Enhancing performance and motivation in lower secondary education

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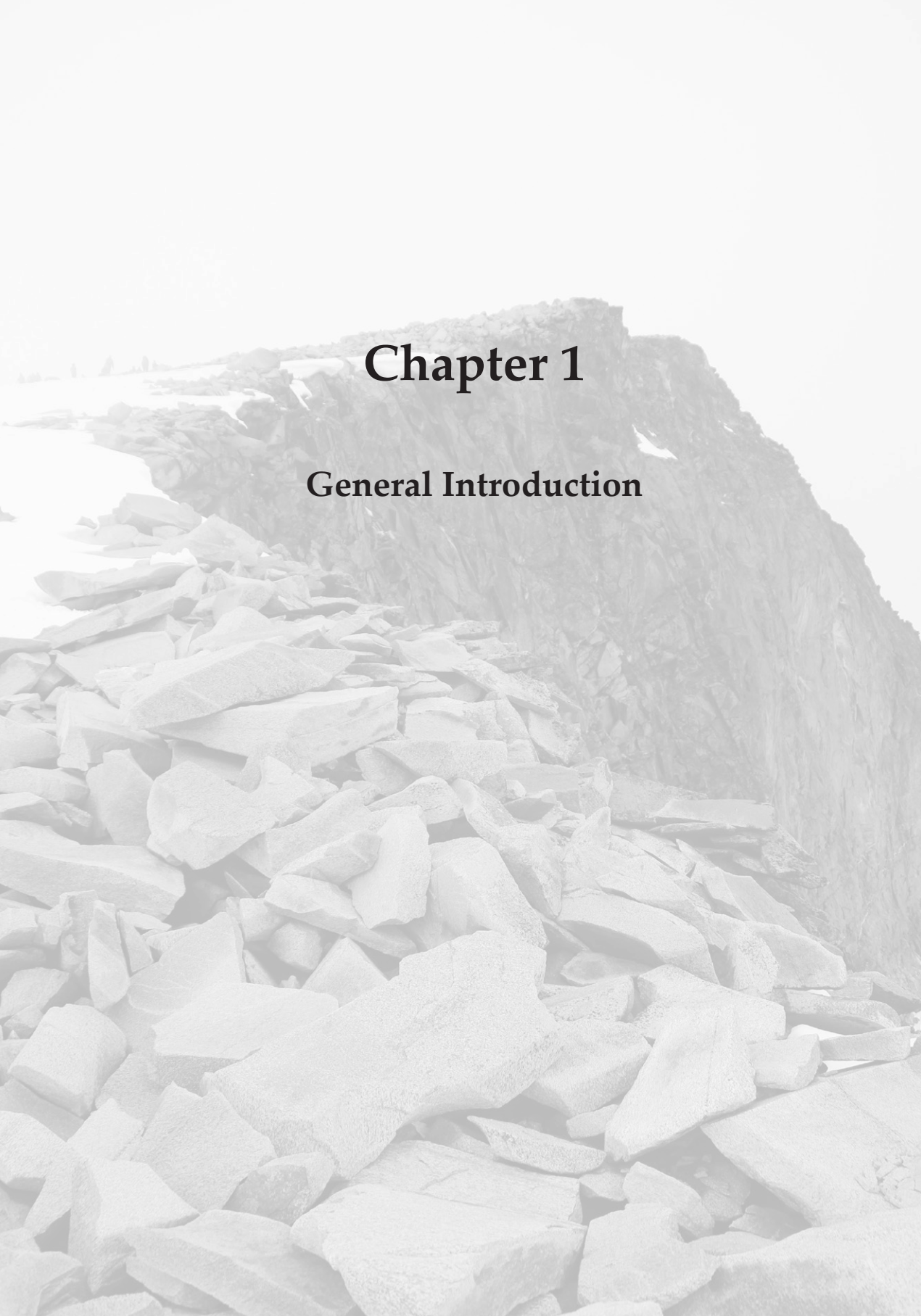

Chapter 1

General Introduction

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1.1 **Introduction**

Secondary school is an important period in the lives of adolescents. Students start their secondary education around the age of 12 years, and this brings about many changes as compared to primary education. The secondary school environment means for students that they have to change classrooms between the lessons, are taught by different teachers for every subject, have many different subjects, with more emphasis on performance. At the same time, students become adolescents and reach an age at which puberty is an important characteristic of their lives. Their friends become more important, as do hobbies and weekend jobs. These changes in adolescents' lives have many consequences for their attitudes towards school.

It is a well-known phenomenon that motivation for school decreases among adolescents in secondary education (e.g. Eccles, Lord, & Midgley, 1991; Gnambs & Hanfstingl, 2016; Gottfried, Fleming, & Gottfried, 2001; Peetsma, Hasher, van der Veen, & Roede, 2005). This decline in academic motivation occurs most consistently during early adolescence until 15 or 16 years of age (Gillet, Vallerand, & Lafranière, 2012; Gottfried et al., 2001). This is a shame because various motivation concepts and performance have many times been shown to be related (e.g. Guay & Vallerand, 1997; Hidi & Harackiewicz, 2000; Lepper, Henderlong Corpus, & Iyengar, 2005; Steinmayr & Spinath, 2009; Wigfield & Cambria, 2010). Performance level influences school success and may ultimately affect one's life too. Moreover, one may not have learned as much as one could have during secondary school and therefore miss out on certain opportunities in study choices or further career.

The motivation and performance declines may emanate from the individual student, but are equally or even more likely to arise from characteristics of the learning environment. Education professionals in several countries have acknowledged that the education system does not encourage students to meet up to their academic potential. Sometimes, the learning environment is typified as a *culture of C's*; referring to students' tendency to do only what is required instead of meeting their own full potential (De Boer, Minnaert, & Kamphof, 2013).

The general aim of this dissertation is to investigate more specifically how student performance and motivation develop and relate to each other during lower secondary education, and whether an innovation could positively change these rather negative developments. If one wants to improve student performance and motivation, a good place to start is the learning environment. Therefore, this dissertation takes place in the context of an innovation in the learning environment, called GUTS. The aim of GUTS was to increase both performance and motivation among students in lower secondary education through a combination of intrinsic motivation stimulation and an external incentive. The remainder of the introduction first describes the motive for the

present study, followed by the theoretical foundation and the context of the dissertation, and finally an overview of the following chapters is presented.

1.2 Motive for the Present Study

To progress from one grade to the next in Dutch secondary education, students need to meet a specific set of criteria. Schools have some freedom to determine these criteria, but in each school the bottom line is defined by the lowest allowable performance level, and that is a report card grade of a 6 on a scale of 1 (extremely poor) to 10 (perfect). Overall, students need to obtain at least a six for their subjects to march on to the next grade. At the same time, performances higher than the standard do not have consequences for students' progress in school. Moreover, among peers it is generally deemed uncool to show that you are putting effort into your schoolwork (Mijs & Paulle, 2016). This might create a focus on the lowest possible grade rather than aiming for higher grades and might encourage students to lower their efforts as this will create more free time for their hobbies and friends. Therefore, the performance standard may be a reason for the culture of C's, a so much criticised phenomenon in Dutch education. While Dutch students generally perform well in international comparisons, the OECD (2016, p. 79) wrote that "some of the most promising students in the Netherlands are not reaching their full potential". In addition, motivation of students is low in comparison to other countries (OECD, 2016). This issue has also been addressed in the Dutch media widely (Hoogstad, 2012; Pietersen, 2013; Roeters et al., 2014; van Gaalen, 2017; van Walsum, 2016).

To address the culture of C's, Michiel Westenberg and Jan van Driel in 2012 wrote a project proposal for an innovation in secondary education to increase both student performance and motivation through challenging students to discover and develop their talents. This proposal was subsidised by the Dutch ministry of Education, Culture, and Science. The innovation was implemented in close collaboration with Wolfert Bilingual, a secondary school in the western part of the Netherlands. The research proposal included two PhD projects, one about the performance and motivation of secondary school students, and a second about teachers' views on and practices in differentiation. The present dissertation is the result of the former PhD project.

1.3 Theoretical Foundation of this Dissertation

Two concepts are central in this dissertation: performance and motivation. Both concepts are defined in the following subsections.

1.3.1 Performance

Performance in this dissertation is defined in terms of report card grades. In Dutch education, report card grades are important performance measures, which are attained for every subject a student takes. End-of-the-year report card grades are composed of results on different tests and assignments throughout the school year. For instance, one report card grade for history and one for mathematics is accomplished, which both are averages of results on various tests in that subject throughout the school year. These grades are important determinants of how school careers proceed. Report card grades are common in the practice of schools; however, they are not used in research often. This lack of research into report card grades originates from the often-used judgement that a report card grade is an unreliable and subjective measure of performance (Bowers, 2011; Brookhart et al., 2016). This judgement originated from a low correlation between report card grades and standardised measures of knowledge (Bowers, 2011). However, it is now known that this low correlation can be explained by the fact that report card grades do not solely measure academic knowledge, as do standardised measures of knowledge. Grades are composed of multiple dimensions such as a cognitive, a subject-specific, and a common grade dimension (Klapp Lekholm & Cliffordson, 2009). As such, this makes report card grades good predictors of educational success to use in research, as success is dependent on all these types of factors (Bowers, 2011; Klapp Lekholm & Cliffordson, 2009). Moreover, it has been shown that report card grades which consist of multiple measurements provide an overview of a student's average performance level for each subject during that year (van der Lans, van de Grift, & van Veen, 2015).

1.3.2 Motivation

1.3.2.1 Self-Determination Theory

This dissertation uses self-determination theory (SDT) to define motivation. The general idea of SDT is that every human is inherently active, curious and interested to learn, inclined to undertake challenges, and is growth oriented in nature (Deci & Ryan, 2000; Niemiec & Ryan, 2009; Stroet, 2014). This also holds for adolescents. However, it does not have to mean that one is always active, curious to learn and inclined to undertake challenges in every setting, or in case of academic motivation, for every school subject. Rather, it is likely that one is enthusiastic about some subjects and not about others.

Self-determination theory distinguishes the quality of motivation from its quantity (Ryan & Deci, 2000, 2002). The more self-determined one feels, the better the quality of the motivation is (Ryan & Deci, 2002). In SDT, two types of motivation are distinguished: autonomous and controlled motivation (Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009). If autonomously motivated, behaviour originates from within the self or behaviour is accepted to be personally relevant or to be integrated with one's personal values and goals

(Ryan & Deci, 2002). Controlled motivation includes motivation due to a feeling of pressure from within oneself or from the environment (Ryan & Deci, 2002). One shows behaviour purely to receive a reward or to avoid punishment, or to avoid a feeling of guilt or shame.

Autonomous motivation relates to positive school outcomes, as has both theoretically been reasoned (Ryan & Deci, 2000), and empirically been investigated (e.g. Guay & Vallerand, 1997; Vansteenkiste et al., 2009). To understand motivation, SDT stresses a need to comprehend people's basic psychological needs for autonomy, competence, and relatedness (Deci & Ryan, 2000). Only if these needs are fulfilled, one can feel fully self-determined. Social contexts are very important to influence the fulfilment of needs, and individual differences in motivation and personal growth (Ryan & Deci, 2000).

1.3.2.2 Need-supportive teaching to stimulate motivation

Teaching is a social activity that can stimulate volitional academic motivation through support of student basic psychological needs for autonomy, competence, and relatedness. Teachers can support or thwart students' need for autonomy, can provide structure or chaos, which affects the need for competence, and can show involvement or rejection, affecting the need for relatedness (Stroet, 2014). Autonomy and competence play the most important role in stimulation of intrinsic motivation (Deci & Ryan, 2000). The role of relatedness is more distant, but also important for maintaining intrinsic motivation. This dissertation, when describing need-supportive teaching, focuses on fulfilment of the needs for autonomy and competence. The *need for autonomy* refers to perceiving oneself as the origin of one's behaviour, and the *need for competence* indicates the need to feel effective in interaction with the environment and to feel able to show one's capacities (Ryan & Deci, 2002).

To fulfil students' need for autonomy, a teacher can employ autonomy-supportive teaching. An autonomy-supportive teacher adopts the student perspective, is open to thoughts, feelings, and behaviour of students, and stimulates the autonomous self-regulation (Reeve, 2009; Stroet, 2014). Autonomy support does not mean complete freedom, but is perceived self-determination within boundaries or guidelines. Therefore, structure is an important aspect of need-supportive teaching too, mainly to fulfil the need for competence. Structure comprises of clear expectations and goals, guidelines and rules, and informative feedback (Koestner & Losier, 2002; Reeve, 2002). If a teacher provides structure, teaching fulfils the need for competence by providing students with the feeling of control over their school outcomes (Stroet, 2014).

1.3.2.3 Extrinsic incentives in relation to motivation and performance

In addition to need-supportive teaching to stimulate autonomous motivation, in an academic setting there are also some external factors affecting student motivation and performance. Students take many subjects in secondary school

which they all have to pass, although they may not be autonomously motivated for all subjects. This may, then again, mean that students need some extrinsic incentive such as a reward or another driving force to stimulate their motivation and performance for their non-autonomously motivated subjects. In self-determination theory, incentives are defined in terms of rewards for positive behaviour. The influence of extrinsic incentives on motivation and performance has been topic of study, inferring various and sometimes conflicting plausible mechanisms (Deci, Koestner, & Ryan, 1999). Addressing the relation between extrinsic incentives and intrinsic motivation, Cognitive Evaluation Theory (CET, Ryan & Deci, 2002) within SDT postulates that incentives negatively influence self-determination through a feeling of control and pressure from outside the individual to perform an activity. On the other hand, incentives are theorised to possibly provide information about one's competence; i.e. incentives may show whether one is capable at a certain task or not. This may increase perceived competence; one of the basic psychological needs which need to be fulfilled to stimulate autonomous motivation. Whether extrinsic incentives then negatively or positively relate to intrinsic motivation depends on the strength of the detrimental effect on autonomy as compared to the advantageous effect on competence.

Furthermore, empirical research has stressed the importance of the types of incentives to determine its relation to intrinsic motivation and performance. Several meta-analyses have consistently shown that more controlling types of incentives negatively affect intrinsic motivation, whereas less controlling types of incentives did not do this (Cameron & Pierce, 1994; Deci et al, 1999; Cerasoli, Nicklin, & Ford, 2014). For example, Cameron and Pierce (1994) found a negative effect on free time spent on the task only after removal of expected tangible rewards that were provided for doing the task, regardless of the result. For other types of rewards, including verbal praise, unexpected tangible rewards, and rewards for performing to a set of standards, and for another measure of intrinsic motivation, namely attitude, non- or even increasing effects were found. Regarding the relation between extrinsic incentives and performance, intrinsic motivation in terms of working autonomously, being absorbed in the task, drawing on personal resources, and maintaining a broad focus, was found to predict quality of performance best. Moreover, extrinsic incentives were the best predictors of quantity of performance; that is noncomplex, repetitive performance that requires chiefly focus and drive. It was also found that the presence of extrinsic incentives boosted the link between intrinsic motivation and performance (Cerasoli et al., 2014), especially if the incentives were indirectly tied to performance; such as receiving a compliment when reciting the correct answer in class which does not directly affect performance on the following test.

The present dissertation defines extrinsic incentive in terms of a performance standard as a driving force. This driving force has a direct relation to performance level and is assumed to contribute to a motivation and performance increase.

1.3.2.4 General and specific motivation

Dependent on the perspective employed, academic motivation is defined more general or specific (Bong, 2001; Hornstra, van der Veen, & Peetsma, 2016). General motivation is motivation towards school or learning in general, however, students can differ in their motivation for various tasks or subjects. Therefore, the present dissertation uses both perspectives at various moments.

When we refer to *general motivation*, motivation for school in general is studied. In this situation, students' overall affect towards school is central. Motivation for school in general is of interest in this dissertation because it provides a perspective to study the so-called culture of C's, and the declining levels of motivation during adolescence. *Specific motivation* in the present dissertation is distinguished into motivation for specific types of subjects that are perceived positively or negatively. We name these subjects *favoured* and *disfavoured* subjects. Favoured subjects are operationalised as subjects which students like and would like to spend extra time on, and disfavoured subjects are defined as subjects which students do not like and would not like to spend extra time on. For a favoured subject, the autonomous motivation is expected to be higher than for a disfavoured subject, as 'liking a subject' is a typically autonomously motivated emotion (Ryan & Deci, 2000). When a student favours a subject, (s)he has a positive emotion towards this subject, and (s)he enjoys learning the subject. Learning enjoyment towards a subject has been found to originate from a pre-existing interest in the learning content, activity, or subject itself, or when a student felt competent at a subject (Hagenauer & Hascher, 2010). On the other hand, learning enjoyment was also found to be impeded when the learning content was judged boring, when a student disliked the subject in general, or when (s)he felt incompetent (Hagenauer & Hascher, 2010).

1.4 **Context of this Dissertation: GUTS**

The innovation studied in the present dissertation is GUTS (Differentiated Challenging of Talent in School; or in Dutch Gedifferentieerd Uitdagen van Talent op School). GUTS is an innovation that was developed collaboratively by Leiden University and Wolfert van Borselen School Group. Wolfert van Borselen School Group is a group of schools for public education containing all types of secondary education. This group of schools falls under supervision of a board, which contains 78 schools for primary, secondary and special needs education.

Specifically, from Leiden University, the institute of Psychology and ICLON, and from Wolfert van Borselen one school, Wolfert Bilingual, participated. GUTS was implemented in this school between September 2013 and July 2016. Wolfert Bilingual is a bilingual secondary school in the province South-Holland in the Netherlands that provides senior general secondary (havo) and pre-university education (vwo). Senior general secondary education prepares

for higher professional education, and pre-university education prepares for university. These are the two highest level school types in the Netherlands. The school educates approximately 850 students in total every year. Wolfert Bilingual can be typified as an innovative school, constantly thinking of ways to improve the education and to stand out. The school has received the by the government issued predicate 'Excellent School' for several years in a row. Additionally, the school has an international and societal focus, stimulating the students to contribute to the society in multiple ways by, for example, a system of community and service points which students have to achieve, and offering Chinese and Spanish as extra subjects.

The aim of GUTS was to increase both performance and motivation among students in lower secondary education through a combination of intrinsic motivation stimulation and an external incentive (see Westenberg, 2012). GUTS consists of two elements: (a) talent lessons as intrinsic motivation stimulation and (b) an increased promotion standard as extrinsic incentive. In order to capitalize on the combined effects of intrinsic and extrinsic factors, while avoiding potentially aversive effects of an extrinsic incentive, we use a positive approach by focusing on students' talents instead of deficits. The basic idea is that a student does not have to be good at and enjoy every subject, but that every student selects certain subjects that they like to excel at, which ultimately affects their subject-specific and general performance and motivation level. It is rare to perform poorly at something one enjoys (Cerasoli et al., 2014).

In GUTS, it is important that every student is included and stimulated. An underlying idea is that everyone has certain talents, or is able to excel at something. Rather than focusing only on excellent or gifted students, GUTS focuses on all students. In this view, GUTS defines talent as a combination of competence in a subject, and a drive to work on that subject. This definition of talent is similar to Gagné's (1985, 2004) reasoning, which states that the expression of talent in terms of performance depends on a combination of a student's ability, personal factors such as motivation, and context factors such as school. Additionally, an important nuance in our definition is that talent development is something for all students (Barab & Plucker, 2002) instead of only for the gifted ones.

1.4.1 Talent lessons

Goal of the talent lessons in GUTS was to stimulate student autonomous motivation for a subject chosen by the students for the talent lessons, and to stimulate motivation for school in general, through positively approaching students in a subject they liked. The talent lessons focus on students' strengths and aim to fulfil students' need for autonomy. When feeling autonomous, one's behaviour is perceived in accordance with one's interests and values, and activities are experienced as volitional (Ryan & Deci, 2002). In a school setting, the need for autonomy can be fulfilled through autonomy-supportive teaching,

which means that teachers incorporate students' interests and values through offering choice, fostering relevance and showing respect (Stroet, Opdenakker, & Minnaert, 2013; Vansteenkiste et al., 2012). If students perceive autonomy support, they experience more motivation and engagement in school (Reeve, 2006; Stroet et al., 2013). The talent lessons were shaped using four design principles, to enhance performance and motivation. The first design principle was *autonomy*. Choosing a subject for the talent lessons offered some choice to the students to spend time on one of their interests. Also, during the talent lessons, as much choice as possible was offered regarding the topic or learning activity. Second, the teacher *differentiated* between the students, which means that the teacher took differences between students into account (Tomlinson et al., 2003). This provides students with positive affect and motivation towards learning (Tomlinson et al., 2003). Finally, *higher order thinking tasks* and *enrichment* were also included as principles in the talent lessons as aspects that challenge and interest students and make them acquainted with topics that are not included in the regular curriculum which may be perceived as interesting.

In practice, the talent lessons consisted of two cycles of eight 100-minute lessons per school year. For every cycle, students chose a different subject in which they received these talent lessons in addition to the regular lessons of the subject. Students from seventh and eighth grade and senior general secondary and pre-university education took the talent lessons jointly. This kind of flexible grouping has been found to positively affect student achievement (Rubie-Davies, Peterson, Sibley, & Rosenthal, 2015).

1.4.2 Promotion standard

A higher promotion standard was implemented as an extrinsic incentive. This means that students participating in GUTS had to achieve an average 7 on their report card at the end of the school year. Generally, in the Netherlands an average report card grade of 6 is enough for a student to proceed to the next grade. In GUTS, however, if a student achieved a 6 in one subject, which was still sufficient for that one subject, an 8 should be achieved in another subject to reach the overall performance standard. In this way, students could differentiate their achievement between subjects, giving everyone the opportunity to excel in some subjects to compensate for other subjects.

In different ways the higher promotion standard was thought to change the behaviour of students. Firstly, by asking more from students, it becomes worthwhile to perform at a higher level because one simply has to. Most students will only put effort into an activity when they think this effort is valuable (Wigfield & Eccles, 2000). Secondly, asking more of students may positively contribute to their self-efficacy if students see that they are able to perform at a higher level with some extra effort. The higher promotion standard may also have a self-fulfilling prophecy effect through the higher expectations. It has previously been found that high teacher expectations stimulate students to achieve higher

(Rubie-Davies et al., 2015). Thirdly, students respond differently to low and high grades. Whereas low grades strengthen the decline of involvement with school in general, high grades reduce this decline in involvement (Poorthuis, 2012). Lastly, the promotion standard may affect the culture of C's among peers in schools through students' and peers' views on what is cool or uncool in school. When everyone excels at some subjects, which compensates lower performance in other subjects, it may become more normal and less uncool to show effort and achieve high grades.

1.4.3 Implementation process

The implementation of GUTS was a collaboration between Leiden University and Wolfert Bilingual. During the implementation, regular meetings were scheduled between the institutions and decisions were made collaboratively. Also, several evaluation moments with teachers, students, and parents were used to improve the innovation.

The performance standards were discussed in the first year of the implementation, and accordingly in every school year. It was decided that an average report card grade of a 7 was an unconditional pass to the next grade. Additionally, for everyone who performed under an average 7 it was discussed whether they could pass or not. Some students who achieved under an average 7 could pass anyways if the teachers saw a good reason for this, such as circumstances in the home situation of the student.

In the first year, it was decided that the talent lessons would take place on Wednesday afternoons, and that students would first have coach conversations with the talent coach to be supported in their choice of subject for the talent lessons. The talent coaches were teachers of Wolfert Bilingual. Teachers attended multiple afternoons in which they discussed and received instructions about how to conduct coach conversations as well as the talent lessons. Students presented the project they worked on during the talent lessons for their parents at the end of each of the two talent lessons cycles. From the school year 2014-2015 onwards the talent lessons took place at various days of the week. Furthermore, the coach conversations developed into conversations about the learning goals a student formulated for the talent lessons. This coaching task was transferred to the teachers of the talent lessons because they were in a better position to decide on the student's learning goals. Based on teacher and student feedback the talent lessons for grade 7 and 8 were graded, and the lessons were included in the regular time schedule (as of school year 2015/2016). Finally, a 'personal project' was initiated for students in grade 9. The design principles of this project were the same as for the talent lessons. The personal project prepares students for a larger project in their final year of secondary school (*profielwerkstuk* in grade 11/12).

1.5 **Overview of the Chapters**

This dissertation focuses on performance and motivation of lower secondary school students between grade 7 and 9. Three assumptions are at its heart: (1) that motivation declines during secondary school, (2) that motivation and student performance are interrelated, and (3) that combining intrinsic motivation stimulation and extrinsic incentives is important to enhance motivation and performance in lower secondary education.

The chapters of this dissertation all cover both performance and motivation. However, some chapters emphasize performance more than motivation or the other way around. Figure 1.1 provides a schematic overview of the emphasis of the following chapters.

Chapter 2 describes a longitudinal study on the performance development in lower secondary education of students in nine schools. Aim was to investigate how students' report card grades develop between grades 7 and 9. Much is known about motivation development in secondary education, but the development of performance in terms of report card grades was underexposed. Based on the assumptions that motivation declines during lower secondary education, and that motivation and performance are related, two research questions were formulated in this chapter: (a) Does student performance decline during lower secondary education?; and (b) Is this trend moderated by (1) gender, (2) school type or (3) initial level?

Chapter 3 investigates the relations between autonomous and controlled motivation and performance in favoured and disfavoured subjects of students in three secondary schools. The positive relation between autonomous motivation and performance is well known. However, the relation between controlled motivation and performance, especially in secondary education is less documented. Furthermore, a distinction between subjects based on students' affect towards these subjects can provide meaningful information as to how to stimulate students' performance and motivation in various subjects. Three research questions were posed: (a) To what extent does autonomous motivation positively predict performance, and to what extent and in what direction does controlled motivation predict performance?; (b) What are the levels of autonomous and controlled motivation and performance in students' favoured and disfavoured subjects?; and (c) What are the roles of autonomous and controlled motivation in predicting performance in students' favoured and disfavoured subjects?

Proceeding to C*hapter 4*, the dissertation moves on to the context of GUTS. The motivating aspects of the talent lessons were central in Chapter 4. This chapter first studied, by means of structured interviews, the extent to which students perceived autonomy support and structure during the talent lessons. Student perceptions were studied because these determine how an innovation may affect students. Furthermore, this chapter investigates by

means of questionnaires how autonomy support and structure in the talent lessons related to motivation and self-efficacy for the subject. The study posed two questions: (a) To what extent do students experience and value the need-supportive elements of talent lessons?; and (b) How does need support during talent lessons relate to subject motivation and self-efficacy?

Chapter 5 describes a study on how performance and motivation for school, well-being and self-esteem developed among students in GUTS. This longitudinal case study compared report card grades and measures of motivation for school, well-being, and self-esteem of students in GUTS with students in other learning environments. Two research questions guided this study: (a) To what extent is GUTS related to a higher performance level?; and (b) How is GUTS related to motivation for school, well-being and self-esteem?

Finally, *Chapter 6* provides an overview of the main findings from chapters 2 to 5, followed by a discussion of these findings and the implications of the research, both theoretically and for education practice.

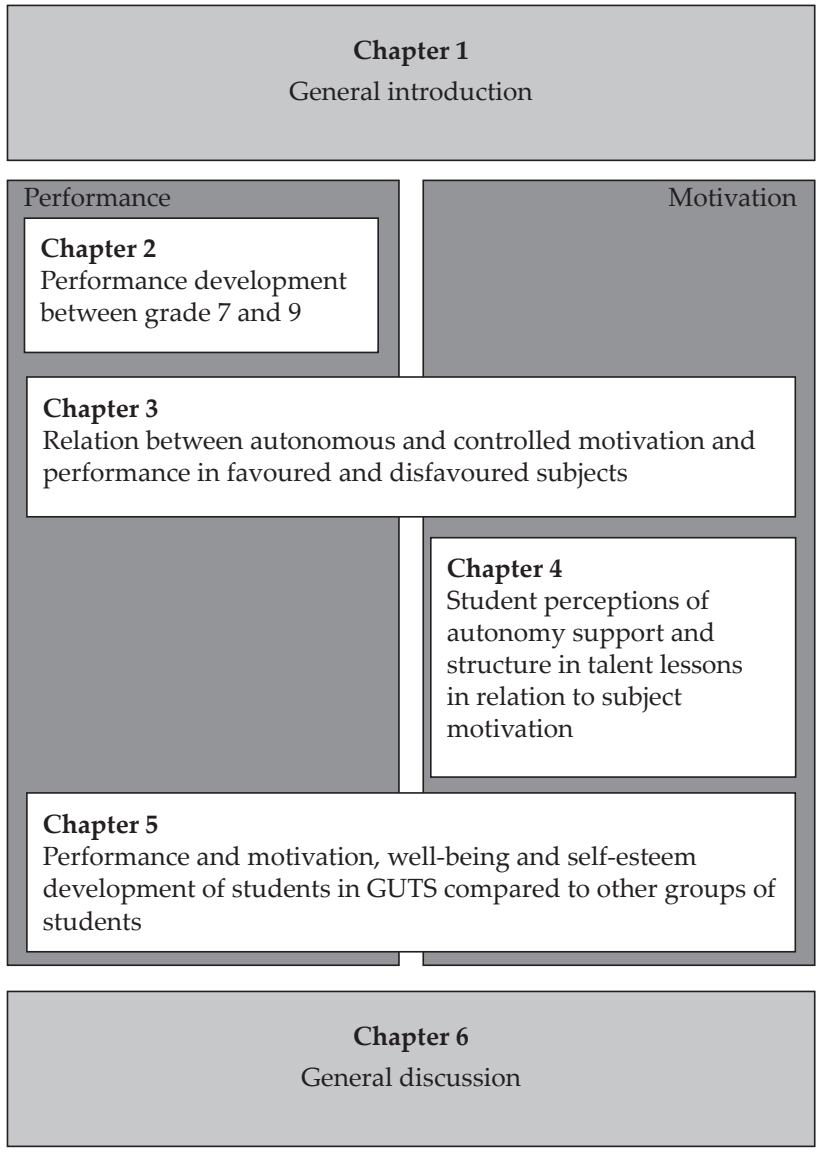

Figure 1.1 Schematic overview of the chapters in this dissertation, showing the relation between the key concepts performance and motivation.