two parallel sequences are considered, one relating to intentions, the other to observations. These sequences are considered at three sequential stages, which Stake lists as antecedents, transactions and outcomes. The congruence between the intentions and observations at the three separate stages form the basis of the evaluation. The functional structure of an evaluation under Stake's plan would not be a formal design. On different occasions the evaluator will have different

priorities, for example, there is no set time for identifying program scope, as somewhere within the evaluation this may be further defined. Much of the evaluator's time may be spent evaluating the program. Traditionally, the evaluator sees himself as a stimulus who through data collection, elicits a response. Stake however, considers the principal stimuli to be those events occurring in the program. The evaluator himself is responsive to these happenings.

Stufflebeam outlines the four principles of good evaluation (Stufflebeam 1978). These are technical adequacy, utility, probity, and practicality. The need for technical adequacy is based on the truism that evaluations should provide good information.

Borland (1989) also lists the major problems with psychometric and statistical factors which include ceiling effects, regression effects, unreliability of gain scores, inequality of percentile units and lack of appropriate norms in evaluating tests for the gifted, who may exist at several standard deviations upward from the mean. Useful evaluations are ones which serve some purpose beyond providing accurate information or satisfying the evaluator's own needs. To pass a utility test, the evaluation must be oriented to the information needs of the audience. As Callahan (1986) states, useful questions provide data that some audience can actually use in the process of making decisions. Yavorovsky (1984) identifies two distinct types of audience when she gives directions for the selection of appropriate evaluation concerns - external and internal audiences. Tomlinson et al (1994) provide a unique body of analysis of case studies of evaluation utilisation in gifted education. Probity requirements are important because evaluations can have harmful effects on people. These can be brought about by the unethical or unlawful actions of evaluators. To counteract these problems, many authors have produced comprehensive guidelines for evaluators to follow, the best of these being the Joint Committee on Standards for Educational Evaluation (1981).The need for an evaluation to be practical reflects the fact that the are conducted in a natural setting (i.e., on the site, Stake 1975),

and that they consume valuable resources. An evaluation plan must not assume skills and knowledge beyond the capabilities of those who carry it out. It must also be workable in the place of implementation and not consume more time, materials and money than necessary to achieve its purposes.

A word of warning

Evaluating a program is a highly complex affair. To evaluate the worth and quality of a Haydn symphony is next to impossible. The popularity of the composer rises and falls with time and in any case, the judgement of the masses may not correspond to that of the learned. To place a value judgement on a gifted program is to state with merit that you have justifiably interfered in the lives of people and produced a positive or negative result. As Staughran and Wrigley (1980) point out, sophisticated judgement with regard to education is often impossible. Advanced measurement techniques are rarely possible in matters concerned with education. The underlying data is too rough and the consensus of values not great enough to justify the use of sophisticated research techniques. The good evaluator must make the best use of any materials at his disposal and use his innate ability to produce the optimal judgement.

This evaluation is both quantitative and qualitative in focus. It is formative in nature and is both outcome and process-oriented. It measures how students and administrators perceive how the CTYI programme works for them.

CHAPTER 3

Talent Search

History of the Talent Search

The primary purpose of a Talent Search is to identify those students of exceptional ability who given present educational practices are often not identified and consequently are ignored or under-served (Cohn, 1991). It is based upon the psychometric approach of using standardised tests of aptitude and achievement. Students whose scores exceed designated criteria are adjudged to be talented or of high ability.

Stanley (1991) describes the origin of the Talent Search concept. The story begins in 1968, with a brilliant American twelve-year-old named Joseph Bates. He was enrolled in a Summer Computer Programme for high school students at Johns Hopkins University, Baltimore, Maryland. From the moment he arrived on campus his instructors noticed something different about him. While others were coming to terms with the new technology to which they were now exposed, Bates excelled in it, so much so that by the end of the three week programme, his knowledge began to exceed that of his instructors. So impressed with his abilities were his instructors that they asked Professor Julian Stanley, an eminent educational psychologist, to evaluate him. Stanley administered several tests to the boy, including the Scholastic Aptitude Test (SAT) and found his results to be quite remarkable. On Stanley's recommendation, Bates was admitted to Johns Hopkins University to study as a full-time student. But Stanley believed that there may have been many other students craving far more stimulation than any high school could provide. He urged that these students be identified and given special educational opportunities in Mathematics and related subjects. Thus, in 1971 the Study of Mathematically Precocious Youth (SMPY) was founded.

The first Talent Search was conducted in 1972 in the catchment area around Baltimore. Maryland. In this first search, 450 students took the SAT Mathematics paper. By 1979 the Talent Search effort had grown to a degree where a separate organisation was

necessary. In that year, the Center for the Advancement of Academically Talented Youth (CTY) was founded. CTY initially conducted a Talent Search for mathematically and verbally precocious youth, using the SAT Mathematics and the SAT Verbal in thirteen Eastern states. Later this was extended to six states in the far West. In 1980, Stanley encouraged the creation of an organisation similar to CTY at Duke University, North Carolina. This group, the Talent Identification Programme, began a Talent Search in the sixteen states of the South and Midwest. Additional searches began in the University of Denver and Northwestern University, Illinois, so that the four regional Talent Searches now serve all fifty states of the USA. In 1992, the largest Talent Search was the Duke University Talent Identification Program, which had identified over 60,000 students. Combining this number with figures from Talent Searches carried out by Johns Hopkins University (approximately 40,000 students), Northwestern University (30,000), and the University of Denver (approximately 5,000), brings the total number of talented students identified to some 140,000.

At Johns Hopkins University, the Talent Search process involves seventh or eighth graders (12-13 year-olds) who score in the top 3 per cent on a nationally-normed, in-class achievement test. Students who meet these criteria are nominated to participate further by taking the SAT test. The idea underlying the search is that twelve to thirteen-year-olds who score highly on the SAT Mathematics have enhanced problem translation ability, and are superior in their capacity to represent and manipulate information in short-term memory (Benbow, 1990, p. 96). The SAT Verbal may be particularly well-suited to assessing the verbal reasoning skills of eleven to fourteen-year-olds, as they are at precisely the stage when verbal skills are integrated with cognitive skills in the conventional Piagetian scheme of development (Piaget, 1954). This is a tremendously important time in the intellectual development of the individual. Exposure to the right set of opportunities in a properly designated environment can result in accelerated learning

and intellectual development. The use of out-of-age testing makes it possible to distinguish between young students who have reached the highest level in their previous tests. Students who perform well on these tests are eligible to attend residential summer programmes run by the various universities. Stocking and Goldstein (1992) have shown that the SAT has been of great value in identifying talented adolescents.

The Irish Talent Search

The first Irish National Talent Search took place in 1992 under the auspices of the Irish Centre for Talented Youth based at Dublin City University. It aimed to identify Irish post-primary students who reason well mathematically or verbally. The following table shows the figures for the first four years of the CTYI programme:-

Table 3-1 CTYI Talent Search, 1993 - 1996 Breakdown by male and female

	Male	Female	Total
1993	232	235	467
1994	256	345	601
1995	291	381	672
1996	296	409	705

While this first Talent Search was aimed at thirteen year olds in either their first or second year at post-primary level, it has since been expanded to include any student between the ages of twelve and sixteen. Eligibility for the SAT is determined by one or more of the following criteria. The student must:-

- present a recent standardised aptitude or achievement score, showing a 95^{th} or higher national percentile score in relation to mathematical or verbal reasoning,

or

- present evidence of notable achievement at regional or national level in a competition reflecting high ability in Mathematics, Science, Literature, etc.

or

- give a reason why he or she could hope to score in the top 5% of the present school population. This application should be supported by a parent, guardian or teacher.

To be eligible for CTYI's academic programmes, students must achieve certain minimum SAT scores as follows:-

Table 3-2 Qualification scores for CTYI on SAT

SAT Eligibility Chart			
	Humanities	Sciences	
Age on taking SAT	*SAT-V*	*SAT-M and SAT-V+*	
up to 13 yrs. 6 months	≥ R510	≥ R530	≥ R1040
13 yrs. 6 months to 14 yrs. 0 months	≥ R530	≥ R540	≥ R1070
14 yrs. 0 months to 14 yrs. 6 months	≥ R560	≥ R570	≥ R1130
14 yrs. 6 months to 15 yrs. 0 months	≥ R580	≥ R580	≥ R1160
15 yrs. 0 months to 15 yrs. 6 months	≥ R610	≥ R600	≥ R1210
15 yrs. 6 months to 16 yrs. 0 months	≥ R620	≥ R620	≥ R1240
16 yrs. 0 months to 16 yrs. 6 months	≥ R650	≥ R650	≥ R1300

Every student who takes the SAT receives a certificate from Dublin City University for their school records. The Irish Talent Search concludes with an awards ceremony for all the qualifiers, regardless of whether they have chosen to attend the summer programme. Scholarships are awarded for the best performances as well as cash prizes and book tokens. Goldstein and Wagner (1993) believe that these ceremonies represent the first and possibly only opportunity for public recognition many of these exceptional youngsters will receive. More importantly however, the students learn that it is acceptable to be bright, creative and interested in intellectual pursuits.

Methodology

Some 1375 students took part in the Irish Talent Search in 1995 and 1996. In January 1995, 672 people took the Scholastic Aptitude Test, and in January 1996, the numbers had risen to 705. Since 1993, 40% of Irish secondary schools have participated in the Talent Search by sending at least one student to take the SAT. This research involved designing a questionnaire for the specific purposes of assessing these students. In the week following the test in both 1995 and 1996, the CTYI Talent Search Questionnaire was posted to all students. Some 769 people responded to the questionnaire, 403 in 1995, and 369 in 1996, indicating a 56% response rate. The questionnaire was designed to ascertain information about the family life, school life, level of support received, leisure activities, and possible future career information of the participants in the Talent Search. The questionnaire and the 1995 Talent Search Report are included in Appendix A.

Talent Search data

A total of 769 students completed the Talent Search questionnaire in 1995 and 1996. 386 of these were male (50.2%) and 383 were female (49.8%). Almost 83% of the respondents were in first or second year of secondary school in Ireland. 367 (48%) of these students were in first year, and 267 (35%) were in second year. For full details see the table below.

Table 3-3 Talent Search participants by year in school

	Number of students	Percentage
1st year	367	47.8%
2nd year	267	34.8%
3rd year	88	11.5%
4th year	29	3.8%
5th year	17	2.2%

(Missing cases: 1)

The majority of the respondents (80%) had between one and three siblings, with the highest percentage being for two siblings, accounting for 34% of those surveyed. Interestingly, 44% reported having no elder brothers or sisters, with a further 27% having only one elder sibling. Less than one per cent reported having a twin. All of the respondents were living at home with either one of their parents. Over 90% reported that they were living at home with both parents, while seven per cent stated that their father was not living in the household. Less than two per cent reported that they were not living with their mother.

Education levels

The following table illustrates the highest level of education achieved by the father within the group.

Table 3-4 Highest level of education - father

	Number of students	Percentage
Primary school	69	9.2%
Secondary school	294	39.4%
Third level diploma	109	14.6%
Primary degree	122	16.3%
Master's degree	55	7.4%
PhD / Professional qualification	98	13.1%

(Missing cases: 22)

As we can see from this table, less than half of the group went on to third level education, the highest percentage being for secondary school at 39.4%.

The following table illustrates the highest level of education achieved by the mothers of the group.

Table 3-5 Highest level of education - mother

	Number of students	Percentage
Primary school	29	3.8%
Secondary school	372	49.3%
Third level diploma	138	18.3%
Primary degree	153	20.3%
Master's degree	16	2.1%
PhD / Professional qualification	46	6.1%

(Missing cases: 15)

While a higher proportion of mothers than fathers received a secondary school education (49% compared to 39%), a lower percentage went on to third level education, and even fewer went on to postgraduate work. The following table indicates the highest level of education that the student respondents to the questionnaire hoped to achieve themselves:-

Table 3-6 Highest level of education - self

	Number of students	Percentage
Secondary school	11	1.5%
Third level diploma	17	2.3%
Primary degree	136	18.2%
Master's degree	132	17.7%
PhD / Professional qualification	450	60.3%

(Missing cases: 23)

As we can see from this table, fewer than 2% do not want to proceed to third level education, with as high as 60% hoping to attain either a PhD or a professional qualification.

Schools

Three hundred and sixty students (47%) attended co-educational schools, while the remainder went to single-sex schools. Two hundred and twenty one of these (29%) attended single-sex girls' schools, while 187 (24%) attended single-sex boys' schools.

Rank

The students were given a list of subjects and asked to rate on a Likert 1-5 scale, where 1 indicated much better, and 5 indicated much worse, how they ranked themselves in that subject relative to their classmates at school. The following table lists the mean ranking for each subject for males and females, and the overall mean ranking for that subject.

Table 3-7 Mean ranking for subjects at school

	Males	Females	Overall	P-value
Mathematics	1.64	1.80	1.72	.003
Science	1.84	1.88	1.86	N/S
History	2.00	2.05	2.02	N/S
Languages	2.02	1.91	1.97	N/S
Geography	2.05	2.18	2.11	.03
English	2.13	2.07	2.10	N/S
Music	2.29	2.23	2.25	N/S
Irish	2.36	2.16	2.26	.003
Sport	2.59	2.63	2.61	N/S
Art	2.74	2.61	2.68	N/S

N/S = not significant at the 95% confidence level
If P < .05, significant at 95% confidence level
If P < .01, significant at 99% confidence level

Running a check on the frequencies reveals that in all the pure academic areas, the majority of students rank themselves as either much or somewhat better than their classmates. For example, in Mathematics, over 84% ranked themselves as superior to their classmates, and only one person considered himself somewhat worse. While the results are not as overwhelmingly high in other subjects, the trend continues in English,

where two thirds rate themselves as better, and less than 2% consider themselves worse. In science, 75% see themselves as better than their classmates, while in History and Geography the figures are 69% and 65% respectively. The results are less conclusive in the creative domain, with 40% considering themselves better at Art, and 22% ranking themselves as worse. In Music, 56% see themselves as better, while 10% consider that they are worse than their classmates. 15% believe that they are worse at sport, with 45% ranking themselves as equal, with the remaining 40% seeing themselves as better than their classmates in sporting pursuits.

Table 3-7 shows conclusively that all students surveyed rank themselves as superior in most areas, particularly Mathematics, Science and Languages. Performing some independent sampled T-tests for males and females reveals that the male students rank themselves significantly superior to the females in Mathematics and Geography, while the female students rate themselves significantly better in Irish than their male counterparts. In Languages, the mean score for girls is 1.91, compared to 2.02 for males, and this falls just outside the 95% significance level. The other subjects reveal much similarity between the two sexes. Surprisingly, there are no language courses offered on either the summer or Saturday programmes at CTYI, with the course director, Dr. Sheila Gilheany, feeling that three weeks on the summer course is too short a time for language immersion, and also due to the fact that there are many good language programmes available elsewhere throughout the country.

Attitude

Students were asked to rate their attitudes to a group of school subjects using a Likert 1-5 scale, where 1 indicated strong liking and 5 indicated strong dislike. Perhaps unsurprisingly, given the type of group involved in the research, all subjects received a positive rating, with Mathematics, Science and English scoring highest overall (see table

3-8). Interestingly, while 80% stated that they liked English, only 68% of this group indicated that they liked writing. Despite the fact that Sport scored lower on the ranking scale (see previous table 3-7), over 78% stated that they liked sport. Again, the figures for Music and Art fell below the other groupings, with 63% stating that they liked these subjects. In what is surely a sign of the times, 78% revealed that they liked computers, despite the fact that only 52% indicated that they had studied computers at school. A list of the mean scores for attitude towards the various subjects for males and females is listed below:-

Table 3-8 Mean attitude rating for subjects at school

	Males	Females	Overall	P-value
Mathematics	1.61	1.59	1.60	N/S
Science	1.71	1.68	1.69	N/S
Computers	1.56	1.97	1.76	.000
Sport	1.59	1.87	1.78	.000
English	1.91	1.67	1.79	.000
Languages	2.05	1.76	1.90	.000
History	1.90	1.97	1.94	N/S
Writing	2.22	1.89	2.06	.000
Music	2.37	2.01	2.18	.000
Art	2.31	2.06	2.18	.006
Geography	2.16	2.28	2.22	N/S

N/S = not significant at the 95% confidence level
If P < .05, significant at 95% confidence level
If P < .01, significant at 99% confidence level

Both males and females indicated that Mathematics was their favourite subject at school. From the previous table we can see that this was also the subject in which they ranked themselves best. Analysing the males and females with some T-tests shows that girls have a significant preference compared to boys for English, Writing, Languages, Art and Music at the 95% confidence level. Similarly, boys showed a significant preference (95%) for Sport and Computers, while no notable differences are reported for Mathematics and Science.

Encouragement and Support

The students were given a list of subjects - Mathematics, Science, Literature, Languages, Art, Music, and Sport, and asked to rate using a 1 to 5 Likert scale how much support they received from a selected group of people in their pursuit of knowledge in these fields. This group consisted of their parents, teachers, friends, and others in their immediate circle. In this instance, 1 indicated much encouragement, while 5 indicated much discouragement. The results for the different subjects - Mathematics, Science, Languages, Literature, Art and Music, and Sport - are listed below:-

Table 3-9 Mathematics - mean score for level of encouragement and support

	Males	Females	Overall	P-value
Father	1.50	1.41	1.46	N/S
Mother	1.44	1.37	1.41	N/S
Teachers	1.61	1.62	1.61	N/S
Friend	2.66	2.44	2.55	.000
Self	1.60	1.54	1.57	N/S
Others	2.39	2.22	2.31	.014

N/S = not significant at the 95% confidence level
If P < .05, significant at 95% confidence level
If P < .01, significant at 99% confidence level

As we can see, the highest level of encouragement came from the students' parents. 91% reported encouragement from their mother, while 88% indicated that they received encouragement from their father. There were very few incidences of active discouragement from any of the groups. However, it is worth noting that over 60% believe that they did not receive any encouragement from their friends in their pursuit of knowledge in Mathematics. Likewise, 58% did not receive any encouragement from the "other" category, which may include their siblings or classmates at school. The girls report that they received significantly more encouragement from their friends than did the boys in this subject.

Table 3-10 Science - mean score for level of encouragement and support

	Males	Females	Overall	P-value
Father	1.66	1.62	1.64	N/S
Mother	1.62	1.53	1.58	.000
Teachers	1.75	1.59	1.67	.009
Friend	2.65	2.43	2.54	.000
Self	1.67	1.62	1.64	.000
Others	2.51	2.29	2.40	.001

N/S = not significant at the 95% confidence level
If P < .05, significant at 95% confidence level
If P < .01, significant at 99% confidence level

Again, much encouragement is reported from the parents (82%) and teachers (84%) with less support from friends (37%) and others (42%). The figure for support from self remains consistent. Once more, reports of active discouragement are rare, while girls report significantly more encouragement from teachers and friends than do the boys.

Table 3-11 Languages - mean score for level of encouragement and support

	Males	Females	Overall	P-value
Father	1.68	1.57	1.63	.05
Mother	1.36	1.38	1.37	N/S
Teachers	1.57	1.56	1.56	N/S
Friend	2.62	2.38	2.51	.000
Self	1.72	1.63	1.68	N/S
Others	2.45	2.23	2.34	.001

N/S = not significant at the 95% confidence level
If P < .05, significant at 95% confidence level
If P < .01, significant at 99% confidence level

Here the combined male and female group report more encouragement from their mothers (92%) than from their fathers (82%). The Teachers and Self categories remain constant, while once again the Friends and Other categories are reported as those offering the least

support. Girls receive significantly more encouragement from their fathers and their friends than do the boys.

Table 3-12 Literature - mean score for level of encouragement and support

	Males	Females	Overall	P-value
Father	1.69	1.63	1.66	N/S
Mother	1.48	1.42	1.45	N/S
Teachers	1.68	1.59	1.64	N/S
Friend	2.64	2.38	2.51	.000
Self	1.80	1.70	1.75	N/S
Others	2.48	2.23	2.35	.000

N/S = not significant at the 95% confidence level
If P < .05, significant at 95% confidence level
If P < .01, significant at 99% confidence level

As with languages, mothers offer more support (90%) for their child's interest in literature than do the fathers (80%). Again, the teachers are seen to offer strong encouragement (83%), with the Friends and Others categories coming out as the least supportive for this subject also (39% and 43% respectively). Once more, the girls report significantly more support from their friends than do the boys.

Table 3-13 Art and Music - mean score for level of encouragement and support

	Males	Females	Overall	P-value
Father	1.94	1.77	1.86	N/S
Mother	1.66	1.45	1.56	.000
Teachers	2.04	1.81	1.93	.001
Friend	2.54	2.11	2.32	.000
Self	2.06	1.71	1.88	.000
Others	2.47	2.23	2.35	.000

N/S = not significant at the 95% confidence level
If P < .05, significant at 95% confidence level
If P < .01, significant at 99% confidence level

In Art and Music, over 85% of the group report some level of support from their mothers, while only 74% indicate support from their fathers. From the other tables we can see that this mean score is the lowest for the Father category for any subject. The mean score for the Teachers category is 1.93, with 69% of students indicating that they received encouragement from their teachers. This compares with 86% for Mathematics, 88% for Languages, and 84% for Literature and Science. The group we are dealing with have been identified as being in the top five per cent in terms of Mathematical and Verbal ability, and this may explain the lower level of support received for Art and Music. Girls report significantly more support and encouragement in this subject from the Mothers, Teachers, Friends and Self categories.

Table 3-14 Sport - mean score for level of encouragement and support

	Males	Females	Overall	P-value
Father	1.47	1.71	1.66	.000
Mother	1.73	1.70	1.72	N/S
Teachers	2.02	1.85	1.94	.009
Friend	1.77	1.89	1.83	.038
Self	1.67	1.80	1.74	N/S
Others	2.02	2.19	2.35	.019

N/S = not significant at the 95% confidence level
If P < .05, significant at 95% confidence level
If P < .01, significant at 99% confidence level

Sport sees 84% of respondents receiving some encouragement from their fathers compared with 81% from their mothers. Boys report significantly more encouragement from their father and friends, while girls report significantly more encouragement from their teachers. The mean score for friends in this category is 1.83, with 77% reporting that they received some support. This compares with 36% for Mathematics, 38% for Science, 39% for Languages, and 40% for Literature. This clearly proves that the group received

far more encouragement from their friends for sporting or leisure pursuits than they do for their academic endeavours.

Leisure activities

The students were asked to indicate the activities they enjoyed in their spare time. The following table lists the eight most popular responses of the fifteen activities listed in the questionnaire:-

Table 3-15 Favourite extracurricular activities

1	*Sport*	88%
2	*Music or Dance*	61%
3	*Computers*	51%
4	*Foreign languages*	46%
5	*Art and Craft*	45%
6	*Mathematics*	42%
7	*Science*	37%
8	*Scouting*	35%

As we can see, sport proved to be the most popular, with 88% participating in some form of sport. This is interesting, as it was the subject at which they ranked themselves lowest relative to their classmates at school (see table 3-7). Music also proved popular, with many students indicating that they were learning to play an instrument. 51% stated that they took part in computer-related activities outside of school time this figure could be explained by the fact that only 53% indicated that they studied computers at school. Not included in the top eight but also popular were Drama (30%) and Public Speaking or Debating (28%).

The students were then given a list of areas and asked if they had ever competed in these at a school, national or international level. The most popular included writing, with 20% competing at school level, and 17% at a national level. 15% competed in Maths competitions at a national level, with 10% competing at school level. Art too proved popular. From the previous table we can see that 45% participated in Art activities outside of school hours. 19% of those surveyed reported that they had participated in competitions at a school level, with 14% competing at national level. 13% of the group participated in music competitions at national level, and 10% at school level. Overall however, the number competing in competitions at any level was quite low. This is interesting when one takes into consideration the fact that in many countries, competitions are used as a means of identifying talented young people.

By far the most important leisure activity for the students was spending time with their friends, with 66% of those surveyed seeing this as very important. More than half of the group felt that participating in sport, and reading were their main leisure activities. Listening to music proved more popular than playing it, while watching TV was more popular then going to the cinema. A list of the top five most important leisure activities follows:-

1. Spending time with friends
2. Participating in sport
3. Reading
4. Watching TV
5. Listening to music

Career

The students were asked to rate a list of subjects in order of importance for their future career, using a Likert 1-4 scale, where 1 indicated very important, 2 indicated fairly important, 3 indicated slightly important, and 4 indicated not important. Maths was ranked highest, with 72% rating it as very important, and another 20% seeing it as fairly important. English was the next highest, with 55% seeing it as very important for their future career. 48% of the group saw languages and computers as very important. The mean score for males and females is given below:-

Table 3-16 Mean score for importance of subject to future career

	Overall	Males	Females	P-value
Mathematics	1.38	1.37	1.39	N/S
English	1.68	1.78	1.58	.002
Languages	1.80	1.86	1.74	N/S
Computers	1.89	1.80	1.98	.014
Physics	2.10	2.14	2.06	N/S
Biology	2.25	2.56	1.93	.000
Chemistry	2.25	2.43	2.07	.000
Geography	2.62	2.63	2.56	N/S
History	2.70	2.84	2.61	.000

N/S = not significant at the 95% confidence level
If P < .05, significant at 95% confidence level
If P < .01, significant at 99% confidence level

From the list we can see that the girls rate English, Biology, Chemistry and History as significantly more important for their careers than boys do, while the boys rate computers as significantly more important. History and Geography are seen as less important by both boys and girls.

Other peoples' perceptions

The students were asked to rate using a Likert 1-5 scale, where 1 indicated very negatively, and 5 very positively, how they felt their intellectual abilities impacted peoples' opinions of them. These people included their parents, brothers and sisters, friends, teachers, and classmates at school. The mean response rate for the various categories is listed below:-

Table 3-17 Mean score for others' perceptions of students' intellectual ability

	Overall	Males	Females
Mother	4.23	4.19	4.26
Father	4.20	4.14	4.25
Teacher	4.18	4.18	4.17
Brothers	3.49	3.45	3.53
Sisters	3.48	3.49	3.48
Friends	3.41	3.37	3.45
Classmates	3.16	3.16	3.16

From the table we can see that the students perceive their parents as holding the most positive opinion of their ability, with 73% believing that their ability had a positive impact on their mother's opinion of them, while the figure for fathers was 72%. Some 68% believed that their intellectual abilities were well-received by their teachers. Interestingly, only 42% believed that their ability had a positive impact on their siblings' opinions of them. The only group the students reported as reacting adversely was their classmates, with over 28% stating that this groups' opinion of them was affected somewhat negatively by their intellectual ability. While girls feel that their fathers hold a more positive opinion of them as a result of their intellectual ability, the boys believe that their teacher's opinion of their high ability is more positive than their fathers'. On the whole, using an independent sample T-test, no significant differences were reported for boys and girls in any of the groups.

Qualifiers and non qualifiers

Of the respondents, 270 were qualifiers, while 499 were non-qualifiers. This constitutes a 35% qualification rate. The questionnaire was administered to students who completed the Scholastic Aptitude Test under the auspices of CTYI in 1995 and 1996. In 1995, the qualification rate for respondents was 30%, while in 1996 the figure was 40%. In both instances, the questionnaire were administered after the SAT and the students were responding prior to finding out their results and whether they had been offered a place on the CTYI summer programme. There was a higher response rate in 1995 (403 respondents) compared to 1996 (366 respondents), despite the fact that more people took the test in 1996 than in the previous year (see table). This could be explained by the fact that in 1996, inclement weather affected the test centres on the day of the test. Over 100 students could not sit the test on that day, and an alternative date was organised. The questionnaire was sent out to all the students after the date of the first test, resulting in a lower response rate for 1996. Of the 270 qualifiers overall, 127 qualified on the Mathematics and Verbal sections of the test (47%), while 111 were Verbal only qualifiers (41.1%), and the remaining 32 (12%) were Mathematics only qualifiers.

The qualifying group

Looking at the 270 qualifiers, 143 (53%) were male, and 127 (47%) were female. The following table illustrates the breakdown within the various categories:-

Table 3-18 Qualification breakdown by male and female

	Male	Female	Total
Maths and Verbal Qualifier	78	49	127
Maths only qualifier	23	9	32
Verbal only qualifier	42	69	111

The table reveals that females outnumber males in the Verbal only qualifier section, with females making up over 62% in this category. However, 72% of the Maths only qualifiers are male, and of the Maths and Verbal qualifiers, 62% are also male.

We can compare qualifiers and non-qualifiers in terms of year in school. This is illustrated in the following table:-

Table 3-19 Qualifiers and non-qualifiers by year in school

	Qualifiers	Non-Qualifiers	Total
1st year	112	225	367
2nd year	97	170	267
3rd year	35	53	88
4th year	16	13	29
5th year	10	7	17

(Missing cases: 1)

We can see that the number of qualifiers in the third, fourth and fifth year categories is proportionately higher than for first and second years. Accordingly, there is a larger number of non-qualifiers in the first year group. There may be two possible explanation for this: many people sit the test more than once, and results show that those who have sat the test previously stand a statistically higher chance of qualifying the second or subsequent time around. There is also the effect of students attending different schools and learning at different levels. Many Irish post-primary schools offer classes at mixed ability up to Junior Certificate, while some schools are streamed in terms of ability from day one. As all of these students have been identified as talented through nomination before the SAT, some could be in streamed classes in their schools. These students may be exposed to more challenging concepts in their classroom than their counterparts in mixed-ability classes. In particular, the Mathematics section of the SAT may challenge some young students in concepts that they may never have encountered before. CTYI does not recommend that anyone "study" for the test, as it may elicit an unfair advantage, but if the student has already encountered some of these problems in their school environment

they will naturally be in a position to perform better. These ideas are reflected within the overall results. Among the 367 first years analysed, the qualification rate was 30%. For the 267 second years this rate had increased to 36%. For the 88 third years, the rate rose further to 40%, with the qualification rates for the smaller numbers of fourth and fifth years at 55% and 59% respectively.

Family

Forty-nine per cent of the qualifying group report having no older brothers or sisters. This compares to 41% of the non-qualifying group. Bloom's study (1985) showed that many of his group were the eldest in their families. The mean for the total number of brothers and sisters for the qualifiers is 2.26, compared to 2.48 for non-qualifiers, proving that the qualifiers come from smaller-sized families. Zajonc and Markus (1975) predict that elder children and children from smaller families tend to be more intelligent than other children. This model is based on the fact that the eldest can benefit from an adult-level intellectual environment. The highest level of education achieved by the fathers of both qualifiers and non-qualifiers is listed below:-

Table 3-20 Comparison of fathers' education - qualifiers and non-qualifiers

	Qualifiers	Non-qualifiers
Primary school	4.2%	12.1%
Secondary school	29.3%	44.8%
Third level diploma	11.4%	16.3%
Third level degree	26.6%	10.7%
Masters degree	10.3%	5.8%
PhD or professional qualification	18.3%	10.3%

It is clear from this table that the fathers of qualifiers have achieved a higher level of education than the non-qualifiers. Twenty-six per cent hold a primary degree, compared to

11% of non-qualifiers' fathers. Also, 18.3% held a PhD/professional qualification compared to 10.3% of non-qualifiers.

The highest level of education achieved by the mothers of both qualifiers and non-qualifiers is shown in the table below:-

Table 3-21 Comparison of mothers' education - qualifiers and non-qualifiers

	Qualifiers	Non-qualifiers
Primary school	1.5%	5.1%
Secondary school	38.0%	5.5%
Third level diploma	18.8%	18.0%
Third level degree	28.6%	15.8%
Masters degree	3.8%	1.2%
PhD or professional qualification	9.4%	4.3%

From this table we can see that the mothers of qualifiers tend to have a higher level of education than the mothers of non-qualifiers. 28.8% hold a primary degree, compared to 15.8% of non-qualifiers' mothers, while 9.4% hold a PhD or professional qualification, compared to 4.3% of non-qualifiers' mothers.

The following table illustrates the highest level of education that the students themselves felt they will attain.

Table 3-22 Highest level of education qualifiers and non-qualifiers hope to achieve

	Qualifiers	Non-qualifiers
Secondary school	0.4%	2.1%
Third level diploma	0.7%	3.1%
Third level degree	9.4%	23.1%
Masters degree	19.9%	16.5%
PhD or professional qualification	69.7%	55.0%

Qualifiers hope to go on to higher levels of education than non-qualifiers. While 23% of non-qualifiers believe that the highest level of education they will achieve will be a primary degree, only 9% of qualifiers believe that their formal education will cease here.

The mean score for highest level of education achieved by students' parents was calculated. This was achieved by using 1 to denote primary school, 2 to denote secondary school, 3 for third level diploma, 4 for third level degree, 5 for Master's degree, and 6 to denote a PhD or professional qualification. The following table shows the mean score of highest level of education achieved by father and mother, with highest level of education student hopes to attain, by qualifiers and non-qualifiers:-

Table 3-23 Highest level of education of parents compared to students' aspirations

	Qualifiers	Non-qualifiers
Father	3.64	2.85
Mother	3.23	2.65
Self	5.58	5.19

Ranking and attitude (qualifiers and non-qualifiers)

The following table shows how qualifiers and non qualifiers rank themselves in the various school subjects:-

Table 3-24 Comparison of mean ranking of qualifiers and non-qualifiers

	Qualifiers	Non-qualifiers	P-value
Mathematics	1.60	1.78	.001
Science	1.64	1.78	.000
English	1.78	2.28	.000
Languages	1.82	2.05	.000
History	1.90	2.09	.001
Geography	2.03	2.16	.044
Irish	2.17	2.31	N/S
Music	2.36	2.19	N/S
Art	2.75	2.62	N/S
Sport	2.95	2.42	.000

N/S = not significant at the 95% confidence level
If P < .05, significant at 95% confidence level
If P < .01, significant at 99% confidence level

From this table we can see that the qualifiers rank themselves significantly higher than their classmates compared to non-qualifiers in Mathematics, Science, English, Languages, History and Geography. Non-qualifiers rank themselves significantly higher in Sport relative to their classmates than qualifiers.

The following table compares the mean ranking of attitude to subject in school of qualifiers and non-qualifiers:-

Table 3-25 Comparison of mean attitude rating

	Qualifiers	Non-qualifiers	P-value
English	1.57	1.91	.000
Mathematics	1.59	1.60	N/S
Science	1.61	1.73	N/S
Computers	1.78	1.74	N/S
Languages	1.88	1.90	N/S
History	1.88	1.96	N/S
Writing	1.97	2.09	N/S
Sport	2.04	1.66	.000
Geography	2.29	2.18	N/S
Art	2.31	2.10	.026
Music	2.35	2.13	N/S

N/S = not significant at the 95% confidence level
If P < .05, significant at 95% confidence level
If P < .01, significant at 99% confidence level

The table tells us that qualifiers rate English as the subject they like best at school, closely followed by Mathematics and Science. For non-qualifiers, Maths is the favourite subject, followed by Sport and Science. Qualifiers significantly prefer English to non-qualifiers, while non-qualifiers significantly prefer Art and Sport.

Types of qualifiers

Looking more closely at the qualifiers reveals that female qualifiers significantly prefer English, Languages and Music to male qualifiers, while male qualifiers significantly

prefer Sport and Computers. From the research we know that there were 127 Maths and Verbal qualifiers (M+VQ) 111 Verbal only qualifiers (VQ), and 32 Maths only qualifiers (MQ). The group of maths only qualifiers is considered too small for T-test analysis, so comparing the M+VQ qualifiers with the VQ qualifiers in the attitude scale results in the following table:-

Table 3-26 Mean attitude by VQ and M+VQ

	VQ	M+VQ	P-value
English	1.27	1.68	.000
Mathematics	1.79	1.47	.001
Science	1.70	1.56	N/S
Writing	1.70	2.14	.002
Languages	1.79	1.93	N/S
History	1.72	1.93	N/S
Computers	1.89	1.70	N/S
Geography	2.22	2.35	N/S
Sport	2.07	2.08	N/S
Art	2.20	2.34	N/S
Music	2.09	2.47	.019

N/S = not significant at the 95% confidence level
If P < .05, significant at 95% confidence level
If P < .01, significant at 99% confidence level

We can see that the Verbal only qualifying group significantly prefer English, Writing and Music, while the Maths and Verbal qualifiers significantly prefer Maths and have lower mean scores for Computers and Science, just outside the 95% confidence level. If we compare Verbal only qualifiers with Maths and Verbal qualifiers in terms of ranking themselves relative to their classmates, VQs rank themselves significantly better in English, and M+VQs rank themselves significantly better in Maths. The other results were not significant.

Special courses

All students were asked if they had participated in any special courses for academically talented students before attempting the SAT. Some 21% of the students indicated that they had participated in a special programme. These courses included the Young Students Programme at St. Patrick's College Drumcondra, where they had been identified in the 95th percentile using a standardised in-house test. Other students indicated that they had competed in the Maths and Computer Olympiad at University College Dublin, an international competition for highly talented mathematical students. Students who indicated that they had attended the Gaeltacht (Irish language college) were not included in this group, as there is no specific identification procedure. Over half (53%) of the group which had attended special courses qualified on the Scholastic Aptitude Test, and were eligible for the CTYI Summer Programme.

Comparison of support received

In terms of support and encouragement received from their parents, both qualifiers and non-qualifiers received equally high levels of support, however both groups reported that they received little encouragement from their friends. There were no significant differences reported between the groups in these categories. In terms of teachers, there were some interesting results. In every subject, the qualifiers report receiving less support and encouragement than the non-qualifiers. The results are illustrated in the following table:-

Table 3-27 Level of support from teachers

	Qualifiers	Non-qualifiers	P-value
Mathematics	1.68	1.57	.07
Science	1.76	1.62	.03
Literature	1.67	1.61	.297
Languages	1.60	1.53	.212
Art	2.00	1.88	.091
Sport	2.11	1.84	.000

These results are made more interesting by the fact that we have already seen that qualifiers rank themselves better than non-qualifiers in Maths, Science, Languages, and English. It is reasonable to suggest that their teachers are not giving them the encouragement that they need.

Subjects for future career

In terms of their future career prospects, both qualifiers and non-qualifiers rate Mathematics as their most important subject. Surprisingly, non-qualifiers rate Mathematics as significantly more important (mean 1.32) compared to qualifiers (mean 1.47). Both groups consider English to be the next most important subject, with non-qualifiers again viewing it as more important. This trend continues, with non-qualifiers viewing languages as significantly more important. Perhaps the qualifiers do not place as much importance on school subject for what they will do in the future. We have already shown in this research that qualifiers rank themselves significantly higher than non-qualifiers in subjects like Mathematics, English and Languages. Perhaps at this stage, they do not feel that any one particular subject is more important than another for their future career.

Conclusion

This chapter has outlined the history of the Talent Search in both the United States and Ireland. For CTYI, it plays a vital part in the identification process for talented adolescents. Dr. Gilheany has stressed that she is very happy with the use of the Scholastic Aptitude Test as a means of identifying students for the summer programme. The test has proved a challenging examination for the highly-able student. Even to participate in the test is a notable achievement for any student, and this is recognised by CTYI. However, this research has shown that the test identifies a separate group of people who qualify for CTYI programmes. This group differs from the non-qualifiers in a

variety of ways, and CTYI has pledged itself to promote academically stimulating classes for them. At the moment, these are the only courses on offer, however CTYI have not forgotten the non-qualifiers, hoping to provide enrichment classes for this group in the not-too-distant future.

This research will now examine the academic programmes which CTYI offers for qualifying students in the form of the CTYI Summer Programme, and the Saturday classes.

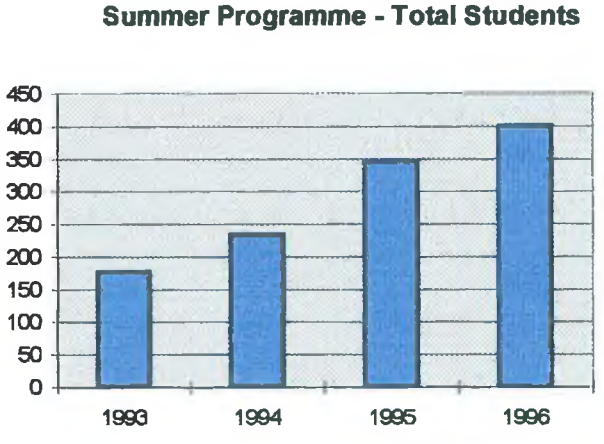
CHAPTER 4

Summer Programmes

Growth of academic summer programmes

In its inaugural year in 1993, the CTYI Summer Programme attracted some one hundred and eighty students, including forty from Overseas. By 1996 the Summer Programme had expanded to cater for over four hundred students, eighty of whom were Overseas students, taking place over two three-week sessions during July and August at Dublin City University. Some 95% of Overseas students were American, and all Overseas students had experienced the US educational system in some form. The following table and graph illustrate the rate of expansion of the Summer Programme since its first year:-

Table 4-1 Attendance on Summer Programme



SUMMER PROGRAMME			
year	*male*	*female*	*total*
1993	99	78	177
1994	172	113	234
1995	173	174	347
1996	172	230	402

It is predominantly a three-week residential course, and also caters for commuters. During this time academically talented participants study one course with either a mathematical/scientific base, or one in the area of Humanities. Eligibility for the courses is determined by performance on the Scholastic Aptitude Test or SAT (as discussed in Chapter 3).

The basic courses on offer include Mathematical Modelling, Computer Applications, Literature, Drama and Writing, Biotechnology, Psychology, and Media and

Communications Studies, with other options including Electronics, Astronomy, and Global Economics. The classes all take place at Dublin City University, with all university facilities at the disposal of CTYI. Computer facilities offered are some of the best available in the country, and DCU also boasts its own Community Radio Station, with modern audio equipment.

The classes are often pitched at a first-year university standard, and at a faster pace than school. As Enerson (1993) points out, programming should stimulate curiosity and investigation while introducing new areas of interest. The instructors would usually be university lecturers, and present a course outline for approval by the programme director at CTYI. While the instructor will follow the outline as much as possible during the session, flexibility is encouraged, and the ability to change in mid-stream is a vital quality in instructors at CTYI. It is important that as teachers of talented youth, they have in-depth knowledge of their subject, and that they encourage their students to research independently in their fields of interest.

Summer programmes have been found to be positive experiences for gifted students, offering them opportunities to interact with other equally-able students and to further develop their intellectual ability (Van Tassel-Baska, Landau and Olszewski 1985) The social component is a very important aspect of the summer programme at CTYI, and as Feldhusen (1991) points out, the opportunity to share a common viewpoint or discuss a topic deeply and passionately is not typically available in a forty minute period.

In the United States, these programmes have long been a fixed element of out-of-school provision for highly able students (Olszewski-Kubilius, 1989). CTY's academic programme is based on the following principles:-

- Academically talented students should be provided with the opportunity to learn subject matter and develop skills at a pace and level appropriate to their abilities;

- Academically talented students require a rigorous and challenging course of studies in the liberal arts, and CTY sees this area as the most valuable embodiment of verbal and/or mathematical ability;
- CTY combines rigorous and challenging educational coursework with a social experience that encourages the development of a balanced human being;
- Students' academic accomplishments should be acknowledged and rewarded.

Classes are kept small so that students may interact with one another, for experience shows that students learn as much through intensive interaction with their peers as they do through direct instruction (see Mills and Durden, 1992, and Tangherlini and Durden, 1993). The class size at CTYI allows a pupil-instructor ratio of around fifteen to one, which is much lower than the average class size in both Irish and American schools.

Self-concept

There is evidence to prove that the gifted have significantly higher self-concepts than other students. (Tidwell, 1980; Ringness, 1961; Ketcham and Snyder, 1977). Studies conducted with gifted children have generally found that they obtain higher scores on global self-concept measures compared with non-gifted children (Maddux, Scheiber and Bass, 1982; Davis and Cornell, 1985). Hultgren and Marquardt (1986) report that gifted junior high-school students perceive themselves to be higher on scholastic competence and judge their conduct to be better than non-gifted students. However, questions must be raised as to the impact of special programmes on these self-concepts. In certain programmes, placement in homogeneous groups can lead to a decrease in self-confidence (Coleman and Fults, 1982). A change in school environment which involves a change in friends and social climate can give a negative impact on self-perception (Olszewski, Kulieke and Willis, 1987). But other studies, such as that by Kolloff and Feldhusen

(1984) report no differences in self-concept between gifted students who take part in programmes and those who do not. Conflicting opinions may be explained by differences in the programmes. Moreover, these studies were performed on year-round "pullout" programmes. Kolloff and Moore (1989) looked at residential summer programmes and showed that self-concept does rise using the Piers-Harris Children's' Self-Concept Scale (Piers, 1984), and the ME scale (Feldhusen and Kolloff, 1981). Speculation as to why self-concept increases on a summer programme suggests that the students are better able to be themselves in this environment, and there is no need for them to pretend not to be intelligent. There is also an effect operating in which new-found friends and camaraderie act as a factor.

Daily routine

The average day for participants on the summer programme at CTYI is highly structured. Breakfast is served in the university restaurant between 8.00 and 9.00, classes run from 9.00 to 15.00 Monday through Friday, with a one-hour break for lunch, and are supervised by an instructor and a teaching assistant. In the afternoon, the students attend co-ordinated activities between 15.15 and 17.00. These may be sports activities such as football, basketball, volleyball or rounders, or other leisure activities including drama, dance, board games or arts and crafts. Dinner is served between 17.30 and 18.30 and afterwards the students attend supervised study periods between 19.00 and 21.00, during which time they attempt the homework assigned to them by the instructors. Study is held in the classroom, and is under the supervision of the teaching assistant. After study the students have free time until 22.00, when they must return to their rooms. Lights out is at 22.30. The residential students stay in the Campus Residences which accommodate university students during term time. Commuting students are allowed to stay for study if they have permission from their parents, returning home at 21.00.

Residential activity is co-ordinated by the site director who has overall responsibility for the students during their time at CTYI. Each group of students is assigned to a residential assistant (RA) who has responsibility for this group at all times outside of class. During the week, with the exception of supervised class field trips, the students must stay on campus at all times. At weekends there are numerous trips and activities organised for the residential students. The residential staff must stay on campus with the students for the duration of the course. At the weekends, lights out is usually one hour later and the students are given sufficient free time to rest and look after their laundry, etc.

Methodology

This research involved designing a questionnaire for the students to evaluate the 1995 Summer Programme. Of the 347 students who attended the Summer Programme during the months of July and August, some 207 responded to the 1995 CTYI Summer Course Evaluation questionnaire. This indicates a response rate of 60%. The questionnaire was administered to the students on the last day of the programme, and attempted to gauge students' level of satisfaction with both the academic and social sides of the programme. The instructors were evaluated in areas deemed important for teachers of the academically talented, as illustrated in Chapter 2. The facilities at Dublin City University were also examined in terms of their suitability for a residential summer programme. The data was further analysed in terms of Irish and Overseas students.

1995 data

There were 207 respondents to the questionnaire designed to evaluate the 1995 course. Of these 106 were male and 111 female. This group included 50 Overseas students. The ages of the respondents can be broken down in the following table:-

Table 4-2 Age of respondents

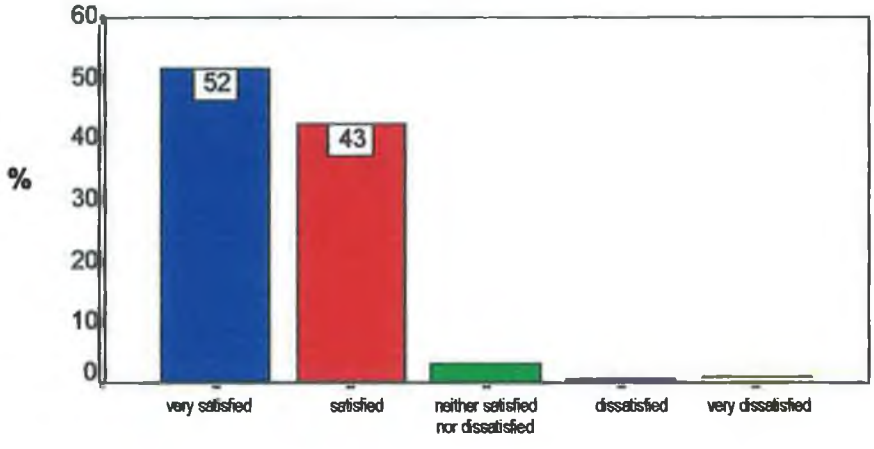
Age group	Number of respondents (N)	Percentage of overall (P)
12 years	6	2.8%
13 years	29	13.5%
14 years	79	36.7%
15 years	62	28.8%
16 years	39	18.1%

The majority of respondents were aged between 14 and 15 and constituted over 65% of the group, 16 year olds making up just under 20% of the group. 35% of the group indicated that they had attended a previous CTYI event. 90% of this group had attended the previous year's summer course.

Academic life

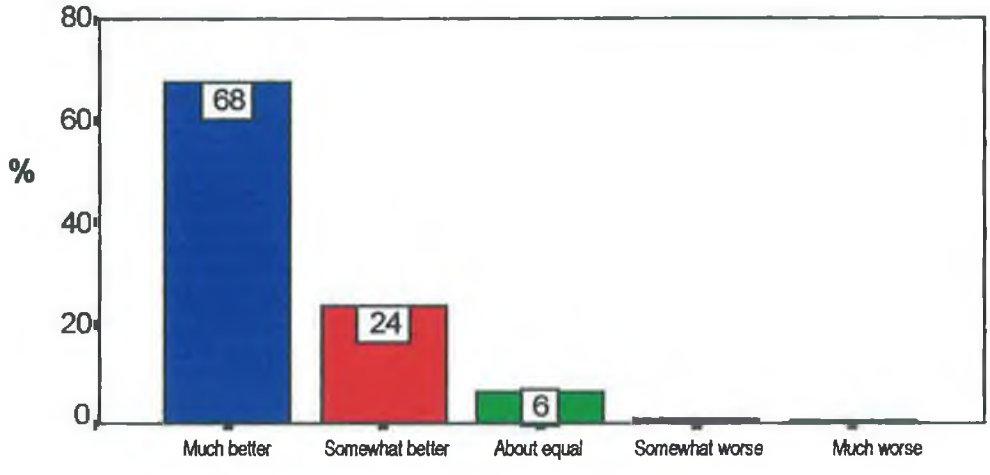
Unlike a regular classroom at school, the summer programme at CTYI has an instructor and a teaching assistant. Over 91% of the students believed that the instructor had a positive impact on their experience at the course, with 56% reporting a very positive impact. 80% believed that the teaching assistant had a positive impact on the class. The level by percentage of academic satisfaction with the programme is illustrated in the graph below:-

Figure 4-1 Level of academic Satisfaction with classes at CTYI



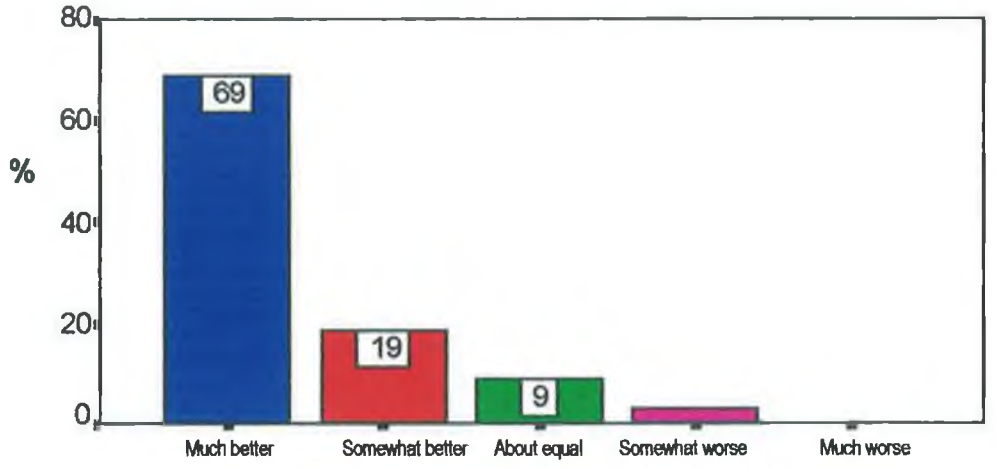
While their regular classroom provides them with an outlet to display their talents, all too often these students receive inadequate stimulation. Many turn to their parents with complaints that they are bored and that school does not present sufficient challenge for them. The students who attended the summer programme were asked to compare the level of intellectual challenge within their classes at CTYI with those that they experienced at school. 90% of the students believed that the level of intellectual challenge at CTYI was superior. Indeed, many Irish students noted that this was the first time that they had ever been challenged in an academic/educational environment. The overall results are illustrated in the following graph:-

Figure 4-2 Level of intellectual challenge compared with school



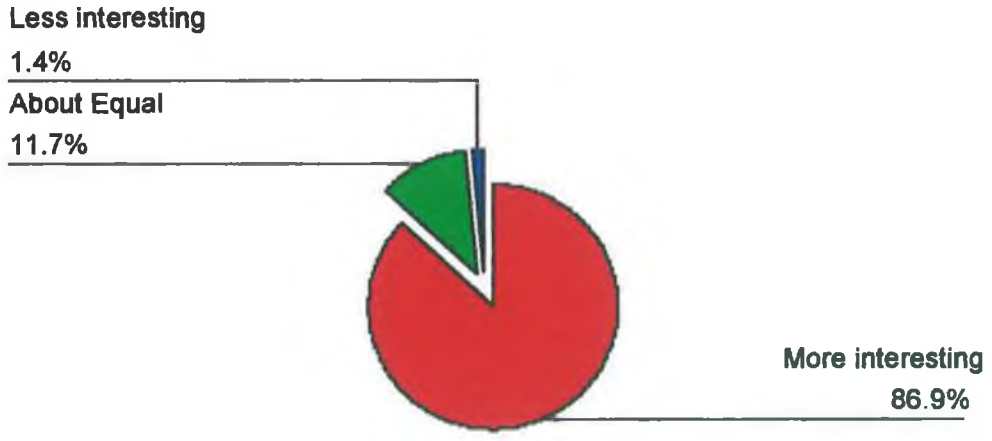
CTYI also prides itself on providing a special, unique atmosphere in its classes on the summer programme. The students were asked to compare the atmosphere with that of their schools. Again, CTYI seems to have been successful in this regard, with 89% of the respondents indicating that the atmosphere was favourable to that of their schools. In fact many Irish students drew attention to the fact that they found the atmosphere within the classes very relaxed compared to their school situation. The following graph illustrates these results:-

Figure 4-3 Atmosphere of classes at CTYI compared to school



Finally, the students were asked to contrast the level of interest in the classes they had encountered at CTYI with that in their regular schools. 87% found the classes at CTYI more stimulating, with 12% rating CTYI and school at about the same level.:-

Figure 4-4 Interest level in classes at CTYI compared to school



Comparison of Irish and Overseas students

It is worth noting that all the Irish students came from a cross-section of diverse Irish schools, with co-ed, single sex, public and private all represented. Yet the conclusive

results shown in the graphs above are consistent across the board. The Irish students *do* find the atmosphere better, they prefer the intellectual challenge, and find the classes more interesting than school. Comparing the Irish group with their Overseas counterparts yields the following results:-

Table 4-3 Academic satisfaction

	Irish	Overseas
Very satisfied	51%	58%
Somewhat satisfied	44%	36%
Neither satisfied nor dissatisfied	4%	2%
Somewhat dissatisfied	.5%	1%
Very dissatisfied	.5%	3%

Table 4-4 Interest in classes

	Irish	Overseas
More interesting	88%	86%
About equal	11%	12%
Less interesting	1%	2%

These tables yield very similar results, although more Overseas students than Irish report that they were very satisfied with the programme from an academic point of view.

Table 4-5 Intellectual challenge

	Irish	Overseas
Much better	73%	50%
Somewhat better	21%	34%
About equal	5%	10%
Somewhat worse	.5%	4%
Much worse	.5%	2%

Table 4-6 Atmosphere

	Irish	Overseas
Much better	72%	58%
Somewhat better	16%	26%
About equal	8%	12%
Somewhat worse	3%	4%
Much worse	1%	0%

This table reveals that the Irish students found the level of intellectual challenge and the atmosphere in the classes significantly better than the Overseas students did. This may be

due to the fact that the majority of Overseas students attend fee-paying private schools, where the level of individual attention is greater than in regular schools.

Achievements

The students were asked to state what achievements they may have realised as a result of attending the summer programme. 95% believed that they had achieved a greater knowledge of the subject. For many of the students this is their very first experience of subjects such as Psychology, Archaeology and Biotechnology, but equally students studying Mathematics, Literature, or Computers felt that their techniques had improved. 94% of the students felt that they had received some educational benefit from attending the programme, while 87% believed that they now had a greater appreciation of the subject they had studied. Lower on the scale, 60% felt that they would become more interested in this subject during their school year, and a further 44% believed that their study techniques had improved as a result of their attendance at CTYI. 51% believed that attending the classes had helped them become more self-confident. Comparing the results between Irish and Overseas students reveals very few differences in the first three categories; greater subject knowledge, increased appreciation of the topic and educational benefit. However with regard to improvement in study techniques, 47% of the Irish students believed the programme had proven beneficial, while only 31% of the Overseas students shared this view. Perhaps this can be explained by the fact that most of the instructors were Irish or used to lecturing in an Irish environment, within the Irish educational system. Interestingly, the Irish also reported a significantly greater increase in self-confidence, with 57% noticing an improvement compared to 36% of Overseas students. Further analysis reveals that while the difference between Irish and Overseas females in this category is comparable (53% to 50%), for the males the difference is quite substantial. Overall, 60% of the Irish male students reported an increase in self-

confidence, while only 18.5% of their Overseas counterparts report a similar increase from the programme. Dr. Sheila Gilheany, CTYI Course Director believes that the explanation for this lies in the fact that the Overseas students may have had a greater level of self-confidence before attending the programme at CTYI. Indeed, their parents must have felt assured that their confidence levels were sufficiently high to allow them to travel so far to attend the programme.

Ambitions

The students were asked if they were interested in continuing studies in the subject in which they had enrolled in at CTYI, or if they would consider pursuing a career in the area. Overall, 41% indicated that they would like to follow further studies in a related area, with 37% hoping to pursue studies in the same area. 24% hoped to pursue a career in a related area while 22% hoped to pursue a career in the actual field they studied at CTYI. The results show significant differences in Irish and Overseas thinking. 54% of Overseas students compared to 36% of Irish wished to study in a related area. Also, 42% of Overseas students compared to 32% of the Irish hoped to participate in studies in the same field. The explanation here could lie in the age profiles of the students. Percentage-wise, there were nearly twice as many sixteen-year-old Overseas students as Irish. Given that the college-going age in America is often 16 or 17 years, and the fact that many of the Overseas students may have grade-skipped due to acceleration during their high-school years, choice of college career is a more immediate concern for the Overseas students. The flexibility within the American college system allows students to study more subjects in their college careers than their Irish counterparts, so that the possibility of taking up a subject they may have studied at CTYI is considerably greater. The Irish system is far less flexible, and many students take courses at CTYI to experiment before making their career choices. With regard to future ambitions, the widest difference

between the two groups occurred in the area of independent study, with 30% of the Overseas students hoping to participate in some independent research compared to a mere 9% of the Irish students.

Comfort with ability

When asked how comfortable they felt about their intellectual ability, 74% reported that they were comfortable, with a further 19% indicating that their academic ability did not affect them. Breaking this down into Irish and Overseas students, 84% of the latter said that they were comfortable with their intellectual ability compared to 71% of the Irish. Of those remaining, 21% of Irish compared to 12% of the Overseas group indicated that their ability did not affect them. Only 4% of Overseas students compared to 8% of Irish students perceived themselves to be uncomfortable with their ability. This data can be contrasted with research carried out by Gilheany and Barnett (1996) on attendance at the CTYI summer programme in 1993, as illustrated in the table below.

Table 4-7 Comfort with intellectual ability

	Irish students 1993 Irish students 1995	Overseas students 1993 Overseas students 1995
Comfortable	35% - 71%	70% - 84%
Does not affect	56% - 21%	30% - 12%
Uncomfortable	9% - 8%	0% - 4%

As we can see, there is a significant increase in the number of Irish who now consider themselves comfortable with their ability (35% to 71 %). This contrasts sharply with the number who believe their intellectual ability does not affect them (30% to 12%). Perhaps this could be explained by the fact that 1993 was the first year of the CTYI programme and we know that in 1995, 40% of students were returning to the programme. They may have become more comfortable with their ability than they had been previously as a result of their attendance at the CTYI summer programme over the years.

Evaluation of instructor

All the respondents were given a list of statements about the instructor and the course they had studied at CTYI in 1995. Using a 1 - 5 Likert scale, students were asked to indicate whether they represented an accurate statement about their experiences in class during the three weeks they spent on the programme. The overall list of responses is included in the table below.

Table 4-8 Evaluation of instructor

	Always	Usually	Sometimes	Almost never	Never
The class was run in a way that was conducive to learning	54%	40%	5%	1%	0%
The class discussions helped me to understand the subject	55%	33%	11%	1%	0%
The instructor included examples and demonstrations	58%	28%	13%	1%	0%
We accomplished a lot in each day's class	58%	25%	14%	1%	2%
The instructor encouraged students to ask questions	75%	18%	6%	0.5%	0.5%
I felt that my ideas and opinions were welcome	61%	28%	10%	0.5%	1%
I felt comfortable asking the instructor for help	71%	15%	10%	2%	1%
I felt that the instructor knew a lot about the subject	84%	13%	1%	0.5%	1.5%
The instructor assigned an appropriate amount of homework	50%	30%	13%	6%	1%
The instructor returned my work to me on time	72%	19%	6%	1.5%	1.5%
The instructor's feedback on my work helped me to understand	54%	28%	13%	4%	1.5%
The instructor made the subject more interesting	64%	23%	10%	1%	2%
The instructor treated each individual student fairly and with respect	80%	13%	4%	2%	1%
The instructor encouraged a good class atmosphere	83%	11.5%	3%	1%	1.5%

As we can see from this table, the instructor's knowledge of the subject is rated most highly by the majority of the students. Feldhusen and Ruckman (1988) believe that teachers should be selected for gifted and talented programs on the basis of their knowledge in a particular area. In this aspect, they serve as mentors for gifted youth, providing in-depth knowledge about their area of interest. Also important to the students according to the table was the role played by the instructor in encouraging a positive atmosphere in class. The atmosphere at CTYI has been discussed earlier and has a special significance. If the optimal conditions are met, then learning is made easier. We have heard how the students can come together to provide an atmosphere where learning is placed on a higher platform, where it is possible to learn in an environment without fear of being stigmatised or ridiculed by one's classmates. If the instructor can in some way enhance this atmosphere, then the classroom can become a stage for the optimal performance. McLeod and Cropley (1989) state that the right classroom atmosphere cannot be scientifically prescribed, its creation depending on the art of the teacher, who has to balance a number of considerations. Cropley (1978) believes that a classroom climate favourable to the realisation of exceptional ability is characterised by a general air of acceptance, confidence, mutual support, respect for effort, and interest in high performance by all students.

Almost 80% believe that the instructor always treated the students fairly. At an age where these students are increasingly coming to terms with the complexities of interpersonal relationships and can be quite impressionable, it is important that the teacher set a good example. Unfortunately, some students report that they are coming from classrooms where some of their teachers are actually jealous of them, fearing their academic prowess. In this type of environment, they often feel afraid to achieve the results to match their potential. An important aspect of the instructor's duties at CTYI is to realise that he is not infallible, that he/she does not need to *know* the answer to every question, but rather

possess the ability to guide the students in the right direction where they can find the information they require. Some teachers respond to the challenge posed by these students by setting standards that are unattainable and putting themselves and their students under unnecessary pressure. This is clearly not the case at CTYI. Almost all of the students at CTYI felt comfortable asking the instructor questions, whereas some report that they often feel awkward asking questions at school, fearing that their teacher's reaction will be negative, or that their fellow classmates will feel they are wasting time. From the table we can also see that most of the students felt comfortable asking for help, which is something that they may have been unused to doing at school.

The overall mean score for the instructor under the various teaching categories from the 1 - 5 Likert scale is listed below, with a column for Maths/Science courses, and one for Humanities.

Table 4-9 Mean ranking for instructor

	Overall score	Maths/Science courses	Humanities courses
The class was conducive to learning	1.53	1.53	1.52
Class discussions were good	1.57	1.57	1.56
The instructor included some good examples and demonstrations	1.56	1.58	1.54
A lot was accomplished in class	1.63	1.61	1.64
The instructor encouraged questions	1.36	1.39	1.34
Student ideas were welcome in class	1.53	1.52	1.54
Students felt comfortable asking the instructor for help	1.45	1.51	1.48
The instructor knew a lot about the subject	1.21	1.22	1.21
The instructor assigned appropriate homework	1.80	1.85	1.76
The instructor returned work on time	1.42	1.36	1.50
The instructor gave good feedback	1.70	1.67	1.73
The instructor made the subject interesting	1.52	1.47	1.55
The instructor treated everyone fairly	1.33	1.34	1.29
The instructor encouraged a good class atmosphere	1.26	1.25	1.25

As we can see from the table above, there is no significant difference among the ratings for the instructor for Maths/Science and Humanities courses across the board. Similar significance tests for males and females and also for Irish and Overseas students yielded no significant difference. The results illustrated above are representative of all the groups of students who participated in the summer course.

Evaluation of teaching assistant

The students were asked to rate on a 1 - 5 Likert scale a list of statements about the Teaching Assistant (TA). 86% of the class believed that the TA always wanted the class to do well. This illustrates that on the whole, the Teaching Assistants have had a positive impact on the classes at CTYI. An important aspect of the TA's job is to assist the students during the evening study period. Almost all (98%) of the students found the teaching assistant helpful during this period. As with the instructors, most of the students also felt comfortable asking the TA for help. In fact, some reported that they used the study period to ask questions so as not to hold up the instructor during class time. 93% felt that the instructor and the TA usually worked well together, an important factor in the smooth running of the class. The students believed that on the whole, the TAs had a good grasp of the subject, explained concepts in a way they could understand, and were helpful during the study period. Significantly, over 90% felt that the TA was always available to help. With many students attending CTYI for the first time, it is clear that they have benefited from the extra voice in the classroom, either to offer a helping hand with their work, or as an alternative opinion within the class. The table for student responses with regard to the Teaching Assistant is shown below. Again, there were no significant differences between the various courses.

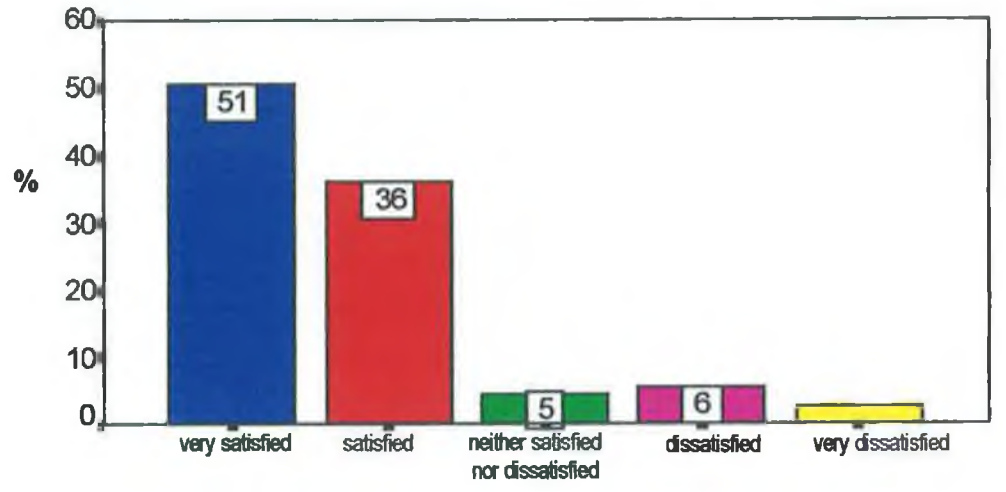
Table 4-10 Evaluation of teaching assistant

	Always	Usually	Sometimes	Almost never	Never
The TA had a good grasp of the subject	66%	30%	4%	0%	0%
The TA was helpful with homework assignments	68%	21%	8%	2%	1%
The TA explained concepts in a way that I could understand	64%	23%	10%	2%	1%
The TA's written comments on my work were helpful	53%	26%	14%	1%	5%
I felt comfortable asking the TA for help	75%	15%	7%	2%	1%
The TA and instructor worked well together	73%	18%	5.5%	0.5%	1%
The TA helped during study hour	79%	14%	5%	1.5%	0.5%
The TA wanted the class to do well	86%	11%	3%	0%	0%
The TA was always available	71%	21%	7%	1%	0%

Residential life

Alongside the academic programme, CTYI places a huge emphasis on life outside of the classroom. We have discussed the daily routine at CTYI and the importance for the talented student of spending time with his/her peers in a relaxed environment. The overall level of satisfaction with the social side of the programme is illustrated in the graph below:-

Figure 4-5 Level of satisfaction with campus life



As we can see from the graph, almost 90% of the students who attended the course in 1995 were pleased with their experience on campus. The breakdown of these results between Irish and Overseas students is illustrated in the following table:-

Table 4-11 Campus life - Irish and Overseas students

	Irish students	Overseas students
Very satisfied	56%	30%
Somewhat satisfied	35%	42%
Neither satisfied nor dissatisfied	5%	4%
Somewhat dissatisfied	2%	18%
Very dissatisfied	1%	6%

This table shows that the level of dissatisfaction with campus life is significantly higher for the Overseas students than the Irish students. Those Overseas students who were dissatisfied commented that having attended CTY in the United States, they felt that they were granted less freedom on campus in Ireland. These students found the system in Ireland more confining, as they had to stay on campus at all times. On the other hand, many of the Irish students had experience of residential summer courses in the *Gaeltacht*

(Irish-speaking areas of Ireland where children go to improve their knowledge of the language), and thus were used to the strict rules and regulations that are the norm on these courses. On reflection most of these found that CTYI was much more relaxed than any Irish language summer course they had attended.

Daily and weekend activities

Each day (after class from Monday to Friday) all students on the course participate in leisure activities. These activities may be of a sporting or non-sporting nature. The activities are non-competitive and give the students a chance to unwind after classtime. In addition, the Residential Assistants and Site Director are responsible for supervising special weekend pursuits. These include trips to the cinema, shopping excursions to the city centre, and a bus tour around Dublin's places of interest. These activities play a major role in the social life of the students while they are on campus. During this time they can meet students from different classes, make new friends and generally enjoy themselves. Usually there are sufficient activities to choose from, with a good blend of sporting and other leisure activities, such as arts and crafts, board games, drama and dance. In Ireland, inclement weather can wreak havoc with outdoor activities, however this is compensated for with alternative entertainment, such as showing a video or organising debates. Generally speaking the routine is flexible enough to ensure that if one activity is oversubscribed, the students can be accommodated on one of the other activities. The key concern from an administrative point of view is that the staff are aware of the whereabouts of all students at all times. Lists are kept with the names of students participating in each activity and a record is kept should a student fail to attend. Most activities have two Residential Assistants in charge, so that in the rare case of an accident, the remaining students are not left unattended. Help is never far away and there is a health centre on campus to deal with minor injuries, in addition to the staff of the sports complex

all of whom are trained in First Aid. More serious injuries can be dealt with in a nearby hospital. Students' perceptions regarding the activities are shown below:-

Table 4-12 Were there enough leisure activities?

	Yes	No
Daily activities	86%	14%
Weekend activities	80%	20%
Sporting activities	94%	6%
Other non-sporting activities	75%	25%

Observation of the programme reveals that most of the activities do start on time and the equipment required is usually available. CTYI has a lot of its own sports equipment, with the remainder being hired from the Sports Complex. The activities are usually well-run, and generally the Residential Assistant organising the activity will have a good working knowledge of this activity. The main emphasis is on the students' enjoyment and safety, and rules are not adhered to strictly in the sporting activities. The first activity is of 45 minutes duration, with the second lasting an hour. As we will see from the following table, many students feel that the first activity is too short, especially as it follows immediately after class. However the level of satisfaction with the amount of time allocated to leisure activities at weekends is harder to gauge, and seems to vary depending on the energy level of the particular student. Some feel that they do not get sufficient time to rest at weekends, while others believe that they get too much. Overall however, the majority seem happy with the balance. Student observations are shown in the table below:-

Table 4-13 Students' perceptions of daily and weekend activities

	Always	Usually	Never
Did the activity begin on time?	19%	71%	10%
Was the equipment for the activity always available?	48%	48%	3%
Was there enough time to complete the activity?	23%	53%	24%
Was there sufficient time to rest at weekends?	35%	49%	16%

Evaluation of residential assistant

During the course, each student is assigned to a Residential Assistant (RA). The RA is responsible for the student outside of classtime, and co-ordinates their daily and weekend activities. While in a position of responsibility, the RA must act as an adviser and friend to the students to ensure that their time outside of class is enjoyable. The RA must also ensure the smooth transition from life at home to that on campus at Dublin City University. As we have heard earlier, some of these students may be quite shy initially. Mixing with other students could be a problem, so in the early days the RA must do much to encourage a community spirit, and try to make everyone a part of the experience. Almost every comment from the students about their RA was positive. They consistently stated that their RA had treated them with respect throughout the duration of the programme, and that he/she had promoted a good atmosphere within the RA group. Significantly, 96% agreed that the RA was always clear and consistent about the rules for student conduct. Most RAs visited their students in class and 76% of students believed that their RA always acted as a good role model. This is important, particularly for the older students who may be about to embark on college careers. For the students to have someone in a position of authority who is interested in their education as well as their personal development is a great advantage, and considerable emphasis is placed on this at CTYI. It is common practice in the United States for CTY students to become the RAs of the future, and from the Irish experience there is no reason why this tradition should not continue. By and large, the students believed that the RAs were available to help, and 94% thought that the RA encouraged them to have fun on the programme. The table illustrating the comments about the RAs is shown below. Again, there was much similarity and consistency in the responses of Irish and Overseas students and males and females respectively.

Table 4-14 Evaluation of Residential Assistant

	Always	Usually	Sometimes	Almost never	Never
My RA was available to help me	77%	18%	3%	1%	0.5%
My RA encouraged me to have fun on the program	81%	13%	4%	1%	1%
My RA was interested in the activities that I chose	57%	33%	16%	2%	2%
My RA was a good role model and set a good example	76%	13%	8%	3%	0%
My RA was interested in how I was doing in class	63%	15%	13%	6%	3%
My RA was clear and consistent about the rules for student conduct	87%	9%	2%	2%	1%
My RA encouraged a feeling of community within my RA group	80%	11%	7%	1%	1%
My RA treated me with respect	91%	7%	0.5%	1%	1%
My RA treated other students in the group fairly	91%	8%	0%	1%	1%
My RA let me know what was expected of me each day.	79%	17%	2%	1%	1%

Facilities

The students were asked a list of questions about the facilities which were made available to them at Dublin City University, under the following headings:-

- Restaurant
- Campus residences
- Sports complex
- Other facilities

Restaurant

The following table illustrates the students' perceptions on the adequacy of the canteen facilities:-

Table 4-15 Students' perceptions of the restaurant

	Yes	No
Layout was adequate	84%	16%
There was sufficient time for meals	95%	5%
The restaurant was clean	54%	46%
The seating was adequate	94%	6%
There was sufficient food	83%	17%

While the students believed that there was sufficient food and that the layout and seating were adequate, a significant number questioned the cleanliness of the restaurant facilities. Although it was not specifically asked, many students (approx. 50%) indicated that they did not like the food served in the restaurant.

Campus residences

The following table illustrates the students' perceptions of the campus residences.

Table 4-16 Students' perceptions of campus residences

	Yes	No
Rooms were comfortable	91%	9%
Bathroom facilities were adequate	80%	20%
The showers were clean	81%	19%
There was enough wardrobe space	81%	19%
The common rooms in the campus residences were clean	78%	22%

From this information most of the students seem satisfied with the campus residences, by a majority of 4 to 1 in most cases. Despite early reservations from some students about

the size of the rooms, by the end they seemed satisfied, with 90% indicating that they were comfortable.

Sports facilities

The following table illustrates the adequacy of the sports facilities:-

Table 4-17 Sports facilities

	Yes	No
Outdoor sports facilities adequate	91%	9%
Indoor sports facilities were adequate	95%	5%
The sports complex was available when I went to use it	75%	25%
The sports facilities were in good condition	96%	4%

The above information indicates that the quality of the facilities, particularly the indoor facilities, was of a very high standard. The sports complex at Dublin City University is well-designed building with a range of state-of-the-art equipment. However, one quarter of the students' stated that it was not fully set up in time for their activities.

Other facilities

The following table illustrates students' perceptions of the other facilities available to them at Dublin City University:-

Table 4-18 Students' perceptions of general facilities on campus

	Yes	No
Adequate phone facilities	82%	18%
Adequate banking facilities	84%	16%
Adequate postal facilities	72%	28%
The shop was well stocked	24%	76%
I felt safe on campus	92%	8%

As we can see, the other facilities seemed adequate. Some references were made to the fact that there are no payphones in the residences. The only real cause for complaint seemed to be the shop, with students citing a lack of basic essentials such as milk, bread, butter and cereal.

Conclusion

A high level of academic and social satisfaction with the CTYI Summer Programme is reported by the students. They have benefited from an environment where learning is rewarded, and an atmosphere where they can be themselves without feeling different. Seventy-seven per cent of the students have stated that they would return to school more confident after their time at CTYI. A further 96% state that they enjoyed their overall experience, and 94% have indicated that they are hungry for new experiences and would return to CTYI for any future events.

CHAPTER 5

Qualitative Research

Qualitative research

Quantitative methods use standardised measures which fit diverse opinions and experiences into predetermined response categories (Patton, 1987, pg. 9). Quantitative data can provide some useful information in evaluating the running of a program. Policy makers can analyse responses to questionnaires that use Likert scales and measure the levels of satisfaction and dissatisfaction that exist amongst participants. These responses can lead to the organisers tackling and resolving issues which will hopefully improve the program. In the case of a residential summer course, like CTYI, this may not be enough. Asking participants to quantify the impact that CTYI has had on their lives by rating it on a 1-5 scale is an impossible task. Yet in the absence of an alternative, such a scenario often has to suffice. This clearly over-simplifies the effect and is an injustice to the program. However, observers and those involved in the administration of the program (co-ordinators, instructors, counsellors, etc.) will testify that almost every day, something significant occurs that directly affects the student's outlook on and philosophy of life. No evaluation form could ever capture these moments, let alone attempt to quantify them. An alternative approach is needed. Denzin and Lincoln (1995) describe qualitative research as multi-method in focus, involving an interpretative, naturalistic approach to its subject matter. Qualitative researchers study things in their natural settings, attempting to make sense of phenomena in terms of the meaning people bring to them. Qualitative analysis gives the researcher scope to delve beneath the surface of quantitative data, to ask individuals to explain, as best they can, the effects of events happening around them. It provides depth and detail through direct quotation and careful description of programme situations. To understand a programme like CTYI, we must be able to get to know the participants. How they rate a particular aspect of the programme in a closed format on a questionnaire cannot help us to achieve this goal. Having conducted some quantitative research in evaluating the program, the qualitative study was used to supplement the data

already collected and to give the respondents a chance to explain fully their thinking. This can help us to understand the *process* as well as the *product* as recommended by Bogdan and Biklen (1982) in their characteristics of qualitative research, which are the following:-

- Qualitative research has the natural setting as the direct source of data and the researcher is the key instrument.
- Qualitative research is descriptive
- Qualitative researchers are concerned with process as well as product
- Qualitative researchers tend to analyse their data inductively
- "Meaning" is of essential concern to the qualitative approach

Quantitative research can provide an important framework for our study of talented children but qualitative research goes some way towards giving us a meaning behind it. In order to get even a glimpse of the way that coming to CTYI has had on the lives of these students, they must be allowed, in their own words to tell their story.

Methodology

This research involved interviewing 30 students who were returning to CTYI for their third year on the programme. These interviews were conducted during the final week of the programme and lasted approximately 30 minutes each. All responses were taped for further analysis. The questions were asked in a structured format and all respondents were asked the same questions. All the questions involved open ended responses that often led to further discussion. The same interviewer carried out all the interviews and this person was familiar with the program and the technical terms associated with the courses. The technique of ethnographic research is recommended by Lundsteen (1987). The ethnographic process involves the study and capture of real-life situations. Direct

observation and interviews with the main players help us to discover the key characteristics of a programme. Observing the program in some instances as a participant and in others as an onlooker allows some special insights. It was believed that having experienced the course on three separate occasions, the respondents would have experienced some longitudinal effects that could be monitored

Perceived academic effects

The respondents were asked to quantify what effects, if any, coming to CTYI had on them academically. Everybody believed that they had experienced some effect but the responses were varied. Carrying out some analysis of the responses saw five major categories emerge. Firstly 71.4% said that experiencing the courses at CTYI helped with subjects that they were studying at school in some capacity. This answer is easy to understand as some students of Global Economics believed that this had an influence on their study of Economics in school, Creative Writing students saying that their command of English had improved, World Geopolitics having a profound effect on history and geography and Mathematical Modelling affecting Maths and Applied Maths.

Indeed, as one enthusiastic Mathematical Modelling student put it *"It's good to have done Mathematical Modelling because when I went back to school, I found myself coming across material that I had learnt at CTYI and being able to apply it to a much broader degree "*

A further 46.4% said that they had been challenged intellectually by coming to CTYI. Many found that this was very refreshing as they were often the best in their class at school and they now found that there was more to learning than what they were doing at school. They were now being exposed to new areas and coming across more difficult concepts than they had previously encountered. This group found the classes much more interesting than their normal schools and they found themselves being challenged at the

same time. 32.1 % said that coming to CTYI had broadened their minds in some capacity. The opportunity to study areas such as Psychology, Astronomy and Philosophy was obviously something that they relished and other students reported that they enjoyed approaching subjects such as Maths and Literature in an exciting and refreshing way. Many believed that this new and refreshing outlook gave them a whole new style of looking at things. For example, students of Psychology commented that the course had helped them view people in a whole new light and Geopolitics students felt that the course had opened their eyes to events that were happening in the world around them. Some voiced their frustration that the history syllabus in Irish schools stopped at 1966 while they were eager to understand what was happening in the news every day.

14.3% said that coming to CTYI had given them a better outlook on returning to school. This interesting effect could be attributed to the added stimulation that the students experience in the class at CTYI. As one Psychology student noted *" CTYI has put the fun back into learning for me. I was bored with school but now I feel that there is more to education and I hope to put that back into practice when I go back to school. "*

Others mentioned that coming to CTYI enabled them to maintain interest in school rather than become disillusioned. Literature students enthused that their writing ability had improved considerably and that they were looking forward to trying it out when they returned to school.

14.3% said that coming to CTYI had allowed them to be creative. *"CTYI are very interested in expression, I come here and express myself in the way that I want to, rather than the way my teacher in school tells me to do. "* While some Literature students noted that they were encouraged at school, others felt that their creativity was being stifled. They believed that too much attention was being paid to "doing things by the book". While one can feel sympathy for the teacher who is trying to bring all students up

to a particular level, it can be very frustrating for someone who has already attained that level, and is now hoping to explore new horizons. The ethos of CTYI is very student centred and the students are encouraged to follow their own paths and discover things for themselves. Other academic effects mentioned to a lesser degree included that the students felt more mature with the realisation that they could improve on their work. As one World Geopolitics student noted, *"I've got A's in History since I started at school, and have always considered myself an expert. Now I know that if I delve deeper, I can discover a lot more"*. Having a higher standard against which to measure their own work proved to be of great assistance in this case. Many reported that they had become more comfortable dealing with people in an academic setting as they were more confident bringing their own point of view across and less worried about being shouted down. The results are summarised in the following table.

Table 5-1 Perceived Academic Effects Of CTYI on Summer Course Participants

Helped with subjects at school	71.4%
Challenged students intellectually	46.4%
Broadened the mind	32.1%
Gave a better outlook on school	14.3%
Allowed students to be creative	14.3%

Atmosphere and Pace of classes at CTYI

The respondents were asked to compare the atmosphere within the classroom at CTYI compared to that of their regular schools. In spite of the fact that the group comprised students who attended single-sex and mixed schools as well as private or community

colleges, over 90% believed that the atmosphere at CTYI was preferable to that of their schools. Probing deeper, the participants related four significant factors for this belief. Firstly, 60.7% said that the atmosphere was decidedly more relaxed. As one Global Economics student noted, *"The atmosphere is much less formal than school, you feel much freer to speak up"*. Observation shows that the classroom is less structured than at school; students do not have set places, and are less confined.

32.1% reported that at CTYI, there was much more of an interest in learning amongst the students which created a better environment to facilitate progress. *"The people here are in class because they want to be, the teacher has a captive audience so automatically there's a better atmosphere"*. Many of the problems that exist in regular school are of a motivational nature. Too often, students are sitting in classes when they would rather be elsewhere. Classes can be disrupted with the result that too much of the teacher's energy is spent disciplining the class, at the loss of teaching time. This is not a problem at CTYI, and therefore there is great learning benefit. 25% said that the atmosphere encouraged good class discussions and conversations during class time. Again, this is only possible with students who want to listen, in an environment where everyone's opinion is respected. *"Sometimes in school, the teacher will start a discussion and ask for contributions. This is usually met with a long silence. I might want to say something, but usually I would be too embarrassed because the others would laugh at me"*. The instructor is allowed a degree of flexibility with the material and is freed from the pressure of having a set curriculum to be taught within a given time frame. Much of an Irish secondary school teacher's energy is expended in the race against time to ensure that students are ready for state examinations. Sometimes they do not have the time to focus on specific areas, and explore them in more detail. Maker (1982) points out that the atmosphere at enrichment classes are often conducive to the exploration of issues and encouragement of initiative thinking. As a Mathematical Modelling student noted, *"If you*

spot something that leads onto another area, then this too is explored. The instructor has the ability to change mid-stream and everybody responds to that."

21.4% believed that the good atmosphere was related to the fact that the program is very student centred. The lower number of pupils in the class and the added benefit of a teaching assistant allows the class to cater more for individuals. The students are encouraged to ask many questions and more thorough explanations are given. Giving the student priority makes them more willing to participate and also helps them feel more integrated in the class. The table below illustrates the students' views on the atmosphere in CTYI classes:-

Table 5-2 Atmosphere at CTYI compared to school

More relaxed than school	60.7%
More interest in learning	32.1%
Better class discussions	25.0%
Course was more student centred	21.4%

The classes at CTYI are supposedly pitched at a higher level to cater for the fact that students are in the top 1% of the population. The participants were asked what they thought about the pace of the class, and almost all (96.4%) believed that the pace was faster than school, creating a more intensive environment. 32.9% perceived that this was beneficial as it constituted less time wasting and boredom because they did not have to wait for people to have things explained again and again. 25% thought that the pace of their classes in school was too slow. As a frustrated Biotechnology student put it: *"You learn something new in school and you understand it immediately, then you have to do it again and again until everybody understands it. At this stage, I've become so bored*

that I've almost forgotten what it is I'm supposed to have learnt" 17.9% said that the pace was suitable for everybody on the program. Different people are capable of learning at different levels, the classes at CTYI seem to be able to cater for each of their various levels. The different ages within the class does not seem to be a problem as each student finds their own understanding of the tasks on hand. Observation of the classes and talking with the instructors reveals that on rare occasions, some students may be a little overawed and can fall behind. The Course Director, Dr. Sheila Gilheany believes that if a student is struggling for any reason, then there is no point in increasing their anxiety by making them continue. If they feel they would be happier in another class, they are transferred.

Instruction and Teaching Style

Is there a difference in teaching style in the classroom at CTYI compared to that of school? The students were asked to describe the teaching style that they had experienced in their time at CTYI. 39.3% believed that the style was much more student centred than ordinary school. The trend here was that while school was very curriculum based, the courses at CTYI were much more accessible to individual learning. Questions were more welcome and effort would be made to respond to each individual question. As a Maths student observed *"When I ask a question at school that's not relevant to what's written on the blackboard, then the teacher will either ignore it or be reluctant to answer it but at CTYI, the emphasis is on discovery and if a question leads to a new angle with the possibility of discovering something new, then the instructor will gladly take the class along this new path."* A further 39.3 % thought that the teaching style allowed for more in-depth analysis as the teachers knew a lot about the subject. The instructors on each course are specifically chosen because of their knowledge in a particular field. Expertise is important when dealing with highly-able students. As a Mathematical Modelling instructor noted, *"This is so much more refreshing than my usual university lectures,*

because I have to be on my toes at all times as some of the questions are phenomenal". Olszewski-Kubilius (1989) believes that a caring teacher or friend naturally boosts self-confidence and makes talented children feel more accepted. 28.6% observed that the style was more relaxed than school. With students motivated towards learning, the traditional teacher-pupil confrontations are avoided. 28.6 % said that their classes at CTYI were more similar to a university lecture, noting that all the teachers were comfortable with talking and were very good communicators. *"The teachers were just so friendly, the teacher and teaching assistant even joked with each other in class, something that would never happen in my school"*

The role of the teaching assistant

The presence of a teaching assistant in the classroom is an extra luxury afforded by the system at CTYI. As the teacher-pupil ratio is already smaller at CTYI, compared to school, the teaching assistant caters for individual tuition where possible. The students were asked what they thought about the involvement of the teaching assistant. 92.9% said that they thought that it was beneficial but the reasons were varied. Many felt that good utilisation of resources had depended on the relationship between the instructor and the teaching assistant. 35.7% believed that it took some of the pressure off the teacher with two voices to be heard instead of one. This is quite advantageous as many students felt that the problem in schools often exists because there is only one person to explain things. Another way of looking at the area or a different way of explaining things often helps understanding. The critical element lies in the link up between instructor and teaching assistant. It is imperative that if two voices exist, then the long term objective must be a common one for both teachers and students alike. From an organisational point of view, it seems to work with the teaching assistant often responsible for the preparation of resources for the class i.e. photocopying, organising videos, distribution of materials.

These duties while necessary for variety and enrichment often prove time-consuming for the one teacher in a classroom. If the student can come to class with everything ready, then they can get down to work much faster. Much effort is expended in regular schools on preparation, which can often cut into class time, resulting in the loss of valuable teaching time. The residential staff at CTYI play an important role here in ensuring that the students reach class on time so that there is no waiting around. Some 28.6% felt that the teaching assistant was useful if you needed to ask a question in class. Rather than disturbing the instructor, the pace of the class was not disrupted and the teaching assistant provided the option of a quick and adequate response. 25% felt that the teaching assistant was most useful during study time at night when they often needed help with their homework assignments. Teaching assistants themselves felt that this time was very useful in getting to know their students better in a less formal classroom environment. This is illustrated in the following table.

Table 5-3 Perceived effects of teaching assistant at CTYI on Summer Course participants

Benefited from his/her presence	92.9%
Took the pressure off the instructor	35.7%
Helpful for questions	28.6%
Useful during study hall	25.0%

An important question

Over 60% believed that questions were more welcome in the classroom at CTYI and felt that there was less chance of them being "shouted down" than they might in a regular class. As another aspect of these classes is that the inquisitive student is encouraged to ask questions, this is an important finding. 42.9% observed that they received more

thorough explanations for their questions than they would expect at their normal school. The talented student can often feel frustrated in their regular school, because the teacher may not have neither the time nor the knowledge to deal adequately with their questions. Rather than returning to the problem at a later date, it is often dismissed and forgotten about. This is not the case at CTYI. As a Biotechnology student noted, *"Our teacher would answer a question as if he had all the time in the world"* A further 35% said that their questions were always excellently answered while another 21% said that their questions often led to a more detailed exploration of the topic which in turn sparked an interesting class discussion, a chain of events that would be usually impossible to achieve at school. A closer look at the classes bears testimony to this. Often the instructor's specialist knowledge is tested to the full by challenging and probing questions from the students. On the whole, the instructors do not panic when asked a question the answer to which they do not readily know, but rather accept their limitations, bearing in mind that the most important thing is not to know everything but to know how to find it out. They come back to the query at a later stage and set the students on the right path to enrich their knowledge.

One of the key elements of the CTYI mission is to provide enriching classes for academically talented students. This research hoped to find if the students found the classes more stimulating than their regular school. 92.9% of the respondents believed that the classes were more stimulating while the remaining 7% found them as stimulating. This compares with research performed on all summer course participants in 1995, 87% of whom found the classes more stimulating, 2% less stimulating, and 11% equally stimulating in contrast to school (see chapter 4). 35.7% cited the added depth of the subject they took as the reason for this increased stimulation. This is understandable since generally speaking, the school curriculum can only offer the pupil the tip of the iceberg, and presents few opportunities to uncover what lies beneath. A three-week intensive study

of one particular subject field as offered by the courses at CTYI gives everyone the opportunity to delve as deep as they wish into areas of interest, just as they would in a college programme. Access to university facilities at CTYI provides an educational benefit. Availability of modern computers, a comprehensively stocked university library, and up-to-date technological equipment are some of the pedagogical tools utilised by the CTYI programme. 25% believed that the added stimulation stemmed partly from the lack of time-wasting in CTYI classes since the need to hang back for other students to catch up is eliminated. Many students voiced frustration with the school situation, where the teacher often has to reiterate points many times over before all students grasp the new material. 14.3% found that they were more stimulated as a result of being able to choose a subject that they were interested in and having the opportunity to follow their interests in an intensive three week session. The curriculum in Irish schools is not very flexible, with little room for manoeuvrability. There are few opportunities for extended subject choice, particularly in smaller rural schools.

Social Effects

Strop (1985), and Ross and Parker (1980) noted that academically talented adolescents generally feel competent in academic areas, but much less so in social areas. The respondents were asked if they had experienced any social effects from their participation in the course. Some four significant themes emerged, growth in self-confidence, making new friends, improved communication skills and meeting a variety of new people. Over 85% believed that their self confidence had improved in some capacity. Many confessed to having been shy originally but felt much more comfortable with their personality having attended the programme at CTYI. Others reported that they believed they were more understood having experienced the course here. Interestingly three out of ten said that this new self-confidence was restricted to being at CTYI. When these students

returned to school, they had difficulty transferring it to a different environment, and in particular relating their CTYI experiences to those at home seems to have been a problem. Many students felt that it was hard to justify to their classmates that they had spent a month of their summer holidays at "school". Describing the programme to people who had never even heard of it usually proved a difficult and frustrating task, often culminating in a reluctance even to talk about the experience, let alone share it. As a Biology student relates: *"When I told my friends about my first experience at CTYI, they thought I was mad to spend three weeks of my summer holidays in a classroom. It bothered me at first, but then I realised I'd probably have reacted in the same way had I not seen the course for myself and enjoyed every minute of it"*.

Some 60% said that making new friends had been a major social effect. Enerson (1993) found that while satisfaction with challenging course work taught by expert teachers and the opportunity to live on a university campus was important, making friends and gaining confidence in one's ability is equally vital. The fact that so many students return to the courses validates this assertion with the same people meeting up every year. Kolloff and Moore (1989) point out that the most critical aspect for students on residential programmes is to discover that there are other young people who think the same way as they do, who are interested in the same ideas, and who like to learn in similar ways.

32% believed that meeting a variety of new people was an interesting experience. While the numbers on the summer course are increasing every year, it is still at a level where almost everybody on campus can get to know each other. A wide variety of activities and no discrimination amongst age groups means that everyone mixes. The presence of both American and Irish students lends the experience a cross-cultural dimension. Despite the many miles travelled and the boundaries between them, many of these people share similar interests, tastes and goals. 57% felt that their communication skills had improved primarily from their experiences here. Many believed that they were able to establish their

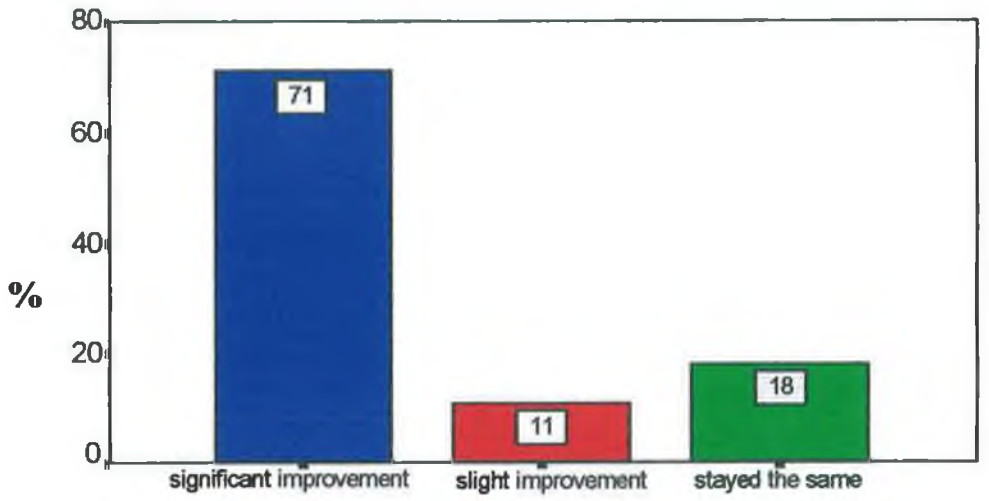
own identity at CTYI which was different to the perception that their school friends may have had on them. A lot of students felt that they had already been labelled in school and often diagnosed as strange just because that they were intelligent but that was never a factor at CTYI.

Table 5-4 Perceived social effects of participants at CTYI

Improved self-confidence	85.9%
Established new friendships	60.6%
Improved communication skills	57.1%
Met a variety of new people	32.4%

Are these students comfortable with their ability? Being labelled as gifted or academically talented could have had some adverse effects. Buescher (1991) points out that high expectations could contribute to feelings of failure and Freeman (1985) speculates that because the child is cognitively advanced, he may be more sensitive to social cues. From considering the social comparison process Harter (1986) and Marsh (1990) consider that the implications of removing a child from a regular classroom may lead to a negative self-concept. In this instance, this is not the case. Factors explaining this difference could be that the acceleration programme that we are examining in this research is that of a summer enrichment programme and the students are not actually removed from their everyday classroom. The following graph illustrates this idea.

Figure 5-1 Comfort with academic ability after attending courses at CTYI



The chart above shows the level of comfort with academic ability after attending the Summer Programme at CTYI. Analysing the results reveals that 18% of students said that they felt the same way about their ability since they came to CTYI, citing that they had always been comfortable or that their feelings had remained constant. 11% recorded a slight improvement while 71% reported that they felt significantly more comfortable with their ability than previously. This stemmed from the fact that they had met people of similar interests resulting in no longer feeling isolated.

Comments included :

"Everybody here is at the same level, I no longer feel strange."

"CTYI is a place where you can apply your ability"

"People here have had similar experiences and share the same outlook on life"

"In school, there is often a certain degree of nastiness if you're bright, here it's different, it's acceptable and encouraged"

Reasons for Returning

When these students were asked to explain why they come back, some different trends emerged. Three in four said that they returned because of how much they had enjoyed the classes. They were delighted to find themselves both academically challenged and stimulated at the same time. Surprisingly, there was no significant trend towards either the Maths/Science courses or the Humanities courses. In fact, many students said that they had enjoyed a Humanities course, but decided to try another course the following year and found it just as interesting. Nearly 80% said that they returned to meet new people or renew old acquaintances. Observation of the program validates this belief. From the moment of their arrival, most returning students are visibly excited by the prospect of meeting people from previous years' courses. Every student in the research indicated that they had kept in touch with people that they had met at CTYI during the year. Between letter writing, telephone calls, weekend visits and organised reunions, some contact was made. Often many miles were travelled, county and sometimes even country borders were crossed to keep friendships alive. Meeting new students held no fear for some students *"I was nervous when I came here first but everybody was so friendly. Now, I try to be as friendly to people who are arriving for the first time."* Many return for the atmosphere which is *"much more relaxed than Irish college"* and often much more *"exciting than home."* Some students say that they return to improve their academic skills. This is common among literature students who often do follow-up courses to improve their writing skills. It would be an injustice to either side of the program to specify whether it was the academic or social aspect of the programme that brought them back to CTYI. While everybody felt that the classes were wonderful, many believed that it was the camaraderie amongst their fellow students that encouraged them to return. The link between the academic and social side provided an atmosphere that encouraged involvement for staff and students alike.

Staff discussion

Many members of staff, both teaching and residential, return to CTYI year after year. The site director, Mr. Frank Lee, who has overall responsibility for the residential side of the programme, and has been involved in residential programmes for over 20 years, believes that CTYI is different from any other course he has worked on. "*The students here are more focused on learning; they are less easily distracted than other children.*" The average day at CTYI is very structured, with students being clear on what they are supposed to be doing, and where they are supposed to be at all times. Even outside of class time, the activities are highly co-ordinated, and keep to a particular timeframe. The students seem happy with this system, as one Literature, Drama and Writing student notes: *"I like sports, and there is a huge variety of sports to choose from, so I'm very happy*". Observation of the programmes reveals that the daily activities are divided in a 60-40 ratio between sporting and other, non-sporting activities. The sporting activities are run in a fun fashion, the Residential Assistant in charge attempting to get everyone involved. The indoor sports facilities at Dublin City University are some of the best in the country, and these activities are always very highly subscribed. The non-sporting activities include drama and dance, and the less energetic board games and arts and crafts. The balance seems to work, as one Mathematical Modelling student observes: "*Sometimes I feel full of life and want to do an outdoor sport, but I know that if I get tired I can relax at the next activity and still be with my friends*".

Many Residential Assistants return over the years. They are often university students themselves, or young teachers. As the Senior Residential Assistant for the last two years, Mr. Seamus McMahon, a secondary school teacher and broadcaster on community radio points out: "*The atmosphere on this course is amazing. The students really come out of themselves over the three weeks and allow you to see a side to them that you never see at school*". Once they arrive on campus, the students are assigned to the care of an

Residential Assistant, and are part of that Residential Assistant's group of approximately 15 students. This system meets with favour from most of the residential students. "*Right from day one, you become part of a community. Making friends is so much easier and the RAs are very helpful.*" The residential staff are very focused on the aims of the programme. They stay in the Campus Residences with the students for the duration of the course. As one RA notes, "*CTYI is most enjoyable. For three weeks of your life, you can just shut yourself off from the outside world and let the programme take over.*"

All of the students believed that they benefited from having a Residential Assistant allocated to them. The Residential Assistants help the students adjust to college life, explaining the rules of student conduct and introducing them to the other members of their group. 90% of the students believed that the Residential Assistant encouraged them to have fun over the three years they had participated in CTYI summer courses, even if they did not have the same RA every year. Three-quarters of the students felt that their RA was always available to help, as one student noted: "*When I came here first, my Residential Assistant told me that if I had a problem adjusting, to talk to him and he would do his best to help me*". Many students noted that they were impressed by the fact that their RA often turned up in their classroom. As one Astronomy student points out: "*It's great to look up from time to time and see that your RA is in the class. It shows that they are interested in how you're getting on*".

Interview with Dr. Sheila Gilheany

Dr. Sheila Gilheany has been Programme Director at the Irish Centre for Talented Youth since 1993. Dr. Gilheany was first asked what academic benefits she hoped the students would gain from coming on the summer programme. Her main objective for the students was that they would acquire knowledge of new material. She particularly hoped that this would be subject matter that they would not normally touch on in school. Offering

courses such as astronomy and archaeology gives the students access to material that would normally be reserved until third level, thus giving them a taste for college life. She also hoped that the students would have acquired the ability to seek out information for themselves. A goal of the CTYI programme is to encourage self-direction in learning. Dr. Gilheany believed that by arousing curiosity in talented students, they could satisfy this curiosity by discovering things for themselves. This should not be reserved for their time on the CTYI summer programme, but rather set the students on the right path for life-long learning. She also hoped that the students could return to school and view it in a different light thanks to their experiences at CTYI. Rather than feeling frustrated with their schools, she hoped that the student who had experienced a worthwhile academic challenge at CTYI would now look forward to fresh challenges at school. Instead of fostering an attitude where the students feel disillusioned about returning to school, Dr. Gilheany wants CTYI to help them embrace it. "*When they are completing their homework for school, they shouldn't be content with doing enough to get a reasonable mark. Hopefully now they will go all out to do their best, having learnt from their experience at CTYI*".

Dr. Gilheany was then asked about the criteria for choosing the instructors she employs on the course. The most important factor, to her mind, was that he or she should have an expert knowledge of the subject. Being comfortable with your subject is imperative, as all kinds of questions can emerge in a classroom of talented adolescents. Dr. Gilheany believes that the instructor must also have absolute enthusiasm for his or her area, in order to inspire the students during the summer programme. Academic qualifications however, although highly important, were not everything. Flexibility is cited as an important quality, since the environment on a residential programme is highly dynamic. Finally, but equally important, she mentions keenness to work with young people and a willingness to share knowledge. Not all experts make good teachers, so the instructor

needs to be a part of the overall programme and realise that student benefit is all-important.

On the subject of teaching style, Dr. Gilheany does not look for one particular style, realising that the style required to teach a course on Pharmacology is very different to that suited to a Literature, Drama and Writing course. Overall, the instructors must be happy to play a wide ranging role. "*One day they may have to do 'chalk and talk', while the next day, they may head off on a field trip. What we need is flexibility so that the instructor know the best way to bring his or her message across to the students*". Ideally, third level lecturers in the various subjects are sought. In some instances, such as Psychology, Astronomy or Archaeology, this will be a necessity, as these subjects are not on offer in Irish schools. Sometimes a highly qualified second level teacher fits the bill, as long as they possess the enthusiasm and flair to work with the programme and facilitate learning for the students.

Dr. Gilheany is trying to create an academic atmosphere where a genuine enthusiasm for learning exists. "*I really want the students to come away from CTYI feeling good about their own ability and excited about the subject that they have just studied*". She believes that the pace of the classes is necessarily fast, since in many cases these students need to be pushed. Many of them find their work in school somewhat easy, and discover that they can still manage to do well with the minimum effort. Dr. Gilheany notes that many students seem surprised at the start of the programme at the rapid pace of the classes, but feels that this is vital. "*It's good for them to come here and discover that learning isn't quite as easy as they thought it was*". She believes that this has no adverse effects, as the student is more than capable of adjusting to this new, faster-paced environment. "*The SAT is a very comprehensive exam, and anyone who qualifies will find no difficulty in the classes at CTYI*".

Dr. Gilheany believes that the role of the teaching assistant is as important as that of the instructor. They are necessary from an administrative point of view for the class to run smoothly. Duties such as photocopying and preparation of class materials may seem mundane, but can use up valuable teaching time. The teaching assistant is also vital in the classroom to offer assistance where a student is having difficulties. Often third level students of the subject are chosen as teaching assistants, so that they can help with student enquiries. Very importantly, they can get an overview of how the class is progressing during study hall, and report back to the instructor with suggestions as to how this may be improved. The teaching assistant acts as an important link between instructors and students, one that is rarely available in regular schools. Overall, Dr. Gilheany is very happy with both her instructors and teaching assistants. "*We get a lot of instructors and teaching assistants coming back year after year, in fact some see the programme as the highlight of their calendar*".

The main social effect of the summer programme in Dr. Gilheany's opinion is the opportunity to mix and make friends with other young people of similar ability. This would hopefully lead to an increase in self-confidence. "*Mostly one hopes that the students go home with increased self-confidence, that they feel it's acceptable to work hard as they see others around them doing just that*". She believes that this helps them to take back a good feeling about themselves which will obviously benefit them in their own social environment. The social atmosphere that Dr. Gilheany endeavours to create is one in which the students find it easy to make friends. From the first day, they become part of a Residential Assistant's group, which brings with it a sense of community. The students do not have time to feel lonely or homesick, because there are so many people around them. Outside of classtime, the emphasis is on fun. "*The students can play something like football, and while they may not be very good, they can still enjoy themselves because they are meeting other students in a similar position*". Excellence is not sought after in

activities, just the creation of an environment where it is easy to meet and get to know people. The benefits can be enormous: "*Sometimes we may have a student coming here, and the parents would tell us that they have no friends, but after the programme, the same parents would contact us to tell us that their son or daughter is constantly writing letters, or on the phone to the new friends met on the summer programme*".

Dr. Gilheany stresses that the link between the academic and the social side of the programme cannot be overlooked, and indeed is "incredibly important". The students have to be regarded as a whole person: "*If you don't feel good about yourself socially, you'll find it difficult to perform academically. While we are promoting academic excellence, it would be a mistake to over-emphasise the academic side of the programme, because their social adjustment is so important, especially at this age*". Increasing confidence in one's ability is an important aim of the CTYI programme. It is of no benefit to the student to have a great deal of intellectual talent unless he or she is comfortable enough to make the most of it.

The long-term effects stressed by Dr. Gilheany is that the students who attend CTYI may become happy and fulfilled in their lives. She would hope that every student would fulfil their true potential, whatever this involves, and believes that every student deserves the opportunity to develop to the best of their ability. "*When these students grow up, I don't want them to feel frustrated about what might have been. I want them to believe that while they may have encountered difficulties, they have managed to overcome them, and if CTYI has played even a small role in that experience, then we have achieved something*".

Conclusion

From the research, it is clear to see that coming to CTYI has had a profound effect on these students, both academically and socially. The need for academic stimulation is

evident, the talented student needs to be taught at a faster pace. They need an environment that they will thrive in, one in which learning is encouraged and curiosity is rewarded. Students at CTYI respond well to a more student centred teaching style and a relaxed atmosphere. Socially, coming on the Summer course helps these students to become more self-confident and to establish new friendships with people that share similar interests and ideas. Primarily, they return to relive past experiences because they enjoy their time that they spend at CTYI. Their needs should not be ignored and while CTYI can provide a platform in which their talent can flourish, it should only act as a foundation. It is not enough just for classes to be offered during the summer at CTYI, these students require enrichment the whole year through. Schools should attempt to copy the successful formula that exists and encourage these students to reach their full potential. Finally in the words of a Biotechnology student *"I really enjoy my time at CTYI and when I go back to school, I just wish that they could do things in a similar fashion"*

CHAPTER 6

Saturday Classes

Background

CTYI organises Saturday classes at Dublin City University to provide enrichment programmes for students during the year. These courses are of ten weeks duration and aim to broaden students' minds in a variety of areas which they would not normally tackle in their curriculum at school. The criteria for qualification for these classes is the same as on the summer programme, using performance on the Scholastic Aptitude Test (SAT) [see Chapter 3]. The classes act as a further resource for students who have already attended the summer programme, and importantly, may serve as an outlet for students who have been unable to attend during the summer, for example, through illness or for financial reasons. The subjects on offer over the Saturday sessions included Mathematical Modelling, Computer Applications, Philosophy, and Literature, Drama and Writing. This research intends to look at students who have attended these courses to ascertain what expectations they may have had, and what ambitions they hope to realise in the future.

Feldhusen and Sokol (1982) identify some key cognitive needs of talented students addressed by Saturday programmes. The gifted must try to acquire a broader store of knowledge, learn new research methods, and exercise self-direction in learning. Saturday programmes provide the opportunity for gifted and talented youth to engage in some in-depth study in areas of interest, with a curriculum that can be enriched and accelerated to fit students' needs. Saturday programmes should offer a wealth of information **(enrichment)** at a fast pace **(acceleration)**. Feldhusen and Ruckman (1988) suggest that an effective Saturday programme should run between a seven and twelve week period, with two to three hours instruction per week. This allows sufficient time for detailed pursuit of a topic for significant project involvement. Feldhusen and Wyman (1980) believe that a college or university campus is an excellent location for a Saturday programme. College or university lecture theatres provide an excellent setting for the

classes and the professional academics environment may serve as a career stimulus for the talented adolescent.

Finding the right teacher is crucial. They should be selected for these classes on the basis of their competence in their particular area, so that the student may enjoy a high level of teacher expertise. Feldhusen and Hansen (1987) propose the following selection criteria for teachers, who should be:-

- intelligent and generally knowledgeable
- willing to work to hard
- well-organised
- excited about the opportunity to work with gifted students
- accepting of the diverse behaviours of talented students
- flexible and creative in designing methods and materials of instruction

Methodology

The research consisted of designing two questionnaires, the first to be administered to the students at the start of the classes, and the second at the end of the ten week programme. The first questionnaire included some demographic information, and whether they hoped to achieve anything by attending the classes. The follow-up questionnaire assessed the students achievements as a result of the programme, and their level of satisfaction with different aspects of the classes. Since the classes took place on Saturday mornings and early afternoon, most of the students represented came from the Dublin area, although some travelled from as far as Sligo and Kilkenny to attend the sessions. Overall, 64 people responded to the opening questionnaire, 19 in Mathematical Modelling, 18 in Computer Applications, 13 in Philosophy, and 14 in Literature, Drama and Writing.

Some 62 people replied to the closing questionnaire, 16 in Mathematical Modelling, 18 in Computer Applications, 12 in Philosophy, and 16 in Literature, Drama and Writing. Both questionnaires are included in Appendix C.

The opening questionnaire

Analysing the opening questionnaire first, over 90% indicated that they had attended a previous CTYI event. Of these, all reported to be either satisfied or very satisfied with their previous academic experience, while 93 % reported that they were either satisfied or very satisfied with their previous social experience at CTYI. 70% of the respondents had attended at least one summer programme, with as high as 42% indicating that they had attended the summer programme on 2 or more occasions. An average of 30% had attended at least one of the open days organised over the previous three years.

Student perceptions

Before attending, 35% of students ranked themselves as much better than their classmates in the subject they were about to study, while 48% ranked themselves as somewhat better, and 16% thinking that they were about equal. None of the students considered themselves worse or somewhat worse than their classmates. This could be explained by the fact that these students had already been identified as academically talented by their previous performance on the SAT, in which they had ranked above the 99th percentile for their age group. The students were asked to rate a list of statements about why they may have attended the course, using a Likert 1 to 5 rating scale, where 1 indicated strong agreement, and five indicated strong disagreement. Analysis of the results revealed that the most popular reason for coming was that they enjoyed new challenges. The mean response rate here was 1.64. Another significant reason was that they had enjoyed a

previous experience at CTYI, which had a mean response rate of 1.89, as shown in Table 6.1 below:

Table 6-1 Mean response rates of reasons for attending Saturday classes at CTYI

Enjoy new challenges	1.64
Enjoyed previous experiences	1.89
Like to meet new people	2.52
Renew old acquaintances	2.80
Help with school work	3.02
Improve study techniques	3.26

As we can see from this table, the lowest rating is for improving study techniques (3.26). This is an interesting observation because, according to Dr. Sheila Gilheany, Director of CTYI, the aim of these classes is not to serve as a "grind school", but rather to broaden the minds of the students who attend. Students were then asked to relate the subject that they were about to undertake to their school experiences, using a similar rating scale. As would be expected, most students picked their subject out of interest in the subject at school, but many related a concern over the pace of the classes and the ability of the teacher and the scope of the curriculum to stimulate them. These results are illustrated in Table B:

Table 6-2 Mean response rates of school experiences and their chosen subject

Interested in subject at school	1.95
Interested in curriculum at school	2.94
Classes conducted at a suitable pace	3.02
Teacher at school stimulates me	3.10
Curriculum at school challenges me	3.37

Extracurricular activities

The research was interested in the fact that many of these students would be involved in different areas outside of their school hours, apart from attending classes at CTYI. Interestingly, the most popular extra-curricular activity for all the students was sport, with over 64% saying that they participated in some sporting activity outside their school hours. The full list of activities is provided in Table 6-3 below:

Table 6-3 Activities participated in outside school hours

	Male	Female	Total
Acting classes	15%	15%	15%
Art and Crafts	3%	15%	7%
Chess	21%	7%	15%
Computers	31%	7%	21%
Debating	21%	19%	20%
Literary activity	23%	19%	21%
Maths	10%	0%	6%
Music	18%	30%	22%
Scouting	26%	15%	23%
Sport	72%	52%	64%

As can be seen from the table, males have a much higher involvement in activities such as chess and computers, outranking females by a ratio as high as three and four to one, while females participate more in arts and crafts, and music. Sport has the highest participation ratio for both sexes, with 72% of males participating, and 52% of females. The higher percentage of males here could be explained by the higher availability of sporting clubs and organisations for boys. Males seem to be more interested in the mathematical sphere, with 10% participating in mathematical activities outside of school hours, contrasting with the null set of females. The low percentage of individuals participating in arts and crafts (total 7%) could be explained by the fact that qualification for entry to a CTYI course is based on performance on a mathematical and verbal test, and the possibility that artistically talented students may fall outside the scope of the facilities offered by the centre. Finally, all students indicated that they were involved in at least one extra-

curricular activity, with some indicating participation in as many as eight activities outside school hours. The mean number of activities here was between three and four, suggesting that stimulation such as that offered by courses like CTYI is absolutely necessary in the development of the talented adolescent. Almost all the students involved claimed to read a lot in their spare time. Novels and thrillers proved to be the most popular reading material followed by magazines and historical books. Domain-specific reading was also quite significant with 39% of Computer applications students reading computer related books, 24% of Mathematical Modelling students reading mathematical books and all the Literature students reading novels. Magazines and newspapers were favoured choices among the Philosophy group, along with history and geography books. The reading habits of these four groups can be illustrated in the following table:

Table 6-4 Reading habits by course taken

	Maths	Computers	Philosophy	Literature	Overall
Novels	84%	94%	94%	100%	93%
Thrillers	73%	55%	47%	60%	60%
Magazines	53%	44%	70%	70%	59%
Historical	47%	28%	53%	40%	42%
Science	32%	44%	35%	30%	35%
Computers	10%	39%	23%	20%	22%
Geographical	11%	5%	29%	10%	15%
Maths	23%	5%	6%	0%	9%

Why did they take the course?

90% of the students involved said that they took the course to gain a better knowledge of the subject. The aim of the classes would be to teach at a level higher than they would normally be accustomed to at school. In-depth analysis and longer discussions on a particular topic would be possible in these circumstances. The other main ambition these students hoped to realise was to learn some new ideas. The reality is that many of these students are not stimulated by the school curriculum and are looking for another outlet. The research has shown that they read a lot in their spare time and we can see now that they hope to discover some different ideas. Much of the pedagogy involving talented

students highlights stimulation or curriculum development as critical factors (see Stanley, 1979; Gallagher, 1985; and Maker, 1982). Exposure to a new concept or idea facilitates stimulation. Pitching the classes at a higher level in a college-like environment makes this transition possible. The participants also hope to meet students of similar abilities. As was described earlier, many of the participants had attended and enjoyed a previous CTYI experience. Meeting students of similar ability is a valuable part of that experience. The talented student can often feel isolated within a regular school environment. Previous research (Feldhusen, 1991; Goldstein and Wagner, 1993) shows that coming to a programme similar to this one provides an outlet for the talented adolescent to develop socially. 36% said that they were attending to improve their self-confidence. Being in an environment that is more conducive to learning helps the talented adolescent to thrive, to explore new ideas, and hopefully to become more self-confident. Only 15% of the students said that they hoped to improve their study techniques by attending these classes, thus reinforcing the idea that the course operates more as an enrichment programme than a grind school.

Self concept

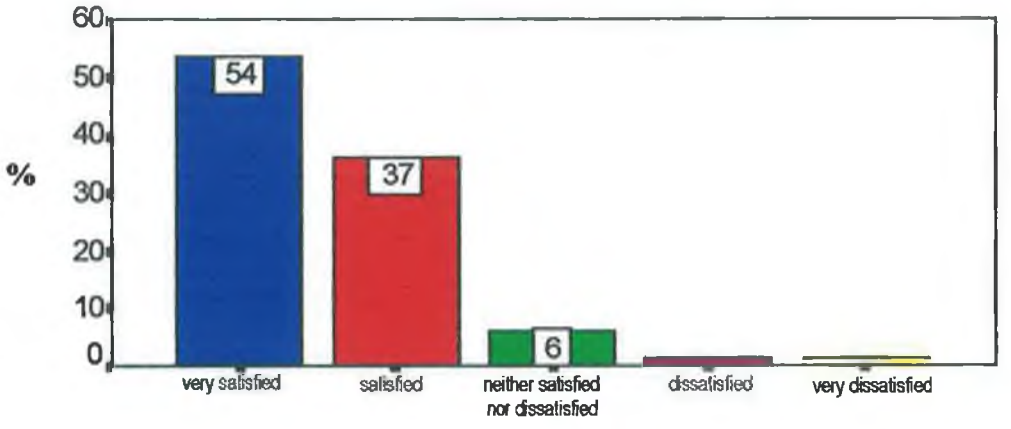
Finally, students were asked to indicate using a 1 to 5 scale where 1 indicated very negatively, and 5 indicated very positively, how they felt their intellectual ability affected the way certain groups of individuals thought of them. These groups included their parents, their brothers and sisters, teachers, friends and classmates at school. Not surprisingly, the results indicated that their parents held the most positive image. The Dodge Report (1981) stated that all students reported feelings of parental support, rating their home environments as warm and supportive. This idea is supported by studies from Galton (1869), Albert (1980), and Roe (1983). In fact, as recently as 1995, Yewchuk stated that critical environmental factors in the development of the gifted child include

parental support and encouragement of domain-specific talents. Attending the Saturday classes definitely improves the talented students' techniques in a particular area. The students also felt that their teachers had a high positive image of them. This could be explained by the fact that many of these students would be the best in their class at school, and interested in their studies outside of school time. Bloom (1985) stressed the importance of an educator or mentor in the development of high achieving mathematicians. The lowest score on this question was for their classmates at school, which had a mean of 2.80. As most of the students would not be streamed in terms of ability within their school, they may become victims of a negative image from their classmates because of their intellectual ability. This could explain the lower score here, and also the fact that class rivalry and jealousy would also be common at this age. Goertzel and Goertzel (1978) found that nearly 60% of eminent individuals had difficulty in school. The Dodge Report mentions feelings of isolation for the talented student as a result of conflict with schoolmates.

The follow-up questionnaire

On the last of the ten Saturday classes, the students were asked to evaluate their experiences on the programme. Using a Likert scale where 1 indicates very satisfied and 5 indicates very dissatisfied, the students were asked how satisfied they were academically with the programme. The graph indicates the results:-

Figure 6-1 Academic satisfaction with Saturday classes



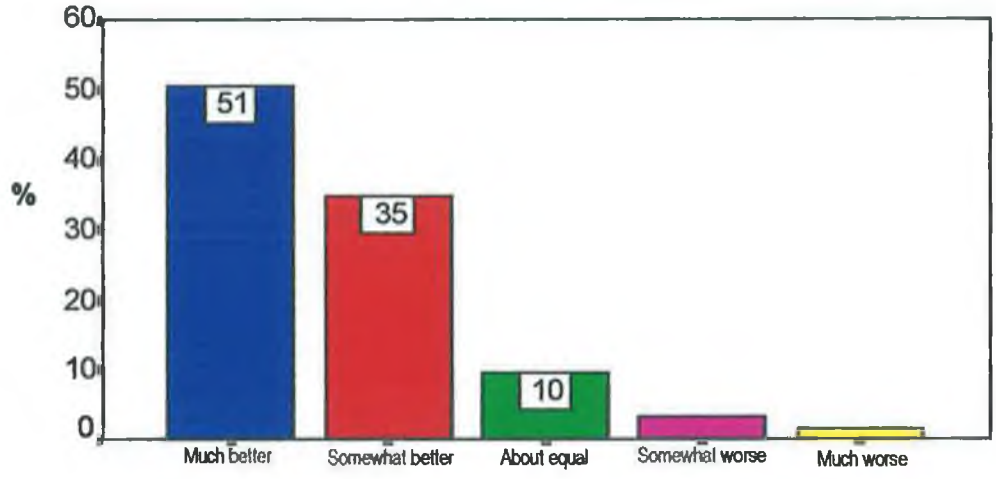
As we can see from the graph, 54.8% indicated that they were very satisfied with the experience, and 37.1% indicated that they were somewhat satisfied. Less than 2% indicated that they were either dissatisfied or very dissatisfied. The table below shows the breakdown for the individual subjects:-

Table 6-5 Level of satisfaction with Saturday classes

	Maths	Computers	Literature	Philosophy
Very satisfied	58%	78%	40%	42%
Somewhat satisfied	33%	22%	40%	58%
Neither satisfied nor dissatisfied	8%	-	15%	-
Somewhat dissatisfied	1%	-	-	-
Very dissatisfied	-	-	5%	-

52% rated the atmosphere of the classes as much better than at school. It is true to say that CTYI encourages a special atmosphere within the classroom, where the talented student can excel as a result of the ideal learning conditions. This response is illustrated in the following graph:

Figure 6-2 Atmosphere in classes compared to school



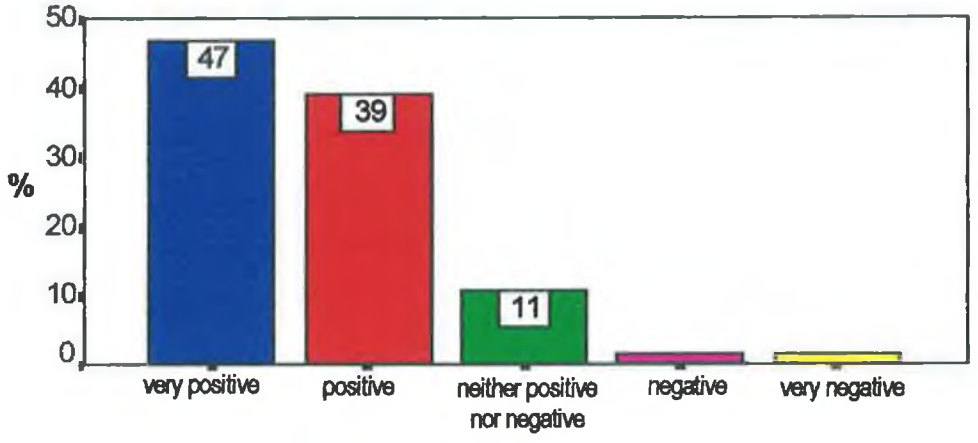
Using a scale of 1 to 5, the students were asked to rate the instructors' performance in aspects of the classes.

Table 6-6 Evaluation of instructor

	Always	Usually	Sometimes	Almost never	Never
Classes conducive to learning	48%	36%	14%	0%	2%
Good class discussions	53%	31%	16%	0%	0%
Instructor used good examples	46%	30%	20%	2%	2%
Accomplished a lot in class	47%	36%	11%	3%	2%
Instructor encouraged questions	66%	25%	8%	0%	0%
New ideas welcome in class	64%	26%	8%	2%	0%
Felt comfortable asking for help	56%	36%	8%	0%	0%
Instructor knew a lot about the subject	83%	13%	2%	2%	0%
The homework was appropriate	69%	15%	13%	2%	1%
Instructor returned work on time	81%	6%	11%	2%	0%
Instructor gave useful feedback	66%	21%	13%	0%	0%

In all the questions, the mean response rate fell between 1 and 2, with the highest ranking being awarded to instructor knowing a lot about the subject (mean 1.22), and the next highest for the instructor returning the work on time (mean 1.35). Over 88% of the students believed that the instructor had a positive or very positive influence on the class, showing the benefit of an instructor teaching at a college level. The impact of the instructors is rated in the following graph:-

Figure 6-3 Impact of Instructor on Saturday classes



Achievements

The students were asked if they had realised the ambitions they had hoped for at the beginning of the Saturday classes. 95% agreed that they had achieved an educational benefit from attending the classes, while 93% believed that they had gained a better knowledge of the subject. 88% believed that they had achieved a better appreciation of the subject, which is an important learning objective of the course. 60% related that they had now become more interested to the subject at school, having been exposed to it in a different context. Half of the students believed that their self-confidence had improved, particularly those in the Literature classes who had become more able to express themselves in a clearer way. Only 38% believed that their study techniques had improved as a result of the classes.

Academic facilities

Almost all students (95%) were satisfied with the academic facilities at their disposal. The Computer Applications course and much of the Mathematical Modelling course were held in the Computer Labs at DCU, while the Literature, Drama and Writing and the Philosophy classes took place in small lecture theatres in the Dublin Business School at DCU. Students did not seem to be put off by the 2 ½ hour classes, compared to their usual 40 minute periods at school. On the contrary, the majority of students would prefer 3 ½ hour classes, with as many as 10% of students indicating that they would like the classes to run for 6 hours every week.

42% of the students indicated that they would be interested in intensive study weekends at CTYI, with a further 35% hoping for one-day seminars in particular subjects. 21% expressed potential interest in correspondence courses, and since this research was conducted, CTYI has kicked off correspondence courses in Psychology and Creative Writing, with some 50 students participating.

Before and after

One of the main objectives from CTYI's point of view is that the talented student should become able to study for his/herself as a result of the classes. It is widely accepted among educators that it is important to develop self-direction or independent learning skills in students so that they can continue their learning without the constant supervision of an adult (George, 1993). Boredom in the classroom is quite common amongst this group, and this can lead to them becoming disinterested and disenchanted with school. Occasionally this culminates in disruptive behaviour and results that are not in line with their intelligence (see Whitmore, 1980; Tannenbaum, 1984; and Rimm, 1986). The ability to look objectively at school work and the curriculum and applying it to a larger concern is a very worthwhile exercise. At the beginning of the classes, the students were asked about

how they felt about independent studies. This was followed up at the end of the session with a similar question in the closing questionnaire. The table below illustrates the responses:-

Table 6-7 Level of comfort with independent study - before and after

	Week 1	Week 10
Very comfortable	33%	42%
Somewhat comfortable	38%	35%
Neutral	15%	17%
Somewhat uncomfortable	10%	5%
Very uncomfortable	3%	0%

As we can see from the table, improvements have been made in some areas, with 42% now being very comfortable with independent study. Students mentioned that researching their specialist subject in the library helped to give them a greater fluency in individual work. Comments also proved favourable, as a Mathematical Modelling student noted, "Coming to CTYI has allowed me to view mathematics in a new way, enabling me to use my own initiative in tackling more difficult problems."

Academic ability

Many talented students are faced with a dilemma about their academic ability. While this research has suggested earlier that their ability allows them to be presented in a positive light with parents and teachers, their is also a degree of scepticism amongst their classmates. The students were asked on the first week how comfortable they felt about their intellectual ability. The results were noted and then on the final week of the programme, the question was posed again. The results are tabulated below:-

Table 6-8 Comfort with intellectual ability - before and after

	Week 1	Week 10
Very comfortable	32%	45%
Somewhat comfortable	35%	35%
Neutral	24%	17%
Somewhat uncomfortable	8%	1%
Very uncomfortable	2%	0%

We can see that a significant improvement has been achieved among those who are very comfortable with their intellectual ability as it has risen from 32% to 45%. This is an encouraging result. Mixing in a class at CTYI helps the talented student to fit in more as part of the group and avoid the isolation that they may feel in a regular school classroom.

Ambitions

Students were asked if they would like to continue their studies in the same area. Looking at the different classes, 67% of the Computer applications students indicated that they would like to pursue studies in this field. This compares with only 16% of the Mathematical Modelling students. However, 83% of these pupils indicated that they would like to continue studies in a related area. As much of the maths course involved computing, most of these students were anxious to do some more Computer applications. These figures are more conclusive than those for Literature and Philosophy. These students seem relatively undecided about what studies to pursue. It is worth noting that 58% of the Philosophy students indicated that they would like to do some independent research in the area, compared with 41% of those who would like to pursue a follow-up course.

Only 8% of Mathematical Modelling students wished to pursue a career in the field of Mathematics, while half of the Computer students hoped to secure employment in the

computer industry. 45% of Literature students indicated that they would like to pursue a career in this area, or in a related field.

Saturday programmes provide an opportunity for parents to participate in their children's education.

Implications for the future

If CTYI is committed to its mission statement, to assist parents in the education of talented youth by providing access to information and resources, then they should encourage these parents to sit in on these classes and meet afterward to assess the impact of the course. Saturday classes offer a chance for a community to come together, including teachers from regular schools, counsellors, and school administrators.

Feldhusen (1991) notes that while Saturday classes for talented students may be able to address some of their needs, the programmes are often not widely available. While the courses at Dublin City University offer a chance for the talented students in the Dublin area to gain much-needed special attention, there is more work to be done. Where possible these classes should be offered all over the country. The National Association for Gifted Children in the United Kingdom is the largest parental initiative for highly-able children. This body is divided into regional branches, and organises Saturday clubs offering a wide range of activities. They aim to

- provide an opportunity for gifted and talented children to meet, and to pursue their intellectual activities in friendly company;
- facilitate children with interesting and well-informed adults who offer an intellectual stimulus and an introduction to a wide range of interests;
- provide and encourage companionship between children and adults to help children to integrate socially and develop in emotional maturity at home and in school;

- give help, advice, and information to parents of gifted children;
- increase community awareness and understanding of the need to develop links with local professionals.

This is similar to the mission statement of CTYI. Promoting the programme in rural areas is essential for the development of the mission. In order for CTYI to develop to its full potential, a nationwide network is essential.

Conclusion

The research has indicated that the pioneer Saturday classes at CTYI have proven successful. The students have gained in terms of educational benefit, acquiring new insights, and developing their talents in specific areas over the ten week period. The students seem very pleased with what they have achieved, and many are hungry for fresh challenges. While the summer programme at CTYI is clearly popular with the students, it is evident that a three-week enrichment programme during July or August is not sufficient to satisfy all the academic needs of these talented children. These Saturday classes offer something in terms of an all-round commitment by CTYI to address these needs. Despite the fact that the intensive nature of a residential summer programme allows the talented student to become absorbed in learning while on campus, the dropout rates for these non-residential Saturday courses is minimal. Attendance rates for the classes were high, regardless of the fact that the onus was now on the student to make sure they made it to class. This demonstrates the commitment of these students to meet the challenges that CTYI has out before them and recognises that learning is something which can be done in their spare time, and perhaps more significantly, is something that can be enjoyed.

The classes are worthwhile in that they offer an extension to what has been covered at the summer programme. They give students a chance to continue on with what they have

already learnt from their CTYI experiences, or offer new students the opportunity to benefit from a fast-paced learning-focused environment. The classes should continue with hopefully some new courses on offer, particularly in the science line. Maybe the possibility of a research project over a period of weeks could be viable for a group of students, or participation in the community radio station on the Dublin City University campus. .

The students prefer the atmosphere at these classes to their own schools and enjoy the benefit of an instructor who has specialist knowledge of the subject in hand. From a teaching perspective, three out of the four instructors were experienced from teaching at the CTYI summer programme. In class, questions were encouraged, new ideas were always welcome, and there were some good lively class discussions. The students can now go back to their schools feeling more comfortable with independent study. They have now been given a taste of what to expect if they are to encounter the subject at third level. Much of the school curriculum will now make more sense as they have scratched the surface to reveal hidden treasures below. Many of these students have learned a valuable social lesson, and have returned to their schools more comfortable with their intellectual ability. Rather than feeling frustrated and isolated, they will have benefited from meeting students of similar ability, and will hopefully go back to school with greater self-confidence. 98% of the students indicated that they would return to a future event at CTYI, which delivers a clear message: Keep the classes at this high standard and we will keep coming back.

CHAPTER 7

Myers-Briggs Type Indicator

Background

In the early 1900s, Katherine Briggs started a systematic observation of personality types in human interactions. Her primary focus was on individual behaviour related to experience and information processing. She realised that Jung's theory of psychological types (1923) was highly compatible with her own interest in personality development. After studying Jung's personality theory thoroughly, Briggs and her daughter, Isabel Briggs-Myers began observations of personality types and their cognitive styles. By the 1940's, Briggs and Myers had started developing self-report questions which would lead to assessments of personality types and their individual styles. Myers and Briggs expanded cognitive theory to include typological constructs from their personality theory. This concept is referred to as the **Myers-Briggs Type Indicator (MBTI)**.

Jung (1923) devised his theory of psychological types to help to explain human personality. In Jung's theory, all conscious mental activity can be classified into four mental processes, of which two are Perception processes **(Sensing and Intuition)**, and two are Judgement processes **(Thinking and Feeling)**. Each thought that comes into our consciousness must be encoded and interpreted by the Perception process, either through the Senses or by Intuition. They are then in turn, evaluated and analysed by the Judgement processes, Thinking and Feeling.

The components of the MBTI

The **Myers-Briggs Type Indicator (MBTI)** is a personality measure based on Jung's theory of psychological types. According to Pittenger (1993) over two million copies of the MBTI are sold annually and the test has proved useful in a variety of settings such as large corporations as a component of job performance and in academic settings for use by both students and teachers alike as part of career counselling. Thompson & Borello (1986) support

this view and state that the MBTI measures variation in normal attitudes and behaviour and may be seen as appropriate for research in educational settings. Myers and McCaulley (1985) describe the MBTI as an instrument containing four separate indices with each index reflecting one of the four basic preferences that direct the use of the perception and judgement processes that have been mentioned earlier. These four can be summarised as a preference between extroversion and introversion (E-I), sensing and intuition (S-N), thinking and feeling (T-F) and judgement and perception (J-P).These four preferences give rise to sixteen individual types of the MBTI that differ only in the priorities given to each process and the attitudes of the individual when he or she uses a particular function. This question of attitudes comprised a major portion of Jung's work as he focused on the history and description of **extroversion and introversion**. These two are seen as complementary attitudes towards life. Translated from Latin, extroversion means outward turning and an extrovert is oriented towards the outer world of people and objects. Extroverts are active and allow themselves to focus on people and things. They will often scan the environment for stimulation. Introverts tend to turn towards the inner world of ideas and concepts. Introverts are focused on the inner impression. Often reflective, they will consider deeply before acting, and probe inwardly for invigoration. According to Lawrence (1982), everyone turns outward to act and inward to reflect. It is a question of being more comfortable with one or the other. On the MBTI, E stands for extroversion and I stands for introversion.

Sensing and Intuition (S-N) and Thinking and Feeling (T-F) are referred to as the **orienting functions**. The S-N preference reflects opposite ways of perceiving. A person who relies primarily on the Sensing process (S) reports observable facts as they occur through the five senses while people relying on the intuitive process (N) report meanings, relationships and possibilities beyond the conscious mind. S can more easily see the details, whereas N can see the overall picture. Individuals who favour sensing attend to practical and factual details. They are in touch with the practical realities, and often confine their attention only to what is

said and done. Intuitives perceive with memory and association; they enjoy projecting possible future outcomes, and can often read between the lines and see patterns and meanings.

Thinking and Feeling (T-F) represent opposite ways of judging. A person may rely on Thinking (T) and therefore make decisions based on logical consequences, managing to remain impersonal. Thinking individuals can draw on cause and effect relationships and use objective criteria. Logical order is prized, and they are very firm-minded. Alternatively, someone who uses Feeling (F) makes decisions by paying attention to personal values and emotions. He/she will weigh up human values and motives. They believe in trust, and place value in warmth within relationships. Persons primarily oriented towards thinking may develop characteristics associated with analytical ability, objectivity and concern with the principles of justice. Persons making judgements with the feeling function are more likely to be attuned with the feelings of others. They have an understanding of people, a capacity for warmth and a time orientation that includes preservation of the values of the past.

The fourth dimension of the Myers-Briggs focuses on the way people *deal* with the outside world. To do this, they must focus on whichever of the **processes**, perception or judgement that appeals to them the most. A person who prefers the judgement process tends to show their thinking and feeling process more easily than their sensing and intuition process. When one takes a judging attitude, one believes in organising and scheduling. Controlling and regulating are important, as well as a desire for closure, even when the data is incomplete. On the other hand, a person who uses the perceptive process shows a preference for using sensing or intuition when dealing with the outside world. This type of person can take in much information and remains open-minded. He/she is often curious, and interested in finding new information that might lead to new possibilities. He/she can adapt to a changing environment, and will deliberate before reaching a final outcome. On the MBTI, J is used to describe judgement while P stands for perception.

The preference on each index is independent of preferences for the other three indices so that the four indices yield sixteen possible combinations (called types) denoted by the four letters of the preference. For example an **ESTJ** indicates a preference for extroversion over introversion, sensing over intuition, thinking over feeling and judging over perception. For each type, one process is **dominant** and the other acts as an **auxiliary.** These two functions are considered to be more interesting and are likely to be developed and used. The two less preferred functions are likely to be relatively neglected.

Choosing and recognising our dominant function

So, how do we choose our dominant function? According to Myers (1980), this depends on our **attitude** towards the world. Remember that if we are more oriented towards the outer world of people and objects, then we are extroverted. However if we prefer the inner world of concepts and ideas, then we are introverted. For extroverts their dominant function will be extroverted and used in the outer world. On the other hand, introverts will have an introverted dominant function and will use it in the inner world. Naturally extroverts will show their dominant function to the outside world because their personality is shaped by it whereas introverts prefer to show their auxiliary function in the outer world keeping their dominant function for their inner world of ideas. From a teaching perspective this offers an interesting challenge because introverts may not be performing to the best of their ability in an external environment i.e. school. This point is made all the more salient for academically talented students as this research shows that CTYI shows a higher proportion of introverted students than would be expected in a normal population.

But, how do we know our dominant function? Perhaps this is best illustrated using an example. Take a Myers-Briggs reading of **ENTP.** In this instance the E indicates that we are dealing with an extrovert. As mentioned earlier that J or P are used to indicate which process the person prefers. In this case, it is the Perceptive process (P) rather than the Judging process

(J). P therefore points to N as a dominant function as the Sensing and Intuition index is the process of perceiving information. In this case the N is preferred so it is the **dominant** function and therefore is extroverted. T here is the introverted function and must be the **auxiliary**.

A similar example using an ITSJ. In this instance, we are dealing with an introvert that prefers dealing with things using a Judging process (J). Therefore J points to T as Thinking and Feeling are the functions that deal with ways of judging information. So T is extroverted and S is introverted. However since we are dealing with an introvert, the introverted function is dominant (S) while the extroverted function becomes the auxiliary (T).

Using the Myers-Briggs in the classroom

In Jung's theory all conscious mental activity occurs in the two perception and two judgement processes. In a school environment, this can create problems with how students assimilate information. For example somebody with S dominant, a sensing type responds to what they see as practical and useful. They wish to learn new skills that they can master through one of the five senses. A hands-on approach would undoubtedly suit these students, but what of the intuitive types with dominant N? As this research will show CTYI students fall mostly into this category (75% N to 25% S). They need to be stimulated and prefer an imaginative approach. Much teaching in Irish schools is very curriculum based and favours an S approach. At CTYI, the smaller class sizes and lower teacher- pupil ratio allows a more flexible approach. Students are encouraged to ask questions, to figure out problems without following a set pattern. The teacher acts as a mentor, the student becomes an innovator.

For young Thinking students with T dominant, they need to be taught based on logical conclusions. Organisation is the key for the teacher here. Clarity of presentation and clear conclusions mean everything to the student, and a badly prepared teacher can lead to much frustration. Students who are Feeling types with F dominant, need to be stimulated personally.

If the teacher does not involve them in the subject, then they cannot learn to the best of their ability.

The Myers data contains some estimates of the overall population which can be summarised as follows:

Extrovert-Introvert	70%-30%
Sensing-Intuition	70%-30%
Thinking-Feeling	40%-60% (female)
Thinking-Feeling	60%-40% (male)
Judgement-Perception	55%-45%

According to Lawrence (1982), writers of paper-and-pencil tests of intelligence are usually intuitives. They are unaware that these tests are biased towards other intuitives, and results show that IN 's followed by EN 's score the highest on these intelligence tests. Van (1992) believes that the Introversion-Intuitive (IN) combination is particularly associated with scholastic potential, because this preference has an affinity for language. In primary and secondary schools over America as few as one in sixteen people would be an introverted intuitive but this proportion would be much higher at a college level. In this sample, the number of CTYI students falling into this category is over 35%. McCaulley and Natter (1974) make an interesting observation about the conflict within schools. Traditionalists are demanding discipline and the three R's. This approach is tied in with the sensing- thinking-judging individual while the humanists, usually of the intuitive- feeling- perceptive type are encouraging free unstructured school models. This research believes that both groups should come together to provide the optimal environment for all students.

Literature on the Myers-Briggs

From an extensive review of the Myers-Briggs literature, Hoffman and Batkouski (1981) studied teachers at all levels, from pre-school up to college, using the MBTI. The majority of teachers in each sample showed a preference for extroversion over introversion between 51 and 57%, sensing over intuition between 53-74%, feeling over thinking between 53 and 74% and judging over perception between 63 and 84%. They conclude that the modal type for teachers from this review would be ESFJ. McCutcheon, Schmidt & Bolden (1991) looked at 79 student teachers enrolled in elementary, secondary and special education at Ohio University and also found ESFJ to be the most common type with 25.3% falling unto this category. This type is described by Myers (1980) as radiating warmth and fellowship. They are warm-hearted practical, realistic people that adapt excellently to routine but have little interest in abstract thinking. Teaching styles for instructors of the academically talented tend to be intuitive-thinking and intuitive-feeling, as opposed to sensing thinking and sensing feeling (Howell and Bressler, 1988). Intuitive-thinking teachers are those whose style reflects intellectual orientation and whose plans for teaching are developed around concepts, open-ended questions, critical thinking, logical research techniques, and independent study. Intuitive-feeling teachers are those whose style reflects innovative orientation. They place a high value on insight and innovative ideas, creative thinking and moral development. A flexible, imaginative approach to learning and a classroom environment full of creative clutter best describes the intuitive-feeling teacher. We have mentioned that intuitives comprise a major part of the population at CTYI. Myers (1980) also defines combinations of types. For example, she describes those that possess intuition plus feeling (NF) as individuals tending to focus on new possibilities and new projects. Often they have a gift of language that they can use to communicate to a high level. Also, she describes those that possess intuition plus thinking (NT). These tend to be ingenious and successful in solving problems of a special interest citing mathematical, scientific and computing research as examples. These individuals

are ideally suited to the work of CTYI taking specific courses for a three week period working on projects and delving deeper into aspects of the programme that appeal to them.

Ross (1963) performed a study of students in college preparation programs. He found that the S-N scale of the MBTI gave the most impressive results since it gives information about both ability and attitude. Using a range of intelligence tests, Ross found that N consistently outscores S, a fact backed up in the literature by Damico (1976) and Morgan (1975). However, Lawrence's theory that intuitives set these tests could also be a significant factor. In America, intuitives are twice as common in academic high schools as they are in regular schools and on National Merit, sometimes three times as high. National Merit Scholarships are awards sponsored by over 600 corporate, foundation, college and university sponsors. Students beginning their high school career may compete for these scholarships. They are very competitive and prestigious in nature. May (1971) related S and N characteristics to mathematical achievement and attitude towards maths at eighth grade level. Again N significantly outscores S for achievement with no significant results for attitude. Studies by Ross (1966), McCaulley (1978) and Rowe (1978) have found that interest in science is connected to N preferences. Since much of classroom teaching is based on symbols, and the interpretation of language, intuitives seem to have an advantage from the outset, with their capacity to explore beyond the expression and look for meanings. Gardner (1983, 1987) explores these themes in his theory of multiple intelligences. He believes that intelligence must also be susceptible to encoding in a symbol system - a culturally derived system of meaning which captures and conveys important information. Language and mathematics are three important symbol systems which have become critical for survival and productivity. For a full description of Gardner's seven intelligences, see chapter 2.

Several years prior to Gardner's categorisation of Logical Mathematical Intelligence as the capacity to discern logical or numerical patterns and the ability to handle long chains of reasoning, the MBTI had identified these characteristics as cognitive styles employed by

various personality types. For example, individuals inclined towards the types of introversion, sensing and thinking would process information that maximises their capacity for logic and reasoning (Morgan 1996). Introverted types value their inner world of concentration which is required for dealing with these long chains of reasoning. Thinking types prefer the use of logical and rational processes, with little probability that emotion and feeling will interfere. Sensing types use standard procedures, relying on direct perception, and are oriented towards what is real. They concentrate on valuable information for problem solving, and according to Morgan fall within Gardner's framework for this category.

In the MBTI personality typologies, further modalities similar to Gardner's categories can be found. For example, extroverts are oriented towards the world of people and ideas and can react to the immediate and objective concerns in their environment. This can be contrasted with Gardner's definition of Interpersonal Intelligence, which involves a capacity to discern and respond appropriately to other people's moods. Feeling types on the MBTI make decisions based on emotional and affective values, and have a genuine sensitivity towards others. Gardner's intrapersonal intelligence is described as "*access to one's own feelings, and the ability to discriminate among them so as to draw upon them to guide behaviour*". Finally, and perhaps most significantly, intuitives place a reliance on unconscious perceptive processes. As we have stated earlier, intuitives have a distinct advantage with language. This can be tied to Gardner's theory of linguistic intelligence which is described as sensitivity to the sounds, rhythms and meanings of words, and the different functions of language.

Descriptions of types

The sixteen types descriptions of the MBTI as outlined by Myers (1980) are detailed below:-

ISTJ

Sensuous, quiet and earn success through concentration and thoroughness. Using sensing in their inner life, they see to it that everything is well organised. Seen as logical, realistic and dependable. They like everything kept factual, clearly stated but not too complex. They do not enter into things impulsively, but once in are very hard to discourage, or distract.

Possible careers: steelworker, dentist, police officer.

ISFJ

Quiet, friendly, responsible and conscientious. They like direct experience but are patient with detail and routine. Living their outer life with feeling, they are sympathetic, kind and concerned and supportive to those who need help. As introverts, they enjoy working alone but through their judging attitude they need to be thorough and accurate.

Possible careers: community health care, public service, machine operator, teacher

ISTP

Cool onlookers, quiet, reserved, observing and analysing life with detached curiosity. Relying on thinking in their inner world, they become logical and impersonal, unlikely to be convinced by anything other than reasoning. Good at applied science and how and why mechanical things work. Are very efficient and believe in economy of effort, exerting themselves no more than necessary.

Possible careers: mechanic, farmer, electronic engineer

ISFP

Retiring, sensitive and modest about their abilities. Their outer life dominated by sensing gives a need for well-defined goals and often do not care to lead, but become loyal followers. Their feeling attitude makes them want to work in a job that they believe in. They are often idealists; and can suffer from demanding too much of themselves.

Possible careers: specialised labour, storekeeper, nurse

ESTP

Good-natured realists who accept the facts around them. Tend to like mechanical things. Because of their thinking process, tend to make logical decisions rather than sensitive ones. They usually have a capacity for exact facts, can handle material well, and can be good at maths and science if they feel the need. They enjoy life but get more from first-hand experience than study, and perform better in situations than in written tests.

Possible careers: craft worker, carpenter, labourer

ESFP

Outgoing, friendly and enjoy a good time. Enjoy direct experience including sports and making things. Feeling gives them an interest in people, and they often make friends easily. They are often good mediators as the perceptive attitude allows them to weigh up all the possibilities; their sensing side weighs up the facts while their extrovert feeling process enables them to make thoughtful decisions comfortably when dealing with people.

Possible careers: child care worker, receptionist, transport operator

ESTJ

Matter-of-fact, practical realists with a natural head for business. Usually linear learners with a strong need for structure. Not really interested in subjects that they see no use for, but they like to organise activities because of their judging process. They often live life to a definite formula and solve problems through applying previous experience. If sensing is particularly dominant, they tend to be wary of new ideas unless they are actually based in fact.

Possible careers: manager and administrator, technical teacher, military personnel

ENFJ

Warm-hearted, talkative and popular individuals. With the feeling function dominant to the outer world, they constantly want to win approval and do good deeds. Need constant encouragement and praise. Little interest in abstract things, preferring actions that will affect peoples' lives. While they tolerate variety, they tend to make the most of routine with their judgement process preferring matters to be settled quickly.

Possible careers: nursing, religious workers, hairdressing

INFJ

Persevering and original with a desire to do what is needed. They use their feeling function to handle people sympathetically and apply their intuition to solve problems. As introverts, they like to work alone and are very single-minded in their concentration. Good researchers but with their strong will and single-minded judging process can sometimes not even consider the possibility that something is wrong with their ideas.

Possible careers: social scientists, executives, librarians and psychologists

INTJ

Have original minds and great individual drive. Most independent of all the types. Great innovator in the field of ideas. They enjoy organising a job and seeing it through by themselves. Their introverted, intuitive nature allows them to trust their vision of the possibilities regardless of universal scepticism. Their thinking and judging functions allow them little time for those who disagree with them. Will always come up with new ideas, but uncompromising attitude can make them seem aloof.

Possible careers: physical scientists, lawyers, judges, journalists and university lecturers

INFP

Warm and enthusiastic but may not show it unless they know you well. Reliance on feeling leads them to judge everything by personal values. As introverts they are less comfortable with people and choose their values without reference to others. Their perceptive, intuitive nature tends to let them have insight and long-range vision. Especially interested in possibilities for people. They are perfectionists where their feelings are engaged and are happiest with individual work involving their personal values.

Possible careers: counselling, lecturing, editing, psychiatrists

INTP

Prolific in theoretical and scientific subjects. Quiet and reserved but very interested in ideas. Brilliant in exam situations. Very logical with much intellectual curiosity. More interested in research than practice. They like to analyse the world. Being introverted, they often focus their thinking on principles underlying things than actually do the things themselves. They can struggle to make their ideas understood because their weakest process is feeling and they know little of what matters emotionally to other people.

Possible careers: research assistants, chemical scientists, computer programmers

ENFP

Enthusiastic, high spirited, ingenious and imaginative. Able to put their hand to anything that interests them. As extrovert intuitives they tend to rely on their ability rather than preparing in advance. Much drawn to counselling where each new person presents a fresh problem to be solved and fresh possibilities to be communicated. Their feeling process makes them more concerned with people and able to handle them. They have a lot of imagination and initiative for originating projects and plenty of impulsive energy to carry them out.

Possible careers: counselling, journalists, art and drama instructors and psychologists

ENTP

Quick, ingenious, good at many things. Alert and outspoken and offer stimulating company. Being perceptive, they try to understand people rather than judge them, but with their thinking process are a little impersonal in their relations with people. Enjoy solving new and challenging problems, but can sometimes take on too much as they need more and more stimulation

Possible careers: actors, inventors, promoters and sales executives

ENFJ

Responsive and responsible. Feel concern for others and can lead a group discussion with diplomacy and tact. They focus their feeling as extroverts on the people around them. As intuitives they are interested in seeing possibilities beyond the present. They like to have matters settled as they are judging types, but often do not want to make the decisions themselves because of their respect for others. Are usually good at speaking to an audience

and their intuition in their inner life gives them a curiosity for new ideas and a love of books.

Possible careers: the clergy, personnel management, educational counsellors

ENTJ

Frank, hearty and often leaders in activities. Usually good at public speaking and are often well informed. As they live their outer life with thinking, they tend to run as much of the world as they can. They can become logical and analytical but with their extroverted knowledge can always relate well to their environment. Intuition in their inner world heightens their intellectual interest. They need problems to solve and are expert in finding solutions. As feeling is their least developed process, they can sometimes ignore the merits of other peoples' opinions.

Possible careers: lawyers, system analysts and marketing personnel

The research instrument

The Myers-Briggs Type Indicator is a personality measure based on Jung's theory of psychological types. The MBTI is published in three forms: Form F (166 items), Form G (126 items), and Form AV, which is the abbreviated version and is self scoring (50 items). Form G is now the standard form of the MBTI, and was used for this research. Form F is recommended when researchers or counsellors are willing to share their answer sheets with the respondents on a confidential basis.

The test consists of a series of forced choice questions representing behavioural preferences and preferred self-descriptive adjectives. The results are then tabulated to indicate preferences for each of the four scales: extroversion-introversion (EI); sensing-intuition (SN); thinking-feeling (TF); and judgement-perception (JP). Although a continuous scale score is provided

for each dimension, the final personality profile contains a nominal score of preference. For example, a person who endorses fifteen items scaled for introversion and nine items scaled for extroversion is given a preference of I, and is therefore considered introverted. The individual is described with four letters (e.g. INTJ) that represent the preference for each type. When the test is scored, both the nominal and continuous scores are presented in the report, but in practice only the four letter code is used, because the types are considered to be mutually exclusive classes.

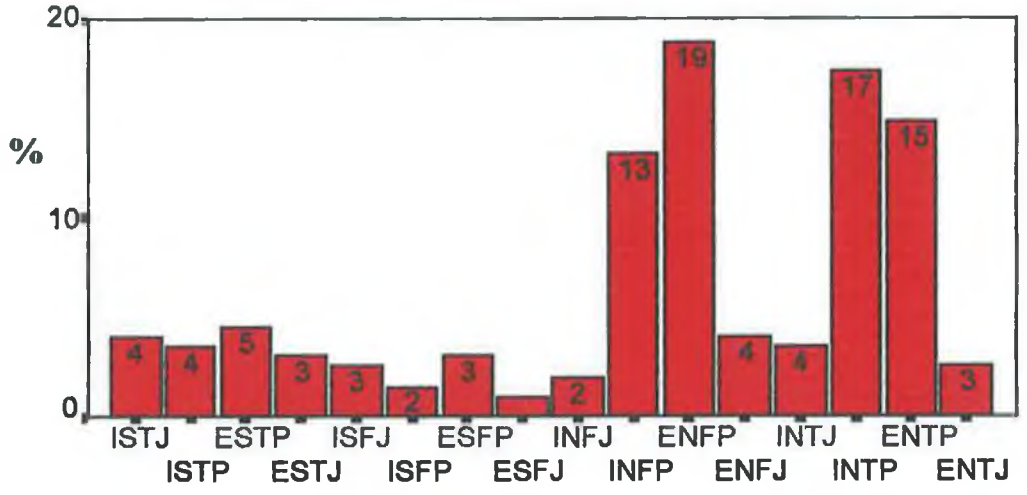
Methodology

This research used the Myers-Briggs Type Indicator to compare the results of students that had attended the 1995 Summer Programme at CTYI with school students from a normal population. The test was administered to 196 CTYI students, 96 male and 100 female and 260 school students, 125 male and 135 female. Within this school group, all levels of intelligence were looked at, including students that may have been at a standard to enable them to attend classes at CTYI. The CTYI students varied in age from 12-16 while the school students were taken from second and third year post-primary level with ages varying from thirteen to sixteen years old.

Results

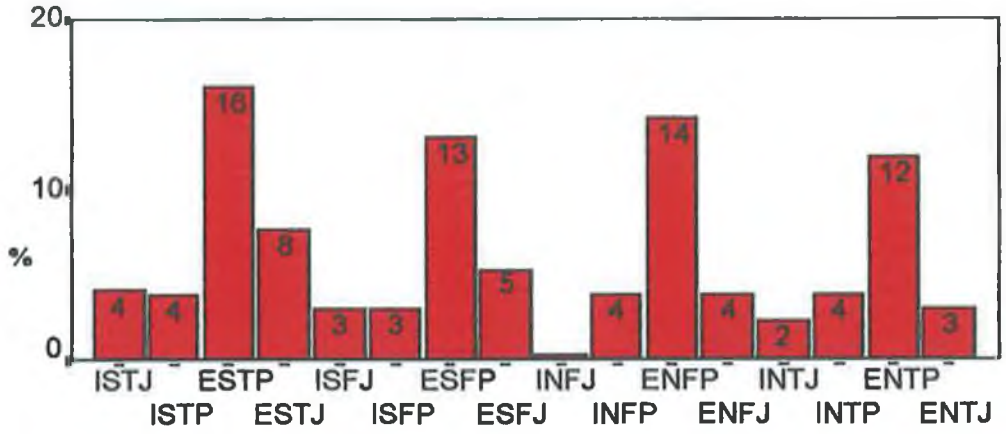
The graph below shows the overall CTYI results giving the % for each type.

Figure 7-1 CTYI Myers-Briggs results



The results are quite conclusive. Four categories have a much higher percentage than any of the others, namely ENFP (18.9%), INTP (17.3%), ENTP (14.8%), and INFP (13.3%). These four alone account for over 64% of the overall CTYI results. This research has mentioned earlier about the significance of the N (intuition) type but one can also see that each of the four categories contain P (perception) types. So, how does Myers describe NP types ? They are described as adaptable innovators. This suggests that through their dominant N they like to focus on possibilities for the future and use a judgement feature in their inner world. They constantly seek new challenges and adapt to new possibilities as they arise. A word of warning is needed however, as they are also described as unconventional free spirits who hate to be fenced in. The lowest overall score in this group was for ESFJ, only (1%) which interestingly is the modal teaching type. Comparing this with the schools data provides us with the following graph:-

Figure 7-2 School Myers-Briggs results



The results again show four dominant categories which constitute over 55% of the overall schools results. These are ESTP (16.2%), ESFP (13.1%), ENFP (14.2%), and ENTP (11.9%). The trend differs from that of the CTYI sample because of the higher proportion of S types in the school sample.

Table 7-1 Overall comparison of CTYI and school by type

TYPE RESULT	SCHOOL	CTYI
ISTJ	4.2%	4.1%
ISTP	3.8%	3.6%
ESTP	16.2%	4.6%
ESTJ	7.7%	3.1%
ISFJ	3.1%	2.6%
ISFP	3.1%	1.5%
ESFP	13.1%	3.1%
ESFJ	5.4%	2.0%
INFJ	0.4%	1.0%
INFP	3.8%	13.3%
ENFP	14.2%	18.9%
ENFJ	3.8%	4.1%
INTJ	2.3%	3.6%
INTP	3.8%	17.3%
ENTP	11.9%	14.8%
ENTJ	3.1%	2.6%

Directly comparing the Sensing- Intuition Type Index of the schools data with that of the CTYI group yields the following results.

Table 7-2 Overall S and N results

	Sensing Types	Intuitive Types
CTYI	24.0%	76.0%
Schools	56.5%	43.5%

In the schools data the S types outscore the N types while the opposite applies in the CTYI sample. Comparing this information with samples of Type Tables from Myers (1980) yields similar results, as illustrated in the following table

Table 7-3 Male S-N results

	Sensing	Intuition
Non-college	86%	14%
College prep	62%	38%
Central high school	46%	54%
National Merit	17%	83%

A group of non-college preparatory males showed a score of 85.5% for S with only 14.5% for N while those males in a college preparatory programme gave a score of 62.0% for S with 38.0% for N. Another group used in the Myers analysis was the all male Central High School in Philadelphia, which has a requirement for an IQ of 110 and over. Here the S score is 46% while the N score goes up to 54%. Finally Myers looked at male National Merit finalists with the N score going to 82.7% and the S score falling to 17.3%. In this research, the CTYI male students showed a preference for N with a score of 80.2% while S was left with 19.8%, with the male school's score at 54.5% S to 45.5% N. The corresponding scores for females produced similar results, as illustrated in the following table:-

Table 7-4 Female S-N results

	Sensing	Intuition
Non-college	87%	13%
College prep	59%	41%
Central high school	50%	50%
National Merit	18%	82%

We can see the following scores from the table above: non-college preparatory 87.3% S to 12.7% N, college prep 59.4% S to 40.6% N, Philadelphia Girls High School (IQ over 110) 50.0% S, 50.0% N and National Merit Finalists scored 81.8% N and 18.2% S. In this research, the CTYI female students scored 72.7% N and 26.3% S while the schools female scored 58% S to 42% N.

Table 7-5 E-I overall scores

	Extroversion	Introversion
CTYI	51.2%	48.8%
Schools	75.2%	24.8%

The table above illustrates that the CTYI group have a larger number of introverts than that of the schools. Further classification in the male category for extroversion and introversion yields the following table:-

Table 7-6 Male E-I preference

	Extroversion	Introversion
Non-college	63%	37%
College prep	61%	39%
Central high school	62%	38%
National Merit	41%	59%

These results show similar scores for Extroversion-Introversion for non-college, college, and central high school students, which is approximately 60-40 extroversion over introversion. This compares with the National Merit Finalists in which the males show a 59.5% preference for introversion. The male CTYI students have a preference for introversion (54.5%) over

extroversion (45.5%) while the male school group in this research show a 72.7% preference for extroversion over introversion 27.3%.

The female results for the extroversion-introversion scale are illustrated in the table below.

Table 7-7 Female E-I preference

	Extroversion	Introversion
Non-college	68%	32%
College prep	69%	31%
Central high school	62%	38%
National Merit	48%	52%

Again in this category, the non-college, college prep and central high school grouping show a significant preference for extroversion over introversion. Once more, the high-achieving individuals in the National Merit group show a higher proportion of introverts. This trend does not continue with the CTYI female group, as this group shows a 58.2% preference for extroversion while the female Irish schools group in this research show a 77.3% preference for extroversion.

The Thinking-Feeling and the Judgement- Perception Indices both show similar results for the CTYI and the schools sample, with no significant variation.

Within the CTYI group there were 39 American students who took the MBTI. Comparison of the scores on the four indices for the Irish CTYI students and American CTYI students reveals the following table:-

Table 7-8 Comparison of Irish and American

	E-I	*S-N*	*T-F*	*J-P*
Irish	53% - 47%	26% - 74%	52% - 48%	21% - 79%
American	46% - 54%	15% - 85%	59% - 41%	33% - 66%

From this table we can see that there are more introverts in the American group than in the Irish (54% - 47%). The American group shows a greater number of intuitives that the Irish group. However, the Irish group has more P-types (79%-66%). The table below compares the 16 different types among the Irish and American students.

Table 7-9 Comparison of overall type results for Irish and American students

TYPE RESULT	IRISH	AMERICAN
ISTJ	5.1%	-
ISTP	3.8%	2.6%
ESTP	5.1%	2.6%
ESTJ	2.5%	5.1%
ISFJ	2.5%	2.6%
ISFP	1.3%	2.6%
ESFP	3.8%	-
ESFJ	1.3%	-
INFJ	1.3%	5.1%
INFP	14.0%	10.3%
ENFP	19.7%	15.4%
ENFJ	3.8%	5.1%
INTJ	2.5%	7.7%
INTP	15.9%	23.1%
ENTP	15.9%	10.3%
ENTJ	1.3%	7.7%

Despite these differences in the four preference indices listed in table 7.8, the overall representation in the sixteen types of the MBTI is very similar for Irish and American students, with the 4 dominant types highlighted above.

Conclusion

This research shows conclusively that the CTYI group analysed using the MBTI has a much higher proportion of intuitive types (N) than the school group. There is also a much higher percentage of introverts within the CTYI group. This could be explained by the high number of American introverts in this CTYI group. This leads to four dominant types in the CTYI group: ENFP, INTP, ENTP and INFP. These four types are dominant for both the Irish and the American students who attended the CTYI Summer Programme in 1995. In spite of the

significant differences in terms of Intuition over Sensing, and Introversion over Extroversion, the four dominant school categories contain two of the CTYI types. These are ENFP and ENTP. The other two dominant school categories are ESTP and ESFP.

CHAPTER 8

Conclusion

Equal opportunities in Education

Bloom (1985) notes that regardless of the initial characteristics or gifts of the individual, they will not attain extreme levels of capability unless there is a long and intensive process of encouragement and nurturing. Charges of elitism have been levelled against those who promote the special education of talented children (see Marland, 1972; Whitmore, 1980; Povey, 1980; and more recently, Margolin, 1996). Margolin believes that special education for the highly talented constitutes a mechanism specifically designed to single out the children of the affluent in a strategy to develop a class of people who will lead, direct and originate. However, if one accepts that it is the duty of society to provide equal educational opportunities for all children appropriate to their individual abilities and aptitudes, including those with special needs, then there is an obligation to provide it. The *Primary School Curriculum Teachers' Handbook Part 1* issued by the Irish Department of Education reads *"Each pupil needs to be provided with the kind and variety of opportunities towards stimulation and fulfilment which will enable him (sic) to develop his natural powers at his own rate, to his fullest capacity".* Cruickshank (1986) concludes that special support for the academically able is a necessary element in any society that accepts its responsibility to provide educational experience consistent with the abilities, motives and interests of all children. Borland (1989) believes that the highly academically able are exceptional children to the same extent that the visually impaired and the learning disabled are exceptional children, and thus are entitled to special programming.

Miraca Gross (1993) states that there is a considerable body of empirical research on the positive affects of ability grouping on both the academic and social development of gifted students. Indeed, most recognised educational psychologists agree that intellectually talented children should be grouped together for a greater learning effect (see

Hollingworth, 1942; Barbe, 1957; Kulik and Kulik, 1982; Tannenbaum, 1983; Webb, Meckstroth and Tolan, 1983, Feldhusen, 1985, Van Tassel-Baska, 1985).

Reviewing the Research

This research has shown how CTYI uses a national Talent Search to identify post-primary pupils who reason well verbally and mathematically. The numbers have increased steadily over the three years, and Dr. Gilheany has stated that she is delighted with the Scholastic Aptitude Test as a means of identifying these students. The majority of the students who take the SAT are in either first or second year at post-primary level, and come from relatively small families, with almost 50% reporting that they are the eldest in their family. These students perceive themselves to be better than their classmates at school in academic areas, such as Mathematics, Science, English, and Languages, while they consider themselves about equal in Sport, and Art and Music. Mathematics is considered their favourite subject at school, with girls significantly favouring English and Writing, while the boys prefer Computers. The group reported a high level of support from both parents for their various subjects, with little support or encouragement for their academic pursuits from their friends. The group reports that their intellectual ability results in a positive perception from their parents and teachers, but some degree of negativity from their classmates. The questionnaire identified a group of students who qualified from the SAT to be eligible for courses during the summer. The qualification rate increases as the students grow older. More of the qualifying group were the eldest in their family, compared to non-qualifiers, and family size is smaller. Their parents have a significantly higher level of education than non-qualifiers, and they believe that they themselves will go on to higher levels of education that the non-qualifiers do. They rank themselves significantly higher than non-qualifiers in Mathematics, Science and English. A higher percentage of qualifiers had attended special courses before participating in the

SAT. These courses included the Maths and Computer Olympiad, and the Drumcondra Logo programme.

The respondents to the CTYI summer course evaluation believe that the fast-paced classes offer a significantly higher intellectual challenge than they experience at school. They also perceive that the classes are more interesting and that the special atmosphere at CTYI produces a more intensive learning environment than their regular schools. On the whole, both the Irish and American students report a high level of academic satisfaction with the courses at CTYI. The instructors have impressed them, particularly with their expert subject knowledge, and by creating an environment where the talented student can excel. Outside of classtime, the students are happy with residential life on campus at Dublin City University. They have enough activities to keep them occupied in the afternoon, and a wide variety from which to choose at weekends. In general, the students believe that these activities are well-organised, start punctually, and run in a fun fashion, the only complaint being that the first activity in the afternoon is a little short. The residential assistant plays a vital role in allowing the students adjust to campus life at CTYI. Nearly all of the students feel that the Residential Assistant encouraged them to have fun on the programme, and see their RA as a good role model. The facilities at Dublin City University are ideal for the running of a residential summer programme. The academic facilities provide a platform for the optimal learning conditions, the sports complex supply a variety of options for the daily activities, and the campus residences offer safe and comfortable accommodation for the students. While the campus restaurant provided a clean and hygienic mealtime environment, many students complained about the low quality of the food, and were also unhappy with the campus shop, which they felt was inadequately supplied and closed too early in the evening.

Students returning for their third CTYI experience believed that the course had had a profound academic effect on them. It had helped them with their subjects at school, and

many felt challenged academically for the first time. They noticed a different atmosphere from that of their schools, finding it more relaxed, with a greater interest in learning. They also found the teaching style much more student-centred, with plenty of in-depth analysis in the presence of an instructor with expert subject knowledge. Dr. Gilheany had a similar vision of the academic effects. She hoped that the students had gained new insights and knowledge in subjects they may not have experienced at school. She hoped that the CTYI experience might inspire the students to perform better at school, and have the means to seek out information for themselves. Socially, the students reported an increase in self-confidence, although many reported that this was restricted to their time at CTYI, and not really sustained for the year at school. Many students reported that making friends was the greatest social effect of the course, and Dr. Gilheany points out that the Centre was striving to create a residential atmosphere where all students would find it easy to meet people of similar interests and ability. When asked for reasons why they returned, the students were divided between the social and academic sides of the programme, with Dr. Gilheany stressing that the link between these two aspects is of the utmost importance.

The CTYI Saturday classes provide enrichment for talented students during the year. The students feel that they benefit educationally from these classes, learning more about the subject they have encountered and gaining a better appreciation. Most students report a high level of satisfaction with the courses, particularly those in the computer classes. More of the students felt happier with independent study at the end of the 10 week programme, and 10% believed that they had become more comfortable with their ability.

Analysing results from the Myers-Briggs Type Indicator makes interesting reading. Compared to students at school, the CTYI group is characterised by significantly more intuitive types than sensing types. These intuitive types report possibilities and meanings, enjoy projecting future outcomes, and can see patterns and meanings in a variety of things. Research has shown that intuitive types frequently outscore sensing types on

intelligence tests. This type can also be associated with Gardner's theory of linguistic intelligence (1983). The CTYI group also has a higher proportion of introverts than the school population. Introverts tend to turn to the world of ideas and concepts. They are deep thinkers and focus on inner impression. This is significant to how they perform in the classroom. Teaching styles may have to be adjusted to cater for this group. As introverts, they may not perform as well as extroverts in an outside environment, like school. Intuitive introverts do not respond well to rote learning, and prefer to explore new ideas and different perspectives on the various school subjects.

Implications for the Future

Future research could involve a long-term study of students who have passed through the summer programme, and the effect CTYI has had on their lives. Parents too could be assessed in terms of their contribution to the identification process, and the environment they have created for the talented adolescent. One could also look at the effects of highly-able students on their siblings and friends. There is also scope for research in examining instructors on the CTYI programme using the Myers-Briggs Type Indicator, or a similar instrument, and comparing the results with those of teachers in regular secondary schools.

Over the past year, CTYI has established a Young Students Programme addressing the needs of talented eight to twelve-year-olds by offering enriching Saturday classes and a one-week summer programme in the areas of Creative Writing, Mathematics and Computers. This whole group needs to be researched in terms of the students, parents, teachers, and schools involved. One could also examine how many of these students go on to the CTYI programme for older students.

CTYI has dedicated itself to the achievement of academic excellence by all its students. The Centre has started in-service training courses for teachers in primary schools, in an attempt to better equip them to nurture the development of these children. Dr. Gilheany

has stressed the need to establish a nationwide network of centres working under the ethos of CTYI. This would involve co-operation on the part of teachers, parents, and the government to provide the necessary environment where talented young people can thrive. The report of the Special Education Review Committee to the Department of Education in 1993 includes recommendations for provisions for pupils who are exceptionally able, and states that all schools should outline arrangements for pupils with special needs, describing the measures they are implementing to encourage the academically talented.

CTYI needs to establish itself in the eyes of the public. This research believes that this should start at a school level. While CTYI approaches every post-primary school in Ireland looking for students for the Talent Search, to date only 40% of schools have responded. It seems impossible to believe that every school in Ireland would not have at least one talented student. CTYI is now entering its fifth year. At this stage, schools should not perceive the Centre as a threat, but rather as an ally in their quest to provide equal educational opportunities for all students. For CTYI to prosper, it must continue to grow. This growth is dependent on schools sending more students to participate in CTYI programmes. The CTYI mission is a noble one. It can change students' lives in a positive fashion. It must be allowed to continue and deliver upon its undoubted potential.

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APPENDIX A

Talent Search Reports

and

Talent Search Questionnaire

DUBLIN CITY UNIVERSITY

Ollscoil Chathair Bhaile Átha Cliath

The Irish Centre for Talented Youth

The 1995 Talent Search Report

Congratulations on taking part in the 1995 CTYI Talent Search in First and Second Year Post Primary Students taking part in the Talent Search fall into the top 5% of the present school population As you review your scores in the Scholastic Aptitude Test bear in mind that this is an extremely difficult test, designed for 18 year old college bound students To be able to attempt the SAT is a highly significant achievement To achieve an average score, as compared to such students, is even more exceptional.

The 1995 Talent Search Report is designed to help you compare your SAT scores with those of other Irish and US students This year 623 students took part in the Talent Search, by taking the SAT on 28th January 1995 In addition 49 older students, aged 14-16, also took the SAT for purposes of establishing eligibility for CTYI Summer Courses

The comparison groups referred to in the tables and charts below are as follows:-

Group I: **1995 CTYI Talent Search** - figures are based on a total of 619 Talent Search participants (354 females and 265 males), whose results had been obtained by March 15th 1995 Talent Search participants are first and second year post-primary school students and those in a higher class, born after 31-Jul-80

Group II: **1995 CTYI Total Scores** - are based on all CTYI students i.e those who were eligible for the Talent Search and older students (born in 1980, 1979 and 1978).

Group III: **1995 US CTY Talent Search** - these results are based on a total of 37,416 Seventh Grade Talent Search participants (17,740 females and 19,676 males). These are similar in age to Irish Talent Search students

Group IV: **1994 US College-Bound Seniors** - these results are based on a large group of older students throughout the US who took the SAT for university-entry purposes

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COMPARISON OF MEAN SAT SCORES

	MATHS		VERBAL	
	Female	Male	Female	Male
1995 CTYI Talent Search	**426**	**457**	**378**	**382**
1995 CTYI Total Testing	**435**	**472**	**386**	**394**
1995 U S CTY Talent Search	400	426	366	359
1994 U S College-bound Senior	460	501	421	425

For those of you not familiar with statistics, the following information may be useful when reading the tables included in the report Percentiles are used when comparing the scores of different groups of students Take for example Table 1 The column on the left gives a list of possible SAT-M scores The 1st Year frequency column (second from left) tells us that 6 CTYI female students in 1st Year achieved a score of 520 SAT-M The Senior Percentile column, (fourth from left) indicates that this places them at the Senior 70%ILE In other words these students performed better than 70% of the comparison group of US university-bound senior students

Scholastic Aptitude Test Results: Mathematics

As can be seen in the summary table on the previous page, the College Board SAT Program reports that the mean (or arithmetic average) of college-bound high school females who took the mathematics portion of the SAT in 1994 was 460 and that of college-bound senior males was 501. Approximately 20% of the female 1995 1st Year post-primary participants and 56% of the female 2nd Year participants scored as well as or better than the average college-bound female on the SAT-M; approximately 22% of the male 1st Year post-primary participants and 55% of the 2nd Year participants scored as well as or better than the mean of the college-bound males. CTYI considers a SAT-M score of 500 or above to be outstanding in this age group.

TABLE 1: A frequency distribution of 1995 Talent Search female and male SAT-M scores. Percentiles of 1994 college-bound senior females and males achieving corresponding scores on the SAT-M are given for comparison purposes.

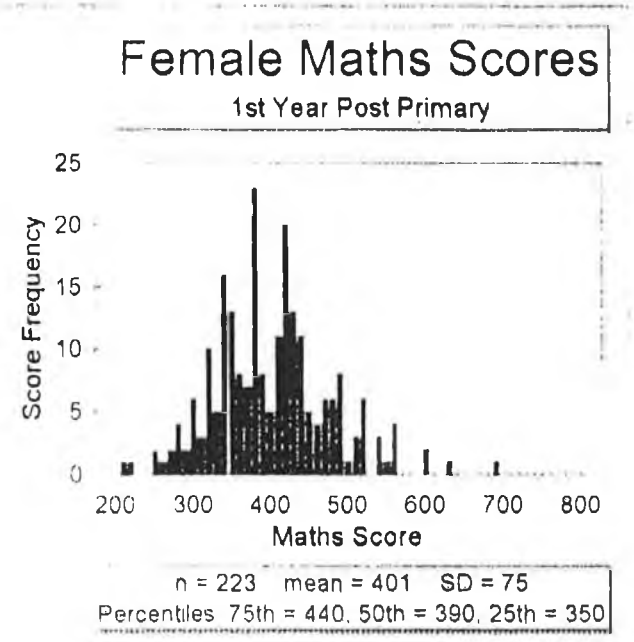
	FEMALES				MALES			
SAT M Score	1st Year Post Primary Freq	2nd Year Post Primary Freq	Senior Percentile		SAT M Score	1st Year Post Primary	2nd Year Post Primary Freq	Senior Percentile
800	0	0	99+		800	0	0	99+
790	0	0	99+		790	0	0	99+
780	0	0	99+		780	0	0	99
770	0	0	99+		770	0	0	99
760	0	0	99+		760	0	0	98
750	0	0	99+		750	0	0	96
740	0	0	99		740	0	0	97
730	0	0	98		730	0	0	96
720	0	0	98		720	0	0	95
710	0	0	98		710	0	0	94
700	0	0	97		700	0	2	93
690	1	0	97		690	0	1	92
680	0	1	96		680	1	0	90
670	0	0	95		670	0	0	89
660	0	1	95		660	0	0	88
650	0	0	94		650	0	2	86
640	0	2	93		640	2	1	84
630	1	0	92		630	0	3	83
620	0	2	90		620	1	0	81
610	0	1	89		610	0	2	79
600	2	1	88		600	0	4	77
590	0	1	86		590	0	3	74
580	0	4	84		580	2	2	72
570	0	5	82		570	3	5	70
560	4	4	80		560	4	8	67
550	1	4	78		550	0	4	65
540	3	3	76		540	3	5	62
530	0	3	73		530	1	4	59
520	6	3	70		520	1	4	56
510	3	3	67		510	6	6	53
500	1	8	64		500	10	7	50
490	8	13	62		490	3	1	47
480	6	6	59		480	5	3	45
470	6	4	56		470	9	6	42
460	4	5	52		460	5	5	39
450	5	5	49		450	3	2	36
440	11	5	46		440	4	2	33
430	13	4	43		430	2	3	31
420	20	2	40		420	10	11	28
410	11	4	37		410	7	3	26
400	5	4	34		400	5	3	24
390	8	9	31		390	9	2	21
380	23	4	28		380	11	4	19
370	7	3	25		370	5	1	17
360	8	6	22		360	8	3	15
350	13	2	20		350	5	0	13
340	16	4	17		340	4	1	11
330	5	1	15		330	3	0	10
320	10	1	13		320	7	0	8
310	3	1	10		310	2	0	6
300	6	2	8		300	4	0	5
290	2	0	6		290	1	0	4
280	4	0	5		280	0	1	3
270	2	0	3		270	0	0	2
260	1	0	2		260	1	1	1
250	2	0	1		250	3	0	1
240	0	0	1		240	0	0	1
230	0	0	1		230	0	0	1
220	1	0	<1		220	0	0	<1
210	1	0	<1		210	0	0	<1
200	0	0	<1		200	0	0	<1

Histograms of the 1995 CTYI female and male Maths score frequency distribution

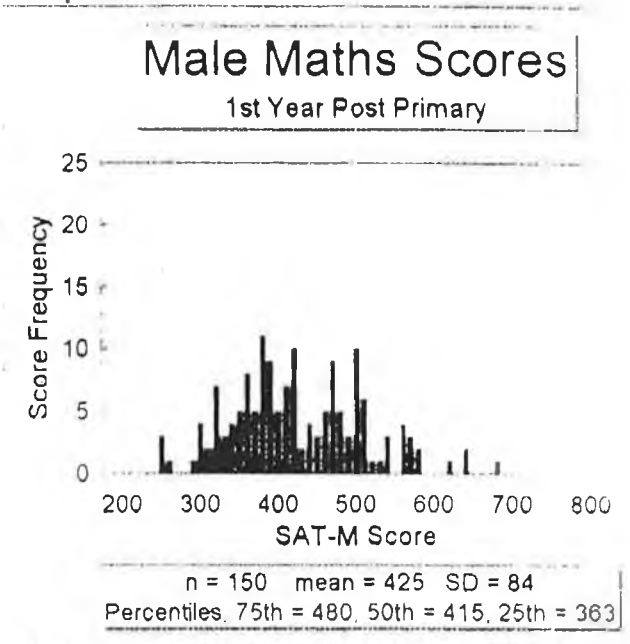
Graphs 1,2,3 and 4 are based on the data presented on the previous page in Table 1

n: number of students in category
mean: average score in category
SD Standard Deviation

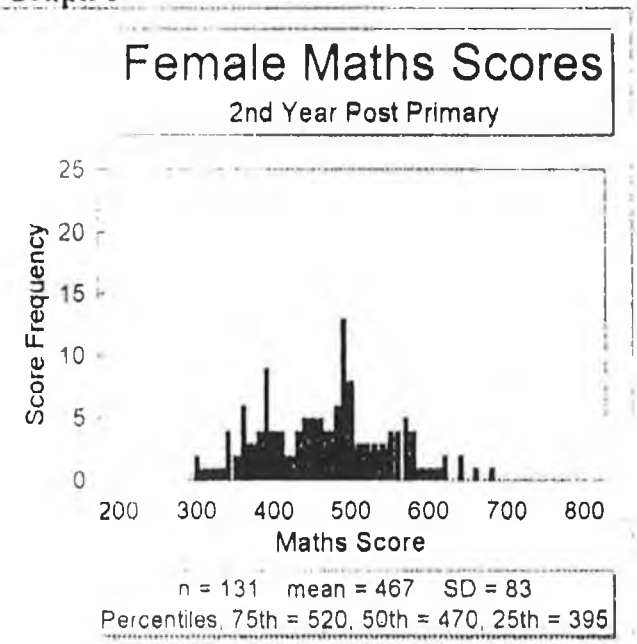
Graph 1



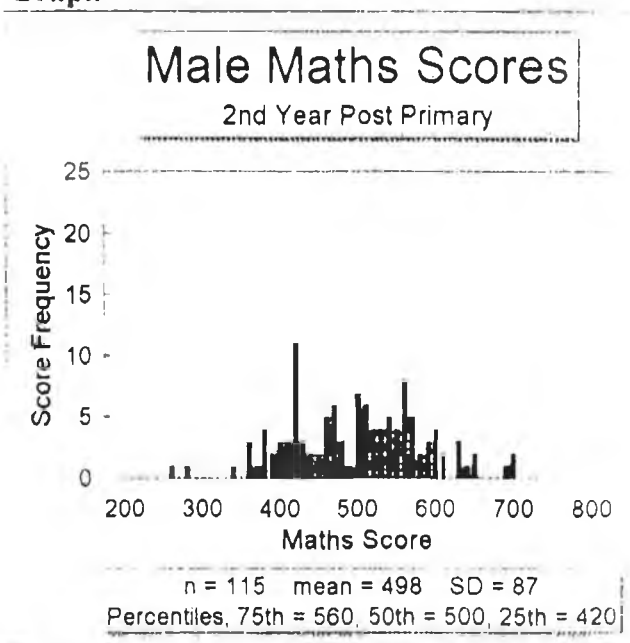
Graph 2



Graph 3



Graph 4



Scholastic Aptitude Test Results: Verbal

As can be seen in the summary table on Page 1, the College Board SAT Program reports that the mean (or arithmetic average) of college-bound high school females who took the verbal portion of the SAT in 1994 was 421 and that of college-bound senior males was 425. Approximately 22% of the female 1995 1st Year post-primary participants and 50% of the female 2nd Year participants scored as well as or better than the average college-bound female on the SAT-V; approximately 22% of the male 1st Year post-primary participants and 43% of the 2nd Year participants scored as well as or better than the mean of the college-bound males. CTYI considers a SAT-V score of 430 or above to be outstanding in this age group.

TABLE 2: A frequency distribution of 1995 Talent Search female and male SAT-V scores. Percentiles of 1994 college-bound senior females and males achieving corresponding scores on the SAT-V are given for comparison purposes.

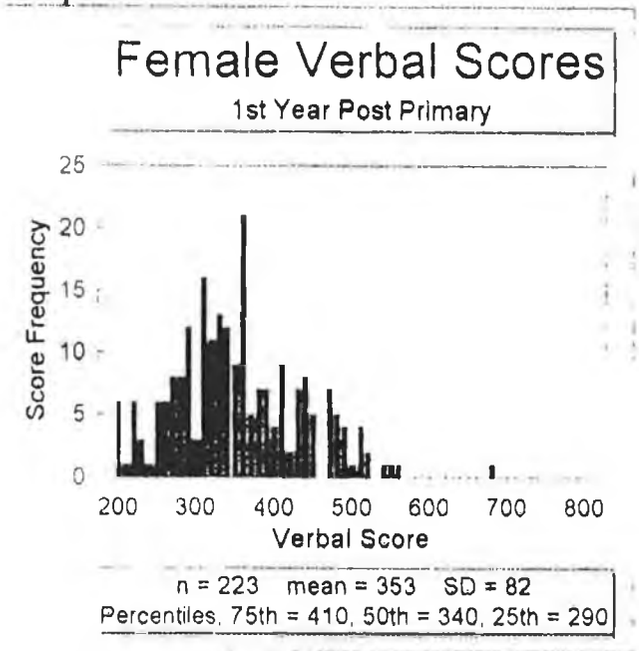
FEMALES					MALES			
SAT V Score	1st Year Post Primary Freq	2nd Year Post Primary Freq	Senior Percentile		SATV Score	1st Year Post Primary Score	2nd Year Post Primary Score	Senior Percentile
800	0	0	99+		800	0	0	99+
790	0	0	99+		790	0	0	99+
780	0	0	99+		780	0	0	99+
770	0	0	99+		770	0	0	99+
760	0	1	99+		760	0	0	99+
750	0	0	99+		750	0	0	99+
740	0	0	99+		740	0	0	99+
730	0	1	99+		730	0	0	99+
720	0	0	99+		720	0	0	99
710	0	0	99		710	0	0	99
700	0	0	99		700	0	0	99
690	0	0	98		690	0	0	98
680	1	0	98		680	0	0	98
670	0	0	98		670	0	0	97
660	0	0	97		660	0	1	97
650	0	0	97		650	0	1	96
640	0	0	96		640	0	1	96
630	0	0	96		630	0	0	95
620	0	0	95		620	0	2	94
610	0	1	94		610	0	0	93
600	0	0	93		600	0	1	92
590	0	2	92		590	0	0	91
580	0	1	91		580	0	2	90
570	0	1	90		570	1	0	88
560	1	1	89		560	0	0	87
550	1	1	87		550	0	0	85
540	1	3	85		540	0	2	83
530	0	0	83		530	0	3	81
520	2	2	81		520	0	0	79
510	4	5	79		510	3	1	76
500	1	5	77		500	1	2	74
490	4	7	74		490	6	6	71
480	5	4	71		480	5	1	68
470	7	7	68		470	2	7	65
460	0	2	65		460	2	2	62
450	5	7	62		450	3	6	59
440	8	4	58		440	4	7	55
430	7	7	55		430	7	4	52
420	2	3	51		420	1	5	48
410	9	7	48		410	13	7	44
400	4	4	44		400	5	2	41
390	7	6	41		390	4	7	38
380	7	7	37		380	7	3	35
370	5	5	34		370	8	5	31
360	21	7	31		360	10	4	28
350	9	3	27		350	6	8	25
340	12	7	24		340	7	3	23
330	13	3	22		330	4	3	20
320	11	3	19		320	4	3	18
310	16	4	17		310	10	2	15
300	3	0	14		300	2	2	13
290	12	1	12		290	9	2	11
280	8	0	10		280	3	2	9
270	8	2	8		270	7	2	8
260	6	3	7		260	1	1	6
250	6	0	6		250	1	0	5
240	1	1	4		240	1	1	4
230	3	1	3		230	4	0	3
220	6	0	2		220	2	2	2
210	1	1	2		210	0	0	1
200	6	1	<1		200	7	2	<1

Histograms of the 1995 CTYI female and male Verbal score frequency distribution

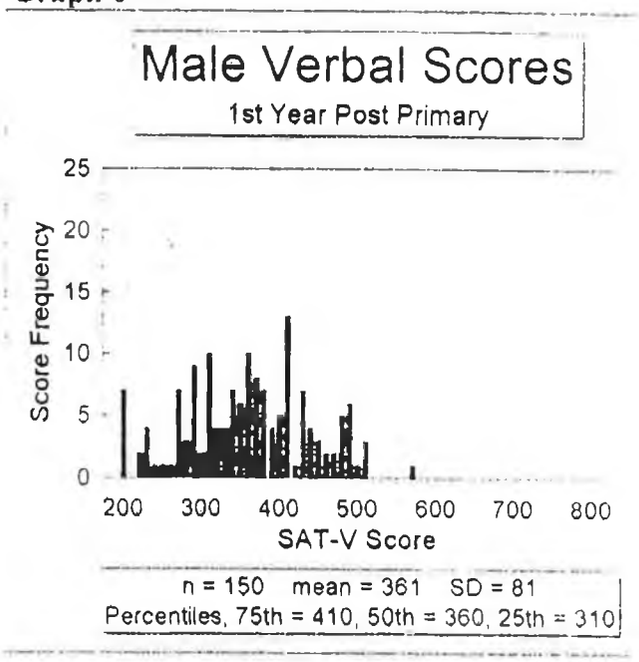
Graphs 5,6,7 and 8 are based on the data presented on the previous page in Table 2

n: number of students in category
mean average score in category
SD Standard Deviation

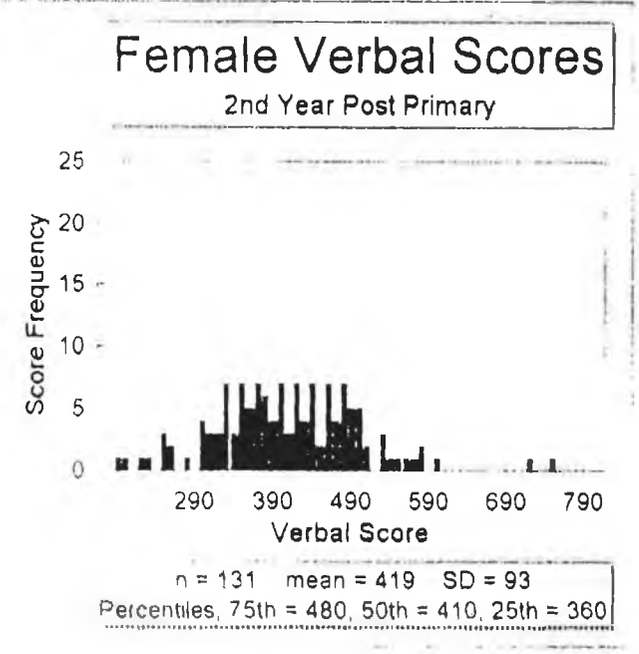
Graph 5



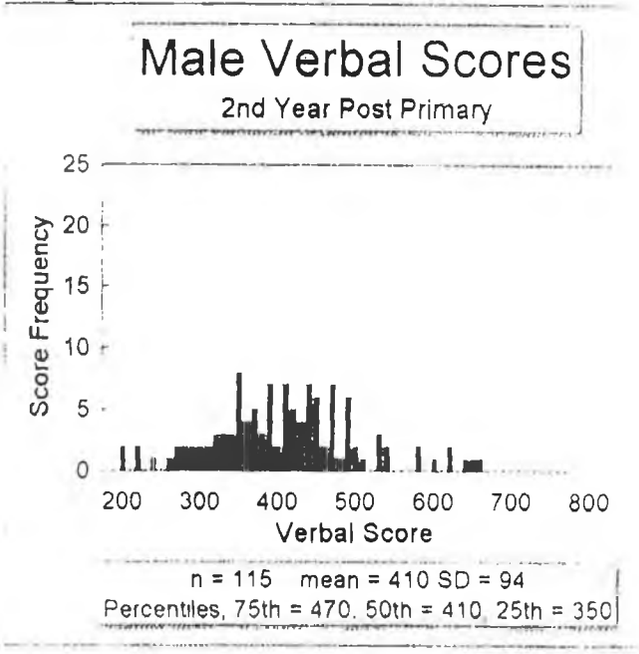
Graph 6



Graph 7



Graph 8



Developing Your Potential

Your SAT scores are only one measure of your intellectual and academic potential To attain a high score on either section of the SAT, you must reason exceptionally well mathematically or verbally Such abilities develop in response to your experiences and interests in and out of school Other attributes such as work habits, memory, motivation, creativity and personal values also contribute to your intellectual development Your academic success will depend on how well you develop all of these characteristics as well as on careful long term planning and collaboration between you, your parents and your teachers

It is important that you fully consider all available educational options and take advantage of appropriate opportunities for intellectual growth both inside and outside of your school system All Talent Search participants are encouraged to continue seeking challenges and experience that will enhance their exceptional abilities.

If on this occasion you have not qualified to participate in CTYI's academic programmes please do not be discouraged Bear in mind that this is probably one of the most difficult tests that you have ever taken and that you may take the SAT again at any time in order to qualify in future years SAT scores are not static Taking the SAT on a yearly basis allows you to measure the growth of your mathematical and verbal reasoning abilities.

What to expect from CTYI in the upcoming years

OPEN DAYS

Over the coming years, regardless of your SAT scores, you will continue to receive invitations to **Discovery Days** at Dublin City University. These events are designed to let you explore new areas in science and humanities.

RESEARCH

From time to time we may ask you to complete a questionnaire. Your help is vital to understanding the characteristics and needs of highly able students. All such information remains completely confidential.

CTYI would like to take this opportunity to thank you for taking part in the Talent Search and to wish you every success in your future academic path

DUBLIN CITY UNIVERSITY
Ollscoil Chathair Bhaile Átha Cliath

The Irish Centre for Talented Youth

The 1996 Talent Search Report

Congratulations on taking part in the 1996 CTYI Talent Search for students aged 12-16 years. Students taking part in the Talent Search fall into the top 5% of the present school population. As you review your scores in the Scholastic Aptitude Test bear in mind that this is an extremely difficult test, designed for 18 year old college-bound students. To be able to attempt the SAT is a highly significant achievement. To achieve an average score, as compared to such students, is even more exceptional.

The 1996 Talent Search Report is designed to help you compare your SAT scores with those of other Irish and US students. This year 703 students took part in the Talent Search, by taking the SAT on January 27th and February 10th 1996. This report includes the scores received by CTYI up to March 15th 1996.

Table 1

Comparison of Mean SAT I Scores

	13. 5 years and younger		13.5 - 14.5 years		14.5 - 15.5 years		15.5 years and older		1995 College-Bound Seniors	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Number	109	162	103	111	49	95	33	41		
Maths	484	458	535	500	582	530	615	582	527	490
Verbal	436	450	508	494	539	539	582	610	507	502

1995 US College-Bound Seniors - these results are based on a large group of older students throughout the US who took the SAT for university-entry purposes.

For those of you not familiar with statistics, the following information may be useful when reading the tables included in the report. Percentiles are used when comparing the scores of different groups of students. Take for example Table 2. The column on the left gives a list of possible SAT-M scores. The 13.5 year old frequency column (second from left) tells us that 4 CTYI male students aged 13.5 years or less achieved a score of 530 SAT-M. The Senior Percentile column, (fourth from left) indicates that this places them at the Senior 52%ILE. In other words these students performed better than 52% of the comparison group of US university-bound senior students.

Table 2
SAT I Results: Maths Scores

Table 2 gives the frequency distribution of the 1996 Talent Search male and female SAT I Maths scores. Percentiles of 1995 college bound senior males and females achieving corresponding scores are also given. The data is grouped according to the age of the students at the time of taking the SAT.

Maths Score	Freq Males <13.5 yrs	Freq Males 13.5-14.5	Freq Males 14.5-15.5	Freq Males >15.5yrs	Males %ile Senior	Maths Score	Freq Females <13.5 yrs	Freq Females 13.5-14.5	Freq Females 14.5-15.5	Freq Females >15.5 yrs	Females %ile Senior
800	0	0	0	0	99+	800	0	0	0	0	99+
790	0	0	0	0	99	790	0	0	0	0	99+
780	0	0	1	0	99	780	0	0	0	1	99+
770	0	0	0	0	99	770	0	0	0	0	99+
760	1	0	1	0	98	760	0	0	0	0	99
750	1	0	0	1	98	750	0	0	0	0	99
740	0	0	0	0	97	740	0	0	0	0	99
730	0	0	2	0	97	730	0	0	0	0	99
720	1	1	1	2	95	720	0	0	0	0	98
710	0	0	0	2	95	710	0	0	0	0	98
700	0	0	1	0	94	700	0	0	0	0	98
690	1	0	3	0	93	690	0	1	0	0	97
680	1	3	0	0	91	680	1	1	1	1	96
670	1	1	0	0	90	670	0	0	1	1	95
660	0	3	0	2	88	660	0	2	1	3	94
650	0	4	1	2	85	650	0	2	0	1	93
640	1	6	5	3	82	640	0	1	2	2	91
630	0	1	0	0	80	630	0	1	1	2	89
620	2	3	4	1	78	620	0	0	3	2	88
610	0	4	1	4	76	610	3	1	2	3	86
600	2	5	2	4	73	600	0	3	7	3	84
590	1	5	2	4	70	590	3	4	1	3	81
580	0	1	3	0	67	580	3	2	2	0	79
570	4	4	1	3	65	570	3	10	11	2	77
560	2	3	2	0	62	560	3	1	2	2	74
550	2	1	3	0	58	550	3	1	5	3	71
540	8	6	2	2	55	540	2	7	6	4	68
530	4	5	2	0	52	530	5	5	7	0	65
520	2	3	1	0	49	520	4	6	9	2	62
510	2	4	1	2	45	510	5	6	2	1	58
500	3	3	1	1	43	500	5	2	2	1	55
490	10	4	1	0	40	490	17	2	10	0	52
480	5	3	1	0	36	480	6	5	2	0	48
470	8	10	0	0	32	470	11	12	2	1	44
460	4	1	1	0	30	460	9	2	3	1	41
450	8	1	2	0	27	450	12	7	4	1	37
440	3	5	0	0	25	440	2	6	3	0	34
430	2	2	0	0	21	430	6	1	1	0	30
420	8	4	2	0	18	420	12	4	1	0	26
410	2	0	1	0	16	410	3	2	1	1	22
400	2	3	0	0	14	400	10	3	1	0	20
390	4	3	1	0	12	390	13	5	0	0	17
380	4	0	0	0	10	380	7	1	1	0	14
370	4	0	0	0	8	370	5	0	0	0	12
360	3	0	0	0	7	360	4	2	0	0	11
350	1	0	0	0	7	350	2	0	0	0	10
340	1	0	0	0	5	340	0	1	0	0	8
330	0	0	0	0	4	330	1	0	0	0	6
320	1	0	0	0	3	320	2	2	0	0	5
310	0	0	0	0	3	310	0	0	0	0	4
300	0	0	0	0	2	300	0	0	0	0	3
290	0	0	0	0	2	290	0	0	1	0	3
280	0	0	0	0	2	280	0	0	0	0	2
270	0	0	0	0	1	270	0	0	0	0	2
260	0	0	0	0	1	260	0	0	0	0	2
250	0	0	0	0	1	250	0	0	0	0	1
240	0	0	0	0	<1	240	0	0	0	0	1
230	0	0	0	0	<1	230	0	0	0	0	1
220	0	0	0	0	<1	220	0	0	0	0	<1
210	0	0	0	0	<1	210	0	0	0	0	<1
200	0	1	0	0	<1	200	0	0	0	0	<1

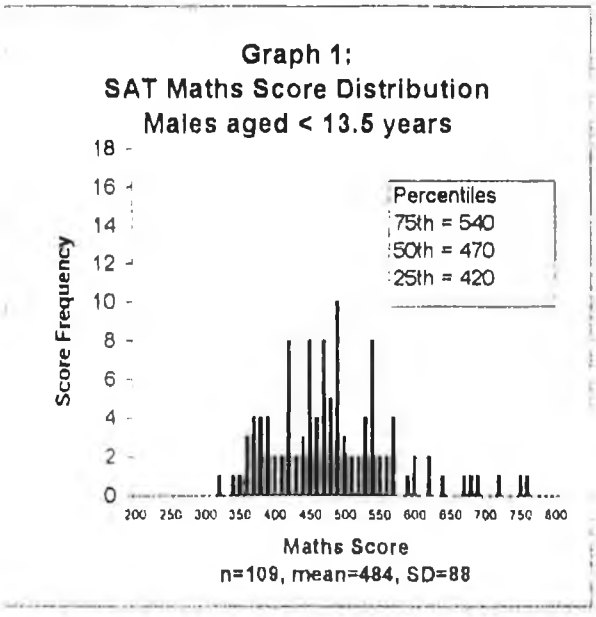
Table 3
SAT I Results: Verbal Scores

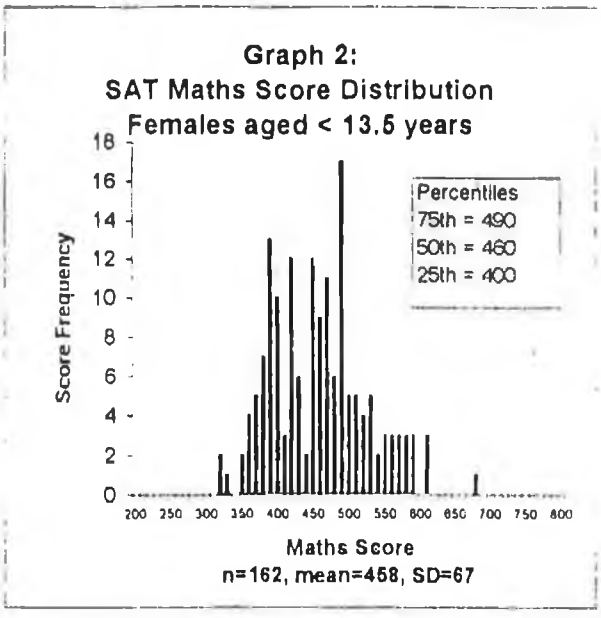
Table 3 gives the frequency distribution of the 1996 Talent Search male and female SAT I Verbal scores. Percentiles of 1995 college bound senior males and females achieving corresponding scores are also given. The data is grouped according to the age of the students at the time of taking the SAT I.

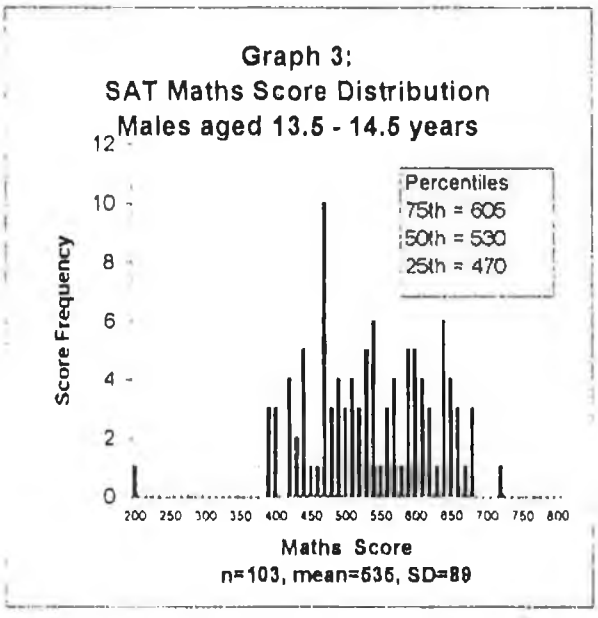
Verbal Score	Freq Males <13.5 yrs	Freq Males 13.5-14.5	Freq Males 14.5-15.5	Freq Males >15.5 yrs	Males Senior %ile	Verbal Score	Freq Females <13.5 yrs	Freq Females 13.5-14.5	Freq Females 14.5-15.5	Freq Females >15.5 yrs	Females Senior %ile
800	0	0	0	0	99+	800	0	0	0	0	99+
790	0	0	0	0	99+	790	0	0	0	0	99+
780	0	0	0	0	99	780	0	0	0	0	99
770	0	0	1	0	99	770	0	0	0	1	99
760	0	0	0	1	99	760	0	0	0	0	99
750	0	0	1	0	98	750	0	0	0	0	99
740	0	1	0	0	98	740	0	0	0	0	98
730	1	1	1	1	98	730	0	0	1	1	98
720	0	0	0	0	97	720	0	0	0	0	98
710	0	0	1	0	96	710	0	1	0	2	97
700	0	0	0	1	96	700	0	5	0	2	96
690	0	0	0	0	95	690	0	0	1	2	95
680	0	1	1	2	94	680	1	1	2	2	95
670	1	1	1	0	92	670	2	0	0	1	93
660	1	0	1	3	91	660	1	1	2	1	92
650	0	3	0	1	89	650	0	2	3	1	90
640	1	2	1	0	88	640	0	3	3	2	89
630	0	4	0	0	86	630	2	0	2	2	88
620	1	1	0	2	84	620	1	5	2	6	86
610	0	1	1	2	83	610	1	0	4	1	84
600	0	2	4	2	80	600	1	2	5	2	81
590	3	4	5	3	76	590	1	0	5	1	78
580	0	4	0	1	74	580	1	2	4	1	75
570	1	5	0	0	71	570	3	2	4	3	73
560	1	3	2	1	68	560	4	4	4	0	69
550	1	4	3	1	65	550	4	2	7	0	67
540	2	9	1	2	62	540	6	5	2	1	64
530	1	1	2	1	59	530	4	2	4	1	60
520	0	2	1	1	56	520	5	8	5	0	57
510	4	2	1	0	53	510	3	0	4	2	54
500	5	5	4	3	49	500	5	5	6	2	50
490	6	2	2	0	45	490	10	2	3	2	46
480	6	7	2	1	42	480	10	5	2	1	43
470	4	3	3	1	38	470	6	4	2	0	39
460	8	1	1	0	35	460	5	4	4	0	36
450	5	8	1	1	32	450	8	7	2	1	32
440	3	1	2	1	29	440	5	8	3	0	29
430	5	7	0	0	26	430	10	3	0	0	26
420	5	3	2	1	23	420	10	6	1	0	23
410	4	1	0	0	20	410	6	6	2	0	20
400	6	1	1	0	18	400	9	1	2	0	18
390	4	3	0	0	15	390	5	1	0	0	15
380	5	2	1	0	13	380	2	5	0	0	13
370	2	2	0	0	11	370	6	4	1	0	11
360	4	2	0	0	9	360	1	0	1	0	9
350	4	1	1	0	8	350	3	1	0	0	8
340	3	0	0	0	7	340	2	0	1	0	6
330	2	1	1	0	5	330	6	0	0	0	5
320	4	1	0	0	5	320	2	1	0	0	5
310	3	1	0	0	4	310	2	0	0	0	4
300	0	0	0	0	3	300	0	0	0	0	3
290	0	0	0	0	3	290	3	0	0	0	3
280	2	0	0	0	2	280	3	1	0	0	2
270	0	0	0	0	2	270	0	0	0	0	2
260	1	0	0	0	1	260	0	1	1	0	1
250	1	0	0	0	1	250	2	0	0	0	1
240	0	0	0	0	1	240	0	0	0	0	1
230	1	0	0	0	<1	230	1	1	0	0	<1
220	0	0	0	0	<1	220	0	0	0	0	<1
210	0	0	0	0	<1	210	0	0	0	0	<1
200	0	0	0	0	<1	200	0	0	0	0	<1

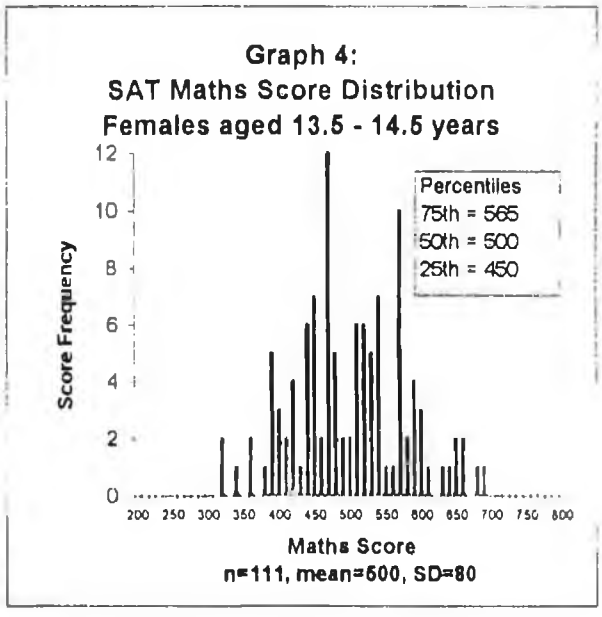
Histograms of SAT I Maths Scores

Graphs 1-8 are histograms showing CTYI male and female SAT I Maths score frequency distribution appearing in Table 2 (Page 2). Percentiles, means and standard deviations reported are those of the 1996 CTYI Talent Search group. The data is grouped according to the age of the students at the time of taking the SAT I.

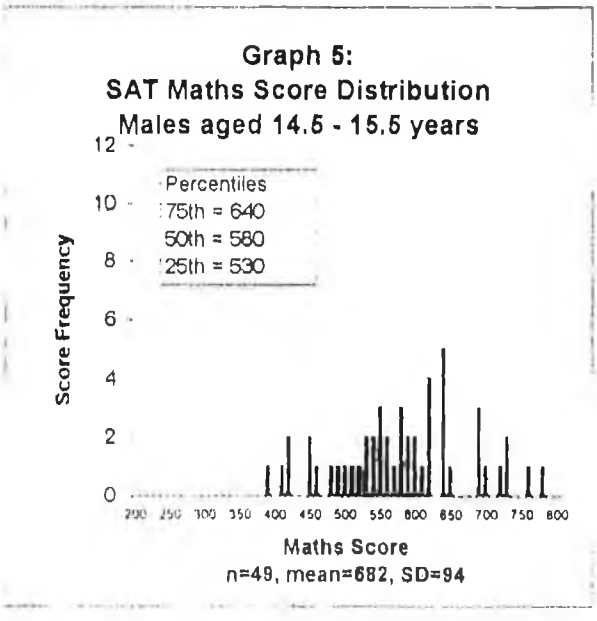


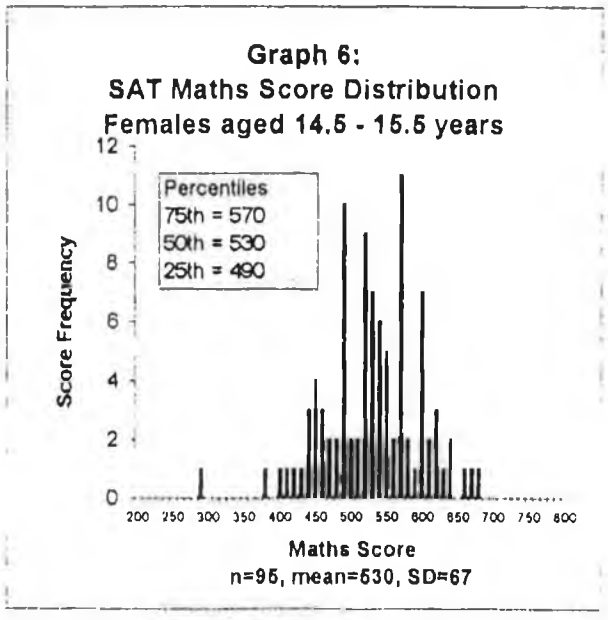


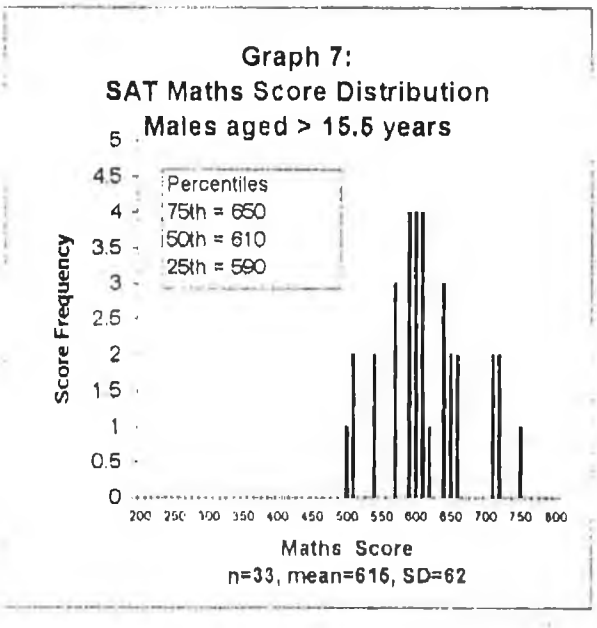


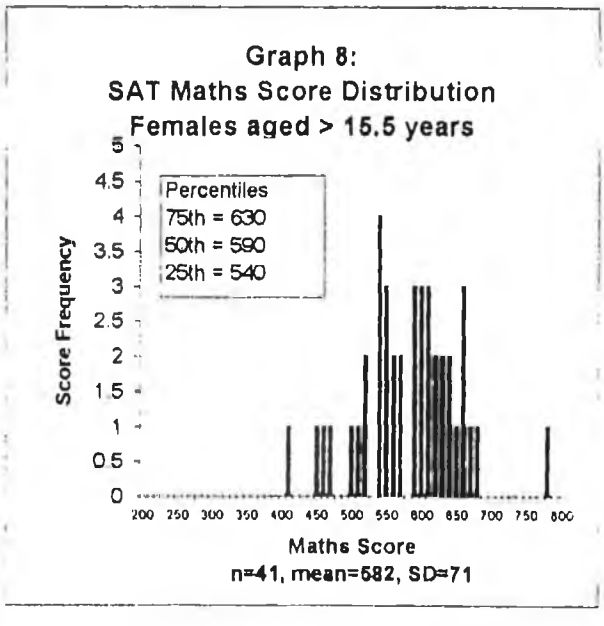


Histograms of SAT I Maths Scores



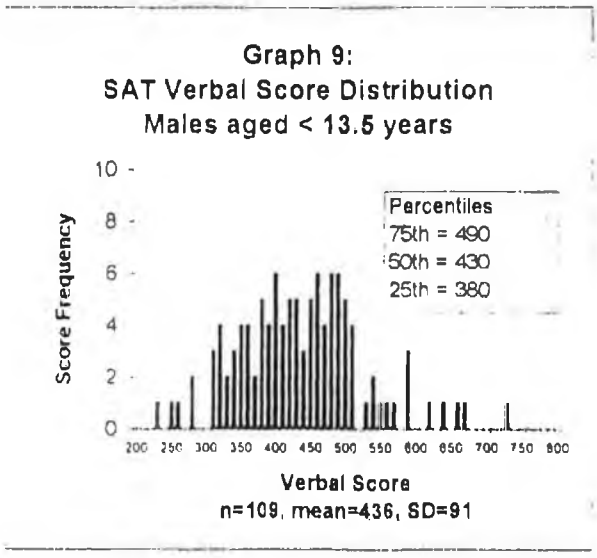


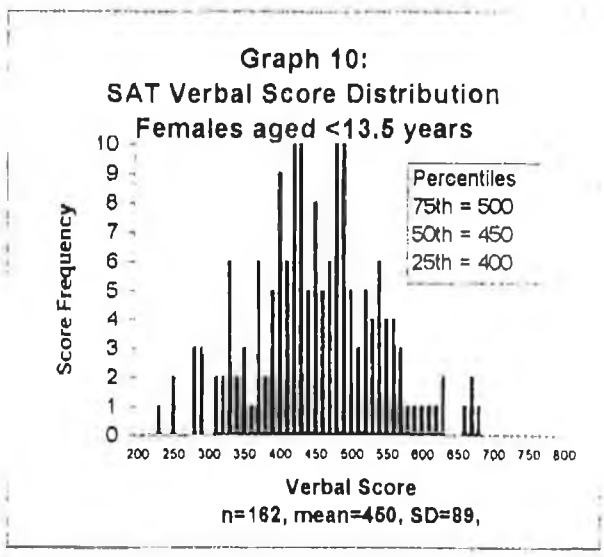


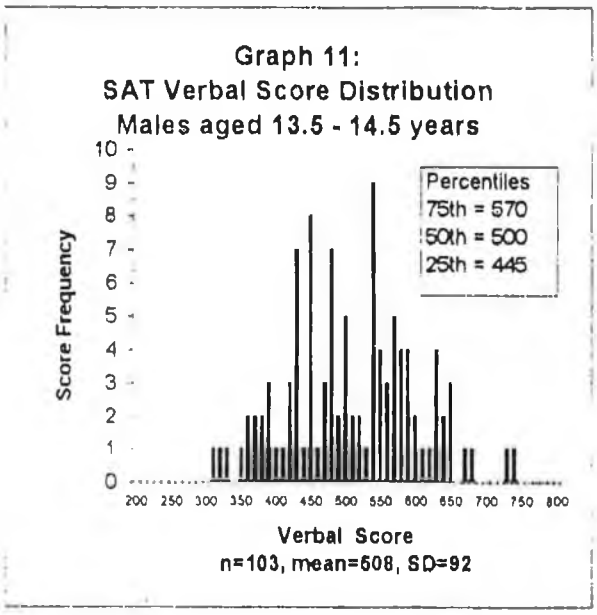


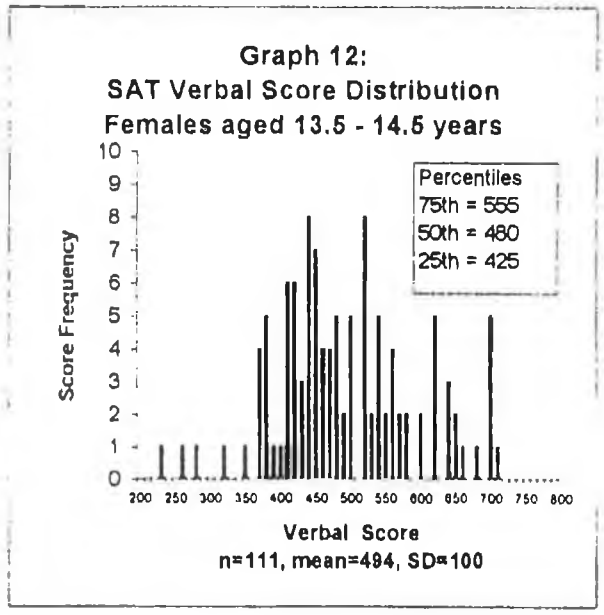
Histograms of SAT I Verbal Scores

Graphs 9-16 are histograms showing CTYI male and female SAT I Verbal score frequency distribution appearing in Table 3 (Page 3). Percentiles, means and standard deviations reported are those of the 1996 CTYI Talent Search group. The data is grouped according to the age of the students at the time of taking the SAT I.

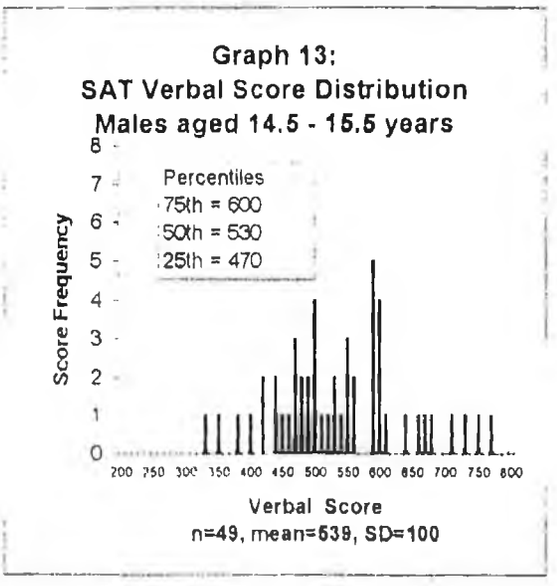


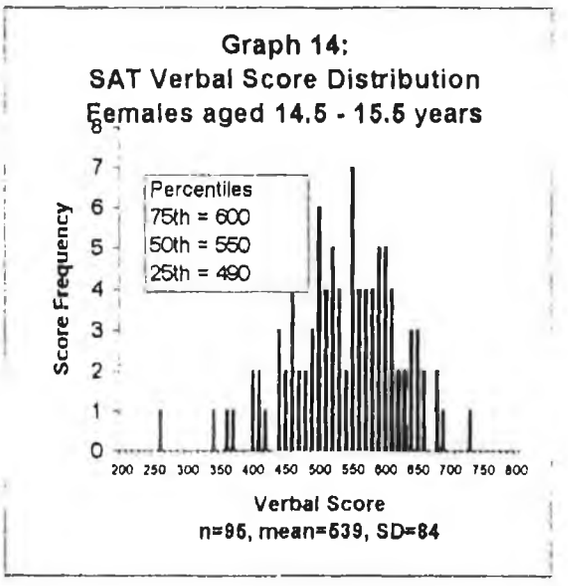


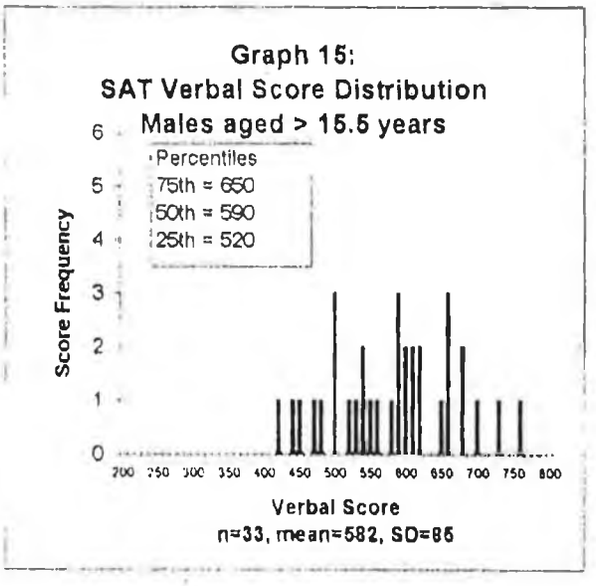


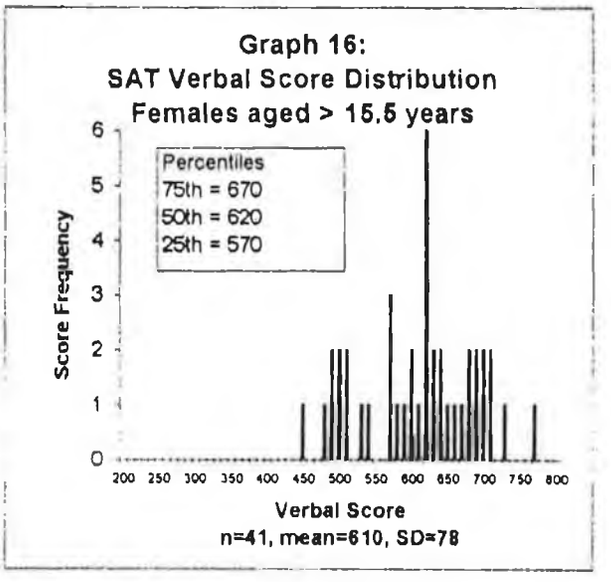


Histograms of SAT I Verbal Scores









Developing Your Potential

Your SAT scores are only one measure of your intellectual and academic potential. To attain a high score on either section of the SAT, you must reason exceptionally well mathematically or verbally Such abilities develop in response to your experiences and interests in and out of school Other attributes such as work habits, memory, motivation, creativity and personal values also contribute to your intellectual development. Your academic success will depend on how well you develop all of these characteristics as well as on careful long term planning and collaboration between you, your parents and your teachers.

It is important that you fully consider all available educational options and take advantage of appropriate opportunities for intellectual growth both inside and outside of your school system All Talent Search participants are encouraged to continue seeking challenges and experience that will enhance their exceptional abilities.

If on this occasion you have not qualified to participate in CTYI's academic programmes please do not be discouraged Bear in mind that this is probably one of the most difficult tests that you have ever taken and that you may take the SAT again at any time in order to qualify in future years SAT scores are not static. Taking the SAT on a yearly basis allows you to measure the growth of your mathematical and verbal reasoning abilities.

What to expect from CTYI in the upcoming years

OPEN DAYS
Over the coming years, regardless of your SAT scores, you will continue to receive invitations to **Discovery Days** at Dublin City University. These events are designed to let you explore new areas in science and humanities.

RESEARCH
From time to time we may ask you to complete a questionnaire Your help is vital to understanding the characteristics and needs of highly able students. All such information remains completely confidential.

CTYI would like to take this opportunity to thank you for taking part in the Talent Search and to wish you every success in your future academic path.

Talent Search Questionnaire 1995

Please return to: CTYI,
Dublin City University,
Dublin 9.

The information you supply is for research purposes only and will be kept strictly confidential. If you choose not to answer a question, please leave the space blank.

Today's date: _____

1. Please print your full name: _____

2. Date of birth: _____ **3. Sex:** ☐ male ☐ female

4. Present year in school:

☐ 1st ☐ 2nd ☐ 3rd ☐ 4th ☐ 5th ☐ 6th

other (please specify): _____

5. Are you

Right-handed ☐ Left-handed ☐ Ambidextrous (both) ☐

6. Family

a. How many older full brothers do you have?

0 1 2 3 4 5 6 7 8

b. How many older full sisters do you have?

0 1 2 3 4 5 6 7 8

c. How many younger full brothers do you have?

0 1 2 3 4 5 6 7 8

d. How many younger full sisters do you have?

0 1 2 3 4 5 6 7 8

e. Do you have a twin?

Yes, identical ☐ Yes, fraternal ☐ No ☐

7. a. **Besides those listed above, are there other children in your home?**

yes ☐ no ☐

b. **If yes, please answer how many**

older boys	1	2	3	4	5
older girls	1	2	3	4	5
younger boys	1	2	3	4	5
younger girls	1	2	3	4	5

8. Father

a. **Does your natural father reside in your household?**

yes ☐ no ☐

b. **If "no", is he deceased?**

yes ☐ no ☐

c. **Describe your father's occupation (if unemployed, retired or deceased, state his last occupation)**

Present: _____

(Last): _____

d. **Do you have a stepfather or adoptive father?**

yes ☐ no ☐

e. **If applicable, describe your stepfather or adoptive father's occupation (if unemployed, retired or deceased, state his last occupation)**

Present: _____

(Last): _____

9. Mother

a. **Does your natural mother reside in your household?**

yes ☐ no ☐

b. **If "no", is she deceased?**

yes ☐ no ☐

c. **Describe your mother's occupation (if unemployed, retired or deceased, state her last occupation)**

Present: _____

(Last): _____

d. **Do you have a stepmother or adoptive mother?**

yes ☐ no ☐

e. **If applicable, describe your stepmother or adoptive mother's occupation (if unemployed, retired or deceased, state her last occupation)**

Present: _____

(Last): _____

10. Education

a. **Please indicate the highest level of education attained by the designated persons:**

	National school	Secondary school	Third level diploma	Third level degree	Masters degree	PhD or Doctorate	Professional qualification
Father							
Stepfather							
Mother							
Stepmother							

Other (please specify) _____

b. **Please indicate the highest level of education you hope to attain, using the scale below:**

	Secondary school	Third level diploma	Third level degree	Masters degree	PhD or Doctorate	Professional qualification
Your goals						

Other (please specify): _____

11. **What kind of school do you attend? Tick the appropriate box.**

Single sex boys' school ☐
Single sex girls' school ☐
Co-educational (mixed) school ☐

12. Do you study computers at your school?

yes ☐ no ☐

13. Which of the following foreign languages do you study at school?

French	yes	☐	no	☐
German	yes	☐	no	☐
Spanish	yes	☐	no	☐
Italian	yes	☐	no	☐

Other (please specify) _____

14. Relative to your classmates at school, how do you rank in your general ability in the following subjects:

	Much better	Somewhat better	About equal	Somewhat worse	Much worse
Maths	1	2	3	4	5
English	1	2	3	4	5
Irish	1	2	3	4	5
History	1	2	3	4	5
Geography	1	2	3	4	5
Languages	1	2	3	4	5
Science	1	2	3	4	5
Art	1	2	3	4	5
Music	1	2	3	4	5
Sport	1	2	3	4	5
Classical studies	1	2	3	4	5

15. Have you taken special course or programs anywhere other than at your normal school?

yes ☐ no ☐

Please specify the type of program or course:_____

_____

16. Indicate how you would describe your attitude towards each of the following subject areas, whether or not you have taken a course in it:

	Strongly like	Somewhat like	Neutral	Somewhat dislike	Strongly dislike
Maths	1	2	3	4	5
Science	1	2	3	4	5
English (reading and literature)	1	2	3	4	5
Writing	1	2	3	4	5
Languages	1	2	3	4	5
History	1	2	3	4	5
Geography	1	2	3	4	5
Sport	1	2	3	4	5
Art	1	2	3	4	5
Computer science	1	2	3	4	5
Music	1	2	3	4	5

17. For each of the following areas, please rank the degree of support you received:

Maths	Much encouragement	Some encouragement	Neutral	Some discouragement	Much discouragement
Father	1	2	3	4	5
Mother	1	2	3	4	5
Teachers	1	2	3	4	5
Friends	1	2	3	4	5
Self	1	2	3	4	5
Others	1	2	3	4	5

Science	Much encouragement	Some encouragement	Neutral	Some discouragement	Much discouragement
Father	1	2	3	4	5
Mother	1	2	3	4	5
Teachers	1	2	3	4	5
Friends	1	2	3	4	5
Self	1	2	3	4	5
Others	1	2	3	4	5

Languages	Much encouragement	Some encouragement	Neutral	Some discouragement	Much discouragement
Father	1	2	3	4	5
Mother	1	2	3	4	5
Teachers	1	2	3	4	5
Friends	1	2	3	4	5
Self	1	2	3	4	5
Others	1	2	3	4	5

Literature/ writing	Much encouragement	Some encouragement	Neutral	Some discouragement	Much discouragement
Father	1	2	3	4	5
Mother	1	2	3	4	5
Teachers	1	2	3	4	5
Friends	1	2	3	4	5
Self	1	2	3	4	5
Others	1	2	3	4	5

Art;Music; Dance	Much encouragement	Some encouragement	Neutral	Some discouragement	Much discouragement
Father	1	2	3	4	5
Mother	1	2	3	4	5
Teachers	1	2	3	4	5
Friends	1	2	3	4	5
Self	1	2	3	4	5
Others	1	2	3	4	5

Sport	Much encouragement	Some encouragement	Neutral	Some discouragement	Much discouragement
Father	1	2	3	4	5
Mother	1	2	3	4	5
Teachers	1	2	3	4	5
Friends	1	2	3	4	5
Self	1	2	3	4	5
Others	1	2	3	4	5

Extracurricular activities

18. Which of the following activities do you participate in (in or out of school)?

Art/craft ☐
Sport ☐
Charity or voluntary activity ☐
Computer activity ☐
Debating or public speaking ☐
Foreign language activity ☐
Journalism or literary activity ☐
Music or dance ☐
Maths activities ☐
Religious activities ☐
Science activities ☐
Scouting ☐
Student Council ☐
Drama ☐
Part time work ☐

Other activities (please specify) _____

19. If you have taken part in any competitions in any of the following areas, at which level did you compete?

	School	National	International
Maths	☐	☐	☐
Science	☐	☐	☐
Languages	☐	☐	☐
Geography/history	☐	☐	☐
Writing	☐	☐	☐
Computers	☐	☐	☐
Art	☐	☐	☐
Dance	☐	☐	☐
Music	☐	☐	☐
Chess	☐	☐	☐

20. How important are the following leisure activities to you?

	Very important	Fairly important	Slightly important	Not important
Sport (participating)	1	2	3	4
Sport (watching)	1	2	3	4
Cinema	1	2	3	4
Spending time with friends	1	2	3	4
Reading	1	2	3	4
Listening to music	1	2	3	4
Playing music	1	2	3	4
Watching TV	1	2	3	4
Computers	1	2	3	4
Art and Crafts	1	2	3	4

Your own future goals

21. Please list, in order of preference, two specific occupations that at the present time appeal to you most as a career:

1. _____

2. _____

22. For your most likely future career, how important do you think each school subject might be? Mark just one number for how important you regard the subject for the job you may have some day.

	Very important	Fairly important	Slightly important	Not important
Maths	1	2	3	4
Biology	1	2	3	4
Chemistry	1	2	3	4
Physics	1	2	3	4
English	1	2	3	4
History	1	2	3	4
Geography	1	2	3	4
Languages	1	2	3	4
Computer science	1	2	3	4

23. How comfortable are you with your high academic ability?

Not at all ☐ Very ☐

Somewhat ☐ Does not affect me ☐

24. Please rank how your intellectual ability affects the opinion that others hold of you :

	Very negatively	Somewhat negatively	Not at all	Somewhat positively	Very positively
Father	1	2	3	4	5
Mother	1	2	3	4	5
Brothers	1	2	3	4	5
Sisters	1	2	3	4	5
Friends	1	2	3	4	5
Classmates	1	2	3	4	5
Teachers	1	2	3	4	5

We welcome any other comments you may wish to make. You may use the space below, or a separate sheet of paper.

Now please check over the questionnaire again and make sure that you have completed it as fully and as well as possible. Thank you for your co-operation.

APPENDIX B

Course Descriptions

and

Summer Course Evaluation

Course descriptions as given in the CTYI Summer Programme booklet

Literature Drama & Writing 1

Dublin is the home of such literary giants as the Nobel Laureates, Yeats, Shaw and Beckett. It is a city that celebrates with equal enthusiasm the spoken and the written word. Our Abbey Theatre is world famous. This course will include a visit to a Dublin theatre.

This course will be given at two levels. The first level LDW1 is suitable for younger students while LDW2 is more appropriate for previous CTYI students. Literature, Drama and Writing involves an intensive exposure to the process of writing and critiquing fiction. Students share drafts of their writing in daily workshops, each of 1-2 hours' duration, which act as a forum for constructive discussion and debate. Students analyse one another's fiction in terms of point-of-view, plot, description, dialogue, and modification. Each student completes at least ten writing assignments.

Literature Drama & Writing 2

LDW2 develops further the process through which literature students acquire verbal and written analytical skills. As the course progresses, participants will become familiar with a list of thirty key critical terms and apply them to selected works of fiction and drama, including work by other leading Irish authors. This part of the course will benefit, among others, those who intend to study English literature at a higher level.

In tandem with literary analysis, LDW2 will, as before, nurture excellence in creative writing. Writing is the focus of the course and each student will complete ten creative assignments, some of which will be read by the class as a whole. In our daily workshops of 1-2 hours' duration, students will share drafts of their work and engage in constructive discussion. In the past, participants have enjoyed the intensive but supportive atmosphere in which the course was conducted. Finally, everyone will have the opportunity to write an original, one-act play which will be performed during class hours. Students will also engage in collaborative dramatic exercises.

Creative Writing

This course will develop students' prose work by emphasising the short story as a means of creative expression. The workshop will discuss several stories by each workshop participant, focusing on characterisation, plot, imagery, dialogue, and subject matter. Each student will produce a portfolio of work that will be presented to the instructor at the end of the course. Students may choose to write some poetry as part of the final portfolio and as a component of course work. We will read from a variety of Irish authors and visit places of literary interest in Dublin.

The workshop is primarily for students who have completed LDW1 or LDW2, but a student may be admitted directly into the course if his or her writing demonstrates unusual promise.

Media & Communication Studies

Mass communications media such as broadcasting, film, advertising and newspapers now convey a vast amount of the information we use in making sense of our world. They have become one of our most significant sources of shared information affecting our social, cultural and political lives. The aim of this intensive course is to encourage students to develop a more critical and investigative approach to their media environment. Through lectures, class discussions, slide shows, screenings and practical hands-on activities students will explore how social meanings are constructed and circulated in society, examining their significance at a personal, cultural and ideological level.

Students will investigate different media both in terms of content and consumption paying particular attention to the fields of advertising, journalism, broadcasting, radio and film. The course also provides a number of opportunities for participants to acquire some practical skills in radio, video and photography. The overall objective is to provide an integrated learning experience which will engage and challenge the intellect and imagination of participants.

Archaeology 1

Ireland possesses a remarkably rich array of sites of archaeological interest. Among these are the Neolithic passage graves of Newgrange and Knowth, the construction of which pre-dates the pyramids of Egypt by centuries.

The course will detail the fascinating sequence of Irish prehistory from circa 8000 BC through to the introduction and establishment of Christianity in the fifth century AD. The aim is to give students a sound understanding of our archaeological heritage placing it in its wider context by highlighting the successive waves of prehistoric peoples from mainland Europe who colonised Ireland.

Students will also be introduced to the techniques of excavation, dating, discovery of sites and finds retrieval. The contributions of a range of specialist studies to archaeology including human and animal bone analysis will be examined. Activities will include lectures, discussion, model building and field trips.

Archaeology 2

This is an advanced level course, designed for students who have previously taken Archaeology at CTYI. Since the early 19th century, when the first remains of our ancient ancestors were unearthed, the origins of our species has exercised the imagination. The first section of this course will explore the range of hominoid fossils which have been recovered and the clues they yield. This will also incorporate a detailed examination of the prehistoric colonisation of Europe.

The second section of the course will deal with the rise, development and decline of a number of civilisations from both the old and new world. This will include the Egyptians of north-eastern Africa, the Minoans of Crete, the Mycenaeans of Greece, the Incas of Peru and the Mayan and Aztecs of Mesoamerica.

Among special topics studied, will be prehistoric cave art, Danish bog bodies, mummies, the 'Ice Man', Pompeii, Tutankhamen and contributions of anthropology to archaeology. Activities will include lectures, discussion, model building and field-trips.

Biology

Living organisms can manufacture a wide array of substances, many of which are of great importance to man as food, fuel and medicines. Over the past 30 years, biological scientists have increasingly applied the methods of physics, chemistry and mathematics in order to gain precise knowledge at the molecular level of how living cells make these substances. Biotechnology combines this newly-gained knowledge with the methods of engineering and science in exploiting biological systems for the efficient manufacture and processing of useful products.

The course offers an introduction to the study of Biology including cell biology, bioprocessing, immunology and microbiology.

The course will consist of lectures and intensive practical sessions. In addition, there will be opportunities to visit research laboratories and industry.

Biotechnology

This course is an extension of the Biology course BIO1. It is suitable for students who have taken part in other CTYI biological programmes or who have a good prior knowledge of Biology.

The course explores techniques in Biotechnology such as extraction of DNA from bacteria, analysis of enzyme action and the use of spectroscopy. Spectroscopic methods of analysis are based on the absorption of light. Absorption will occur at specific wavelengths depending on the composition of the substance under investigation. It is possible therefore to pick up the chemical "finger prints" of the substance.

Such methods in Biotechnology are increasingly crossing the traditional boundaries of physics chemistry and biology. This course provides intensive laboratory sessions and a wide exposure to both theoretical and practical considerations in the subject.

Prerequisite: Potential participants will be expected to have studied biology and to have real interest in practical work.

Pharmacology

The tremendous growth in biochemical research has lead to many exciting developments in the area of pharmacology. A vast amount of research effort is spent each year in attempts to develop new drugs to treat medical conditions which previously could not be cured. In addition, drugs are constantly being refined to reduce their side effects. Pharmacology is the study of the action of drugs in the body. It is a subject which encompasses both the chemical structure of the drug and also its biological implications.

This lab-based course is an introduction to the principles underlying pharmacology. It will include areas such as:

- Cell Biology
- Membrane structure and the transfer of drugs across cell membranes
- Drug disposition including routes of administration, absorption metabolism and excretion
- The analysis and detection of drugs

- Classification of drugs and their modes of action
- Case studies involving the use of drugs in the treatment of certain diseases (e.g. cancer, leprosy etc.) will also be taken.

Prerequisite: Students are expected to have some prior knowledge of Biology/Chemistry

Probability & Chaos Theory

During this course, we will discuss a number of topics in mathematics from Game Theory and Probability through Number Theory to Difference Equations and Chaos. This broad-based syllabus is designed to give students an idea as to the challenges in the mathematical world. The computer package 'Mathematica' is introduced and will be used to examine the problems studied.

This course will begin with Probability and Game Theory. Students will examine problems such as the 'Prisoner's Dilemma', and will look at ways of beating the voting system using insincere voting and bogus amendments.

Students will then deal with various topics in Number Theory such as prime factorisation, perfect numbers and Fibonacci Sequences.

The course concludes with a look at difference equations and the methods used to solve them. We will see how chaotic solutions appear and what type of information we can infer from them.

Number Theory

At the heart of pure mathematics is the area of Number Theory which literally explores how to count numbers. On close examination this apparently simple task gives way to an amazingly complex world. This course covers some of the essential elements of number theory such as its classical formulae and theorems from the time of Pythagoras to current examples of chaotic behaviour.

Students will then be able to apply their new found knowledge to areas such as cryptography - the making and breaking of codes. They will also spend time implementing these on computers. Prior computing knowledge is not essential.

Electronics

Electronic technology is at the very heart of modern society. Applications range from consumer electronics such as television and home computers, to the use of electronic systems for communications and computing in business. The rate of advancement of this technology over the next 10 years will be even more dramatic than has been the experience to date. This will result in the availability of the information superhighway, high definition television and very powerful computers to all in the future at modest cost. However, for this to happen the electronic industry needs engineers with imagination, creativity and intuition.

The object of this course is to introduce potential research engineers of the future to electronics and its applications. It will be divided into the following areas: Electricity Fundamentals, Analogue Electronics, Digital Electronics, Computer Aided Design, and Computer Programming. Where appropriate, the basic theory associated with these areas will be covered in lectures with the emphasis on problem solving. In order to further substantiate the theory, extensive laboratory sessions will be

run. Students will develop the necessary skills in the use of electronic equipment for circuit constructions and operational performance measurement. Practicals will include radio construction.

Psychology 1

This course is designed as an introduction to psychology which aims to examine the core concepts and specialisations in psychology today.

The areas which will be studied include those of Emotion, Sensation & Perception, Memory, Intelligence, Social Psychology and the Biological basis of behaviour.

This course will also have a practical basis. The study of Body Language, Non-verbal communication and Relaxation Techniques are an integral part of the course. Each student also researches, designs and presents his/her own project. All students will be instructed in the use of the Social Citation Index on the CD-Roms and will have full use of the Library.

Philosophy

Philosophy is possibly the most fundamental of subjects as it asks the question 'What does it mean to be?' The aim of this course is to enable students to acquire the basic skills of philosophy i.e. analytic argument and essay writing. The course will cover some of the fundamental concerns of philosophy such as:

- The History of Philosophy
- Metaphysics, Science and Technology
- Logic
- Ethics and Political Theory
- Critical Theory and the Philosophy of Literature

Over the course students will be introduced to the Presocratic and Greek philosophers, the enlightenment philosophers from Descartes to Kant and the more recent philosophy of the concept of Mind Phenomenology and Existentialism.

In short the course seeks to teach 'The Art of Thinking'.

Psychology 2

This course is designed specifically for students who have completed Psychology 1 at CTYI. It is an advanced course and will incorporate at a deeper level many of the subjects studied in PSY1.

This course includes the study of new areas in Psychology such as Thought & Language, Personality Theory & Development - Abnormal Behaviour, Lifespan Development/ Child Psychology - Motivation - Applied Psychology, Statistics, Neuro Psychology.

Each student will also undertake the research, design and presentation of a psychology project. Students will work both individually and in groups when completing projects and 'fieldwork'. This course also aims to give students the chance to apply the knowledge acquired by the courses PSY1 & PSY2.

Irish History

This course examines the emergence of modern Ireland during the period 1760 - 1918. These dates hold great significance in Ireland as they mark the end of the Penal Age and the beginning of the period when Ireland was divided into two states.

The 'modernisation theory' includes concepts such as the democratisation of politics, the emergence of classes, the spread of education and the dominance of the countryside by the town. All of these concepts are relevant to Ireland and this particular period. The impact of nationalism, the Great Famine and the changes in the churches and schools allows us to use this theory to explain how modern Ireland emerges from the 18th and 19th centuries.

The course will be mainly class discussion based, but there will also be the opportunity to recreate contemporary debates and work through maps and documents. Field trips will include visits to some of Dublin's historic sites.

Computer Applications

This course introduces the concept of problem solving using the Turbo Pascal language. The course begins with a brief introduction to computers and the Turbo Pascal programming environment.

Well-structured programming techniques are discussed through a number of examples and student exercises. General programming problems such as Sorting and Searching are addressed, in addition to tackling infamous problems e.g. 'The Travelling Salesman' and the 'Eight Queen Problem'.

Each student will undertake a project. Projects are usually completed on an individual basis and allow the student to understand and develop concepts discussed in class at their own pace while working on a suitable problem which they find intriguing. Previous projects have included: programming such games as 'Connect 4', 'Xs and Os', Text-graphic adventures, and also programmes to break codes and compile QBASIC programmes.

Prerequisite: Some computer programming experience will be expected.

Global Economics

Daily, we are bombarded by a plethora of economic facts from the movement of interest rates, inflation rates, government debt and spending, to wars and famines, booms and recessions. Yet very few of us can decipher this information and fewer still know how these facts are linked together to explain the world in which we live.

Using real world examples we will explore these facts, try to compile them so as to reveal a picture of the way human beings conduct their affairs and reveal the world behind the figures.

This course, through the medium of economics, using video, news reports and documentary evidence, as well as economic text, will advance the students' analytical skills and place these skills in a wider setting.

World Geopolitics

Attempts by Russia to find a defining role in international relations, the on-going development of the European union, and the growing involvement by the United States of America as witnessed in Bosnia and Northern Ireland, are evidence of the constantly changing political and economic map of the world. Ireland's role both as a contributor to United Nations' missions and as a member of the E.U. provides it with special insights into these issues.

This course on geopolitics introduces the student to core geographical, political, economic and historical concepts illustrated by reference to case studies. The aim of the course is to provide students with a deeper understanding of world events beyond the often superficial media coverage. An interdisciplinary approach is adopted to facilitate an understanding of the complex relationships involved in world geopolitics.

Group discussions, role-play, mapwork, lectures, student presentations and expository writing assignments will feature in this intellectually demanding course. It is recommended that students have a strong interest in history and current affairs together with a good knowledge of world geography and excellent analytical writing skills.

CTYI Summer Course Evaluation

Note: The information that you supply is for research purposes only, and will remain completely confidential

Today's date : _____

Name: _____ **Date of birth :** _____

Sex : ☐ Male ☐ Female **Course :** _____

1. **Have you attended a previous event at CTYI?** ☐ Yes ☐ No

2. **If yes, please indicate which of the following you attended:**

   ☐ Summer courses
   ☐ Saturday classes
   ☐ Other

Academic life

3. **In general, how satisfied were you academically with the classes that you have attended at CTYI?**

   ☐ Very satisfied
   ☐ Quite satisfied
   ☐ Indifferent
   ☐ Somewhat dissatisfied
   ☐ Very dissatisfied

4. **What kind of impact did the instructor have on your experience at this course?**

   ☐ Very positive
   ☐ Positive
   ☐ Neither positive nor negative
   ☐ Negative
   ☐ Very negative

5. **What kind of impact did the teaching assistant have on your experience at this course?**

   ☐ Very positive
   ☐ Positive
   ☐ Neither positive nor negative
   ☐ Negative
   ☐ Very negative

6. **Relative to your school environment, how did you find the level of intellectual challenge on the course that you have studied at CTYI?**

   ☐ Much better
   ☐ Somewhat better
   ☐ About equal
   ☐ Somewhat worse
   ☐ Much worse

7. **Relative to your school environment, how do you rate the atmosphere in the classroom at CTYI?**

   ☐ Much better
   ☐ Somewhat better
   ☐ About equal
   ☐ Somewhat worse
   ☐ Much worse

8. **Relative to your school environment, how interesting do you find the classes at CTYI?**

☐ More interesting ☐ About equal ☐ Less interesting

9. **Which of the following ambitions, if any, would you hope to achieve having attended this course?**

☐ Further studies in the same area

☐ Further studies in a related area

☐ Independent study or research in the area

☐ Pursue a possible career in the area

☐ Pursue a possible career in a related area

10. **How comfortable are you with your intellectual ability?**

☐ Very comfortable ☐ Slightly uncomfortable

☐ Quite comfortable ☐ Very uncomfortable

☐ Does not affect me

11. **Do you think that the academic facilities at your disposal were adequate?**

☐ Yes ☐ No

12. **Rate the following statements about the achievements that you may have realised while attending the course, using the scale provided. If there are any other things that you feel that you may have achieved, please specify these in the space provided at the end of the question:**

1 Strongly agree
2 Somewhat agree
3 Neither agree nor disagree
4 Somewhat disagree
5 Strongly disagree

a.	I have benefited educationally from attending this class	1	2	3	4	5
b.	I have achieved a greater knowledge of the subject that I studied.	1	2	3	4	5
c.	I have achieved a greater appreciation of the subject that I studied	1	2	3	4	5
d.	My study techniques have improved because of this class	1	2	3	4	5
e.	I have become more self confident	1	2	3	4	5
f.	I have become more interested in this subject at school.	1	2	3	4	5

Other (please specify): _____

_____

13. **The following are statements about the instructor and the course that you have just completed at CTYI. We ask that you indicate, using the 1 to 5 scale, whether they represent an *accurate* statement about your experience in this class. Please circle your answer.**

		Always	Usually	Sometimes	Almost never	Never
a.	The class was run in a way that was conducive to learning	1	2	3	4	5
b.	The class discussions helped me to understand the subject more thoroughly	1	2	3	4	5
c.	The instructor included examples and demonstrations that helped me to remember the concepts we discussed	1	2	3	4	5
d.	We accomplished a lot in each day's class	1	2	3	4	5
e.	The instructor encouraged students to ask questions	1	2	3	4	5
f.	I felt that my ideas and opinions were welcome in class	1	2	3	4	5
g.	I felt comfortable asking the instructor for help	1	2	3	4	5
h.	I felt that the instructor knew a lot about the subject	1	2	3	4	5
i.	The instructor assigned an appropriate amount of homework	1	2	3	4	5
j.	The instructor returned my work to me in an appropriate amount of time	1	2	3	4	5
k.	The instructor's feedback on my work helped me to understand the subject better	1	2	3	4	5
l.	The instructor made the subject more interesting	1	2	3	4	5
m.	The instructor treated each individual student fairly and with respect	1	2	3	4	5
n.	The instructor encouraged a good class atmosphere	1	2	3	4	5

14. **The following are statements about the teaching assistant and the course that you have just completed at CTYI. We ask that you indicate, using the 1 to 5 scale, whether they represent an *accurate* statement about your experience in this class. Please circle your answer.**

		Always	Usually	Sometimes	Almost never	Never
a.	The TA had a good grasp of the subject	1	2	3	4	5
b.	The TA was helpful with homework assignments	1	2	3	4	5
c.	The TA explained concepts in a way that I could understand	1	2	3	4	5
d.	The TA's written comments on my work were helpful	1	2	3	4	5
e.	I felt comfortable asking the TA for help	1	2	3	4	5
f.	The TA and instructor worked well together	1	2	3	4	5
g.	The TA helped during study hour	1	2	3	4	5
h.	The TA wanted the class to do well	1	2	3	4	5
i.	The TA was always available	1	2	3	4	5

Comments on Academic Life

We welcome any statements that you may wish to make about your academic experience at CTYI this year. The following questions provide you with space to express any opinions that you may have. If you have further comments to add, you may do so at the bottom of the page.

15. **What, in your opinion, is the best aspect of the CTYI academic program?**

_____

_____

16. **How effective was the instructor in helping you enjoy the program?**

_____

_____

18. **Was the curriculum more interesting than the curricula you may have studied at school?**

19. **What suggestions do you have for CTYI to improve the academic programme in general?**

20. **Do you have any further comments?**

Campus Life

21. **How satisfied were you with campus life outside of your class time this year at CTYI?**

- ☐ Very satisfied
- ☐ Quite satisfied
- ☐ Indifferent
- ☐ Somewhat dissatisfied
- ☐ Very dissatisfied

22. **Do you feel that you had enough daily activities to choose from?**

- ☐ Yes
- ☐ No

23. **Were there enough sporting activities?**

- ☐ Yes
- ☐ No

24. **Were there enough non-sporting activities?**

- ☐ Yes
- ☐ No

25. Did the activity begin on time?

☐ Always ☐ Usually ☐ Never

26. Was the equipment necessary for the activity always available?

☐ Always ☐ Usually ☐ Never

27. Was there enough time to complete the activity?

☐ Always ☐ Usually ☐ Never

28. In general, would you say that the activities were well-run?

☐ Always ☐ Usually ☐ Never

29. Were there enough weekend activities?

☐ Yes ☐ No

30. Did you have enough time to rest at the weekends?

☐ Always ☐ Usually ☐ Never

Your Residential Assistant

31. Name of RA: _____

32. The following are statements about *your* residential assistant at CTYI. We ask that you indicate, using the 1 to 5 scale, whether they represent an *accurate* statement about your experienceand dealings with your RA. Please circle your answer.

		Always	Usually	Sometimes	Almost never	Never
a.	My RA was available to help me	1	2	3	4	5
b.	My RA encouraged me to have fun on the program	1	2	3	4	5
c.	My RA was interested in the activities that I chose	1	2	3	4	5
d.	My RA was a good role model and set a good example	1	2	3	4	5

e.	My RA was interested in how I was doing in class	1	2	3	4	5
f.	My RA was clear and consistent about the rules for student conduct	1	2	3	4	5
g.	My RA encouraged a feeling of community within my RA group	1	2	3	4	5
h.	My RA treated me with respect	1	2	3	4	5
i.	My RA treated other students in the group fairly	1	2	3	4	5
j.	My RA let me know what was expected of me each day. I knew where I needed to be, and what time I needed to be there.	1	2	3	4	5

Comments on Campus Life

We welcome any statements that you may wish to make about your experience of campus life at CTYI this year. The following questions provide you with space to express any opinions that you may have. If you have further comments to add, you may do so at the bottom of the page.

33. What, in your experience, is the best aspect of campus life at DCU?

_____

_____

34. Were the activities run in a "fun" fashion?

_____

_____

35. How do you feel about the time allocated for daily or weekend activities?

_____

_____

36. Have you any suggestions for improving the daily or weekend activities?

_____

_____

37. What suggestions do you have for improving life on campus?

_____

_____

38. **Do you have any other comments about campus life at CTYI?**

_____

_____

Facilities

Restaurant

39. **Did you feel the layout of the restaurant was adequate?**

☐ Yes ☐ No

40. **Was sufficient time allocated for mealtimes?**

☐ Yes ☐ No

41. **Did you feel the restaurant was clean?**

☐ Yes ☐ No

42. **Was the restaurant seating adequate?**

☐ Yes ☐ No

43. **Was there enough food?**

☐ Always ☐ Usually ☐ Never

Residences

44. **Did you think the rooms in the campus residence were comfortable?**

☐ Yes ☐ No

45. **Were the bathroom facilities adequate?**

☐ Yes ☐ No

46. **Were the shower facilities clean?**

☐ Yes ☐ No

47. **Were the common areas of the campus residences clean?**

☐ Yes ☐ No

48. **Did you have enough wardrobe space?**

☐ Yes ☐ No

Sports facilities

49. **Do you think that the indoor sports facilities were adequate?**

☐ Yes ☐ No

50. **Do you feel that there were enough outdoor facilities available to you?**

☐ Yes ☐ No

51. **Was the sports complex always ready when you went to use it?**

☐ Yes ☐ No

52. **Were the facilities in the sports complex in good condition?**

☐ Yes ☐ No

53. **Would you be interested in off-campus sports activities?**

☐ Yes ☐ No

Miscellaneous Facilities

54. **Were the phone facilities adequate?**

☐ Yes ☐ No

55. **Were the banking facilities adequate?**

☐ Yes ☐ No

56. **Were the postal facilities adequate?**

☐ Yes ☐ No

57. **Were the campus shop stocks sufficient to supply your needs?**

☐ Yes ☐ No

58. **Did you feel safe on campus?**

☐ Yes ☐ No

59. Do you have any additional comments on the facilities in general?

_____

_____

_____

Conclusion

60. Do you feel more confident returning to school having attended this course at CTYI?

☐ Yes ☐ No

61. Did you enjoy your overall experience at CTYI this year?

☐ Yes ☐ No

62. Would you return to any future events at CTYI? ☐ Yes ☐ No

We would welcome any additional comments you wish to make about the course, or any recommendations you may have to improve the experience. Please use the space below or a separate sheet if necessary.

Thank you for completing the questionnaire.

APPENDIX C

Opening

and

Closing Questionnaires for Saturday Classes

CTYI questionnaire for Saturday classes

Note: The information that you supply is for research purposes only, and will remain completely confidential

Today's date : _____

Name: _____ **Date of birth :** _____

Sex : ☐Male ☐ Female **Course :** _____

1. **Have you previously attended a CTYI event?** ☐ Yes ☐ No

2. **If yes, please indicate which event(s)?**

   ☐ CTYI Open Day 1993
   ☐ CTYI Open Day 1994
   ☐ CTYI Prize Giving Ceremony 1993
   ☐ CTYI Prize Giving Ceremony 1994
   ☐ CTYI Summer Course 1993
   ☐ CTYI Summer Course 1994

3. **In general, how satisfied were you academically with your previous experiences at CTYI?**

   ☐ Very satisfied ☐ Somewhat dissatisfied
   ☐ Quite satisfied ☐ Very dissatisfied
   ☐ Indifferent

4. **In general, how satisfied were you socially with your previous experiences at CTYI?**

   ☐ Very satisfied ☐ Somewhat dissatisfied
   ☐ Quite satisfied ☐ Very dissatisfied
   ☐ Indifferent

5. **Relative to your classmates at school, how do you rank yourself in the subject that you are now about to study at CTYI?**

   ☐ Much better ☐ Somewhat worse
   ☐ Somewhat better ☐ Much worse
   ☐ About equal

6. **The following are statements about the subject you are undertaking to study at CTYI and your experience of this subject at school. We ask that you indicate, using the 1 to 5 scale, whether they represent an *accurate* statement about your school experience. Please circle your answer.**

		Always	Usually	Sometimes	Almost never	Never
a.	I am interested in this subject at school	1	2	3	4	5
b.	My teacher at school stimulates me in this subject	1	2	3	4	5
c.	The curriculum of the subject at school interests me	1	2	3	4	5
d.	The curriculum of the subject at school challenges me	1	2	3	4	5
e.	The classes are conducted at a suitable pace for me	1	2	3	4	5

7. **Rate the following statements about the reasons why you may have attended this course, using the scale provided. If you have any other reasons, please specify these in the space provided at the end of the question:**

1 Strongly agree
2 Somewhat agree
3 Neither agree nor disagree
4 Somewhat disagree
5 Strongly disagree

a.	I am attending this course because I want it to help me with my schoolwork	1	2	3	4	5
b.	I am attending this course because I want to improve my study techniques	1	2	3	4	5
c.	I am attending this course because I *enjoyed* a previous experience at CTYI	1	2	3	4	5
d.	I am attending this course because I want to meet new people	1	2	3	4	5
e.	I am attending this course to renew old acquaintances	1	2	3	4	5
f.	I am attending this course because I enjoy responding to new challenges	1	2	3	4	5

Other reason(s) _____

_____

8. **Please tick if you are involved in any of the following activities outside of school hours:**

- ☐ Acting classes
- ☐ Art/craft classes
- ☐ Chess
- ☐ Computer classes/club
- ☐ Debating or public speaking
- ☐ Literary activity
- ☐ Maths activities
- ☐ Musical activities
- ☐ Scouting
- ☐ Sport

Other (please specify) _____

_____

9. **Which of the following ambitions would you hope to achieve by attending this course?**

- ☐ Better knowledge of the subject matter
- ☐ Better study techniques
- ☐ Meet students of similar ability
- ☐ Become more self-confident
- ☐ Learn new ideas

10. **Is there anything else you hope to achieve by attending this course?**

_____

_____

11. **Do you read much in your free time?** ☐ **Yes** ☐ **No**

12. **If yes, please indicate in the following list which type(s) of books you read:**

- ☐ Novels
- ☐ Thrillers/crime
- ☐ Computer books
- ☐ Maths books
- ☐ Science/nature books
- ☐ Geography/travel
- ☐ History
- ☐ Current affairs magazines/newspapers

Others (please specify) _____

_____

13. **How do you feel about independent study?**

- ☐ Very comfortable
- ☐ Quite comfortable
- ☐ Neutral
- ☐ Slightly uncomfortable
- ☐ Very uncomfortable

14. **How comfortable are you with your intellectual ability?**

- ☐ Very comfortable
- ☐ Quite comfortable
- ☐ Does not affect me
- ☐ Slightly uncomfortable
- ☐ Very uncomfortable

15. **Please rank how your intellectual ability affects the opinion that the following people hold of you, using the following scale:**

1 Very negatively
2 Somewhat negatively
3 Not at all
4 Somewhat positively
5 Very positively

Mother	1	2	3	4	5
Father	1	2	3	4	5
Brother(s)	1	2	3	4	5
Sister(s)	1	2	3	4	5
Friends	1	2	3	4	5
Classmates at school	1	2	3	4	5
Teachers	1	2	3	4	5

16. **Please rank how well each type of behaviour describes you in your classroom at school**

	Not at all	A little	Moderately well	Well	Very well
I share things with others	1	2	3	4	5
I resolve peer problems on my own	1	2	3	4	5
I am well liked by my classmates	1	2	3	4	5
I try to help others	1	2	3	4	5
I have many friends	1	2	3	4	5
I am comfortable as a leader	1	2	3	4	5
I am comfortable as a follower	1	2	3	4	5

17. **Please rank how well each type of behaviour describes you emotionally?**

	Not at all	Rarely	Sometimes	Very often	All of the time
I am generally happy	1	2	3	4	5
I have a balanced and stable mood	1	2	3	4	5
I am affectionate towards others	1	2	3	4	5
I play enthusiastically	1	2	3	4	5
My anger when displayed is justified	1	2	3	4	5

CTYI questionnaire for Saturday classes

Note: *The information that you supply is for research purposes only, and will remain completely confidential*

Today's date : _____

Name: _____ **Date of birth :** _____

Sex : ☐ Male ☐ Female **Course :** _____

1. In general, how satisfied were you academically with the classes that you have attended at CTYI?

☐ Very satisfied
☐ Quite satisfied
☐ Indifferent
☐ Somewhat dissatisfied
☐ Very dissatisfied

2. What kind of impact did the instructor have on your experience at this course?

☐ Very positive
☐ Positive
☐ Neither positive nor negative
☐ Negative
☐ Very negative

3. Relative to your classmates at school, how do you rank yourself in the subject that you have studied at CTYI?

☐ Much better
☐ Somewhat better
☐ About equal
☐ Somewhat worse
☐ Much worse

4. Relative to your school environment, how do you rate the atmosphere in the classroom at CTYI?

☐ Much better
☐ Somewhat better
☐ About equal
☐ Somewhat worse
☐ Much worse

5. The following are statements about the instructor and the course that you have just completed at CTYI. We ask that you indicate, using the 1 to 5 scale, whether they represent an *accurate* statement about your experience in this class. Please circle your answer.

		Always	Usually	Sometimes	Almost never	Never
a.	The class was run in a way that was conducive to learning	1	2	3	4	5
b.	The class discussions helped me to understand the subject more thoroughly	1	2	3	4	5
c.	The instructor included examples and demonstrations that helped me to remember the concepts we discussed	1	2	3	4	5
d.	We accomplished a lot in each day's class	1	2	3	4	5
e.	The instructor encouraged students to ask questions	1	2	3	4	5
f.	I felt that my ideas and opinions were welcome in class	1	2	3	4	5
g.	I felt comfortable asking the instructor for help	1	2	3	4	5
h.	I felt that the instructor knew a lot about the subject	1	2	3	4	5
i.	The instructor assigned an appropiate amount of homework	1	2	3	4	5
j.	The insructor returned my work to me in an appropiate amount of time	1	2	3	4	5
k.	The instructor's feedback on my work helped me to understand the subject better	1	2	3	4	5

6. How do you feel about independent study?

☐ Very comfortable ☐ Slightly uncomfortable

☐ Quite comfortable ☐ Very uncomfortable

☐ Neutral

5. **The following are statements about the instructor and the course that you have just completed at CTYI. We ask that you indicate, using the 1 to 5 scale, whether they represent an *accurate* statement about your experience in this class. Please circle your answer.**

		Always	Usually	Sometimes	Almost never	Never
a.	The class was run in a way that was conducive to learning	1	2	3	4	5
b.	The class discussions helped me to understand the subject more thoroughly	1	2	3	4	5
c.	The instructor included examples and demonstrations that helped me to remember the concepts we discussed	1	2	3	4	5
d.	We accomplished a lot in each day's class	1	2	3	4	5
e.	The instructor encouraged students to ask questions	1	2	3	4	5
f.	I felt that my ideas and opinions were welcome in class	1	2	3	4	5
g.	I felt comfortable asking the instructor for help	1	2	3	4	5
h.	I felt that the instructor knew a lot about the subject	1	2	3	4	5
i.	The instructor assigned an appropiate amount of homework	1	2	3	4	5
j.	The insructor returned my work to me in an appropiate amount of time	1	2	3	4	5
k.	The instructor's feedback on my work helped me to understand the subject better	1	2	3	4	5

6. **How do you feel about independent study?**

☐ Very comfortable ☐ Slightly uncomfortable

☐ Quite comfortable ☐ Very uncomfortable

☐ Neutral

7. **Rate the following statements about the achievements that you may have realised while attending the course, using the scale provided. If there are any other things that you feel that you may have achieved,please specify these in the space provided at the end of the question:**

1 Strongly agree
2 Somewhat agree
3 Neither agree nor disagree
4 Somewhat disagree
5 Strongly disagree

a.	I have benefited educationally from attending this class	1	2	3	4	5
b.	I have achieved a greater knowledge of the subject that I studied.	1	2	3	4	5
c.	I have achieved a greater appreciation of the subject that I studied	1	2	3	4	5
d.	My study techniques have improved because of this class	1	2	3	4	5
e.	I have become more self confident	1	2	3	4	5
f.	I have become more interested in this subject at school	1	2	3	4	5

8. **How comfortable are you with your intellectual ability?**

☐ Very comfortable
☐ Quite comfortable
☐ Does not affect me
☐ Slightly uncomfortable
☐ Very uncomfortable

9. **Do you think that the facilities at your disposal were adequate?** ☐ Yes ☐ No

10. **How do you feel about the length of the classes?**

☐ Too Long ☐ Adequate ☐ Too short

11. **From the following alternatives, indicate which would be your preferred duration for length of class-time. All options would include appropriate breaks.**

☐ 1 hour ☐ 2 hours ☐ 3 hours ☐ 4 hours ☐ 5 hours ☐ 6 hours

12. **From the following list of options , please indicate which , if any , that you would be interested in attending if they were available at CTYI?**

☐ Correspondance courses
☐ Evening classes
☐ One day courses
☐ Study weekends

Other (please specify) _____

_____

13. **Which of the following ambitions, if any, would you hope to achieve having attended this course?**

☐ Further studies in the same area

☐ Further studies in a related area

☐ Independent study or research in the area

☐ Pursue a possible career in the area

☐ Pursue a possible career in a related area

14. **Is there anything else you hope to achieve from attending this course?**

_____

_____