GIFTEDNESS AND LANGUAGE LEARNING

A research on the learning styles and difficulties of gifted in comparison to non-gifted secondary school students when acquiring English as a second language

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MA thesis – November 2015
Supervisor: D. Smakman
Second reader: T. Foster

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1. Introduction

1.1 Preamble

Being a secondary school English teacher is an interesting occupation, all the more so when you work with a wide range of pupils; they stem from different cultural backgrounds, they enter our classrooms with various levels of competence, and with different ways of learning languages. Our goal is to teach these students a second language, with the specific task of making sure they pass their final exams (Dutch: Eindexamen, the equivalent of the General Certificate of Secondary Education (GCSE) in England). In the 14 years I have been a second language teacher, I have worked with hundreds, if not thousands of students, and experienced just about everything that can happen in a classroom.

When I started teaching highly gifted students in 2011, I expected them to be one of the easier types of students to teach a language to. I could not have been more wrong. Highly gifted students quite often bring more than just a high IQ to a classroom; autistic disorders, dyslexia and other learning difficulties are often part of the package. I decided to write this thesis to firstly find out more about these highly gifted students, secondly to examine if and how knowledge of gifted students, learning styles and language pedagogy through previous research is used in the current classroom practice, and ultimately to evaluate the current way ESL (English as a Second Language) is taught to gifted students.

1.2 Introduction

One of the common misconceptions when it comes to teaching a second language to gifted students is that teachers expect gifted students to be better at learning a second language than non-gifted students. Expectations are usually high, and when a student does not live up to these expectations, it causes frustration; not just for the student, but also for the teacher and the parents.

This misconception stems from the fact that most gifted students show an extensive knowledge of their L1 (first language) at an early age. In theory, a gifted child should therefore be faster at picking up an L2 (second language) than non-gifted students: Hayes et al (1998, p. 179) states: “there is a strong connection between language ability and learning ability.” So hypothetically, with their advanced thinking skills, their more extensive verbal skills, and with their aptitude for learning, these gifted students should have little trouble with learning a second language.

In practice, however, this does not always seem to be the case; gifted students do not automatically apply their abilities in learning second languages. For example, classroom practice shows that gifted students generally have greater difficulties with learning and memorizing vocabulary than non-gifted students.

The study described in this thesis has multiple aims. First and foremost it aims to examine if there is a difference in the ways gifted and non-gifted students acquire English as a second language. Secondly it explores how language pedagogy as well as taking learning styles into account could benefit gifted students. This is in turn compared to the current classroom practice at the Rijswijks Lyceum. It should finally lead to the causes of these differences or similarities along with the consequences for gifted students.

1.3 Research Themes

The main research themes of this thesis are the educational needs of gifted students as well as the assumption that those needs are different to those of an average student. Language pedagogy is another theme that is examined; if possible a distinction will be made between language pedagogy that is beneficial for gifted students, versus non-gifted students. Moreover, the theme of learning styles is explored, again with a focus on the difference between gifted and non-gifted students. Last but not least, classroom practices are examined, in which all of these themes and theories should be found.

1.4 Research Questions

Having reviewed the findings in the literature, along with the analysis of the survey on learning styles and how students acquire English vocabulary should answer the following main- and sub research questions:

- Is there a difference between the ways gifted and non-gifted students acquire English as a second language in high school?
- How could language pedagogy positively influence second language learning of gifted students?
    - Do the theories on language pedagogy and the in-class reality match up?
- What kind of learning style(s) would benefit gifted students in language learning?

1.5 Purpose of the Thesis

The purpose of the thesis is to provide an in-depth research of past and current knowledge on giftedness, the educational needs of gifted students, and how to improve the effectiveness of their language learning process by looking at language pedagogy as well as learning styles. Ultimately, the aim is to establish if a problem exists in education for gifted students. This seems to be the case since gifted students regularly underperform when acquiring a second language such as English in secondary school. Establishing the existence of a problem will create awareness among second language teachers and the people involved with the students' language learning process. Therefore, by unravelling the possible causes and consequences of the problem, useful suggestions for improvements or further research could be made.

1.6 Thesis Structure

In this first chapter the research questions, themes, and the purpose of this thesis have been outlined. The second chapter is dedicated to the background literature behind the research themes. First, an extensive summary of the background literature behind the concept of giftedness will be given, followed by an overview of methods of language pedagogy. The final part of the second chapter is about general learning styles. These three topics combined should give sufficient insight into the issue of gifted students underperforming in language acquisition; it looks at giftedness in general, at second language teaching methods, and at the perceived learning styles of gifted students. In the third chapter, the methodology behind the research will be discussed, describing the setting, the procedure, the participants and the tools used to conduct this research. The fourth chapter will describe the results of this research, looking at a group of gifted children in comparison to average learners. The final chapter links the results of the research to the literature that was discussed in the second chapter and will possibly answer the research questions sufficiently.

2. Literature Review

2.1. An Overview of Previous research on Giftedness

2.1.1. The first steps in determining intelligence

The concept of giftedness has been debated by scholars for decades, and the interest in men and women with exceptional abilities has been around even longer. Giftedness is not easy to define, but various scholars have tried, for a variety of reasons. In this chapter, in order to present the reader with a clear view of the history behind the concept of giftedness, a summary of the ideas about intelligence will be presented in a chronological order, starting with the earliest attempts to define intelligence.

The first attempt to measure intelligence with a usable intelligence test was made in France in the year 1905, by a psychologist called Alfred Binet. He was a member of *La Société Libre pour L'Etude Psychologique de L'Enfant*[1]. This society had the aim of studying children in a scientific manner. In 1882, a new set of laws, the so called Jules Ferry Laws[2], forced a drastic change in French education. These laws made it mandatory for all children between ages 6 and 14 to attend school. It therefore became necessary to study the intellectual differences between children. Alfred Binet, working together with his colleague Théodore Simon, focused on establishing the differences between normal children and those who might have learning disabilities, by measuring the intelligence of these children. The focus was to determine who would drop out due to lower intelligence and learning disabilities, and not so much on those children with a relatively high level of intelligence. According to Raymond E. Fancher in his article '*The intelligence men: Makers of the IQ controversy',* the Binet-Simon intelligence test consisted of thirty tasks of increasing difficulty, where the easier tasks could be completed by everybody (the tasks included children following a beam of light, or talking back to the examiner), and the hardest tasks involved memorizing seven random digits, finding rhymes for random French words, and giving the answer to riddles (Gelb and Fancher, 1986). The results of these tests would assign a certain mental age to the child, and how their mental age compared to other children of the same physical age.

Binet himself acknowledged that these tests were rather limited, and that subsequent research into the diversity of intelligence needed to be done. Also, according to Robert S. Siegler, who has reviewed Binet's major contributions, Binet acknowledged that intelligence was not solely based on genetics, and was not a fixed number; rather, various external factors could influence the intelligence testing, including social background and upbringing (Siegler, 1992, p. 181).

[1] Free Society for the Psychological Study of the Child.
[2] http://en.wikipedia.org/wiki/Jules_Ferry_laws

In 1912, a German psychologist and philosopher named William Stern introduced the so-called intelligence quotient (IQ), based on the intelligence tests of Alfred Binet. Instead of assigning a mental age, he proposed to divide the developmental age by the chronological age and then multiply it by one hundred (Stern and Whipple, 1914). A child of six years with a developmental age of seven, for example, would score 114 on Stern's new scale. By the calculation of this author, the downside to this method of scaling is that it cannot be used on adults, as it would assume that one gets increasingly and indefinitely more intelligent as one gets older.

The works of Alfred Binet and William Stern were picked up by two American scientists, Henry H. Goddard and Lewis Terman. During the early twentieth century, a strong call arose in the United States to underline the supremacy of the white upper class because the United States were facing a more diverse population than before. This eugenics philosophy (a pseudoscience aimed at "improving" the human race) was, according to E. Black, in his book "War Against the Weak" enshrined as a national policy in twenty-seven states, by adopting segregation laws and laws surrounding marriage restriction and forced sterilization (Black 2003, p.57). Henry H. Goddard, who was part of this eugenics movement, translated the Binet-Simon IQ test into English and distributed 22,000 copies across the United States. The then-prevalent eugenics movement seized this opportunity to prove the superiority of the white race. A prominent eugenicist named Lewis Terman revised the Binet-Simon IQ test, using a large American sample of the American population. He named it the Binet-Stanford test and one of the goals of this new IQ test, in the words of Lewis Terman, was to "curtail the reproduction of feeble-mindedness and […] the elimination of an enormous amount of crime, pauperism, and industrial inefficiency" (Terman 1916). Edward Larson, author of the book "Sex, Race, and Science: Eugenics in the Deep South," writing about the application of IQ tests in the southern states of the US states that as a result of the scores on these IQ tests, thousands of poor African-American women were forcibly sterilized without their knowledge or consent (Larson, 1995).

Some of the results of Terman's studies would nowadays undoubtedly raise goose-bumps, because the main focus of these IQ tests, as with the tests of Binet previously, was on determining "retardation", and not so much on establishing giftedness. Lewis Terman stated in his *The Measurement of Intelligence*: "High-grade or border-line deficiency [...] is very, very common among Spanish-Indian and Mexican families of the Southwest and also among negroes. Their dullness seems to be racial, or at least inherent in the family stocks from which they come […] Children of this group should be segregated into separate classes […] They cannot master abstractions but they can often be made into efficient workers [...] from a eugenic point of view they constitute a grave problem because of their unusually prolific breeding" (Terman, 1916).

In the same book, however, Terman acknowledges that at the other end of the intellectual spectrum, gifted children need special attention too: "[Bright children] are rarely given tasks which call forth their best ability, and as a result they run the risk of falling into lifelong habits of sub-maximum efficiency" (Terman, 1916).

These two quotes from Terman seem rather contradictory. On the one hand, according to Terman, gifted students can be negatively influenced by their surroundings, which would make them underperform (nurture over nature). However, at the lower end of the spectrum, Terman implies that the lack of intelligence is hereditary (nature over nurture). Notwithstanding the fact that both Goddard's and Terman's ideas could seem rather extreme and racist nowadays, there is some merit in their research and in their results. Lewis Terman especially had a large interest in gifted children, and his *Genetic Studies of Genius* (Terman, 1925, 1947, 1959), deserves mention.

In this longitudinal study, Terman followed a group of highly intelligent children throughout their lives. The children in this study were called "Termites" named after Terman. Terman's aim was to see how their giftedness would influence their lives, finding methods of properly educating them, and dispelling the negative stereotypes surrounding giftedness, namely that these children were "conceited, freakish, socially eccentric and [insane]" (Bernreuter et al, 1942). Terman's 1959 study, *The Gifted Group at Mid-Life: Thirty-five Years Follow-up of the Superior Child* found that almost all of the children studied grew up as healthy adults with normal personalities. These children became successful in their careers, and even had a lower divorce rate later in life (Terman, 1959). Unfortunately, Lewis Terman passed away before he could complete his fifth volume of *Genetic Studies of Genius*. The study was continued by the late Dr. Robert R. Sears, also affiliated with Stanford University. Of course, as time passes, the number of subjects who participated in Terman's follow-up study in the 1950s dwindles. According to an article[3] by Mitchell Leslie, writing for Stanford Magazine, only 200 out of a 1000 members of the sample were still alive in the year 2000, and it is unknown how many are still alive in 2015.

Although the results from Terman's longitudinal study appear to be positive for the gifted population, there are some inherent flaws in the methodology used at the time. The children that were selected for the "Termites" group all scored well on the Stanford-Binet IQ test. Taking Terman's background and socio-political views into account, one can assume that most (or all) of the test subjects were Caucasian and possibly upper class children. This flaw also becomes apparent from Terman's definition of intelligence: "[t]he top 1% level in general intellectual ability, as measured by the Stanford-Binet Intelligence Scale or a comparable instrument" (Terman, 1926).

[3] The Vexing Legacy of Lewis Terman, http://alumni.stanford.edu/get/page/magazine/article/?article_id=40678

It is not a given that all gifted children score well on a test. Based on these flaws, Joseph Renzulli (among others) sought to redefine the definition of intelligence in the 1970s.

2.1.2. Redefining Giftedness

Joseph Renzulli is an American psychologist who specialises in giftedness. In his 1978 article "*What makes giftedness? Re-examining a Definition*" he analyses past definitions of giftedness, reviews studies that deal with characteristics of gifted individuals, and presents a new definition of giftedness that is "useful to school personnel, and defensible in terms of research findings". (Renzulli 1978, p.1). Renzulli analysed the existing definitions of giftedness by viewing them along a continuum ranging from "conservative" to "liberal," with conservative definitions being the most restrictive in determining who is eligible for special giftedness programs and liberal definitions being the least restrictive. A conservative definition, for example, limits giftedness purely to academic performance (or performance on IQ tests) and excludes other areas such as music, art, drama, leadership, public speaking, social service and creative writing. (Renzulli, 1978). One example of a conservative definition would be the one proposed by Lewis Terman: "[t]he top 1% level in general intellectual ability, as measured by the Stanford-Binet Intelligence Scale or a comparable instrument" (Terman, 1926). This definition is restrictive in terms of both the type of performance specified (i.e. how well one scores on an IQ test) and the level of performance one has to attain to be considered gifted (top 1%).

At the other end of the continuum, Paul Witty argues in his work "Who are the Gifted" for expanding the definition of giftedness: "[…] and that we consider any child gifted whose performance, in a potentially valuable line of human activity, is consistently remarkable" (Witty, 1958). According to Renzulli, such liberal definitions have the advantage of expanding the concept of giftedness, but at the same time these definitions introduce arbitrary values; what are the potentially valuable lines of human activity, and how does one measure this objectively? Most educators will undoubtedly acknowledge that clinging to a straight IQ test to determine giftedness is not sufficient, and that multiple talents play a role in determining giftedness. The measurement of such talents will always be subjective, but as Renzulli states: "If some degree of subjectivity cannot be tolerated, then our definition of giftedness and the resulting programs will logically be limited to abilities that can only be measured by objective tests" (Renzulli, 1978). In other words, to truly understand giftedness, one has to look at intellectual factors (measurable and objective) as well as non-intellectual factors such as motivation and talents (immeasurable and subjective). When it comes to IQ tests, Renzulli states: "it seems safe to conclude that this practice has been and always will be questionable. At the very least, attributes of intelligent behaviour must be considered within the context of cultural and situational factors.

Indeed, some of the most recent examinations have concluded that “the concept of intelligence cannot be explicitly defined, not only because of the nature of intelligence but also because of the nature of concepts" (Renzulli 1982, p. 152).

2.1.2.1. The Three-Ring Conception

Joseph Renzulli introduced the factors *task commitment*, *above average ability,* and *creativity* to better understand the intellectual potential of gifted people. These three factors make up his “three-ring” conception of giftedness:

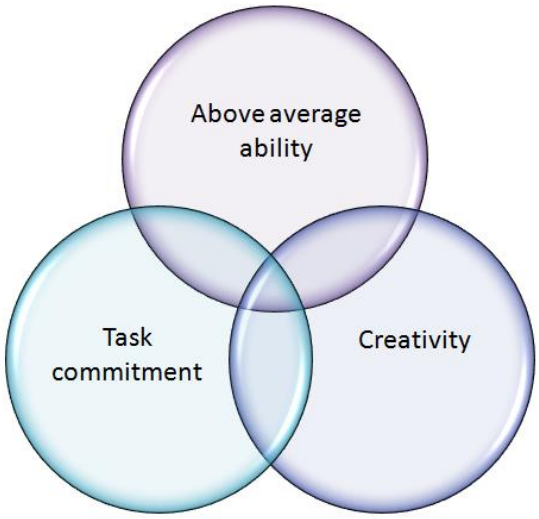

Figure 1. The Ingredients of Giftedness (Renzuli 1978, 1998)[4]

Renzulli based his three-ring conception of giftedness on research conducted on creative/productive people who “have achieved recognition because of their unique accomplishments and creative contributions” (Renzulli, 1978). For these people to become successful, they had to possess a relatively well-defined set of interlocking traits or clusters: above average (though not necessarily superior) ability, task commitment (motivation) and creativity. Renzulli points out that no single cluster makes giftedness by itself, rather, it is the combination of these three traits that make up the ingredients for creative/productive accomplishment.

[4] Image taken from: http://www.ttrb3.org.uk/glossary-item-gifted-and-talented-education-gate/

2.1.2.2. Above Average Ability

People with above average abilities are usually those who do well on IQ tests, are considered intellectually gifted, and have a high academic aptitude. Renzulli mentions the following behavioural patterns: high levels of abstract thinking, verbal and numerical reasoning, spatial relations, memory, and word fluency. Adaptation to the shaping of novel situations encountered in the external environment, the automatization of information processing; rapid accurate, and selective retrieval of information. In addition, people with above average abilities are (or should be) able to apply these general abilities in specific areas, for example: the arts, leadership and administration. They have the capacity for acquiring and making appropriate use of advanced amounts of formal knowledge, tacit knowledge, technique, logistics, and strategy in the pursuit of particular problems or the manifestation of specialized areas of performance (Renzulli, 1990).

Research, however, has shown that academic aptitude (or above average ability) is no guarantee for real world accomplishments. M.A. Wallach, in "Tests tell us little about talent" even points out that "what academic tests … predict are the results a person will obtain on other tests of the same kind" (Wallach, 1976). There seems to be no one-on-one relation between school grades and real world accomplishments. Interestingly enough, a study by the American College Testing Program entitled "Varieties of accomplishment after college: Perspectives on the meaning of academic talent" came to the conclusion that: "The adult accomplishments were found to be uncorrelated with academic talent, including test scores, high school grades and college grades. However, the adult accomplishments were related to comparable high school non-academic (extra-curricular) accomplishments. This suggests that there are many kinds of talents related to later success which might be identified and nurtured by educational institutions" (Munday and Davis, 1974). This leads to the second trait that, interlocked with the other two, makes giftedness.

2.1.2.3. Task Commitment

The second ring in Renzulli's three-ring conception is task commitment. Renzulli believes that task commitment involves motivation turned into action, perseverance, endurance, hard work, self-confidence, perceptiveness and a special fascination with a subject. By reviewing the studies of Terman (1958), Roe (1952) and MacKinnon (1964, 1965), he found that their subjects were successful in life because they were more task-oriented and involved in their work than people in the general population. Terman, for example, concluded: "[…] the traits on which [the most and least successful groups] differed most widely, were persistence in the accomplishment of ends, integration towards goals, self-confidence and freedom from inferiority feelings" (Terman, 1958).

In his study "Personality and the realization of creative potential," Donald. W. MacKinnon reached the same conclusion after he studied 64 successful scientists "it is clear that creative architects more often stress their inventiveness, independence and individuality, their enthusiasm, determination, and industry" (MacKinnon, 1964). Without these traits, he says, high achievement is simply not possible. As Renzulli states: "This second cluster of traits is not as easily and objectively identifiable as the general cognitive abilities are, these traits are nevertheless a major component of giftedness and should, therefore, be reflected in the definition of giftedness" (Renzulli, 1978).

2.1.2.4. Creativity

The third and final cluster of traits that characterizes gifted people consists of various factors normally summarized as creativity. Creativity can be defined as originality of thinking, freshness of approaches to problems, constructive ingenuity and an ability to set aside established conventions and procedures (Renzulli, 1998). In psychological literature, there has been some debate whether intelligence (IQ) and creativity are part of the same process (conjoint hypothesis), or represent distinct mental processes (disjoint hypothesis). In the conjoint hypothesis, a high IQ would automatically lead to a higher level of creativity. In the disjoint hypothesis, there is no direct correlation between IQ and creativity. A third hypothesis is the threshold hypothesis, proposed by E.P. Torrance in the article "Prediction of adult creative achievement among high school seniors" which states that there will be a positive correlation between low creativity and intelligence, the same is not true for higher IQ scores. (Torrance, 1969).

Therefore we can come to the conclusion that Renzulli's three-ring conception follows the disjoint hypothesis; high intellectual ability is no guarantee for high creativity. Only if these two traits (above average intellectual ability and above average creativity) are present in a person, along with a high level of task commitment, can we truly speak of a gifted person.

2.1.2.5. Schoolhouse giftedness vs. creative/productive giftedness.

It is important to realise that Renzulli's original publication on the definition on giftedness was, as stated before, based on individuals who had become successful in life; those people who possessed the interlocking traits of ability, motivation and creativity. Considering the focus of this article, it is much more interesting to look at those individuals who are "potentially gifted," those who happen to possess a high IQ, but for various reasons do not perform well. Renzulli's three-ring model is a helpful model to theorise about giftedness, but might not prove to be very useful in a practical class-room situation.

“Rather, what the research clearly and unequivocally tells us is that giftedness can be developed in some people if an appropriate interaction takes place between a person, his or her environment, and a particular area of human endeavour” (Renzulli, 1998). By providing above average ability students with appropriate experiences, Renzulli’s 1977 programming model (for which this identification system was designed) serves the purpose of promoting creativity and task commitment, it ultimately "brings the rings together" to promote the development of gifted behaviours.

2.1.3. Present-day IQ tests

David Wechsler, an American psychologist, objected to the Binet-Stanford single intelligence score based on intellectual ability, and designed a new series of tests incorporating non-intellective factors, which include fear of failure, lack of confidence, or any other outside factor that can influence performance, but are not necessarily related to intelligence. Wechsler defines intelligence as "the global capacity of a person to act purposefully, to think rationally, and to deal effectively with his environment" (Wechsler, 1939). Wechsler believed that the concept of intelligence is based on a set of interrelated elements, which can be isolated, defined and measured separately.

To this end, his first intelligence test, the Wechsler-Bellevue Intelligence Scale (WBIS), was created in 1939. Unlike the earlier tests created by Binet and Stern, the Wechsler-Bellevue test tested the participants on a wider range of abilities, and awarded both separate scores for these abilities, as well as a general score. By awarding separate scores, the outcome of the Wechsler-Bellevue test more accurately reflected the abilities in specific content areas of a person doing such a test. Another major difference between the Wechsler tests and the Binet-Stanford tests is the fact that the Wechsler tests focus less on verbal and language skills, and incorporate other performance-based skills. According to Kaufman, who reviewed the Wechsler WISC-IV IQ test, Wechsler’s concern with the Stanford-Binet test was that, due to the heavy focus on verbal skills, cultural background and education could wrongly play a large role in determining intelligence (Kaufman, 2006).

The WBIS test was revised in 1955, and renamed the Wechsler Adult Intelligence Scale (WAIS). This first test (WAIS-I) has been revised multiple times, and as of 2008, is in its fourth edition (WAIS-IV). Although a full description of the development of the WAIS tests is outside of the scope of this paper, the basic structure of these tests has remained largely the same, and can briefly be summarized. The WAIS tests consists of two parts, which are both divided into sub-sections. The Verbal IQ (VIQ) part tests verbal comprehension and the working memory. The Performance IQ (PIQ) part tests perceptual organization and processing speed. The total combined performances on these separate tests add up to a Full-Scale IQ (FSIQ) score.

The test was standardized on a sample of 2,200 Americans in the age-range between 16 and 90, and the median FSIQ score in this sample was set at 100, with a standard deviation of 15 points. Considering a normal distribution, IQ scores between 85 and 115 (one standard deviation from the median) would include approximately 68% of the participants, and scores between 70 and 130 (up to two standard deviations from the median) would include approximately 95% of the participants. Using these numbers as a starting point, we can assume that an IQ of 130 or higher, scoring in the 95th percentile, would qualify a person as being more intellectually gifted than the average person. This essentially means that the amount of gifted people, being above two standard deviations from the median (with an IQ of 130+) consists of only 2% of the population.[5] While this may seem like a fairly small number at first, it does mean that one in fifty people (on average) is gifted. In a secondary school with over 1,000 students, it would seem wise to facilitate gifted education.

The WAIS-III and WAIS-IV intelligence tests are considered to be the most widely used test in the world, although other tests exist. Due to the WAIS tests being tailored to age ranges 16-90, Wechsler also devised a test for younger children aged 6-16, the WISC (Wechsler Intelligence Scale for Children). The WISC test requires no reading or writing, but otherwise works very similarly to the WAIS-IV tests, largely testing the same verbal and performance-based abilities. The WISC test is often used to determine giftedness in a young child, and is used at the Rijswijks Lyceum to determine who qualifies for gifted education.

2.1.4. Twice Exceptional: Giftedness and Learning Disabilities

The following quote from M.J. Morelock's article "Understanding our Gifted" describes the problems gifted people can have: "Giftedness is asynchronous development in which advanced cognitive abilities and heightened intensity combine to create inner experiences and awareness that are qualitatively different from the norm. This asynchrony increases with higher intellectual capacity.
The uniqueness of the gifted renders them particularly vulnerable and requires modifications in parenting, teaching, and counseling in order for them to develop optimally." (M.J. Morelock, 1992). The combination of advanced cognitive abilities and heightened intensity can in some cases lead to certain vulnerabilities. In recent years, this combination of personality traits has led to the term "twice exceptional", these individuals are exceptionally intelligent, but sometimes also possess a disability, such as Autism Spectrum Disorder (ASD), dyslexia, or Attention-Deficit/Hyperactivity Disorder (ADHD).

[5] An example of a normal Wechsler distribution can be found on http://allpsych.com/wp-content/uploads/2014/08/deviationIQ.gif

According to research done in 2010, based on data from 2006, only a small percentage of gifted individuals are to be considered as twice exceptional: "[…] two to five percent of the gifted population have LDs and two to five percent of students with LDs are gifted." (Bracamonte, 2010).
LD, in this case, stands for "Learning Disability." Even though a percentage of two to five percent cannot be considered insignificant, it is outside of the scope of this thesis to discuss the impact of ASD such as Asperger Syndrome and ADHD on language learning abilities. It is, however, a research gap in this thesis, and future research would do well to delve deeper into the effects of ASD, dyslexia and ADHD on language learning for gifted students.

2.2. Language Pedagogy and Giftedness

There are many factors that influence language teaching and learning. One of them is for example the level of the students, their IQ, which is a factor that can never be overlooked. It is, however, just one of many indicators that help teachers design their lessons accordingly. The consideration of two other major aspects that could make language teaching, and ultimately learning, effective are language pedagogy to be discussed first in this chapter and learning styles that will be discussed later in this chapter. This quote from John Klapper, in "Taking communication to task? A critical review of recent trends in language teaching" should serve as a starting point:

> "…there is, as Gebhard et al. (1990:16) argue, no convincing evidence from pedagogic research, including research into second language instruction, that there is any universally or 'best' way to teach. Although, clearly, particular approaches are likely to prove more effective in certain situations, blanket prescription is difficult to support theoretically. The art of teaching does not lie in accessing a checklist of skills but rather in knowing which approach to adopt with different students, in different curricular circumstances or in different cultural settings (Klapper 2003, p. 17).

As most higher education language teachers will probably acknowledge, a blanket prescription for second language teaching is not only difficult to support theoretically, but will prove to be impossible to implement in practice. It should, however, be possible to determine which approach works best for gifted (and twice-exceptional) students. This chapter will first go into the definition of "method" and "approach," and will then briefly summarize the various language teaching methods and theories and their relation to giftedness.

It will hopefully help teachers in second language education with making the right choices, and choosing an eclectic approach when it comes to language teaching to gifted students.

In order to understand what kinds of teaching methods exist, we can consider Edward Anthony's distinction between approach, method and technique as stated in his work "Approach, Method, and Technique." Anthony states: "The organizational key is that techniques carry out a method which is consistent with an approach" (Anthony 1963, p. 64). This is called the hierarchical concept, or the tripartite concept. Method, according to Anthony, is "an overall plan for the orderly presentation of language material, no part of which contradicts, and all of which is based upon, the selected approach." (Anthony 1963, p.65). An instructional system needs to be designed in order to translate an approach into a method. This instructional system needs to involve the objectives of the teaching and learning, how the content is to be selected and organized, the type of tasks that need to be performed and the roles of students and teachers. Technique, according to Anthony, is "a particular trick, stratagem, or contrivance used to accomplish an immediate objective." He saw techniques as being consistent with a given method and by extension, with a given approach.

Richards and Rodgers (1982, 1986) further developed this concept in their article called "Method: Approach, Design, and Procedure," defining method as "the umbrella term for the specification and interrelation of theory and practice" (Richard and Rodgers 1985, p.16). Method, according to Richards and Rodgers, encompasses Approach, Design and Procedure. The concept of approach involves a consistent view or idea on language learning, based on assumption about language and language learning in general. These assumptions are axiomatic, and do not give any details about practical application in a classroom environment. According to Richards and Rodgers there are three principal views at this level of approach; a structural view, a functional view and an interactive view (Richards and Rodgers 1985, p. 16).

The structural view sees language as a system of structurally related elements, such as phonological units, grammatical units and lexical items, which give meaning to a language. In the structural view, the target of language teaching is the mastery of the elements in this system. If a student masters the various structural elements of a language, he masters the language itself. The learning methods based on the structural view are the Grammar-Translation Method and the Audio-lingual method.

In the functional view, the grammatical characteristics of a language are not as emphasized as in the structural view, instead focusing on the semantic and communicative dimensions of a language. The functional view views language as a tool for expressing or accomplishing certain functions. According to this view, the target of language learning is to learn to express communicative functions and categories of meaning, without having to fully understand the underlying mechanics of a language.

Examples of methods using the functional view are the oral approach method, and situational language teaching.

The interactive/interactional view sees language primarily as a means to establish and maintain personal relationships, and as a tool to perform social transactions. As the name implies, the interactional view places a large emphasis on initiating and maintaining conversations with other people, and usually does not involve the students' first language (L1), preferring to only focus on the second language (L2). Methods that use the interactive view are often highly visual, and refrain from teaching grammar in the beginner phases. In the intermediate phases, correct pronunciation and grammar is taught explicitly.

2.2.1. Grammar-Translation Method

This method originated in the early 1500s from the practice of learning Latin in school. As the Latin language dwindled, the purpose of learning it in school changed. Whereas it was previously used as a language for communication, it then became a purely academic subject. When modern languages were introduced in the school curricula, they were taught in the same way teachers always taught Greek and Latin. It became the predominant teaching method of the 19th century. It instructs the students in grammar, and provides vocabulary with direct translations to memorize. It is still used to teach classical languages. This method aims to develop an awareness that language constitutes a system which can be analysed. The grammatical analysis of sentences forms the objective of teaching grammar at school. It conditions the training of a second language immensely and grammatical terminology serves this objective. Although grammar offers people the capacity to communicate thoughts, more aspects of a language need to be considered in language teaching and learning as will become clear from the next paragraphs.

According to R. Titone in his book called "Teaching Foreign Languages" the three main goals of this method are to enable students to read, to translate literature written in the target language, and to further the students' general intellectual development. The main principles on which this style is based are that translation interprets the words and phrases of the foreign language as best as possible, that the phraseology and the idioms of the target can best be assimilated in the process of interpretation, and that structures of foreign languages are best learned when compared and contrasted with those of the first language (Titone, 1968). Grammar-translation classes are often conducted in the native language of the students, and focus almost exclusively on reading and translating. Little attention is paid to communicative skills and pronunciation.

Richards and Rodgers are fairly critical of the Grammar-Translation Method; “[T]hough it may be true to say that the Grammar-Translation Method is still widely practiced, it has no advocates. It is a method for which there is no theory. There is no literature that offers a rationale or justification for it or that attempts to relate it to issues in linguistics, psychology, or educational theory” (Richards and Rodgers 2001, p. 7). Unfortunately, elements of the Grammar-Translation method are still practiced in many (Dutch) secondary schools. Teachers still often value translation in English classes, and there is still a heavy emphasis on grammatical instruction. This particular structural view of language learning, which can be seen as a deductive method (as it uses building blocks to come to an understanding of a larger concept), does not work particularly well for gifted students, who generally prefer working in a more inductive method; taking the language itself as a starting point, and eliciting both vocabulary and grammatical concepts from a larger picture, such as spoken or written input. For gifted and non-gifted students alike, the Grammar-Translation method will most likely be ineffective in teaching a language (other than Greek and Latin) to anybody, but for gifted students, this method is detrimental to their motivation and will not sufficiently tap into their creative-productive potential.

2.2.2. The oral approach / situational language teaching

The oral approach was developed in the early twentieth century by British linguists. In this approach, there is an emphasis on reading skills, oral practice, grammar and sentence patterns; “grammar control” (acquiring the sentence patterns most commonly used in spoken conversation) and “vocabulary control” (acquiring the “core” 2000 words that occurred most frequently in written texts, the mastery of which would aid in understanding texts). Theoretical principles guide the selection of content, gradation of difficulty of exercises and the presentation of such material and exercises. This should be a less-confusing sequence of learning than the “direct method.” (Richards and Rodgers, 2001). All language points are presented in “situations,” which should lead to the student acquiring good habits to be repeated in their corresponding situations. Teaching methods in this approach focus on Presentation (new material in context), Practice (a controlled practice phase), and Production (less controlled practice). This method, although called into question in the 1960s, still finds widespread support among language teachers today, especially in countries where foreign language textbooks are still heavily based on grammar.

Although this method is considered to be a functional method, one has to consider which function it serves; in all likelihood, this approach to language teaching is based on passing tests in school, such as the "Eindexamen"[6] in The Netherlands, which is for the full one hundred percent based on reading comprehension. The sheer stupidity of this is outside of the scope of this thesis, but mentioning it is indeed relevant to the matter at hand. This method is indeed functional in the way that it helps students pass tests, but probably not so much in helping students learn a language. This ties into the discussion of school-house giftedness vs. creative giftedness; any method that approaches teaching in such a way that it enables students to pass tests, but not become creative users of a language, is unlikely to challenge a gifted student sufficiently, and in the end will cause this type of students to underperform.

2.2.3. The Direct Method

Carl Krause introduced this method in his 1916 work "The Direct Method in Modern Languages." This method refrains from using the learner's native language (L1) and uses only the target language (L2). Vocabulary and concepts are taught through pantomiming, objects and visual materials. Grammar is taught by using an inductive approach – the learners find out the rules through the presentation of adequate linguistic forms in the L2. In the initial phase of this method of teaching, students are only presented with everyday vocabulary and sentences; grammar, reading and writing are not part of the curriculum until the intermediate phase. Oral communication in the target language takes place between teachers and students in small and intensive classes, where the teacher and the student exchange questions and answers. During classes, students are expected to be speaking approximately 80% of the time, and all teaching points are introduced orally. In the Direct Method, there is heavy emphasis on pronunciation and grammar. This inductive approach to teaching, where students are presented with examples of language use in the target language, and the focus is on understanding, rather than the form, is expected to be a more efficient way of teaching gifted students. However, the slow build-up of the curriculum, with grammar, reading and writing being introduced later in the course, is most likely to be less advantageous for gifted students, who will probably find little challenge in the beginner stages.

[6] Comparable to the GCSEs in England, the final exam of secondary education.

2.2.4. The audio-lingual style

Another structural method is the Audio-Lingual Method (or Army method). This method originated in the early twentieth century in the USA. American linguists wanted to document all the indigenous languages spoken in the USA, but lacked trained teachers for these languages. Linguists had to rely on observation, with a strong focus on oral language. At the same time, behaviourist psychologists believed that all behaviour (including language) was learnt through repetition with positive or negative reinforcement. With the outbreak of WWII, it became necessary to post service-men all over the world with at least very basic verbal communication skills. The audio-lingual method proved to be a very useful way of teaching these service-men en-masse.

The audio-lingual style is a method of teaching grammar to students, unlike the earlier Direct Method which focused on teaching vocabulary. It is based on behaviourist theory, which according to B. Skinner, in his work "Verbal Behavior" states that certain traits of living things (humans) can be trained through a system of reinforcement and conditioning (Skinner, 1957): correct use will receive positive feedback, incorrect use will receive negative feedback. The main difference was the developing audio-lingual methods' allegiance to structural linguistics, focusing on grammar and contrastive analysis to find differences between the student's native language and the target language in order to prepare specific materials to address potential problems. These materials strongly emphasized drill as a way to avoid or eliminate these problems.

The idea in this method is that the teacher presents the correct model of a sentence, and the student repeats it. The teacher continues by presenting new words for the students to sample in the same structure. There is no explicit grammar instruction, everything is simply memorized in form. The idea is that students practice particular sentences until they can use it spontaneously. Students have no control over their own output, the teacher uses static drills. Incorrect output from a student will result in negative feedback from the teacher. This method is in direct opposition with communicative language teaching. Examples of drills and pattern practice are repetition (students repeat the sentence), inflection (one word in the sentence appears in another form, such as plural), replacement (one word in the sentence is replaced by another suitable word) and restatement (the student rephrases an utterance).

Noam Chomsky attacked this method of learning in 1959 in his review of Skinner's book "Verbal Behavior," he did not agree with the behaviourist theories that language learning is a set of habits which can be reinforced by conditioning/drilling (Chomsky, 1959).

Although the Audio-Lingual method served its purpose for the United States Army, with its focus on efficiency and drilling, it is unlikely to be of much use in a modern-day classroom; whereas current classroom practice advocates appropriately challenging subject matter, differentiated teaching methods and individual attention for the students, this method offers none of these, and would therefore be especially unsuitable for education to gifted students.

2.2.5. The communicative style

In her work "Second language learning and language teaching," Vivianne Cook states that the communicative style bases teaching on communication, it is both "(…) the target that the students need to achieve (…) and the means of acquiring it in the classroom" (Cook 2009, p. 247). In the 1970s teaching methods shifted towards methods that emphasized communication, since communication had become a fundamental reason for language teaching. The communicative style even became the traditional style of the twentieth century. This style redefined what students learned, taking in mind communicative competence rather than linguistic competence (Cook 2009, p. 248). Although the structure of this particular style has similarities with previously traditional styles, its motive is very different; the priority in language teaching shifted from grammatical knowledge to the ability to use grammar for a purpose.

This shift in style was consequently accompanied by a shift in teaching techniques. One of the main techniques is the information gap exercise in which a teacher engineers: "(…) two sets of slightly differing information so that the students had an information gap to bridge. The point of the activity is that the students have to improvise the dialogue themselves to solve their communicative task" (Cook 2009, p. 249). Other techniques used when practicing this style in classrooms are guided role play and tasks. These too are based on information gaps.

The classroom practice and the role of teachers also changed dramatically when comparing them to previous traditional styles: the teacher no longer dominates the classroom, instead the responsibility for the activities is handed over to the students, "(…) forcing them to make up their own conversations in pairs and groups – learning language by doing" (Cook 2009, p. 249). Feedback and correction are still significant aspects in this style although they are employed differently; they play a much less central part in the classroom duties of teachers. As Cook states "The teacher has the role of equal and helper rather than the wise expert of the academic style (grammar translation method) or the martinet of the audio-lingual." (Cook 2009, p.250).

The Communicative Style supposedly is an appropriate style for pupils who value international goals of a general kind, however, it must be taken into account that: "The unexpectedness of the classroom situation that it relies on may need selling to the students; they have to realise that the onus is on them to take advantage of the classroom, not on the teacher to spoon-feed them (Cook 2009, p. 255). Especially the unexpectedness of classroom situations must be taken into careful consideration when teachers decide to make use of this style in their teaching to different kinds of students. What works best for which group of students, and why or why not? In theory, the communicative style seems to fit gifted students quite well; it takes language as a tool instead of a goal in itself, and gives the students more responsibility for their own learning.

2.2.6. The task-based learning style

The Task-Based Learning (TBL) style is a style that was founded on the beliefs that "(…) learning and teaching should be organized around a set of classroom tasks" (Cook 2009, p. 257) It has been the most popular style among teaching methodologists in the past few years. In the context of this style: "A task is an activity which requires learners to use language, with emphasis on meaning, to attain a goal" (Cook 2009, p. 257). In TBL "(…) the language must come from the learners themselves, not from the teacher. It is solving the requirements of the task itself that counts" (Cook, 2009, p. 257). Meaning, a significant aspect of TBL is defined as one student transferring information suitable for the particular task to another student. The aforementioned goal is then supposed to be an outcome of a task which students do or do not achieve (Cook 2009, p. 258). According to the guidelines of this style, the importance of the classroom itself must be recognized as a communicative educational setting that organizes the activities that occur by means of educational tasks, rather than tasks that relate to the world outside the classroom.

Again, a change of style means a change of the role of the teacher, because "If learning is doing tasks, teaching means specifying and helping with the tasks (…)" (Cook 2009, p. 259). What is questionable about this style is that the educational value therefore depends on the effectiveness of the tasks and their efficiency as carriers for language learning. The teacher has an enormous responsibility in designing effective language learning tasks since it is seemingly the only way in which students are given the opportunity to acquire a second language. On the other hand, the students have an enormous responsibility as well in actively participating in each task, something which cannot be expected from the average adolescent in secondary school.

Another argument why TBL as a style on its own could be challenged is because of the question of:

> (…) where the language that the students need for the task comes from in the first place. As exploitation techniques, tasks require the students to draw on their own language resources to carry them out, but they do not provide the resources to do so (Cook 2009, p. 261).

Accordingly, Cook concludes that this style and its tasks could be used as very beneficial exploitation activities in conjunction with other styles. However, "(…) they cannot realistically form the core of any language teaching classroom that sees its students as people engaged with the world"(Cook 2009, p. 262).

2.2.7. The mainstream EFL style

From the 1930s up to the present day the mainstream EFL (English as a Foreign Language) style has been developed and this style is still developing. It can be considered to be a combination of the grammar translation method and the audio-lingual style, linking grammatical explanation to automatic practice (Cook 2009, p. 262). This styles is conditioned in two ways, in the first place: "(…) language was to be taught through demonstration in the real classroom situation; teachers rely on the props, gestures and activities that are possible in a real classroom" (Cook 2009, p. 263). The second condition for this style is that language teaching should be organized around the language of the realistic situations the students could come across in their actual lives.

Within this style, teachers employ the sequence of presentation, practice and production to structure their classes. Classes are therefore teacher-controlled, however, this style also allows for working in internal small groups which gives students some accountability for their learning process as well. Because EFL is a combination of styles it is said that:

> (…) if the student does not benefit from one part of the lesson, then another part will help (…) In terms of student types as well, this broadens the coverage. One student benefits from grammatical explanation, another from structure practice, another from role play. Perhaps combining these will suit more of the students more of the time than relying on a purer style (Cook 2009, p. 265).

This last statement by Cook works up to the last teaching styles to be discussed, styles that broaden the coverage even more than EFL. Namely Community Language Learning and finally, Autonomous Learning.

2.2.8. Other styles: Community Language Learning (CLL) & Autonomous Learning

CLL is "(…) a teaching method in which students create conversations in the second language from the outset, using the teacher as a translation resource" (Cook 2009, p. 267). CLL was derived from the work of Charles Curran. When applied to the classroom practice the students have to rely on the teacher tremendously. Every utterance in their L1 is translated by a teacher in the L2. Later on, the teacher will use these translations for audio-lingual drilling or grammar explanation.
However, as the students progress to later stages in their course, they should become more and more independent of the teacher.

CLL is also a method that includes Suggestopedia which in turn aims at:

> (…) relaxing the student through means such as listening to music (Lozanov, 1978), the *Silent Way*, with its concentration on the expression of meaning abstractly through coloured rods (Gattegno, 1972) and *Confluent Language Teaching*, with its emphasis on the classroom experience as a whole affecting the teacher as much as the students (Galyean, 1977). (Cook 2009, p. 267)

The method as a whole emphasizes the educational value for the individual rather than any realistic communication outside of the classroom or international communication. One can imagine that this type of goal is an important cause for the lack of influence that CLL has on the mainstream educational system.

Last but not least, the trend that started in 1985 should be discussed; the move towards Learner Autonomy. The aim of this teaching style is "(…) to hand over responsibility for learning to the student. The teacher is a helper who assists with choice of materials and advises what to do, but does not teach directly" (p. 269). Cook published this book in 2009, at which point she stated that Autonomous Learning was not yet widely used. As an experienced teacher I unfortunately must still agree with her. To this date, little autonomy is given to our secondary school students. At the Rijswijks Lyceum, learner autonomy is more of an exception than a rule. Cook states that she is not sure that such a style would fit current mainstream educational systems.
She implies that the individual nature of instruction and the collective nature of most classrooms and assessments are incompatible with the concept of autonomous learning. This method rejects the notion of enforcing a method that all learners have to follow: "(…) it is up to the student to decide on goals, methods and assessment" (Cook 2009, p. 269).

It is also difficult to criticize this teaching style since it does not exclude any other teaching technique, type of learner or area of language. However: "Without suitable guidance, students may not be aware of the possibilities open to them. The helper has the difficult job of turning the student's initial preconceptions of language and of language learning into those attitudes which are most effective for that student" (Cook 2009, p. 270). Cook rightfully concludes that each of the teaching styles discussed capture some aspects of L2 learning and teaching but misses out on others, none of them are complete but they can be combined. What might be useful then is to consider students' learning styles to establish what (combination of) learning styles would benefit them most. A teaching style does not stand on its own, they have to be compatible with a student's learning styles. Therefore three well-known learning style models will be discussed in chapter 2.3.

2.3. Learning Styles and Giftedness

Before well-known models and insights regarding learning styles will be discussed, the term learning style itself must be defined first. Quoting the entire definition for accuracy, according to Dunn et al, in their "Survey of Research on Learning Styles" state that:

> (a) Learning style is a biologically and developmentally imposed set of personal characteristics that make the same teaching method effective for some and ineffective for others. Every person has a learning style—it's as individual as a signature. Knowing students' learning styles, we can organize classrooms to respond to their individual needs (…) We can recognize the patterns in which people tend to concentrate best—alone, with others, with certain types of teachers, or in a combination thereof. We become aware of the senses through which people remember difficult information most easily—by hearing, speaking, seeing, manipulating, writing or notetaking, experiencing, or, again, a combination of these. Learning style also encompasses motivation, on-task persistence versus the need for multiple assignments simultaneously, the kind and amount of structure required, and conformity versus nonconformity. (Dunn et. Al 2002, p. 75)

This definition immediately encompasses the importance of considering students' learning styles in classroom situations. Since they are all individuals, it comes as no surprise that their styles, preferences and needs differ as well. Most importantly, when learning styles are not considered the main goal of (language) education is influenced in a negative way.

The effectiveness of (language) teaching in one particular style can be very high for one student but at the same time completely useless for another because the teaching style does not fit the student's learning style. With the theme of giftedness in mind, it would be interesting to be able to determine which learning styles are most suitable for gifted students, if such a distinction can be made.

There are numerous frameworks in which learning styles and learner are organised, this thesis focuses on three of those frameworks designed by David Kolb, Rita and Kenneth Dunn and Neil Fleming.

2.3.1 Behavioural Learning Styles

Kolb's learning styles are based on a theoretical model of four thinking steps. His theory is actually a summary of the work of John Dewey, Kurt Lewin, and Jean Piaget. Though this theory is widely used, there is no scientific validation for it, therefore it is criticized by many. David Kolb distinguished four types of behaviour and connected a certain learning style to each type of behaviour. Learning, according to Kolb, is optimal when students go through the entire cycle of learning, starting at the concrete experience. The four steps that students can go through can be characterized as doing, dreaming, thinking and deciding. "Doing" involves concrete experience; a student prefers to get to work as soon as possible, and they will learn best through practice. "Dreaming" is reflective observation, through doing something (or watching somebody else do something), they will look for learning experiences that can benefit their own learning experience. The stage of "thinking" is when students take their observations and transform them into their own hypotheses and theories. The fourth stage is "deciding" – students work within a framework of rules and principles, and make a decision based on this framework and their own theories. Kolb claims that learning itself is optimal when the student undergoes the entire cycle, as seen in figure 4, which is termed the *Experimental Learning Model*:

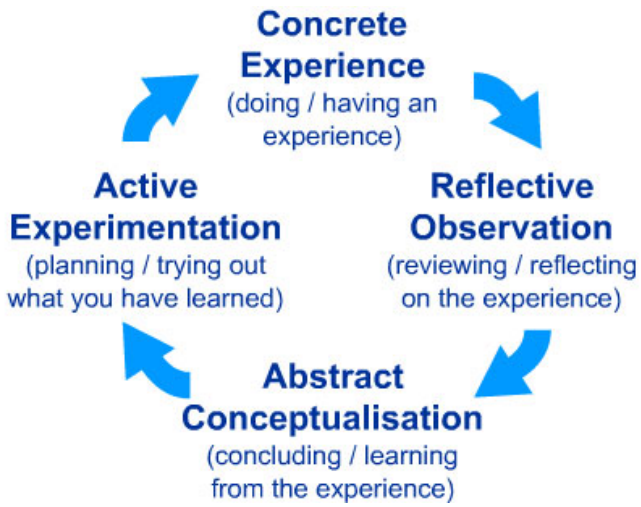

Figure 2: Kolb's Experimental Learning Model[7]

For Kolb, the starting point is always the concrete experience, then going through the different stages of the learning process.

[7] Image taken from: http://www.simplypsychology.org/learning-kolb.html

When it comes to gifted students, however, the starting point could possibly be somewhere else in the cycle. Given their intellectual and creative ability, It is not unthinkable that gifted students would prefer to start with abstract conceptualization or active experimentation, instead of a concrete experience or reflective observation.

2.3.2. Physiological Learning Styles

A second framework widely used to categorize learning styles is Fleming's VARK model, described in his 2001 work "Teaching and Learning Styles", which is based upon the previous Neuro-linguistic programming, an approach that claims to be "(…) a connection between the neurological processes ("neuro"), language ("linguistic") and behavioural patterns learned through experience ("programming") and that these can be changed to achieve specific goals in life." Each letter in the abbreviation VARK represents a particular learning style: Visual learners, Auditory learners, Reading-writing preference learners and Kinaesthetic/tactile learners. According to Fleming, visual learners prefer 'seeing' when they learn. The use of visual aids like graphs, charts and symbols during classes suit them best. The second group of auditory learners conveys and receives information best through listening, such as lectures, audio, discussions and other forms of auditory communication. Learners with a reading-writing preference favour the printed word of which lists, notes and text in all its formats are examples: in print or online. The last group of learners defined by Fleming favours a kinaesthetic/tactile approach, these students like to learn through moving, touching and doing. In a classroom situation one can think of active exploration of the world, science projects and experiments (Fleming, 2001).

Within the context of this thesis, it is expected that gifted students will show a preference towards one of these styles of learning. The experience of the author has been that gifted students perform worse than regular students when it comes to reading-writing tasks and auditory tasks, but perform better with visual representations and actual experience. Literature on gifted students with learning disabilities such as Asperger's, seems to confirm the idea that gifted students are often strong visual thinkers (Winter and Lawrence, 2011). As was discussed in chapter 2.1.4, gifted individuals are often highly sensitive to external impulses due to the heightened intensity of their cognitive abilities. While stronger perception or spatial awareness could certainly benefit gifted students, it is not unthinkable that more extreme forms of sensitivity could lead to students avoiding certain forms of learning.

2.3.3. A Comprehensive Model for Learning Styles

Rita and Kenneth Dunn (1978, 1992a, 1992b, and Dunn, 1986) proposed one of the oldest and most widely used approaches to learning styles. While working in schools, they found out that there were distinct differences in how students respond to teachers' instructions. Some students preferred to learn alone, while others liked a cooperative learning style. From these findings, they observed five key components on which student learning styles differed: environmental, emotional support, sociological composition, physiological elements and psychological elements.

The first component 'environment', determines the ideal place for a student to learn; some wanted warm and bright places, with many people and a lot of verbal interaction, whereas others preferred cooler and more subdued places. Even though many teachers think they have very little control over the environment they teach in, as it is usually a standard classroom, Dunn and Dunn propose partitioning a classroom into separate areas, with separate learning environments to suit the students.

The second component 'emotional support', is based on the difference in support students need while performing a task. Some students prefer working on longer projects, monitoring and pacing their own progress, with little support from a teacher. Other students prefer to work with smaller assignments, with teacher-controlled due dates and progress reports, as well as considerable support from the teacher. Recognizing the students' need for support (or need of autonomy) will lead to a more successful and effective learning experience for both students and teachers.

Students' learning styles also differ when it comes to the sociological composition of the learning environment. Not all students respond well to peer interaction: some dislike group work, and prefer to work completely by themselves, without interference from other students or the teacher, whereas others thrive on companionship and support from peers or the teacher. Tailoring your teaching style to these preferences, and offering a varied approach to learning, will capitalize on these different learning styles. The physiological component of learning determines how a student prefers to learn physically; some people are more visual than others, some prefer auditory channels, and for some the ability to move around is essential in a learning environment. Delivering content in different ways is essential to reach each student's potential. Time is also an important concept in the physiological component; some of us are morning people, while others do not function fully until later in the day. Adjusting to these differences is perhaps one of the hardest things to do for a teacher, most classes are restricted by time-tables, and it is usually not possible to cater to all students by, for example, teaching half the group in the morning, and the other half in the afternoon. According to Dunn and Dunn, however, this would certainly be preferential.

A fifth and final learning style component is the psychological component. This component refers to the strategies students use when tackling learning problems. Some prefer a top-down style of teaching, where the bigger picture is presented first, and students derive the information from that bigger picture. Other students prefer a bottom-up approach, where the teacher provides the building blocks first, and the student arrives at the bigger picture in small steps. In a similar way, some students jump into problems, figuring things out as they go along, while others are more reflective, planning before beginning. In Chapter 3, these learning components, along with those of Fleming and Kolb, will be discussed in relation to the preferred learning styles of gifted students.

3. Methodology

3.1. Introduction

In order to find out about the perception of teaching and learning styles among students of the Rijswijks Lyceum, a survey was conducted. This chapter discusses the steps taken to conduct the survey. Since the survey consisted of two questionnaires, one focussing on learning styles, the other on acquiring vocabulary, they will be referred to separately.

3.2. Setting

The Rijswijks Lyceum [8] in Rijswijk, the Netherlands, is a secondary school with a very mixed population. The school offers three standard educational school tracks: MAVO, HAVO and VWO. MAVO (Dutch: "Middelbaar Algemeen Vormend Onderwijs") education can be translated as "preparatory middle-level vocational education," lasts four years, and houses on average 60% of all students. HAVO (Dutch: "Hoger Algemeen Vormend Onderwijs") education is "higher general continued education," lasts five years, and houses on average 30% of all students. VWO (Dutch: "Voorbereidend Wetenschappelijk Onderwijs") education is "pre-university secondary education," lasts six years, and houses on average 10% of the students. On top of these three standard levels of education, the Rijswijks Lyceum also educates a separate group of highly gifted students. Formerly part of the "Leonardo" foundation, the goal for this group is to provide specialized education, tailored to the needs of the gifted children, as well as providing support to parents. In this research, this type of education is labelled as "GIFTED."

3.3. Methodology of the survey

3.3.1. Procedure

For this survey, four groups of participants were selected to partake. These groups were on average the same age, same distribution male/female, and were all students at the Rijswijks Lyceum. The dependent variable in this survey is the education level of the participants. Participants were asked to fill in two questionnaires with questions about their preferred way of learning vocabulary, and their perception on their own style of learning. Participants were asked to do so individually, without discussing the questions with classmates.

[8] www.rijswijkslyceum.nl

The two questionnaires were both designed using a 5 level Likert scale. The first questionnaire consisted of thirty statements to be rated on a scale from 1 to 5, and was designed to gain insight into the learning styles of the students per education level: MAVO, HAVO, VWO and GIFTED. The second questionnaire consisted of twenty-three statements to be rated on a scale from 1 to 5, and was designed to gain insight into how students prefer to learn vocabulary as well as their preferred methods of acquiring English vocabulary. The results of the two questionnaires were analysed using IBM SPSS Statistics 22. Independent samples T-tests were carried out to determine whether or not there were significant differences in both learning styles and learning strategies between the group of gifted students and the other three groups. The results of these T-tests will be discussed in chapter 4.

3.3.2. Participants

The participants of this study are 75 students in the age-range of 14 to 16, all attending the third year of the Rijswijks Lyceum, a secondary school in Rijswijk, the Netherlands. Seventeen of these students have been proven to be "highly gifted" (IQ above 138) using the WISC-IV IQ test. A psychological report is available in the files of these students. The remaining fifty-eight students are students with an average IQ. Apart from the difference in IQ, there's also a difference in their CITO scores: CITO is a testing and assessment company, based in the Netherlands. CITO measures and monitors human potential, and works for educational institutions, governments and companies.[9] CITO's core activity is to develop different types of tests and examinations (written and digital), which are employed for intake, progress reporting and qualification of Dutch students of primary and secondary education. Based on these CITO scores students are enrolled in MAVO, HAVO or VWO education. The characteristics of the participants of this survey are displayed in table 1 below:

Table 1:
Participant Characteristics

Education track	n	Female	Male	Average age
MAVO	22	12	10	14,6
HAVO	28	13	15	14,4
VWO	18	11	7	14,3
GIFTED	17	8	9	13,8

Note. n = number of participants

[9] Information from www.cito.nl

For this survey, the students were selected based on their education levels and age. For the gifted and VWO groups, the only available groups in the schools were selected (class 3V1 and class 3HB1). For the MAVO and HAVO groups (class 3M1 and class 3H1)[10], a group with a relatively similar size was chosen from the groups available at the school. However, the HAVO group is slightly bigger than the other three groups. The selection process was not restricted in any way, so the groups are representative of a larger school population.

3.3.3. Apparatus and Materials

The questions on the vocabulary questionnaire were formulated with different strategies and learning styles in mind. The vocabulary questionnaire started with: "I best memorize and learn new vocabulary by …" followed by twenty-three learning strategies to be rated from 1 (useless) to 5 (very useful). The questions were originally given to the participants in Dutch, below are the translations.

1. … learning words through pictures, rather than definitions in a book.
2. … creating a picture in my mind, in order to memorize it.
3. … connecting a new word to a personal experience.
4. … putting a word in a group of words with a similar subject, theme or function.
5. … connecting words with their synonyms or antonyms.
6. … putting a word on a scale (e.g. huge/big/medium/small/tiny).
7. … using new words in English sentences.
8. … creating a story out of new words.
9. … studying lists of new words, with Dutch translations next to it.
10. … repeating words out loud many times.
11. … writing down new words repeatedly.
12. … learning full sentences, using these sentences as a tool to memorize the words.
13. … portraying words with physical gestures, or by acting out new words.
14. … listening to lists of vocabulary through audio (CD/computer).
15. … keeping my own list of difficult vocabulary.
16. … often testing my own vocabulary by tests on a computer.
17. … ignoring difficult words, instead trying to guess the meaning of a sentence through context.
18. … determining whether the word is a noun or verb.
19. … looking at familiar words surrounding the new word.
20. … looking at the structure of paragraphs, paying attention to structure words.
21. … using my knowledge of the subject to guess the meaning of a new word.
22. … replacing a difficult word with a word of my own, and checking if the sentence is still logical.
23. … looking at word-structure (stem, suffixes, affixes) to guess the meaning of a word.

[10] Class designations at the Rijswijks Lyceum (such as 3V1) denote year (3), education level (V for VWO) and group number (1). Some education levels have multiple groups, so a 3M2 group would be the second group.

It is difficult to connect these statements to only one specific learning pedagogy, as most learning pedagogies incorporate multiple strategies, and students will most likely prefer (and use) multiple ways of learning a language. It was therefore important to formulate these questions in such a way, that students would recognize and understand these strategies, and be able to rate their usefulness. By looking at the answers of the participants, an analysis of their preferred way of learning could be made, and this could then in turn be connected to (a number of) language learning strategies as discussed in chapter 2.2. The statements can be roughly divided into a number of categories: auditory strategies (such as the Audio-Lingual style), visual strategies (such as the Direct Method), traditional translation and grammar strategies (such as the Grammar-Translation Method and the Oral Approach method), task-based strategies (such as TBL), and autonomous strategies (such as AL). In addition, a distinction could be made between inductive strategies (top-down) and deductive strategies (bottom up). Many statements belong to multiple themes. In table 2 below, the themes that are relevant to this survey are listed with their respective statements.

Table 2:
Questionnaire on vocabulary, statements per theme:

Theme:	Statements:
Auditory	10, 14
Visual	1, 2, 3, 13
Repetition/Drilling	10, 11
Translation	9, 14, 15
Task-Based	7, 8, 17, 22
Deductive	4, 5, 6, 18, 23
Inductive	12, 17, 19, 20, 21, 22
Autonomous	15, 16

The second questionnaire presented to the participants gave them thirty statements about their personal learning styles, to be rated from 1 (never true) to 5 (always true). The original statements were given to the participants in Dutch, but the translation can be found below:

1. I am good at learning and doing physical things, such as sports.
2. When learning something new, I prefer spoken instruction from the teacher.
3. I would rather listen to a story than read it myself.
4. I prefer knowing why I have to do an assignment.
5. I can easily remember the names of people.
6. I prefer classes that have things to see (pictures, diagrams, videos).
7. I find it hard to concentrate when I'm working together with others.
8. I often draw random things in my notebook during class.
9. I prefer learning through experience, or through doing things.
10. I can easily remember the faces of people.
11. I am often reprimanded by the teacher because I'm doodling in my notebook.
12. I prefer teachers who explain things through diagrams.
13. I prefer classes where there is room to discuss about the material.

14. In class, I usually fiddle with something in my hands (pen, paperclip, elastic band).
15. In my free time, I like listening to music or talking to friends.
16. I am often reprimanded by the teacher for talking too much.
17. When learning something new, I like to get started straight away.
18. When learning something new, I prefer somebody demonstrating it once.
19. I prefer it when teachers put us to work as soon as possible.
20. I have a better understanding of a lesson when the teacher writes a lot on the blackboard.
21. I am often reprimanded because I can't sit still.
22. If I have to sit still for long periods of time, I can't wait until I'm allowed to walk around again.
23. I prefer it when the teacher tells me exactly what I have to do.
24. I prefer doing assignments in my own specific way.
25. I start on many different things, but I often get bored quickly.
26. When I'm on public transport, I like talking to other people.
27. I get better results by working in a group (instead of alone).
28. I prefer it when the teacher takes us through the material step by step.
29. I prefer finding everything out by myself, before asking for help.
30. I love doing new assignments, but dislike finishing them.

The statements were formulated to resemble real-life situations, both inside and outside the classroom, to which students could easily relate. The answers the participants gave, could then be related to the learning styles discussed in chapter 2.3. The statements are divided by learning style in table 3 below:

Table 3:
Learning Styles and Statements

Learning Style/Environment:	Statement:
Visual	6, 10, 12
Auditory	2, 3, 13, 15,
Kinaesthetic/Tactile	1, 8, 9, 11, 14, 21, 22
Reading/Writing	3, 11, 20
Emotional	2, 4, 17, 18, 19, 23, 24, 25, 28, 29, 30
Sociological	2, 5, 7, 10, 13, 15, 16, 27, 29
Psychological	4, 23, 24, 29, 30
Concrete Experience (do)	1, 9, 17, 19, 29
Reflective Observation (dream)	13, 24, 25, 30
Abstract Conceptualization (think)	4, 7, 13, 24
Active Experimentation (decide)	25, 29, 30

Note: Learning Styles are based on the models presented in chapter 2.3. The Physiological aspect of Dunn and Dunn is mentioned separately as the elements from the VARK model (which are identical).

All filled out questionnaires were processed in IBM SPSS statistics 22 and are presented in tables in chapter 4. The original SPSS output can be found in the appendix.

4. Results: the Surveys

4.1. Introduction

In this chapter, the results of the two surveys will be discussed. Having performed an independent samples T-test on both sets of results, a number of interesting differences arose between the different groups of students. First, taking the SPSS output as a starting point, an overview of significant differences will be given for both acquisition of English vocabulary and learning styles. The questionnaires were conducted in Dutch, but English translations were added for the reader's convenience. The next chapter will aim to connect these results to possible explanations based on the literature described above, and tentatively try to reach a conclusion.

4.1.1. Gifted Versus Average: Acquisition of English Vocabulary

The answers to the questionnaire of each level were compared to the answers of the gifted group by means of independent samples T-tests to establish whether or not there is a significant difference (<0.05) in the way gifted and average students acquire a language. The full table of results is given below as table 4:

Table 4:

Vocabulary: Mean results per question for each group

Question	MAVO	HAVO	VWO	GIFTED	MEAN
1	3,05	3,00	2,61	2,59	2,81
2	3,45	3,75	3,17	3,12	3,37
3	3,14	3,43	2,94	2,82	3,08
4	2,91	2,79	2,50	2,18	2,60
5	3,27	3,32	2,56	3,06	3,05
6	2,73	2,61	2,33	2,35	2,51
7	2,86	3,11	3,39	3,47	3,21
8	2,73	2,68	2,50	2,35	2,57
9	3,77	4,14	4,00	3,35	3,82
10	3,73	3,61	3,44	2,18	3,24
11	3,41	3,71	3,78	3,06	3,49
12	3,36	2,82	2,50	2,35	2,76
13	2,86	2,68	2,39	2,06	2,50
14	2,72	2,29	2,06	1,65	2,18
15	2,68	2,89	2,83	2,59	2,75
16	3,45	3,32	3,50	3,71	3,50
17	2,68	3,59	3,00	3,06	3,08
18	3,23	2,82	2,61	2,29	2,74
19	3,32	3,39	3,72	3,29	3,43
20	2,55	2,75	2,50	2,65	2,61
21	3,14	3,50	3,17	3,65	3,37
22	3,14	3,57	2,78	3,00	3,12
23	2,82	3,04	3,00	2,18	2,76

Note: Data is taken from SPSS output files, available in the appendix.

The significant results are described per education level below. The tables are available in the appendix:

4.1.2. MAVO versus GIFTED

Statement 10: “I best memorize and learn new vocabulary by repeating these words out loud to myself many times.” (sig. 0.001)
Mean: 3M: 3.73
3G: 2.18

Statement 12: “I best memorize and learn new vocabulary by memorizing complete sentences in which these words are used.” (sig. 0.009)
Mean: 3M: 3.36
3G: 2.35

Statement 13: “I best memorize and learn new vocabulary by portraying meaning with physical gestures, or by performing tasks.” (sig. 0.040)
Mean: 3M: 2.86
3G: 2.06

Statement 14: “I best memorize and learn new vocabulary by listening to audio tapes with the lists of vocabulary.” (sig. 0.008)
Mean: 3M: 2.73
3G: 1.65

Statement 18: “I best memorize and learn new vocabulary by looking at the grammatical function of a word; am I dealing with a verb or a noun, when having to guess the meaning of a word.” (sig. 0.031)
Mean: 3M: 3.23
3G: 2.29

In comparison to MAVO students, the GIFTED students only rate statement 7, 16, 17, 20 and 21 as more useful. Those statements were:

- Statement 7: “I best memorize and learn new vocabulary by using these words in English sentences.”
- Statement 16: “I best memorize and learn new vocabulary by frequently evaluating my performance with tests on a computer.”
- Statement 20: “I best memorize and learn new vocabulary by looking at sentence structure and paragraph structure (by focusing on structure/content words, such as but, because, if, when, however)”
- Statement 21: “I best memorize and learn new words by using my knowledge of the subject to guess the meaning of a word.”

4.1.3. HAVO versus GIFTED

Statement 10: “I best memorize and learn new vocabulary by repeating these words out loud to myself many times.” (sig. 0.001)
Mean: 3H: 3.61
3G: 2.18

Statement 23: “I best memorize and learn new vocabulary by looking at the structure of the word itself, such as the root, prefixes and affixes, and finding the meaning of the word in this way.” (sig. 0.038)
Mean: 3H: 3.04
3G: 2.18

In comparison to HAVO students, the GIFTED students only rate statement 7, 16 and 21 as more useful. These statements are described above.

4.1.4. VWO versus GIFTED

Question 10: “I best memorize and learn new vocabulary by repeating these words out loud to myself many times.” (sig. 0.008)
Mean: 3V: 3.44
3G: 2.18

In comparison to VWO students, the GIFTED students only rate statement 6, 7, 16, 17, 20, 21 and 22 as more useful.

- Statements 7, 16, 17, 20 and 21 are described above. Statements 6 and 22 were:
- Statement 6: ”I best memorize and learn new vocabulary by placing the words on a scale (for example, huge/big/medium/small/tiny.”
- Statement 22. “I best memorize and learn new vocabulary by replacing a difficult word in a sentence with my own meaning of this word, and checking whether the sentence is still correct and logical.”

4.2. Gifted Versus Average: Learning Styles

The answers to the questionnaire of each group were compared to the answers of the gifted group by means of independent samples T-tests to establish whether or not there is a significant difference (<0.05) in the way gifted and average students prefer to learn. The full table of results is given below as table 5:

Table 5:
Learning Styles: Mean results per question for each group

Question	MAVO	HAVO	VWO	GIFTED	AVERAGE
1	4,14	3,86	3,56	3,65	3,80
2	3,41	3,43	3,39	3,82	3,51
3	3,36	2,79	2,94	3,24	3,08
4	2,82	3,07	3,00	4,24	3,28
5	4,23	4,33	4,00	3,18	3,94
6	4,18	4,39	3,61	4,00	4,05
7	2,18	2,14	2,67	2,65	2,41
8	2,95	2,54	2,78	3,06	2,83
9	4,00	4,25	3,78	4,12	4,04
10	4,14	4,39	3,83	4,24	4,15
11	1,77	1,32	1,44	1,76	1,57
12	2,91	2,61	2,28	2,47	2,57
13	3,32	3,82	3,00	3,88	3,51
14	2,59	2,89	2,56	3,29	2,83
15	4,14	4,25	4,11	4,35	4,21
16	2,55	2,68	2,67	2,76	2,67
17	3,55	2,93	2,89	3,12	3,12
18	3,55	3,36	3,72	3,41	3,51
19	2,91	2,50	3,06	2,65	2,78
20	3,14	3,11	3,33	3,00	3,15
21	2,32	2,04	2,22	2,53	2,28
22	2,55	2,57	2,39	2,24	2,44
23	3,73	4,04	4,28	4,35	4,10
24	3,64	4,00	3,50	4,00	3,79
25	3,50	2,79	2,50	3,41	3,05
26	2,27	3,11	1,89	2,94	2,55
27	2,95	3,21	2,50	2,65	2,83
28	4,09	3,75	3,61	3,41	3,72
29	3,05	3,04	3,22	3,35	3,17
30	3,18	2,73	2,39	3,24	2,89

Note: Data is taken from SPSS output files, available in the appendix.

The significant results are described per education level below. The tables are available in the appendix:

4.2.1. MAVO versus GIFTED:

Statement 4: “I prefer knowing why I have to do a specific assignment.” (sig. 0.000)
Mean: 3M: 2,82
3G: 4,24

Statement 5: “I have no trouble memorizing the names of people.” (sig. 005)
Mean: 3M: 4,23
3G: 3,18

Statement 28: “I prefer it when the teacher gives a step-by-step instruction.” (sig. 0.050)
Mean: 3M: 4,09
3G: 3,41

In comparison to MAVO students, the GIFTED students state that statements 2, 4, 7, 8, 9, 10, 13, 14, 15, 16, 21, 23, 24, 26, 29, 30 fit them better.

4.2.2. HAVO versus GIFTED:

Statement 4: “I prefer knowing why I have to do a specific assignment.” (sig. 0.001)
Mean: 3H: 3,07
3G: 4,24

Statement 5: “I have no trouble memorizing the names of people.” (sig. 0.003)
Mean: 3H: 4,33
3G: 3,18

In comparison to HAVO students, the GIFTED students state that statements 2, 4, 7, 8, 11, 13, 14, 15, 16, 17, 18, 19, 21, 23, 25, 29, 30 fit them better.

4.2.3. VWO versus GIFTED:

Statement 4: “I prefer knowing why I have to do a specific assignment.” (sig. 0.001)
Mean: 3V: 3,00
3G: 4,24

Statement 5: “I have no trouble memorizing the names of people.” (sig. 0.044)
Mean: 3V: 4,00
3G: 3,18

Statement 13: “I prefer lessons where we’re allowed to discuss the content of the lesson.” (sig. 0.020)
Mean: 3V: 3,00
3G: 3,88

Statement 25: “I start many different things at once, but get bored rather quickly.” (sig. 0.024)
Mean: 3V: 2,50
3G: 3,41

Statement 26: “When I’m on the bus/tram/train, I like talking to other people.” (sig. 0.008)
Mean: 3V: 1,89
3G: 2,94

Statement 30: “I like doing new assignments, but I don’t like finishing them.” (sig. 0.021)
Mean: 3V: 2,39
3G: 3,24

In comparison to VWO students, the GIFTED students state that almost all statements fit them better: 1, 2, 4, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 21, 23, 24, 25, 26, 27, 29, 30.

4.3. Conclusion

4.3.1. Analysis of the results of vocabulary acquisition.

With the research questions in mind, it was expected that gifted students would give significantly different answers to the survey questions than their non-gifted counterparts. This expectation has not fully been met in the results of the two surveys. However, even if the differences are not plentiful, there are at least some differences that can be discussed a bit more in depth. It is important to keep in mind that these results are the perceptions of students on their own preferred way of learning vocabulary and their own perceptions on their favourite way of learning. First, the significant differences between the groups will be discussed, then the statements which the gifted group described to be more useful, but not with enough of a difference to be statistically significant (but perhaps still interesting!). In most cases, the preferred form of language pedagogy is closely related to the preferred learning style.

The first notable difference between the gifted group and the non-gifted groups can be found in question 10 of the vocabulary acquisition survey: “I best memorize and learn new vocabulary by repeating these words out loud to myself many times.” All three groups of non-gifted students found this method of acquiring vocabulary useful (MAVO 3.73, HAVO 3.61, VWO 3.44), whereas the gifted group was decidedly less enthusiastic about this way of learning: 2.18. This method of drilling is most closely related to the audio-lingual method discussed in chapter 2.2.4, which has a heavy focus on conditioning and repetition.

Unsurprisingly, repetition and drilling are predominant teaching techniques in many secondary schools in the Netherlands, not just when it comes to learning a second language, but in a wide range of subjects. Apparently, this method of acquiring knowledge does not work very well for gifted students, which would be the first explanation for underperforming gifted students in traditional classrooms.

Further confirmation can be found in the results for question 14: "I best memorize and learn new vocabulary by listening to audio tapes with the lists of vocabulary," which the MAVO group described as reasonably useful (2.73) but the gifted group found rather useless (1.65). Once again, drilling, conditioning and repetition are generally not seen by the gifted students to be overly useful.

The final question that gives insight into the differences between gifted students and non-gifted students is statement 12: "I best memorize and learn new vocabulary by memorizing complete sentences in which these words are used." This method of memorizing sentences and reproducing them when necessary is also part of the audio-lingual method. The MAVO group scored this statement with a mean of 3.36, whereas the gifted group found this method decidedly less useful with a mean of 2.35. On all three of the statements, the HAVO and VWO groups described these methods as more useful than the gifted group did, but less useful than the MAVO group. There was, however no significant difference between the HAVO/VWO and gifted groups.

Another difference can be found in the analysis of statement 18: "I best memorize and learn new vocabulary by looking at the grammatical function of a word; am I dealing with a verb or a noun, when having to guess the meaning of a word" and statement 23: "I best memorize and learn new vocabulary by looking at the structure of the word itself, such as the root, prefixes and affixes, and finding the meaning of the word in this way." All three of the non-gifted groups found these methods more useful than the gifted group, but for only MAVO (statement 18) and HAVO (statement 23) were the differences significant. A possible explanation for these differences is more likely to be found in the learning styles of gifted students than in the strategy for language acquisition, although the two are probably closely related. This will be further elaborated in the analysis of the statements concerning learning styles.

The final statement that led to a significant difference is statement 13: "I best memorize and learn new vocabulary by portraying meaning with physical gestures, or by performing tasks." The gifted group valued this statement with a mean score of 2.06, whereas the three non-gifted groups scored higher, with MAVO having the highest mean score of 2.86. This task-based, active style of acquiring vocabulary seems to fit students that prefer to quickly get to work, and who are interesting in actually doing things; once again. In Kolb's model of student behaviour, these non-gifted students prefer learning through concrete experience ("do"), whereas the gifted students prefer learning through abstract conceptualization ("think") or even reflective observation ("dream"). Even though this is more of an analysis of learning styles rather than teaching styles, the two certainly go hand in hand.

The learning strategies which the gifted students described to be more useful, compared to the three non-gifted groups are found in statements 7, 16, 17, 20, 21 and 22, described in the following figure:

6. "I best memorize and learn new vocabulary by placing the words on a scale (for example, huge/big/medium/small/tiny."

7. "I best memorize and learn new vocabulary by using these words in English sentences."

16. "I best memorize and learn new vocabulary by frequently evaluating my performance with tests on a computer."

20. "I best memorize and learn new vocabulary by looking at sentence structure and paragraph structure (by focusing on structure/content words, such as but, because, if, when, however)."

21 "I best memorize and learn new words by using my knowledge of the subject to guess the meaning of a word."

*22. "*I best memorize and learn new vocabulary by replacing a difficult word in a sentence with my own meaning of this word, and checking whether the sentence is still correct and logical."

Figure 3: Statements gifted students rated as more useful

These statements seem to indicate that gifted students would prefer (and perform better with) elements of the communicative style of teaching, as well as the mainstream EFL method (both discussed in chapter 2). The more autonomous nature of these styles of teaching, combined with the focus on grammar and vocabulary as tools for communication, rather than goals in themselves, seems to be better suited for this type of students. This seems to fit in with the idea that gifted students prefer to work from a top-down perspective, rather than a bottom-up perspective; due to their above average intellectual ability, creativity and task commitment, these students thrive when working on a macro-level, being left alone to deduce structure and meaning by themselves, rather than on a micro-level, where teachers try to drill them with "building blocks" or "chunks" of vocabulary. Any type of language teacher would have to keep this in mind when teaching gifted students.

4.3.2. Analysis of the results of learning styles.

In this chapter, the main differences in preferred learning styles between the gifted group and the non-gifted groups will be analysed. The most significant difference between the gifted group and all three of the non-gifted groups can be found in the answers the students gave to statement 4: “I prefer knowing why I have to do a specific assignment.” The gifted group all found this rather important, with a mean score of 4.24. The other three groups MAVO, HAVO and VWO gave mean scores of respectively 2.82, 3.07 and 3.00. If we apply Dunn and Dunn’s learning style dimensions to this outcome, the main difference lies in the emotional support dimension of these students, as well as the psychological dimension.

The group of gifted students apparently values meaning and individual responsibility more than the non-gifted group of students. By understanding why they have to do an assignment, they can become the “owners” of their own learning experience, and will not require the emotional (or motivational) support of the teacher as much as regular students do. Their top-down approach to tackling problems requires knowing their own learning goals, because the teacher will not be guiding them step by step towards these goals. Their answers to this statement, compared to the other three groups, seems to reflect this need to know what they are working towards. It is, however, interesting that the other statement reflecting the emotional dimension of Dunn and Dunn: “I prefer it when the teacher gives a step-by-step instruction” is valued quite highly by the gifted group (3.41). This is significantly lower than the MAVO group (4.09), but still above average. It is possible that this gifted group, through frequent exposure to this bottom-up style of learning in our school, have found this to be a “safe” way of learning, but perhaps not a style of learning that fully taps into their potential.

The second statement that led to a significant difference between the groups was statement 5: “I have no trouble memorising the names of people.” Although all groups indicated that they had (on average) not a lot of trouble memorising names, the gifted group scored significantly lower with a mean of 3.18, compared to the other three groups, who all had means above 4.0. This ties in with Dunn and Dunn’s sociological dimension of learning. It is unfortunate that some of the other statements concerning social interaction were not answered significantly different, because from personal experience, gifted students do not value social contacts as much as regular students. They are often much more solitary, preferring to work alone over doing group work. It is, however, impossible to come to solid conclusions based on personal experience alone.

The other two statements that were answered significantly different by the gifted groups were much more predictable: statement 25: “I start many different things at once, but get bored rather quickly” and statement 30: “I like doing new assignments, but I don’t like finishing them,” both of which were situations the gifted students found themselves in much more often than the non-gifted students. This is almost stereotypically true for gifted students, and is one of the main challenges for teachers who deal with gifted students; how to keep these students intrinsically motivated to finish assignments. Due to a lack of challenge, gifted students often try out many different things, usually to find out that nothing really holds sufficient challenge to keep them interested for long. The fact that many gifted students underperform in a traditional school system or even the academic system, is confirmed in these two statements.

A final word needs to be said about the other statements the gifted group rated quite highly, which were, quite frankly, almost all of them. The hope for these statements was that gifted students would on average show more preference for a visual style of learning, or a kinaesthetic style of learning, and not so much for the reading/writing style or the auditory style. It would then be possible to describe these styles, referencing the VARK model described in chapter 2.3.2. This prediction was based on personal experience, seeing gifted students struggle with traditional methods of teaching (often based on reading/writing or listening). In addition, the fact that gifted students are often very strong visual thinkers would have pointed towards a significant difference. Unfortunately, there was no significant difference in the answers to these statements between the gifted group and the non-gifted groups, although the gifted group did rate most of these statements a bit higher. Perhaps a larger sample group would have given a clearer picture, but based on these results, no real conclusion concerning the VARK model can be reached.

5. Conclusion and Answers to the Research Questions

5.1. Introduction

The initial idea for this thesis came from the personal experiences of the author, who teaches English in a Dutch secondary school. Frequently encountering students with an above-average IQ (135+) in the gifted department of that school, it became clear that gifted students regularly underperform in language classes; they have, for example, trouble learning vocabulary or grammatical rules, and often deliver products that are not satisfactory, or do not live up to the expectations of the teacher. The aim of this thesis was to establish what giftedness entails, and how gifted students can benefit from a style of teaching (and learning) that best fits their special needs.

By closely examining the concept of giftedness, exploring the different ways in which a second language can be taught to students and finally giving insight into the different possible learning styles, it was hoped that these three elements would provide readers with enough information to understand giftedness in general, and especially give teachers an idea of how to work with gifted students. The survey that was conducted aimed to gain an idea of how gifted students at the Rijswijks Lyceum perceive their own classroom experience and learning experiences, compared to non-gifted students in the same school.

Based on the results of this survey, as well as the background literature, this chapter hopes to provide answers to the research questions stated in the introduction. In addition, various proposals will be made for further research, given the very large (and unforeseen) scope of these research questions.

The research questions were:

- Is there a difference between the ways gifted and non-gifted students acquire English as a second language in high school?
- How could language pedagogy positively influence second language learning of gifted students?
    - Do the theories on language pedagogy and the in-class reality match up?
- What kind of learning style(s) would benefit gifted students in language learning?

5.2. Main findings and answers to the research questions

5.2.1. Is there a difference?

By looking at the theories behind giftedness, and in particular the works of Joseph Renzulli (chapter 2.1.3), as well as Morelock's article "Understanding our Gifted" (chapter 2.1.5) it becomes clear that gifted students use their intellectual capabilities in a different manner than non-gifted students; they have higher levels of abstract thinking, are stronger at verbal and numerical reasoning, spatial relations, memory, and word fluency. They also more easily adapt to new situations and are capable of rapid and accurate processing of new information. At the same time, their higher cognitive abilities sometimes coincide with vulnerabilities, such as dyslexia, ASD and ADHD (Morelock, 1992). Their true potential as gifted individuals can only be reached if their intellectual behavioral patterns are combined with the other two components of Renzulli's three-ring conception of giftedness: creativity and task commitment. Without all three ingredients, Renzulli argues, an individual is not truly gifted.

But what if these three components are present in an individual, but not suitably stimulated in a traditional school situation; would that make a student any less gifted?

The answer to this would have to be negative; the underperformance of gifted students is not because they are not gifted (or lazy), but because teachers do not sufficiently make use of the capabilities of these students in their style of teaching. It is very likely that gifted students underperform at learning new vocabulary, because the way in which it is presented to them (e.g. lists of vocabulary at the back of the book) does not sufficiently tap into their potential (creativity and task commitment). The same is most likely true for traditional grammar instruction, if it is presented outside of any meaningful context, a gifted student will have trouble applying themselves to the task, and subsequently perform badly on a test.

The answer to the first research question, therefore, has to be unequivocally yes, gifted students indeed have a different way of acquiring a second language than non-gifted students. This is not to say that non-gifted students could not benefit from a more top-down style of teaching, but for gifted students it is almost a necessity. Without it, their performance drops below the level of even the non-gifted students. The results of the survey seem to confirm this; the gifted group gave much higher value to understanding the meaning of a task, to applying vocabulary in a broader context, and to a more autonomous style of learning than the non-gifted group. These preferred styles of learning most likely stem from necessity, rather than just a preference.

5.2.2. How could learning pedagogy benefit gifted students?

The second research question ties in with the first. Now that it has been established that gifted students require a different style of teaching, and underperform in more traditional styles of teaching, it should be possible to specify which style of language pedagogy benefits these students the most, and which should be generally avoided. The survey has shown that gifted students themselves prefer a task-based style of learning, in which the task is meaningful to them, and in which they can apply their own knowledge. On top of that, they value looking at a broader context, rather than doing small stand-alone tasks, which they often find boring and quickly abandon. In that respect, the task-based learning style (TBL) described in chapter 2.2.6 certainly contains elements that would appeal to gifted students. Although Cook concludes that this style of teaching might not be suitable for the average adolescent (as it requires perhaps too much personal responsibility), it might be just the right method for gifted students, who, if challenged sufficiently, will have no trouble applying themselves to a task.

Another teaching style that contains elements that would benefit gifted students is Autonomous Learning, described in chapter 2.2.8. This style of teaching also heavily depends on learner responsibility, with the learner deciding what to learn, how to learn it, and how to assess it. This style of teaching leaves plenty of room for the students to explore their own options, with the teacher fulfilling the role of the helper or the coach. This style of teaching would be rather unsuitable for the average non-gifted students, as they might not have sufficient knowledge or understanding of the options that are available, but for gifted students, elements of this teaching style can certainly be beneficial. The advantage of this style of teaching is that it leaves ample room for the teacher to give individual attention to students who require it, and use other teaching techniques if the situation requires it.

Many current methods used in English classes, including the methods used on the Rijswijks Lyceum, are mainly (but not solely) based around the mainstream EFL style, discussed in chapter 2.2.7. This teaching style incorporates elements of the grammar-translation method and the audio-lingual method, and is largely teacher controlled. The lesson follows the sequence of presentation, practice and production. Students receive instruction on vocabulary or grammar, get to practice with these subjects, and eventually produce language in small groups, in for example a role-play situation. What seems to be the case is that this style of teaching does not work particularly well for gifted students. Many of the elements of this style of teaching were not rated very highly by the gifted students in the survey.

Gifted students would be more helped with a style that takes meaningful language use as a starting point, rather than the end-result of grammar practice. In this discrepancy between classroom reality (often mainstream EFL) and the useful methods for gifted students (TBL, AL) lies the main explanation for gifted students underperforming in second language acquisition.

5.2.3. What kind of learning style could benefit gifted students?

The final research question that this thesis aimed to answer, was the one related to individual learning styles. Do gifted students have inherently different learning styles than non-gifted students? Do they prefer auditory learning over visual learning, do they prefer abstract conceptualization over concrete experience, or reflective observation? Although evidence from this survey is not conclusive, and no significant differences could be found between gifted students and non-gifted students other than those already described above, there does seem to be some merit to the idea that gifted students have inherently different learning styles. This assumption is, however, further complicated by the vulnerabilities that often go together with giftedness; a gifted student with Asperger Syndrome (a fairly common combination) is most likely to be a strongly visual learner, and a gifted student with ADD or ADHD is more likely to favour a form of kinaesthetic learning.

These assumptions are purely my own, based on many years of experience working with these types of students. This survey did not take into account these psychological factors; the question is, ultimately, does giftedness cause an individual to lean towards a specific type of learning, or do certain disorders cause this? Within the scope of this thesis, these questions cannot be adequately answered, but further research can certainly be done to determine whether or not these unique combinations of high intellectual capability together with dyslexia or ASD or ADD disorders influence second language learning.

5.3. Conclusion

The aim of this thesis was to provide the reader with insight into the concept of giftedness, especially giftedness in a language learning environment. The assumption of many people, both parents and teachers alike, is that gifted students should always show outstanding performance in a classroom environment. As was shown in chapter 2, there has historically not been much attention to the higher end of the intelligence spectrum. Originally, the concept of a scale of intelligence was invented to determine retardation, not giftedness, and was used for all the wrong reasons. When the focus eventually shifted to the gifted population with first Terman, and later Renzulli, most research only involved those individuals who had become successful in life.

Those individuals who, despite their above-average intelligence, performed below-average in primary and secondary education have been left out of the picture for quite a long time. In recent years, more research has been done into the concept of twice-exceptionality; those individuals who combine an above-average intelligence with a variety of ASDs or ADHD. However, the percentage of twice-exceptional gifted individuals is rather small, and does not account for the systematic underperformance of gifted students in classrooms. Therefore, by examining existing teaching methods and learning styles, as well as examining the perception of gifted students on their own preferred style of learning, it has been possible to get more insight into what works and what does not work for gifted students.

Speaking from experience, many teachers choose a traditional style of teaching; they prefer to be responsible for their students' learning process, and like to be in control of the learning environment. In many cases, this wish to be in control at all times, leads to a deductive and structural way of language teaching. Very often, the teacher works from the bottom-up, handing students the building blocks of a language in the form of vocabulary chunks, or grammatical rules; the goal of this style of teaching is to give students the tools to pass a test or an exam, for which it usually works quite well. Teachers are unfortunately often judged by the performance of their students on tests, and their ability to keep an orderly classroom. It is therefore not surprising that teachers might choose these structural methods. For gifted students, however, a structural method of language teaching might not always work; instead of tapping into their creative giftedness, making them proficient language users, these methods try to make them "school-house gifted" which is basically nothing more than the ability to do well on tests.

Instead, the functional and inductive methods discussed in chapter two would serve gifted students quite well, but are often not the methods teachers would like to use in their classroom. Partially giving up classroom control, and giving students the responsibility to choose their own methods of learning does not work well for many teachers, having fears of students breaking down their classroom and failing on their tests. While this is of course an exaggeration, many secondary school teachers shy away from more student-oriented approaches to teaching, because their environment often expects them to be in control at all times and responsible for all results. For gifted students, however, this method of teaching, with a top-down approach, and a large amount of personal responsibility, would certainly be preferential. Within this paradox lies the difficulty of teaching gifted students in a traditional secondary school system, a difficulty for both students and teachers.

In conclusion, I had hoped to come up with some conclusive answers along the way. After having contacted Joseph Renzulli personally, I found out that very little was known to him about giftedness and language learning, and I had hoped to fill in some of these research gaps with my own research. Partly due to the small sample size, and partly due to the limited scope of this thesis, it has been very hard to provide conclusive evidence one way or the other. It has, however, been possible to provide some insight into the behavioural patterns of gifted language learners, and to evaluate every-day classroom practice in a run-of-the-mill secondary school in the Netherlands.

What has ultimately become clear is that the teaching methods and practices that are being used in most secondary schools are not always fully suited to the needs of gifted students, and that their underperformance is mostly due to the shortcomings of the teachers rather than the shortcomings of the students themselves. By treating them just like smarter versions of non-gifted students, teachers often fail in truly unlocking the potential of a gifted individual; by forcing gifted students into the stranglehold of traditional second language teaching (by which I mean the mainstream EFL style of providing grammar and vocabulary building blocks), they impair rather than improve the language skills of these students.

This thesis started with stating that the performance of gifted students in language classes was often disappointing and below expectations; it ends with saying that the blame for this disappointment and underperformance should not be placed on these gifted individuals, but rather on those whose responsibility it is to make sure that all their students, gifted and non-gifted alike, achieve their maximum potential, but fall short in that duty.

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7. Appendix:

7.1. Questionnaire on Vocabulary Acquisition:

Enquête over het aanleren van vocabulaire:

Klas: _____

Leeftijd: _____

Geslacht: M / V

Instructies: Hieronder staan een aantal leer-strategieën voor het aanleren van (Engelse) vocabulaire. Geef per strategie aan hoe *nuttig* deze strategie voor jou is. Elke stelling begint met: "Ik onthoud en leer nieuwe woorden het beste door…"

1=helemaal niet nuttig
2=soms nuttig
3=soms wel nuttig, soms niet nuttig (neutraal)
4=best wel nuttig
5=heel nuttig

	Strategie: "ik onthoud en leer nieuwe woorden het beste aan door…."	**Schaal:**				
1	…een woord te leren aan de hand van een plaatje, in plaats van een definitie uit een boek.	1	2	3	4	5
2	…zelf een beeld in gedachte te nemen bij een woord, om het zo beter te onthouden.	1	2	3	4	5
3	…een nieuw woord te verbinden aan een persoonlijke ervaring. (Bijvoorbeeld het woord "snow" verbinden aan een herinnering aan spelen in de sneeuw).	1	2	3	4	5
4	… een woord te plaatsen in een woordgroep met hetzelfde onderwerp, thema of functie. (bijvoorbeeld woorden over kunst: "painting, drawing, pencil, ink, paint").	1	2	3	4	5
5	… een woord verbinden met synoniemen en/of tegenover gestelde woorden, om het zo beter te onthouden (possible/impossible).	1	2	3	4	5
6	…woorden in een "schaal" te plaatsen. (Bijvoorbeeld "huge/big/medium/small/tiny").	1	2	3	4	5
7	…woorden in Engelse zinnen te gebruiken.	1	2	3	4	5
8	…woorden te groeperen in een verhaal.	1	2	3	4	5
9	…woordenlijsten te leren met de Nederlandse betekenis ernaast geschreven.	1	2	3	4	5
10	…woorden heel vaak hardop te zeggen tegen mezelf.	1	2	3	4	5
11	…woorden heel vaak op te schrijven.	1	2	3	4	5
12	…hele zinnen te leren, en die zinnen te gebruiken als geheugensteuntje voor de betekenis van het woord.	1	2	3	4	5

13	… woorden uit te beelden met lichamelijke handelingen, en dingen te dóen.	1	2	3	4	5
14	… te luisteren naar audio (CDs/computer) met woordenlijsten	1	2	3	4	5
15	…zelf een woordenlijst bij te houden met moeilijke woorden	1	2	3	4	5
16	... mezelf regelmatig te testen met overhoringen (op de computer bijvoorbeeld)	1	2	3	4	5
17	…over moeilijke woorden heen te lezen als ik de tekst toch al voldoende begrijp, en te proberen uit context de betekenis te raden.	1	2	3	4	5
18	…te kijken of ik te maken heb met een zelfstandig naamwoord of een werkwoord, als ik de betekenis moet raden.	1	2	3	4	5
19	…te kijken naar woorden er omheen, en aan de hand daarvan de betekenis te raden.	1	2	3	4	5
20	…te kijken naar zinsverbanden, en verbanden tussen alinea's (door aandacht te besteden aan structuurwoorden zoals "but, because, if, when, however).	1	2	3	4	5
21	… mijn kennis over het onderwerp te gebruiken om de betekenis van een nieuw woord te raden.	1	2	3	4	5
22	... een moeilijk woord in een zin te vervangen met mijn betekenis van het woord, en te kijken of de zin nog steeds klopt.	1	2	3	4	5
23	… te kijken naar delen van het woord (zoals de stam, voorvoegsels en achtervoegsels), en zo de betekenis te vinden. (bijvoorbeeld: un-believe-able als 3 losse delen zien).	1	2	3	4	5

Bedankt!

7.2. Questionnaire on Learning Styles:

Onderzoek naar Leerstijlen

Klas: _____

Leeftijd: _____

Geslacht: M / V

Instructies: Geef van de volgende stellingen aan of ze voor jou wel of niet waar zijn. Er zijn per vraag 5 mogelijkheden:

1= (bijna) nooit waar
2= meestal niet waar
3= soms waar, soms niet waar (neutraal)
4= meestal wel waar
5= (bijna) altijd waar

Omcirkel het getal wat het beste bij jou past:

1. Ik ben goed in het aanleren van lichamelijke vaardigheden, zoals sport. 1 2 3 4 5
2. Als ik iets nieuws moet leren, heb ik het liefste mondelinge uitleg van de docent. 1 2 3 4 5
3. Ik luister liever naar een verhaal dan dat ik het zelf moet lezen. 1 2 3 4 5
4. Ik geef er de voorkeur aan om te weten waarom ik een opdracht moet maken. 1 2 3 4 5
5. Ik kan de namen van mensen heel makkelijk onthouden. 1 2 3 4 5
6. Ik geef de voorkeur aan lessen waar iets is te zien (foto, diagram, video). 1 2 3 4 5
7. Het is voor mij lastig om me te concentreren als ik met anderen werk. 1 2 3 4 5
8. Ik teken vaak willekeurige dingen in m'n schrift tijdens de les. 1 2 3 4 5
9. Ik leer het beste als ik dingen zelf meemaak/onderga/doe. 1 2 3 4 5
10. Ik kan de gezichten van mensen heel goed onthouden. 1 2 3 4 5
11. Ik krijg vaak op m'n kop van de docent omdat ik zit te tekenen in m'n schrift. 1 2 3 4 5
12. Ik heb het liefst dat docenten dingen uitleggen aan de hand van diagrammen. 1 2 3 4 5
13. Ik geef de voorkeur aan lessen waar we over leerstof mogen discussiëren. 1 2 3 4 5
14. In de klas speel ik altijd met iets in m'n handen (pen, paperclip, elastiekje…). 1 2 3 4 5
15. In m'n vrije tijd luister ik graag naar muziek of praat ik met vrienden. 1 2 3 4 5
16. Ik krijg vaak op m'n kop van de docent omdat ik teveel praat. 1 2 3 4 5
17. Als ik iets nieuws moet leren, ga ik het liefst gelijk aan de slag. 1 2 3 4 5
18. Als ik iets nieuws moet leren, heb ik graag dat iemand het één keer voor doet. 1 2 3 4 5
19. Ik heb het liefst dat docenten ons zo snel mogelijk aan het werk zetten. 1 2 3 4 5
20. Ik begrijp iets beter als de docent veel op het bord heeft geschreven. 1 2 3 4 5
21. Ik krijg vaak op m'n kop van de docent omdat ik omgedraaid zit of onrustig ben. 1 2 3 4 5
22. Als ik lang stil moet zitten, kan ik niet wachten totdat ik weer mag rondlopen. 1 2 3 4 5
23. Ik vind het fijner om te leren als de leraar precies heeft gezegd wat ik moet doen. 1 2 3 4 5
24. Ik geef de voorkeur aan het maken van opdrachten op mijn eigen manier. 1 2 3 4 5
25. Ik begin aan veel verschillende opdrachten, maar ik verveel mij snel. 1 2 3 4 5
26. Als ik in de bus/trein/tram zit, praat ik graag met andere mensen. 1 2 3 4 5
27. Ik haal betere resultaten als ik een groep werk dan als ik alleen werk. 1 2 3 4 5
28. Ik geef er de voorkeur aan als de leraar alles stap voor stap met ons doorneemt. 1 2 3 4 5
29. Ik geef er de voorkeur aan om alles zelf uit te zoeken voordat ik iets vraag. 1 2 3 4 5
30. Ik vind het leuk om nieuwe opdrachten te doen, maar ik vind het niet leuk om ze af te maken. 1 2 3 4 5

7.3 SPSS Output

7.3.1. Mavo vs. Gifted (Vocabulary):

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Question 5	3MAVO	22	3,2727	1,07711	,22964
	GIFTED	17	3,0588	1,56007	,37837
Question 1	3MAVO	22	3,0455	1,09010	,23241
	GIFTED	17	2,5882	,71229	,17276
Question 2	3MAVO	22	3,4545	1,18431	,25250
	GIFTED	17	3,1176	1,11144	,26956
Question 3	3MAVO	22	3,1364	1,28343	,27363
	GIFTED	17	2,8235	1,46779	,35599
Question 4	3MAVO	22	2,9091	1,37699	,29358
	GIFTED	17	2,1765	1,18508	,28742
Question 6	3MAVO	22	2,7273	1,20245	,25636
	GIFTED	17	2,3529	1,45521	,35294
Question 7	3MAVO	21	2,8571	1,38873	,30305
	GIFTED	17	3,4706	1,28051	,31057
Question 8	3MAVO	22	2,7273	1,07711	,22964
	GIFTED	17	2,3529	,99632	,24164
Question 9	3MAVO	22	3,7727	1,26986	,27074
	GIFTED	17	3,3529	1,57881	,38292
Question 10	3MAVO	22	3,7273	1,45346	,30988
	GIFTED	17	2,1765	1,07444	,26059
Question 11	3MAVO	22	3,4091	1,56324	,33328

	GIFTED	17	3,0588	1,43486	,34800
Question 12	3MAVO	22	3,3636	1,13580	,24215
	GIFTED	17	2,3529	1,11474	,27036
Question 13	3MAVO	21	2,8571	1,15264	,25153
	GIFTED	17	2,0588	1,14404	,27747
Question 14	3MAVO	22	2,7273	1,35161	,28816
	GIFTED	17	1,6471	,93148	,22592
Question 15	3MAVO	22	2,6818	1,17053	,24956
	GIFTED	17	2,5882	1,50245	,36440
Question 16	3MAVO	22	3,4545	1,26217	,26910
	GIFTED	17	3,7059	1,40378	,34047
Question 17	3MAVO	22	2,6818	1,08612	,23156
	GIFTED	17	3,0588	1,39062	,33727
Question 18	3MAVO	22	3,2273	1,23179	,26262
	GIFTED	17	2,2941	1,35852	,32949
Question 19	3MAVO	22	3,3182	1,04135	,22202
	GIFTED	17	3,2941	1,40378	,34047
Question 20	3MAVO	22	2,5455	1,10096	,23473
	GIFTED	17	2,6471	1,32009	,32017
Question 21	3MAVO	22	3,1364	1,16682	,24877
	GIFTED	17	3,6471	1,36662	,33145
Question 22	3MAVO	22	3,1364	1,12527	,23991
	GIFTED	17	3,0000	1,32288	,32084
Question 23	3MAVO	22	2,8182	1,22032	,26017
	GIFTED	17	2,1765	1,23669	,29994

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Question 10	Equal variances assumed	3,138	,085	3,685	37	,001	1,55080	,42082	,69814	2,40346
	Equal variances not assumed			3,830	36,950	,000	1,55080	,40488	,73039	2,37121
Question 12	Equal variances assumed	,012	,914	2,778	37	,009	1,01070	,36385	,27347	1,74792
	Equal variances not assumed			2,785	34,870	,009	1,01070	,36295	,27376	1,74763
Question 13	Equal variances assumed	,060	,808	2,130	36	,040	,79832	,37481	,03817	1,55847
	Equal variances not assumed			2,132	34,476	,040	,79832	,37451	,03762	1,55902
Question 14	Equal variances assumed	1,625	,210	2,815	37	,008	1,08021	,38373	,30271	1,85772
	Equal variances not assumed			2,950	36,600	,006	1,08021	,36616	,33802	1,82241

Question 18	Equal variances assumed	,149	,701	2,243	37	,031	,93316	,41596	,09033	1,77598
	Equal variances not assumed			2,215	32,724	,034	,93316	,42135	,07564	1,79067

7.3.2. Havo vs. Gifted (Vocabulary):

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Question 5	3HAVO	28	3,3214	1,44154	,27243
	GIFTED	17	3,0588	1,56007	,37837
Question 1	3HAVO	28	3,0000	1,27657	,24125
	GIFTED	17	2,5882	,71229	,17276
Question 2	3HAVO	28	3,7500	1,29458	,24465
	GIFTED	17	3,1176	1,11144	,26956
Question 3	3HAVO	28	3,4286	1,23013	,23247
	GIFTED	17	2,8235	1,46779	,35599
Question 4	3HAVO	28	2,7857	1,22798	,23207
	GIFTED	17	2,1765	1,18508	,28742
Question 6	3HAVO	28	2,6071	1,42307	,26894
	GIFTED	17	2,3529	1,45521	,35294
Question 7	3HAVO	27	3,1111	1,21950	,23469
	GIFTED	17	3,4706	1,28051	,31057
Question 8	3HAVO	28	2,6786	1,02030	,19282
	GIFTED	17	2,3529	,99632	,24164
Question 9	3HAVO	28	4,1429	1,11270	,21028

	GIFTED	17	3,3529	1,57881	,38292
Question 10	3HAVO	28	3,6071	1,47421	,27860
	GIFTED	17	2,1765	1,07444	,26059
Question 11	3HAVO	28	3,7143	1,30120	,24590
	GIFTED	17	3,0588	1,43486	,34800
Question 12	3HAVO	28	2,8214	1,46701	,27724
	GIFTED	17	2,3529	1,11474	,27036
Question 13	3HAVO	28	2,6786	1,33482	,25226
	GIFTED	17	2,0588	1,14404	,27747
Question 14	3HAVO	28	2,2857	1,21281	,22920
	GIFTED	17	1,6471	,93148	,22592
Question 15	3HAVO	28	2,8929	1,34272	,25375
	GIFTED	17	2,5882	1,50245	,36440
Question 16	3HAVO	28	3,3214	1,24881	,23600
	GIFTED	17	3,7059	1,40378	,34047
Question 17	3HAVO	27	3,5926	1,21716	,23424
	GIFTED	17	3,0588	1,39062	,33727
Question 18	3HAVO	28	2,8214	1,27812	,24154
	GIFTED	17	2,2941	1,35852	,32949
Question 19	3HAVO	28	3,3929	1,31485	,24848
	GIFTED	17	3,2941	1,40378	,34047
Question 20	3HAVO	28	2,7500	1,04083	,19670
	GIFTED	17	2,6471	1,32009	,32017
Question 21	3HAVO	28	3,5000	1,20185	,22713
	GIFTED	17	3,6471	1,36662	,33145

Question 22	3HAVO	28	3,5714	1,25988	,23810
	GIFTED	17	3,0000	1,32288	,32084
Question 23	3HAVO	28	3,0357	1,34666	,25449
	GIFTED	17	2,1765	1,23669	,29994

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Question 10	Equal variances assumed	3,999	,052	3,474	43	,001	1,43067	,41185	,60011	2,26124
	Equal variances not assumed			3,750	41,416	,001	1,43067	,38148	,66050	2,20084
Question 23	Equal variances assumed	,464	,499	2,138	43	,038	,85924	,40181	,04892	1,66957
	Equal variances not assumed			2,184	36,209	,035	,85924	,39336	,06163	1,65686

7.3.3. VWO vs. Gifted (Vocabulary):

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Question 5	3VWO	18	3,5556	1,09664	,25848
	GIFTED	17	3,0588	1,56007	,37837
Question 1	3VWO	18	2,6111	,97853	,23064
	GIFTED	17	2,5882	,71229	,17276
Question 2	3VWO	18	3,1667	,92355	,21768
	GIFTED	17	3,1176	1,11144	,26956
Question 3	3VWO	18	2,9444	1,16175	,27383
	GIFTED	17	2,8235	1,46779	,35599
Question 4	3VWO	18	2,5000	1,20049	,28296
	GIFTED	17	2,1765	1,18508	,28742
Question 6	3VWO	18	2,3333	1,13759	,26813
	GIFTED	17	2,3529	1,45521	,35294
Question 7	3VWO	18	3,3889	1,24328	,29304
	GIFTED	17	3,4706	1,28051	,31057
Question 8	3VWO	18	2,5000	,92355	,21768
	GIFTED	17	2,3529	,99632	,24164
Question 9	3VWO	18	4,0000	1,02899	,24254
	GIFTED	17	3,3529	1,57881	,38292
Question 10	3VWO	18	3,4444	1,54243	,36355
	GIFTED	17	2,1765	1,07444	,26059
Question 11	3VWO	18	3,7778	1,00326	,23647
	GIFTED	17	3,0588	1,43486	,34800

Question 12	3VWO	18	2,5000	1,38267	,32590
	GIFTED	17	2,3529	1,11474	,27036
Question 13	3VWO	18	2,3889	1,19503	,28167
	GIFTED	17	2,0588	1,14404	,27747
Question 14	3VWO	18	2,0556	1,10997	,26162
	GIFTED	17	1,6471	,93148	,22592
Question 15	3VWO	18	2,8333	1,09813	,25883
	GIFTED	17	2,5882	1,50245	,36440
Question 16	3VWO	18	3,5000	1,33945	,31571
	GIFTED	17	3,7059	1,40378	,34047
Question 17	3VWO	18	3,0000	1,08465	,25565
	GIFTED	17	3,0588	1,39062	,33727
Question 18	3VWO	18	2,6111	1,28973	,30399
	GIFTED	17	2,2941	1,35852	,32949
Question 19	3VWO	18	3,7222	1,17851	,27778
	GIFTED	17	3,2941	1,40378	,34047
Question 20	3VWO	18	2,5000	,92355	,21768
	GIFTED	17	2,6471	1,32009	,32017
Question 21	3VWO	18	3,1667	1,20049	,28296
	GIFTED	17	3,6471	1,36662	,33145
Question 22	3VWO	18	2,7778	1,16597	,27482
	GIFTED	17	3,0000	1,32288	,32084
Question 23	3VWO	18	3,0000	1,37199	,32338
	GIFTED	17	2,1765	1,23669	,29994

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Question 10	Equal variances assumed	11,265	,002	2,806	33	,008	1,26797	,45189	,34860	2,18734
	Equal variances not assumed			2,835	30,423	,008	1,26797	,44730	,35500	2,18095

7.3.4. MAVO vs. Gifted (Learning Styles):

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Question 1	3MAVO	22	4,14	,941	,201
	GIFTED	17	3,65	1,455	,353
Question 2	3MAVO	22	3,41	1,054	,225
	GIFTED	17	3,82	1,131	,274
Question 3	3MAVO	22	3,36	1,432	,305
	GIFTED	17	3,24	1,348	,327
Question 4	3MAVO	22	2,82	1,053	,224
	GIFTED	17	4,24	,752	,182
Question 5	3MAVO	22	4,23	,752	,160
	GIFTED	17	3,18	1,425	,346
Question 6	3MAVO	22	4,18	,795	,169
	GIFTED	17	4,00	,707	,171
Question 7	3MAVO	22	2,18	1,140	,243
	GIFTED	17	2,65	1,115	,270
Question 8	3MAVO	22	2,95	1,495	,319
	GIFTED	17	3,06	1,560	,378
Question 9	3MAVO	22	4,00	,976	,208
	GIFTED	17	4,12	,697	,169
Question 10	3MAVO	22	4,14	1,125	,240
	GIFTED	17	4,24	,831	,202
Question 11	3MAVO	22	1,77	1,232	,263
	GIFTED	17	1,76	1,147	,278

Question 12	3MAVO	22	2,91	1,231	,262
	GIFTED	17	2,47	,800	,194
Question 13	3MAVO	22	3,32	1,323	,282
	GIFTED	17	3,88	1,054	,256
Question 14	3MAVO	22	2,59	1,182	,252
	GIFTED	17	3,29	1,312	,318
Question 15	3MAVO	22	4,14	,941	,201
	GIFTED	17	4,35	,606	,147
Question 16	3MAVO	22	2,55	1,184	,252
	GIFTED	17	2,76	1,393	,338
Question 17	3MAVO	22	3,55	,800	,171
	GIFTED	17	3,12	1,219	,296
Question 18	3MAVO	22	3,55	1,299	,277
	GIFTED	17	3,41	1,278	,310
Question 19	3MAVO	22	2,91	1,342	,286
	GIFTED	17	2,65	1,320	,320
Question 20	3MAVO	22	3,14	1,320	,281
	GIFTED	17	3,00	,866	,210
Question 21	3MAVO	22	2,32	1,323	,282
	GIFTED	17	2,53	1,419	,344
Question 22	3MAVO	22	2,55	1,625	,346
	GIFTED	17	2,24	1,251	,304
Question 23	3MAVO	22	3,73	1,162	,248
	GIFTED	17	4,35	,862	,209
Question 24	3MAVO	22	3,64	1,093	,233

	GIFTED	17	4,00	,707	,171
Question 25	3MAVO	22	3,50	1,336	,285
	GIFTED	17	3,41	1,228	,298
Question 26	3MAVO	22	2,27	1,352	,288
	GIFTED	16	2,94	1,389	,347
Question 27	3MAVO	22	2,95	1,133	,242
	GIFTED	17	2,65	,786	,191
Question 28	3MAVO	22	4,09	,921	,196
	GIFTED	17	3,41	1,176	,285
Question 29	3MAVO	22	3,05	,999	,213
	GIFTED	17	3,35	,862	,209
Question 30	3MAVO	22	3,18	1,296	,276
	GIFTED	17	3,24	,970	,235

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Question 4	Equal variances assumed	,290	,593	-4,695	37	,000	-1,417	,302	-2,029	-,805
	Equal variances not assumed			-4,899	36,822	,000	-1,417	,289	-2,003	-,831
Question 5	Equal variances assumed	12,422	,001	2,973	37	,005	1,051	,353	,335	1,767
	Equal variances not assumed			2,759	22,819	,011	1,051	,381	,263	1,839
Question 28	Equal variances assumed	,624	,435	2,024	37	,050	,679	,335	-,001	1,359
	Equal variances not assumed			1,961	29,688	,059	,679	,346	-,028	1,387

7.3.5. HAVO vs. Gifted (Learning Styles):

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Question 1	3HAVO	28	3,86	1,145	,216
	GIFTED	17	3,65	1,455	,353
Question 2	3HAVO	28	3,43	1,200	,227
	GIFTED	17	3,82	1,131	,274
Question 3	3HAVO	28	3,79	1,424	,269
	GIFTED	17	3,24	1,348	,327
Question 4	3HAVO	28	3,07	1,152	,218
	GIFTED	17	4,24	,752	,182
Question 5	3HAVO	27	4,33	1,000	,192
	GIFTED	17	3,18	1,425	,346
Question 6	3HAVO	28	4,39	,832	,157
	GIFTED	17	4,00	,707	,171
Question 7	3HAVO	28	2,14	1,297	,245
	GIFTED	17	2,65	1,115	,270
Question 8	3HAVO	28	2,54	1,319	,249
	GIFTED	17	3,06	1,560	,378
Question 9	3HAVO	28	4,25	,928	,175
	GIFTED	17	4,12	,697	,169
Question 10	3HAVO	28	4,39	,786	,149
	GIFTED	17	4,24	,831	,202
Question 11	3HAVO	28	1,32	,612	,116
	GIFTED	17	1,76	1,147	,278

Question 12	3HAVO	28	2,61	1,257	,238
	GIFTED	17	2,47	,800	,194
Question 13	3HAVO	28	3,82	1,156	,219
	GIFTED	17	3,88	1,054	,256
Question 14	3HAVO	28	2,89	1,499	,283
	GIFTED	17	3,29	1,312	,318
Question 15	3HAVO	28	4,25	1,175	,222
	GIFTED	17	4,35	,606	,147
Question 16	3HAVO	28	2,68	1,565	,296
	GIFTED	17	2,76	1,393	,338
Question 17	3HAVO	28	2,93	1,086	,205
	GIFTED	17	3,12	1,219	,296
Question 18	3HAVO	28	3,36	1,224	,231
	GIFTED	17	3,41	1,278	,310
Question 19	3HAVO	28	2,50	1,347	,255
	GIFTED	17	2,65	1,320	,320
Question 20	3HAVO	28	3,11	1,449	,274
	GIFTED	17	3,00	,866	,210
Question 21	3HAVO	28	2,04	1,071	,202
	GIFTED	17	2,53	1,419	,344
Question 22	3HAVO	28	2,57	1,597	,302
	GIFTED	17	2,24	1,251	,304
Question 23	3HAVO	28	4,04	1,138	,215
	GIFTED	17	4,35	,862	,209
Question 24	3HAVO	28	4,00	1,186	,224

	GIFTED	17	4,00	,707	,171
Question 25	3HAVO	28	2,79	1,031	,195
	GIFTED	17	3,41	1,228	,298
Question 26	3HAVO	28	3,11	1,370	,259
	GIFTED	16	2,94	1,389	,347
Question 27	3HAVO	28	3,21	1,287	,243
	GIFTED	17	2,65	,786	,191
Question 28	3HAVO	28	3,75	1,143	,216
	GIFTED	17	3,41	1,176	,285
Question 29	3HAVO	27	3,04	1,192	,229
	GIFTED	17	3,35	,862	,209
Question 30	3HAVO	26	2,73	1,185	,232
	GIFTED	17	3,24	,970	,235

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Question 4	Equal variances assumed	,322	,573	-3,704	43	,001	-1,164	,314	-1,798	-,530
	Equal variances not assumed			-4,096	42,701	,000	-1,164	,284	-1,737	-,591
Question 5	Equal variances assumed	4,670	,036	3,167	42	,003	1,157	,365	,420	1,894
	Equal variances not assumed			2,925	25,932	,007	1,157	,395	,344	1,970

7.3.6. VWO vs. Gifted (Learning Styles):

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Question 1	3VWO	18	3,56	1,247	,294
	GIFTED	17	3,65	1,455	,353
Question 2	3VWO	18	3,39	,979	,231
	GIFTED	17	3,82	1,131	,274
Question 3	3VWO	18	2,94	1,259	,297
	GIFTED	17	3,24	1,348	,327
Question 4	3VWO	18	3,00	1,138	,268
	GIFTED	17	4,24	,752	,182
Question 5	3VWO	18	4,00	,840	,198
	GIFTED	17	3,18	1,425	,346
Question 6	3VWO	18	3,61	,850	,200
	GIFTED	17	4,00	,707	,171
Question 7	3VWO	18	2,67	1,188	,280
	GIFTED	17	2,65	1,115	,270
Question 8	3VWO	18	2,78	1,309	,308
	GIFTED	17	3,06	1,560	,378
Question 9	3VWO	18	3,78	,943	,222
	GIFTED	17	4,12	,697	,169
Question 10	3VWO	18	3,83	,924	,218
	GIFTED	17	4,24	,831	,202
Question 11	3VWO	18	1,44	,705	,166
	GIFTED	17	1,76	1,147	,278

Question 12	3VWO	18	2,28	1,074	,253
	GIFTED	17	2,47	,800	,194
Question 13	3VWO	18	3,00	1,085	,256
	GIFTED	17	3,88	1,054	,256
Question 14	3VWO	18	2,56	1,199	,283
	GIFTED	17	3,29	1,312	,318
Question 15	3VWO	18	4,11	,900	,212
	GIFTED	17	4,35	,606	,147
Question 16	3VWO	18	2,67	1,372	,323
	GIFTED	17	2,76	1,393	,338
Question 17	3VWO	18	2,89	,963	,227
	GIFTED	17	3,12	1,219	,296
Question 18	3VWO	18	3,72	1,274	,300
	GIFTED	17	3,41	1,278	,310
Question 19	3VWO	18	3,06	1,110	,262
	GIFTED	17	2,65	1,320	,320
Question 20	3VWO	18	3,33	,840	,198
	GIFTED	17	3,00	,866	,210
Question 21	3VWO	18	2,22	1,263	,298
	GIFTED	17	2,53	1,419	,344
Question 22	3VWO	18	2,39	1,378	,325
	GIFTED	17	2,24	1,251	,304
Question 23	3VWO	18	4,28	,669	,158
	GIFTED	17	4,35	,862	,209
Question 24	3VWO	18	3,50	,924	,218

	GIFTED	17	4,00	,707	,171
Question 25	3VWO	18	2,50	1,043	,246
	GIFTED	17	3,41	1,228	,298
Question 26	3VWO	18	1,89	,676	,159
	GIFTED	16	2,94	1,389	,347
Question 27	3VWO	18	2,50	1,249	,294
	GIFTED	17	2,65	,786	,191
Question 28	3VWO	18	3,61	1,145	,270
	GIFTED	17	3,41	1,176	,285
Question 29	3VWO	18	3,22	,943	,222
	GIFTED	17	3,35	,862	,209
Question 30	3VWO	18	2,39	1,092	,257
	GIFTED	17	3,24	,970	,235

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Question 4	Equal variances assumed	1,919	,175	-3,765	33	,001	-1,235	,328	-1,903	-,568
	Equal variances not assumed			-3,809	29,640	,001	-1,235	,324	-1,898	-,573
Question 5	Equal variances assumed	9,641	,004	2,098	33	,044	,824	,393	,025	1,622
	Equal variances not assumed			2,068	25,635	,049	,824	,398	,004	1,643
Question 13	Equal variances assumed	,025	,876	-2,439	33	,020	-,882	,362	-1,618	-,146
	Equal variances not assumed			-2,441	32,970	,020	-,882	,361	-1,618	-,147
Question 25	Equal variances assumed	,856	,362	-2,372	33	,024	-,912	,384	-1,694	-,130
	Equal variances not assumed			-2,361	31,482	,025	-,912	,386	-1,699	-,125

Question 26	Equal variances assumed	6,741	,014	-2,849	32	,008	-1,049	,368	-1,798	-,299
	Equal variances not assumed			-2,744	21,161	,012	-1,049	,382	-1,843	-,254
Question 30	Equal variances assumed	,913	,346	-2,419	33	,021	-,846	,350	-1,558	-,134
	Equal variances not assumed			-2,427	32,884	,021	-,846	,349	-1,556	-,137