Bachelorthesis

The influence of teachers' mindset, competitive attitudes, and self-efficacy in differentiation on the application of differentiating teaching methods

Dominik Harnisch

s1611542

University of Twente

Faculty Behavioural Science

Psychology of Instructional Technology

Examination commitee:

Dr. Tessa H.S. Eysink

Elise Eshuis, MSc

Abstract

Differentiation in the classroom is a topic that gained increasingly attention in research as well as in practical implementations. Differentiation in educational context means that the teacher frames the lessons in a way that students can learn according to their ability level, personal interest, and cultural background. Five elements of a lesson can be addressed in a differentiated way (curriculum, instruction, enrichment, re-teaching, and assessment). Research already identified a number of factors that restrain teachers from differentiating their classes while relatively few factors were addressed that promote teachers' differentiation activities. The aim of the present study was to explore the influence that teachers' mindset (fixed vs. growth), competitiveness and self-efficacy with differentiated teaching have on the degree to which teachers differentiate their lessons. Based on the stated influencers, a survey battery was administered to a sample of German elementary school teachers (N=171). In terms of the statistical analyses, it was found that a growth mindset and high self-efficacy in differentiated teaching are linked to the application of teaching techniques that differentiate. Competitiveness lacked significant influence which can be attributed to poor validity of the applied instrument as it contained two factors. Out of these two factors, competition by means of arguments, debate and conflict was strongly related to differentiation in class, whereas competition as a means to enhance student's performance lacked any significant relationship. A more detailed analysis exploring the influence of stated factors on elements that can be differentiated in class revealed similar findings. However, no relation was found between teachers' mindset and differentiation of instruction and both the application of debates and self-efficacy lacked significant predictive value on the degree to which the re-teaching process is differentiated. Shortcomings and practical implications of these findings are discussed.

Introduction

Over the last several years, the relatively new approach of differentiation in educational practice got a lot of attention in research as well as in practical implementations. Traditional teaching with an inflexible lecture style is no longer seen as the most effective method to cater to the needs of the individual student. It is evident that what and how a student learns depends to a great deal on the teacher, the methods he or she utilizes and the interaction between teacher and student (Dijkstra, 2015). Differentiation in the classroom implies that the teacher regularly monitors ability and progress of his or her students and applies different methods in order to maximize each student's learning (Tomlinson, 2014). Due to the traditional approach being oriented towards the average student, rather than the individual, low-ability students have difficulties to keep up with the subject matter and high-ability students may not be challenged enough (Mulder, Roeleveld, & Virke, 2007; Tomlinson, 2002). Both instruction and curricula aim particularly at the improvement of lower-scoring students. High-ability students are thus often neglected in differentiation and achieve under their capability which has been shown to be an international trend (Dijkstra, 2015). For instance, research indicates that in the Netherlands, 30-40% of high-ability students in grades 4, 6, and 8 underachieve academically (Onderwijsraad, 2007). Similar tendencies have been found to prevail in countries such as the United States, Hong Kong, Japan, China, Singapore, South Korea, Taiwan, Canada and –noteworthy for the present study- Germany (Boehnke, 2008; Bruns, 1992; Lupart & Pyryt, 1996; Phillipson et al., 2009; Reis, 1993; Ziegler & Stoeger, 2003).

Differentiation in educational context is to a great extent the responsibility of the teacher as research has shown that teachers differ in the degree to which they differentiate their classes (Richardson, 1996; Shavelson & Stern, 1981). They should thus no longer assume that their students operate on the same ability level but rather differentiate between their students as each of them possesses a different set of learning readiness, personal interest,

and cultural backgrounds (Tomlinson, 2014). Five elements of education can be addressed in a differentiated way (Croom, Rayfield, Stair, & Murray, 2011). First, the curriculum can be differentiated by individualizing learning goals, allowing for critical thinking and matching informational resources to individual student needs. By presenting the content flexibly with possibilities for each student to learn as deeply as possible, the teacher fits the curricular content to the students' current level of understanding. Second, teachers can differentiate their instruction by using several instructional strategies and base student grouping and pace of instruction on individual learning needs. The third element that can be approached in a differentiated way is enrichment. When this element is differentiated effectively, advanced students receive more sophisticated instruction and critical thinking is promoted. Fourth, by using several formats for revisions and allowing for critical discussion, the re-teaching process can be differentiated. Finally, in a differentiated classroom, assessment methods are differentiated as well. By monitoring students learning continuously and applying a myriad of assessment tools, differentiated means are provided for students to represent what they have learned.

It is an essential challenge for teachers to reach out effectively to students who vary in their learning abilities and personal interests. Clearly, just as each student possesses a different set of skills it is assumed that teachers also vary in their capability to differentiate (Harris, 2012). Admittedly, teachers can be educated in progressive, differentiated teaching. However, concerning the theoretical basis for these trainings, research mostly identified factors that restrain teachers from differentiating their classes while relatively few factors were addressed that promote teachers' differentiation activities. For instance, in terms of restraining factors, van Tassel-Baska & Stambaugh (2005) found a lack of peer and principal support to impede a teacher's application of differentiation activities. Additionally, a large class size, students' behavioural problems, and a lack of time for planning were identified to hinder the effective utilization of differentiation in the classroom (Hootstein, 1998). Besides

these restraining factors, it is also important to identify factors that influence teachers' differentiation in a positive way due to the strong dependence on the teacher in offering suitable learning activities (Dijkstra, 2015). Educating the teachers is thus the most effective means to develop more differentiated classrooms. Acquiring knowledge about factors that influence teachers' utilization of differentiation provides a theoretical basis to test the effectiveness of interventions that aim to facilitate differentiation in education. As research mostly addressed factors that restrain teachers from differentiating their classes, the importance of exploring factors that influence teachers' differentiation positively is highlighted.

Another research gap is reflected in studies such as van Tassel-Baska and Stambaugh (2005) or Hootstein (1998) who predominantly regarded factors that are beyond the control of or external to the teacher. For instance, structuring small groups, making time to tutor students, and using peer tutoring have been found to aid differentiated teaching (Hootstein, 1998). However, little is known about the influence of a teacher's inherent frame of mind on the application of differentiated schooling. A considerable amount of research suggests that although teachers are aware of their students' differing academic abilities and needs, they often do not know which practices to use and how to differentiate effectively (e.g., Dixon, Yssel, McConnell, & Hardin, 2014; Hootstein, 1998; Tomlinson, 2005). Besides teachers competence, a teachers' attitudes and beliefs with regard to differentiation can also affect the usage of those methods in the classroom setting (e.g., Dijkstra, 2015; Maier, Greenfield, & Bulotsky-Shearer, 2013; Tomlinson et al., 2003). This research makes an effort to identify teacher-related factors that influence the application of differentiating methods. Especially a teacher's competence with and beliefs and attitudes about differentiation in the classroom form the basis for a theoretical framework that specifies the independent variables this study will investigate.

Based on the identified research gaps, the need for internal factors influencing teachers' application of differentiated teaching is emphasized. First, in terms of attitudes and beliefs that affect teacher's application of differentiation activities, research theoretically indicated a teacher's mindset to be of considerable influence (e.g., Dweck, 2008; Gregory & Chapman, 2012; Tomlinson, 2000). The scientific basis for the "mindset revolution" was initiated by findings concerned with the plasticity of the brain (Boaler, 2013). Most important, the idea that ability and intelligence grow with effort and practice (i.e., functional plasticity) forms the foundation for Dweck's proposed mindsets (Ballantyne, Spilkin, Hesselink & Trauner, 2008). In her influential book Carol S. Dweck (2017) distinguishes between a fixed and a growth mindset that can be possessed by both student and teacher. Individuals who develop a growth mindset believe that intelligence can be learned and cognitive abilities improve by exercise (Dweck, 2008). A fixed mindset, on the other hand, includes the belief that intelligence is an innate trait that cannot be learned or developed (Boaler, 2013). Research indicates that students who believe that everybody's ability can grow (i.e., growth mindset) show significantly higher academic achievements (e.g., Aronson, Fried & Good, 2002; Blackwell, Trezesniewski & Dweck, 2007; Good, Aronson & Inzlicht, 2003). Similar to beliefs held by the students, teachers' mindsets also affect academic achievements of their students (Boaler, 2013). The belief that students' ability-levels are predetermined and cannot be increased by practice (i.e., fixed mindset) restrains teachers from seeking maximized achievement for each student (Redding, 2013). They rather present the subject matter and assume that students achieve in accordance to their (fixed) ability level (Stipek, Givvin, Salmon, & MacGyvers, 2001). Hence, they do not differentiate in order to meet the students' individual capacities. On the other hand, a teacher armed with a growth mindset believes that students can grow cognitively if they are provided with opportunities for challenge (Boaler, 2013). On basis of this theoretical relationship, it is expected that teachers holding growth

mindset beliefs differentiate more, while teachers armed with a fixed mindset make relatively few use of differentiation in the classroom.

A second factor that is also related to attitudes and beliefs a teacher holds about educational styles can broadly be phrased as competitive attitude. A teachers' competitive mentality is referred to as a cognitive style which Witkin (1973) defined as a "characteristic mode of functioning that we show throughout our perceptual and intellectual activities in a highly consistent and pervasive way" (p. 2). To illustrate the concept of competitive attitude more clearly, according to the PISA studies, there often is good education of a broad middle group (De Boer, Minnaert, & Kamphof, 2013). However, by concentrating on the improvement of the general education level, especially extremely high-ability students are neglected (Hootstein, 1998). Underlying to this issue is the teachers' sentiment that high-ability students have no need for difficult subject matter and will learn anyway (De Boer, Minnaert, & Kamphof, 2013; Dijkstra, 2015). Teachers holding this belief are more likely to give priority to inflexible, collective methods and instruction (Morgan, Kingston, & Sproule, 2005). This observation gives rise to assumptions concerned with the degree of competition teachers wants their students to engage in. Generally, in a competitive classroom environment, outperforming others is emphasized, whereas a non-competitive climate highlights self-improvement and effort (Ames, 1984; Morgan, Kingston, & Sproule, 2005). The latter notion already gives some indication towards a relation between non-competitive attitudes and the concept of differentiation which also stresses maximized achievement for each individual (Tomlinson, 2014). A teacher holding non-competitive attitudes stresses each student's effort to achieve as much as he or she is able to (Nicholls, 1989; Roger & Johnson, 1994). On the other hand, competitive pressure reduces the degree to which individual interests can be met, as ability and capacity are emphasized while effort is disregarded (Nicholls, 1989). This coherence is further detailed by Roger & Johnson (1994), who outline that competitive pressure prevents all students from learning as much as their capacity allows

because they focus more on succeeding in the competition than maximize their own learning. From the teacher's perspective, a competitive attitude with regard to teaching is often accompanied by the assumption that students are self-responsible for how and what they learn. Therefore, it is expected that teachers who foster a non-competitive classroom climate make more efforts to nurture and maximize individual learning (i.e., differentiation). Contrarily, it is expected that teachers who hold competitive attitudes with regard to educational practice differentiate relatively less.

A third factor, possibly influencing a teachers' application of differentiation activities is a teacher's self-efficacy in differentiated teaching. Introduced by Bandura (1977, 1986) and applied to teaching by Gibson and Dembo (1984), the concept of self-efficacy reflects the belief in one's capability to influence student learning and behaviour. The importance of this concept is indicated to some degree in most of the research concerned with differentiation in the classroom. Assuming that the application of differentiated methods is shaped by teachers' awareness about academic differences, teachers generally believe in different needs of their students and the effectiveness of addressing them individually (Hootstein, 1998). However, carrying out differentiating techniques is often accompanied by frustration in the classroom environment and confusion about which practices to use (Gamoran & Weinstein, 1998). In line with this finding, a set of studies revealed that teachers perceive the desirability of implementing a variety of instructions much higher than their feasibility (Schumm & Vaughn, 1991; Schumm, Vaughn, & Saumell, 1994; Vaughn, Reiss, Rothlein, & Hughes, 1999). Wertheim & Leyser (2002) reported that although teachers believe in the effectiveness of individualized methods, they articulate low willingness to put them in use, possibly due to a lack of perceived competence. Evidently, a teacher's sense of self-efficacy is the main factor explaining a teachers' motivation to apply certain teaching practices (Thoonen et al., 2011). A number of studies gave indication for a relationship between a teacher's self-efficacy and the application of differentiating techniques. Generally, there is strong evidence suggesting that

high-efficacy teachers spend more time and apply more techniques to cater to diverse academic needs (e.g. Emmer & Hickman, 1991; Gibson & Dembo, 1984; Jordan, Kircaali-Iftar, & Diamond, 1993). More tangible, Wertheim & Leyser (2002) found that the higher their sense of personal self-efficacy in doing so, the more teachers were willing to use several instructional approaches that meet individual academic needs. This finding is consistent with results of earlier research (e.g. Minke, Bear, Deemer & Griffen, 1996; Saklofske, Michayluk & Randhawa, 1988). Emmer & Hickman (1991) already found a positive correlation between teachers' efficacy and their preference for positive management strategies (e.g., talking with a student, modifying assignments). Hence, it is expected that teachers who perceive high self-efficacy in differentiating their lessons apply relatively more teaching techniques that differentiate.

As previously stated, this research aims to discover the influence of factors intrinsic to teachers on the degree to which they makes use of differentiated teaching. Having established a theoretical framework, hypotheses can be constructed that emanate from the following research question:

What influence do a teacher's mindset, competitive attitudes, and self-efficacy in differentiation have on the application of differentiating teaching methods?

As the literature research indicated, teachers' mindset (fixed vs. growth), attitude towards learning (competitive vs. non-competitive) and self-efficacy (low vs. high) in differentiated teaching are expected to affect the degree to which they make use of differentiating techniques. Directions of the causal relationships are anticipated and incorporated in the following hypotheses. First, it is expected that teachers holding growth mindset beliefs apply relatively more differentiating teaching techniques (*H1*). Second, teachers who hold non-competitive attitudes towards learning are expected to apply relatively more differentiating teaching techniques (*H2).* Third, it is expected that teachers perceiving

high self-efficacy in differentiation apply relatively more teaching techniques that differentiate (*H3)*.

Method

Participants

A total of 330 participants took part in the study which included the administration of a survey battery that assessed the specified factors. Participants were German elementary school teachers. Out of the 330 individuals that began to fill in the survey, 159 participants were excluded from analysis because they did not pass through the whole survey. It is worth noting that half of those respondents who terminated the survey did so at the point of 12% progress which was exactly where half of the differentiation scale was passed through. This observation will later be discussed in light of its implications. The 171 participants that were included in the final analysis were averagely 42.61 years of age (SD=10.49), 91.2% of them were female and 8.8% male. The mean age is based on a sample size of 169 as two of the participants did not indicate their age. On average, the sample was already working for 15.37 years as elementary school teacher (SD=10.08). Participants were approached by means of convenience sampling with the schools' administration offices acting as gatekeeper. The websites of educational agencies of several German federal states provided a comprehensive overview of all elementary schools and contact details in the respective states. Consequently, an approximated number of 1000 administration offices were approached via e-mail with the request to spread the survey link among members of their teaching staff.

Design

This study consisted of a survey battery that was specifically compiled for the purpose of this study. A correlational (exploratory) design was chosen in order to be able to establish statistical relationships between stated factors (i.e., mindset, competitive attitudes, and self-efficacy) and the amount of differentiation teachers apply in class. Three independent variables were expected to influence the dependent one, which is the extent to which teachers differentiate their classes. Particularly, the teacher's mindset, competitive attitude, and self-efficacy with regard to differentiation were anticipated to affect teachers' application of teaching techniques that differentiate.

Material

Four scales were included in a survey battery, namely Heacox's "Classroom Practices Inventory (2012),"Measuring Students' Mindsets" (Dweck, 2007), part III of the "Survey of Practices with Students of Varying Needs" (Tomlinson et al., 1995) and a self-compiled measure assessing the teachers' level of competitive attitudes.

Questionnaire assessing factors internal to teachers. Three subscales were included in the questionnaire each of which corresponded to one of the independent variables. The first variable follows Dweck's (2007) conception of fixed versus growth mindsets. A scale was included to determine what beliefs the teachers held about intelligence. Originally, the "Measuring Students' Mindsets" scale was developed to distinguish mindsets of students. However, due to its ability to assess which of Dweck's mindsets a respondent possesses, the measure was chosen as an appropriate instrument for the purpose of this study. The scale consisted of six items all of which could be answered within the range of a 6-point Likert scale from "Strongly Agree" to "Strongly Disagree". As to the scoring, "Strongly Disagree" corresponded to a score of 1 while "Strongly Agree" was scored with 6. Items 4 to 6 were the same questions as items 1 to 3, however phrased negatively. Therefore, the second set of

questions had to be re-coded. An instance of a statement was: “You can always greatly change how intelligent you are”. For the full scale see Appendix A. This measurement instrument was regarded as appropriate because previous research found high internal consistency (α ranging from .94-.98) and high test-retest reliability (r= .90; N= 62) (Gutshall, 2013). Based on the present sample, excellent internal consistency was found with a Cronbach’s alpha value of .92.

Second, competitive attitude was measured by means of a measure that was compiled of several items derived from the “Competitiveness Index” (Smither & Houston, 2002) and the “Competitive Orientation Measure” (Newby & Klein, 2014). Due to both of the scales measuring competitive orientation in general, a number of suitable items have been selected and modified to measure competitive attitude in educational context. For instance, the original item “I perform better when I compete against others.” was adjusted to the classroom setting by rephrasing it to “My students perform better when they compete against each other”. Particularly those items that were contentual present in both scales were adapted for the measurement included in the present study. Overall, 17 items have been assembled which also had to be answered on a 6-point Likert scale ranging from “Strongly Agree” to “Strongly Disagree”. Again, “Strongly Disagree” was scored with 1 and “Strongly Agree” with 6. Items 1 and 9 to 17 had to be re-coded as these items were phrased negatively. For the full scale refer to Appendix B. Due to this measure being self-compiled, reliability and validity had to be determined based on the present sample. Initially, the items were expected to be appropriate due to strong reliability and validity of the original scales. First, Smither & Houston (2002) found high reliability (α = .90) and strong convergent validity in the Competitiveness scale. Second, the Competitive Orientation Measure is considered an appropriate origin due to excellent reliability (α =.98) and the fact that it incorporates seven different scales measuring competitive attitudes (Newby & Klein, 2014). On basis of the present sample good internal consistency was found (α = .85). However, a factor analysis

using varimax rotation revealed two components comprised in the scale. Those items that loaded on the first factor seemed to concern improved performance through competition while the second factor included items that concern the subjects of argument, debate, and conflict. Having found two factors represents an unexpected weakness of this scale that needs to be taken into account within analysis and interpretation of the data. Consequently, from now on these factors will be regarded as two conceptually different subscales. The first subscale is termed "Competition Performance" and is comprised of items 1 to 5 and 11 to 17 of the original scale. An instance of an item included in this scale is "I want my students to try to outperform their classmates". The second subscale will be regarded to as "Competition Debate" and contains items 6 to 9. For instance, the item "I like my students to engage in debate" is part of the Competition Debate scale. Based on the present sample excellent reliability was found for Competition Performance (α =.92), while internal consistency of the Competition Debate scale was also sufficient (α =.68).

The third independent variable -teachers' self-efficacy with differentiated teaching- was measured by means of part III of the "Survey of Practices with Students of Varying Needs" (Tomlinson et al., 1995), which can be retrieved in Appendix C. The subscale measures teachers' confidence about their ability to differentiate their lessons. An example question was: "How confident do you feel about individualizing instruction to meet the needs of gifted learners?". A total of 9 items could be answered within the range of a 5-point Likert scale from "No confidence" to "Very confident". "No confidence" was scored with 1 while "Very confident" corresponded to a score of 5. This instrument was considered appropriate as previous research found sufficient alpha values of .83, .39, .77 and .94, respectively (Eysink, Hulsbeek, & Gijlers, 2017). In the present study this reliability could be replicated with an acceptable internal consistency (α =.75).

Measure of differentiation activities. The dependent variable, which is the degree to which the teacher applies differentiated teaching, was measured by means of Heacox's

"Classroom Practices Inventory" (2012). The instrument was composed of 17 items, each of which represents a distinction between a traditional classroom and a differentiated classroom. For instance, an item stated "Learning goals remain the same for all students." which is an element of traditional teaching as opposed to "Learning goals are adjusted for students based on their needs." which reflects a differentiated classroom. The respondents were asked to move a slider on a range from 0 to 100 to the point that reflected their current teaching practices the most. Indications could only be done in decimal points. For the full instrument, refer to Appendix D. The instrument contained five sections that categorized different activities that can be differentiated in class. Table 1 presents these categories and the respective items belonging to them. Previous research using the Inventory found a Cronbach's Alpha value of .83, indicating that the instrument is of sufficient reliability (Croom et al., 2011). Based on the present sample even higher reliability was found with a Cronbach's alpha value of .91 indicating excellent internal consistency.

Due to the sample being German all of the measurement instruments had to be translated from English into German. Using the back-and-forth translation method, the researcher himself (a German native speaker) translated from English into German, which in turn was translated back from German into English by a fellow student of the researcher who also is a native German. Meanings of the German-into-English translations corresponded to the greatest extent to those of the original scales. Solely the fifth item of the scale measuring differentiation yielded a slight mismatch after back-and-forth translating. Originally, the item read "I mainly use a classical teaching style". "Classical teaching style" was initially translated as "Ganzklassenunterricht" which in turn translates as "whole-class instruction". At the first sight, "classical teaching style" and "whole-class instruction" seem to be two distinct concepts. However, by taking into account that the opposite item addressed different formats of teaching such as group or individual work (as opposed to whole-class), this slight mismatch in the translation can be justified not to distort findings.

Table 1

Description of each section of the Classroom Practices Inventory and the associated items

Section 1- Curriculum
Does the approach to curriculum design emphasize differentiation? (1)
Are individualized learning goals accounted for in instruction? (2)
Does content mastery focus on critical thinking? (3)
Are the informational resources used in instruction based on individual student needs? (4)
Section 2- Instruction
Is instruction targeted toward differentiated learning needs? (5)
Are students grouped according to learning needs? (6)
Is instruction paced according to individual learning needs? (7)
Are student activities based on differentiated instruction? (8)
Is there variety in instructional strategies? (9)
Section 3- Enrichment
Do students complete different activities? (10)
Do advanced students receive differentiated instruction? (11)
Does the delivery method and format of enrichment instruction involve critical thinking?(12)
Section 4- Re-Teaching
What is the format for the re-teaching process? (13)
Do re-teaching methods incorporate critical thinking? (14)
Section 5- Assessment
What is the process for checking readiness to learn? (15)
Where are assessment procedures placed within the lesson? (16)
Is the selection of assessment tools based on differentiated learning needs? (17)

Note. Adapted from "Differentiating Instruction in High School Agricultural Education Courses: A Baseline Study" by B. Croom, J. Rayfield, K. Stair, and K. Murray, 2011, *Career and Technical Education Research, 3,* p. 177. Copyright 2011 by "Association for Career and Technical Education Research".

Procedure

The questionnaire was prepared with Qualtrics and administered online. To begin the survey with, the respondents were informed about the nature of the study and an approximated duration of 15 minutes to fill in the questionnaire. This estimate proved to be a reasonable one as it took the participants that completed the whole questionnaire on average 12.3 minutes to pass through the survey. Furthermore, information was given about confidentiality and anonymity of the data and respondents were informed that participation was fully voluntary and could be stopped at any point of time. Finally, by proceeding to the following page, the respondents consented that their data may be used in this study. The first part of the actual survey inquired some demographics as well as facts concerned with the respondent's occupation as a teacher. Specifically, it was asked for gender, age, and how many years they were already working as a teacher. Afterwards, respondents continued with the subscale measuring how differentiated their classes are, as measured by the Classroom Practices Inventory. Subsequently, the questions concerned with the respondent's mindset (fixed vs. growth) were applied, followed by the subscale measuring the amount of self-efficacy the respondents perceived about their competence in differentiated teaching. The scale measuring competitive attitudes was presented at last and followed by a debriefing, in which participants were comprehensively informed about the purpose of the study and given the opportunity to give remarks or receive information about the outcomes of the study. Substantial information, such as mentioning that there were no right or wrong answers, or how to answer the subscales was given at the beginning of each page.

In addition to the online survey, a class observation was conducted in order to learn more about practical considerations of the topic of differentiation in the classroom.

Results

Descriptives about differentiation activities

A detailed overview of the means and standard deviations of the respective differentiation activities is provided in Table 2. Rough analysis of the scale measuring the amount of differentiation teachers are applying in their classes yielded a moderate degree of differentiation that takes place in the respondents' classes. Bearing in mind that the scale ranged from 0 (traditional classroom) to 100 (differentiated classroom), a mean of 61.97 (*SD*=14.52) suggests a fair amount of total differentiation in the teachers' educational activities. The greatest degree of differentiation was reported to take place in curriculum design (*M*=75.50; *SD*=18.41) and formatting instruction (*M*=75.50; *SD*=22.83). Relatively fewer differentiation activities were indicated with regard to the teachers' assessment tools (*M*=50.41; *SD*=26.60) and the work of advanced students (*M*=51.11; *SD*=23.25).

Table 2

Overview of means and standard deviations on the differentiation activities based on the items included in Heacox's Classroom Practices Inventory (N=171).

Question	M	SD
Total differentiation	61.97	14.52
Curriculum Design	75.50	18.41
Learning Goals	68.30	23.96
Content Mastery	62.51	20.50
Informational Resources	56.67	24.42
Formatting Instruction	75.50	22.83
Student Grouping Preferences	66.08	24.70
Pacing Instruction	69.80	26.39
Managing Student Activities	69.12	21.31
Instructional Strategies	56.02	21.13
Preference Toward Student Activities	61.64	23.78
The Work of Advanced Students	51.11	23.25
Enrichment Preferences	58.42	19.77
Managing the Re-Teaching Process	53.51	21.18
Re-Teaching activities	54.09	19.09
Content Knowledge and Assessment	65.10	21.73
Where Knowledge is Assessed	59.82	24.22
Assessment Tools	50.41	26.60

Note. The items are adopted from Heacox' "Classroom Practice Inventory" (2012) and could be answered in decimals from 0 to 100.

Descriptives about mindset, competitive attitudes and self-efficacy

For an overview of means and standard deviations of the independent variables – mindset, competitive attitudes, and self-efficacy- see Table 3. A first appraisal of the independent variables provides general information about the sample's mental makeup. First, an average of 3.16 (*SD*=.87) on the mindset scale suggests no clear orientation of the sample towards either a fixed or a growth mindset. A minimum mean score of 1 and a maximum mean score of 5 on the mindset scale illustrate rather diverging opinions about the adjustability of intelligence. A similar divergence was observed with competitive attitudes in educational activities (*M*=3.19; *SD*=.58). However, due to the minimum score being 1.71 and the maximum score being 5.24, it can be stated that the overall tendency is slightly more oriented towards a competitive classroom. Bearing in mind that two factors were found within the competitiveness scale, with a mean of 4.44 (*SD*=.74) debating was much more prevalent than competition as a means to enhance performance (*M*=2.84; *SD*=.77). Finally, teachers included in the sample felt fairly efficacious in their use of teaching methods that differentiate (*M*=3.99; *SD*=.47). A minimum mean score of 2.78 on the self-efficacy scale suggests that no respondents felt completely inefficacious about their ability to differentiate their classes.

Table 3
Overview of means and standard deviations of the independent variables mindset, competitive attitudes, and self-efficacy with differentiation (N=171).

Scale	M	SD
Mindset	3.16	.87
Competitiveness	3.19	.58
Competitiveness Performance	2.84	.77
Competitiveness Debate	4.44	.74
Self-efficacy	3.99	.47

Note. Participants could answer the mindset and competitiveness scales on a 6-point Likert scale ranging from 1=Strongly disagree to 6=Strongly agree. Self-efficacy was assessed with a 5-Point Likert scale ranging from 1=no confidence to 5=very confident.

Correlations between differentiation activities and the independent variables

Correlations have been calculated between all of the variables included in this study, in order to get a first comprehension of the coherences. Competition performance and competition in general lacked any substantial correlation while self-efficacy and the different components of differentiation correlated significantly with most of the variables. For all correlations, see Table 4.

Table 4

Correlations between all differentiation activities, mindset, competitive attitudes and its subscales and self-efficacy.

	1	2	3	4	5	6	7	8	9	10	11
1. Diff total	1										
2. Diff Curriculum	.86**	1									
3. Diff Instruction	.92**	.76**	1								
4. Diff Enrichment	.85**	.63**	.72**	1							
5. Diff Re-teaching	.56**	.37**	.42**	.43**	1						
6. Diff Assessment	.82**	.63**	.69**	.65**	.38**	1					
7. Mindset	.19*	.21**	.10	.20*	.19*	.15*	1				
8. Com total	-.01	-.05	-.05	.05	.13	-.04	.17*	1			
9. Com Performance	-.11	-.15*	-.14	-.05	.10	-.12	.10	.95**	1		
10. Com Debate	.30**	.29**	.27**	.31**	.08	.24**	.21**	.24**	-.05	1	
11. Self-efficacy	.38**	.28**	.35**	.35**	.13	.39**	-.02	-.03	-.10	.27**	1

*Note. *p*<0.05. **p<0.01*

The influence of mindset, competitive attitudes and self-efficacy on differentiation

In order to explore the relation between the dependent variable (amount of differentiation in the classroom) and the independent ones (mindset, competitive attitude, self-efficacy) a simple linear regression analysis has been conducted. The most important premise for the use of a regression model – normality of the error distribution- was met by all of the variables. Exploratory analysis suggests approximate linear associations between the variables which justifies the application of a linear regression model. Consequently, three simple linear regression analyses have been conducted with differentiation as dependent variable and mindset, competitive attitude, and self-efficacy as the respective independent variables. As two factors were found within the competitiveness scale, regression analyses were also conducted with the two factors as separate, independent variables. The outcomes of the regression analysis will be outlined separately for each independent variable. For each regression analysis, statistical significance will be established on a 5% confidence level.

Mindset. The first model, which included mindset as an independent variable, explained 3.7% of total variance in the response data of the dependent variable (R^2 =.037). A positive, statistically significant relationship between the respondents' mindset and their amount of differentiation activities was found (*b*=3.21; *SE*=1.26; *t* (171) = 2.55; *p*=.012). This means that respondents who tend to have more of a growth mindset exercise relatively more differentiation in their classes.

Competitive Attitudes. None of the variance in the response data could be explained by the second model, which included competitive attitudes as an independent variable (R^2=0). Accordingly, no statistically significant relation could be established (*b*=-.31; *SE*= 1.93; *t* (171) = -.16; *p*=.875). Clearly, the present data do not suggest any relationship between a teachers' preference for competitive activities in class and the amount of differentiation that is applied. However, since the instrument contained two factors, findings differ when those factors are regarded as separate, independent variables in the model. Including competition

performance in the model explained 1.2% of variance (R^2=.012), statistical significance was, however, not found (*b*=-2.114; *SE*=1.45; *t* (171) = -1.46; *p*=.15). The previous, considerably weak findings of the competitive attitudes scale alter, when competition debate is included as independent variable. This model explained 9.1% of variance (R^2=.091) and revealed high statistical significance in a positive direction (*b*=5.90; *SE*=1.44; *t* (171) = 4.10; *p*<.001). This finding suggests that teachers who like their students to engage in debates and arguments tend to differentiate their lessons relatively more.

Self-Efficacy. By including self-efficacy as independent variable, the second model could explain 14.2% of total variance in the dependent variable (R^2=.142). High statistical significance in a positive direction was found, indicating that teachers who feel more efficacious about their ability to differentiate their lessons indeed tend to exercise more differentiation in class (*b*=11.71; *SE*=2.21; *t* (171) = 5.29; *p*<.001).

Elements of Differentiation. Heacox's Classroom Practice Inventory assesses different components of teaching all of which can be approached in a differentiated way. Specifically, five sets of questions assess to what extent teachers differentiate their curriculum, instruction, enrichment, re-teaching and assessment methods. The elements that were most differentiated by the sample were instruction (*M*= 67.30; *SD*= 17.29) and curriculum (*M*= 65.75; *SD*= 15.99). Relatively fewer differentiation was indicated for enrichment (*M*= 57.06; *SD*= 18.07) and assessment (*M*= 58.44; *SD*= 18.85), while re-teaching was least differentiated (*M*=53.80; *SD*= 17.24). In order to obtain more insightful information about the influence of the independent variables on the specific elements of differentiation, five simple linear regression analyses have been conducted for each of the three factors with the components of differentiation as dependent variables. For a detailed overview of the outcomes see Table 5. Overall, findings of the first regression analyses could be replicated by the more detailed ones. A positive, statistically significant relation was found between mindset and all of the elements except for differentiation of instruction. As already indicated

by the first, general analysis, based on the present data no significant relation could be found between a competitive attitude and any element of a differentiated classroom. Competition as performance-enhancer also did not have statistically significant influence on any of the differentiation activities. However, as already indicated by the first, general regression analysis, Competition Debate had strong predictive value on all of the elements of differentiation except for re-teaching. Again, with considerably high B-values, the strongest statistical relationships were found between self-efficacy and the respective elements of differentiation. Solely the differentiation of re-teaching activities could not be confirmed to be related to the teacher's self-efficacy.

Table 5

Results of the simple linear regression analyses with Mindset, Competitive Attitudes and Self-Efficacy as independent and the respective elements of differentiation as dependent variables. B, t and p- values are provided for each independent variable and each element.

		Curriculum	Instruction	Enrichment	Re-teaching	Assessment
Mindset	B	3.92	1.90	4.06	3.69	3.26
	t	2.84**	1.25	2.60*	2.47*	1.99*
Com general	B	-1.38	-1.42	1.41	3.73	-1.44
	t	-.65	-.62	.58	1.64	-.57
Com performance	B	-3.13	-3.09	-1.23	2.16	-2.87
	t	-1.98^	-1.80	-.68	1.26	-1.53
Com debate	B	6.26	6.22	7.53	1.88	5.98
	t	3.94***	3.59***	4.22***	1.05	3.14**
Self-efficacy	B	9.53	12.75	13.44	4.61	15.87
	T	3.78***	4.78***	4.83***	1.64	5.57***

Note. ^p=.05; *p < .05; **p<.01; *** p <.001

Discussion

The purpose of this study was to explore whether specific factors have influence on the extent to which teachers make use of differentiated teaching. A literature review yielded mindset, competitive attitudes and self-efficacy as possible influencer. An online survey was administered to a sample of German elementary school teachers in order to assess their differentiation activities and what beliefs they hold regarding the mentioned factors. On average, the teachers indicated to differentiate their classes considerably much. The sample differentiated especially by designing the curriculum and providing several means of instruction. The activities that were at least differentiated were application of several assessment tools and providing more challenging work for advanced students. A lesson was observed of a teacher who scored within the standard deviation of the present sample on the differentiation scale. This enabled a more practical view on the findings, as the observed lesson serves as an instance for a teacher scoring averagely on the scale measuring differentiation. Overall, the teacher was evaluated to make reasonable efforts to differentiate elements of the class, which gives practical meaning to theoretical findings with regard to differentiation.

In terms of the hypotheses, it was expected that a growth mindset is associated with more differentiation in class while teachers holding fixed mindset beliefs were expected to apply relatively less differentiated teaching. Second, it was expected that teachers who value competitive classes more tend to apply relatively less teaching techniques that differentiate in comparison to those teachers who do not emphasize competition as much. Third, as research already demonstrated for a lot of domains, self-efficacy was expected to have considerable influence. Teachers who feel more efficacious about differentiating their lessons were thus expected to apply relatively more differentiation activities. Statistical analysis revealed mindset and self-efficacy as significant predictors for the amount of differentiation that takes place in class while competitive attitudes in general lacked a significant influence. However,

taking into account that the competitive attitudes measure contained two factors, findings altered when these two factors were analyzed separately. The factor termed Competition Performance yielded no significant relation at all, while Competition Debate was found to be a strong predictor for differentiation in class.

Based on the present sample two of the three hypotheses could be confirmed. First, a growth mindset was indeed associated with more differentiated teaching. This finding provides a quantitative complement to Gregory and Chapman's (2012) theoretical suggestion that a differentiated classroom is characterized by the development of a growth mindset in both students and teachers. Additionally, observations of Redding (2013) could be confirmed, indicating that a fixed mindset indeed limits the degree to which teachers pursue maximized learning for each student. By means of this study a growth mindset could be linked to differentiation of curriculum, enrichment, re-teaching, and assessment, however not to instruction. A possible explanation for not having found a relation between teachers' mindset and differentiation of instruction is related to perceptions and beliefs teachers hold about the teaching practice. Brighton (2003) points out that a common belief among teachers is that "teaching is talking and listening is learning". In line with this conviction, teachers often feel as if they were not doing their job when allowing for more freedom and autonomy of students in educational instructions. The underlying assumption is thus that the teacher provides the instructions and students have to understand what they are provided with. This does not leave room for either a growth or a fixed theory of intelligence. Furthermore, differentiation of instruction has been argued to be merely a reactive than a proactive practice (Tomlinson, 2015; Tomlinson et al. 2003). Teachers who only individualize instruction when they have to react on a student not understanding the matter might not be concerned with whether or not intelligence is alterable.

In terms of the second hypothesis no relation was found between competitive attitudes and differentiated teaching. Indications towards a relation between non-competitive attitudes

and stressing individual achievement (i.e., differentiation) made by previous research (e.g., Morgan, Kingston, & Sproule, 2005; Nicholls, 1989; Roger & Johnson, 1994) could not be confirmed. A number of aspects can serve as explanation for the lack of predictive value of the variable concerned with competitive attitudes in general. Besides the most obvious one- that competitive attitudes are indeed not associated with differentiation- the competitiveness scale being self-compiled gives rise to doubts about its validity. The assumption of a lack of validity is strengthened by the fact that the scale comprised two factors instead of one single factor measuring competitive attitudes. Another possible explanation for the lack of predictive value of competitive attitudes relates to the polled sample. Previous research did not make distinctions between primary and secondary education when it comes to competitive attitudes and their relation to differentiation. Pellegrini and Long (2002) suggest that large schools stress competition more than smaller ones do. Due to secondary schools being usually larger, it might be the case that elementary schools do not emphasize competition in class as much and therefore no significant relation was found for the variable of competitive attitudes. However, this thought is highly speculative and has to be addressed by future research.

As already mentioned, findings for competitive attitudes altered when the two factors were analyzed separately. While competition as performance-enhancer lacked any relation with differentiation, teachers who emphasize arguments, debate, and conflict in class tended to differentiate all elements of teaching relatively more except of re-teaching. A class observation yielded insight into these findings, as there were no methods that were genuinely competitive, while discussions and debates indeed took place. This observation is quantitatively supported as the teacher whose lesson was observed scored much higher on Competition Debate than on Competition Performance. The missing relation between emphasizing debate in class and differentiation of re-teaching might be explained by the fact that debates mainly take place after new content is presented while the re-teaching elements

are handled rather traditionally. Possibly the re-teaching process generally does not involve engaging in debates and arguments.

As an extensive body of research already demonstrated, this study could replicate findings of a strong relationship between self-efficacy and job performance (e.g., Judge & Bono, 2001; Stajkovic & Luthans, 1998; Zimmerman, 2000). Specifically, previous research established a relation between self-efficacy and using several instructional approaches that address individual needs (e.g. Emmer & Hickman, 1991; Gibson & Dembo, 1984; Wertheim & Leyser, 2002). Results of the present study correspond to those of earlier research. With findings being most plain, teachers perceiving high self-efficacy in differentiating their classes applied relatively more differentiation in class and vice versa. This link is in line with Guskey (1988) who demonstrated that teachers who perceive high personal efficacy are more effective in the classroom and more likely to adapt new instructional practices. Having replicated Guskey's (1988) finding, this study could even expand the matter on the context of differentiation. A strong relation was found between self-efficacy and the differentiation of curriculum, enrichment, instruction, and assessment, however, not for re-teaching. A possible explanation for self-efficacy not being associated with differentiation of re-teaching arises from Bray-Clark and Bates' (2003) observation that teachers high in teaching efficacy tend to seek more improved teaching methods and materials. Perhaps, those teachers do not even re-teach that much but rather include revisions in new techniques in order to strengthen students' learning and knowledge. Based on the class observation, this seems plausible because the teacher did relate revisions directly to new content. Certainly, re-teaching took place, however, it might not be perceived that way by the teacher, as new matter is often presented simultaneously. Furthermore, it has been demonstrated that teachers who perceive high teaching efficacy are better organized and practice more effective planning (Bray-Clark & Bates, 2003). Possibly, re-teaching is not necessary for those high-efficacy teachers because their students master the content faster. In other words, those teachers might differentiate their

classes as effectively that the students understand the matter at the first time the content is presented.

The results of this study have compelling implications for teaching practice. First, due to growth mindset beliefs being linked to differentiating practices, these kinds of beliefs should be communicated to teachers in order to foster differentiated classrooms. By instilling the belief that everybody's ability can grow, teachers are more likely to address individual needs in class which enhances student's performance. Second, research already identified personal self-efficacy with regard to teaching as being important for student and teacher performance (Bandura, 1993; Pajares, 1996; Zimmerman, Bandura, & Martinez-Pons, 1992). Having demonstrated the influence of self-efficacy in differentiation on the extent to which teachers make use of it, expands the significance of self-efficacy on differentiation in the classroom. Enhancement of self-efficacy in differentiation should thus be included in teacher trainings in order to encourage teachers to differentiate their classes more which, again, benefits student's performance. Third, having demonstrated that the utilization of debate in class is strongly linked to differentiation gives rise to considerations about the importance of arguments and debates in class. Findings of the present study suggest that constructive debate is much more linked to differentiation than competitive methods purely as means to enhance student's performance. Therefore, based on these findings, teachers would be advised to make use of debate and arguments in class rather than creating a competitive climate between students.

Although this study presents plausible findings that are in line with previous research a number of limitations have to be considered when interpreting the results. First, during interpretation of the data it has to be taken into account that all of the data were self-reported. As a differentiated classroom is most likely perceived as more desirable, participants might have answered the scale measuring teachers' differentiation in favour of their own which could conceivably harm validity of findings (Gonyea, 2005; Takalkar, Waugh, & Micceri,

1993). In order to confirm findings more reliably, future research should include a more objective measure of teacher's differentiation activities. Second, as already mentioned, half of the participants that terminated the survey did so at the point of 12% progress. This was where the first page with the scale measuring differentiation ended and a second page with another set of questions concerning differentiation began. One explanation could be that the respondents simply got bored and did not want to participate any longer. Another possibility which needs to be considered is related to respondent bias. Those participants that terminated at stated point might have been the ones feeling less efficacious about differentiating their lessons. If this was the case, findings concerned with teachers' self-efficacy and differentiation in class should be embraced carefully. Third, a participant fed back an issue that relates to a controversy within the psychological discipline. While answering Dweck's "Measuring Student's Mindsets" scale the respondent experienced ambiguity about the definition of intelligence. She distinguished between intellect (i.e., intellectual capacity) and intelligence (i.e., being sharply minded) and argued that intellectual capacity is indeed malleable while intelligence is learned by experience as it includes interpersonal processes such as empathy. This notion reflects an ongoing issue within the psychological domain about how the concept of intelligence is to be defined. As participants might have had different concepts of intelligence in mind while answering the mindset scale, future research using the instrument should provide an introductory definition about the concept of intelligence.

As to the practical usefulness of findings, improvement of the teaching practice can be fostered by testing whether interventions aiming at mindset and self-efficacy are effective. A vast body of research already demonstrated the effectiveness of growth mindset interventions aimed at students (e.g., Aronson et al., 2002; Blackwell et al., 2007; Esparza, Shumow, & Schmidt, 2014; Good et al., 2003). Due to the present study having demonstrated the importance of growth mindset beliefs of teachers, interventions aimed at instilling growth mindsets in teachers are expected to be a reasonable means to improve educational

performance of students. Furthermore, since the PISA study promotes efforts for a common European educational structure (Grek, 2009) comparative studies between countries might reveal more expressive insights about the practice of differentiation and how it relates to teacher's mental makeup. Additionally, as the PISA studies also include differentiation (Dupriez, Dumay, & Vause, 2008) the Organisation for Economic Co-operation and Development (OECD) could consider assessing the factors included in this study, mindset and self-efficacy in particular.

Summarizing, this study provided convincing evidence for mindset and self-efficacy having influence on the degree to which teachers differentiate their classes. This enables teacher trainings to specifically address teachers' beliefs about their efficacy with differentiation and theories they hold about the plasticity of intelligence. Since both of these sentiments have been shown to be conducive for more differentiation in class, students' performance most probably improves in correspondence with the degree to which teachers hold self-efficacious and growth mindset beliefs. Furthermore, debates and arguments were demonstrated to be strongly linked to teachers' differentiation activities stressing the importance of these methods for students' learning. However, in line with previously stated suggestions for further research, more detailed and accurate studies are required to establish definite conclusions about how teacher's mental makeup relate to their amount of differentiation activities in class.

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Appendices

Appendix A: Measuring Students' Mindsets (Dweck, 2007)

Mentalität

Bitte lesen Sie jeden Satz und umkreisen Sie die Zahl, die angibt wie sehr Sie mit der Aussage übereinstimmen. Es gibt keine richtigen oder falschen Antworten.

1) **Die Intelligenz über die man verfügt kann man nicht wirklich verändern.**

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

2) **Ihre persönliche Intelligenz ist etwas, das Sie nicht stark verändern können.**

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

3) **Man kann neue Dinge lernen, aber man kann nicht wirklich die Basisintelligenz verändern.**

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

4) **Ganz egal, wer man ist, man kann seine Intelligenz stark verändern.**

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

5) **Man kann immer stark verändern, wie Intelligent man ist.**

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

6) **Ganz egal, über wieviel Intelligenz man verfügt, man kann Sie immer ziemlich stark verändern.**

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

Appendix B: Self-compiled competitiveness measure

Einschätzung des Konkurrenzdenkens

Bitte lesen Sie jeden Satz und umkreisen Sie die Nummer, die angibt wie sehr Sie mit der Aussage übereinstimmen. Es gibt keine richtigen oder falschen Antworten.

1. **Ich wende gerne auf Wettbewerb beruhende Methoden in meinem Unterricht an.**

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

2. **Ich finde auf Wettbewerb beruhende Situationen im Klassenraum unangenehm.**

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

3. **Ich mag es nicht wenn meine Schüler miteinander konkurrieren.**

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

4. **Ich probiere auf Wettbewerb beruhende Situationen im Unterricht zu vermeiden.**

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

5. **Konkurrenzkampf zerstört Freundschaften.**

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

6. **Ich probiere Streitgespräche im Unterricht zu vermeiden.**

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

7. **Ich habe es lieber, dass meine Schüler still bleiben, als dass sie riskieren die Gefühle von jemand anderem zu verletzen.**

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

8. **Im Allgemeinen sollte ein Schüler der Gruppe zustimmen anstatt einen Konflikt zu erzeugen.**

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

9. Ich möchte, dass meine Schüler debattieren.

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

10. Spiele, die keinen klaren Gewinner haben sind langweilig.

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

11. Ich möchte, dass meine Schüler probieren, ihre Klassenkameraden zu übertreffen.

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

12. Bei Spielen im Unterricht mag ich es, die Punkte zu zählen.

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

13. Meine Schüler erbringen bessere Leistung wenn sie miteinander konkurrieren.

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

14. Wettbewerbe motivieren meine Schüler.

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

15. Meine Schüler sollten fast jede Situation als Möglichkeit sehen, zu beweisen, dass sie besser als andere sind.

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

16. Durch Wettbewerbe können Schüler ihre Fähigkeiten verbessern.

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

17. Wettbewerb macht es mir möglich, die Fähigkeiten der Schüler einzuschätzen.

Stimme vollständig zu	1	Stimme größtenteils zu	2	Stimme eher zu	3
Lehne eher ab	4	Lehne größtenteils ab	5	Lehne vollständig ab	6

Appendix C: part III of the "Survey of Practices with Students of Varying Needs" (Tomlinson et al., 1995)

Vertrauen in Differenzierungsfähigkeiten

Bitte geben Sie Ihr Maß an Vertrauen an, indem Sie eine Zahl von 1 bis 5 hinter den Fragen umkreisen. Eine 1 steht für kein Vertrauen und eine 5 steht für viel Vertrauen.

Wieviel Vetrauen haben Sie in Ihre folgenden Fähigkeiten?	1 – kein Vetrauen 2 3 4 5 – viel Vetrauen				
• Ihren Unterricht an Lernbedürfnisse der begabten Schüler anzupassen?	1	2	3	4	5
• Ihren Untericht an Lernbedürfnisse der schwächeren Schüler anzupassen?	1	2	3	4	5
• Verschiedene Lernniveaus im Unterricht anzuwenden?	1	2	3	4	5
• Das Vorwissen der Schüler einzuschätzen?	1	2	3	4	5
• Ihren Unterricht dem Vorwissen der Schüler anzupassen?	1	2	3	4	5
• Anweisungen an Lernbedürfnisse begabter Schüler anzupassen?	1	2	3	4	5
• Anweisungen an Lernbedürfnisse schwächerer Schüler anzupassen?	1	2	3	4	5
• Begabte Schüler zu identifizieren?	1	2	3	4	5
• Schwache Schüler zu identifizieren?	1	2	3	4	5

Appendix D: Classroom Practices Inventory (Heacox, 2012),

Vorgehensweise im Unterricht

Im Folgenden soll erhoben werden, wie sie Ihren Unterricht gestalten. Bitte markieren Sie ein „X“ auf jeder Linie um anzugeben, wo Sie Ihre derzeitigen Methoden auf der Skala einschätzen. Es gibt keine richtigen oder falschen Antworten.

Traditioneller Unterricht:	*Differenzierter Unterricht:*
Dem Lehrplan zu entsprechen, ist meine erste Priorität und steuert meinen Unterricht.	Mein Unterricht basiert sowohl auf den Bedürfnissen meiner Schüler als auch auf dem Lehrplan.
Die Lernziele bleiben für alle Schüler die gleichen.	Die Lernziele werden den Bedürfnissen der Schüler angepasst.
Ich lege Wert auf das Beherrschen des Inhaltes und Fähigkeiten.	Ich lege Wert auf kritisches und kreatives Denken und die Anwendung des Gelernten.
Schüler benutzen die gleichen Informationsquellen (Bücher, Artikel, Webseiten).	Ich ordne spezielle Informationsquellen den Lernbedürfnissen und – Fähigkeiten der Schülern zu.
Ich wende hauptsächlich Ganzklassenunterricht an.	Ich wende verschiedene Unterrichtsformate an (z.B. ganze Klasse,kleine Gruppen, Partner, Individuen).
Ich tendiere dazu, heterogen zu gruppieren.	Wenn es angemessen ist, gruppiere ich Schüler je nach ihren Lernbedürfnissen.
Alle Schüler durchlaufen den Lehrplan zusammen und in gleichem Tempo.	Das Tempo des Unterrichts darf variieren, je nach den Lernbedürfnissen der Schüler.

Alle Schüler absolvieren die gleichen Aktivitäten.	Wenn es angemessen ist, gebe ich Schülern die Möglichkeit, Aktivitäten auszuwählen, die ihren Interessen entsprechen.
Ich neige dazu, jeden Tag ähnliche Unterrichtsstrategien anzuwenden.	Ich wende eine Vielzahl an Unterrichtsstrategien an (z.B. Vorträge, Manipulation, Rollenspiele, Simulationen, Lesungen).
Alle Schüler absolvieren alle Aktivitäten.	Schüler absolvieren unterschiedliche Aktivitäten, je nach ihren Bedürfnissen oder Lernvorlieben.
Alle Schüler sind an allen Unterrichtsaktivitäten beteiligt.	Ich wende Methoden an, die Arbeitsaufwand testen und, wenn es angemessen ist, Arbeit verdichten (beschleunigen, aussortieren, ersetzen).
Meine Extraaufgaben bieten mehr Inhalt oder die Möglichkeit Fähigkeiten anzuwenden.	Meine Extraaufgaben fordern kritisches und/oder kreatives Denken und die Produktion von neuen Ideen, Überlegungen und Perspektiven.
Bei Wiederholungen von Unterrichtsinhalten biete ich mehr Übung durch die Anwendung einer ähnlichen Unterrichtsmethode.	Bei Wiederholungen verwende ich eine andere Unterichtsmethode, als jene, die ich benutzt habe um den Lehrstoff das erste Mal zu unterrichten.
Meine Wiederholungsaktivitäten erfordern üblicherweise Denken auf niedrigerem Niveau (Kenntnis und Verständnis) um Grundfähigkeiten und –Inhalt zu festigen.	Meine Wiederholungsaktivitäten erfordern Denken auf höherem Niveau um Grundfähigkeiten und –Inhalt zu festigen.

Ich gehe davon aus, dass Schüler über keine oder wenige Vorkenntnisse meiner Unterrichtsinhalte verfügen.

Bevor ich eine Lektion beginne, wende ich Vorbewertungsstrategien an, um zu ermitteln wieviel die Schüler bereits wissen.

Üblicherweise beurteile ich das Wissen der Schüler am Ende einer Unterrichtsreihe.

Ich wende kontinuierlich Beurteilungen an, um das Wissen der Schüler im Verlauf einer Unterrichtsreihe zu überprüfen.

Normalerweise verwende ich die gleichen Beurteilungsmethoden, Arbeiten oder Projekte für alle Schüler.

Ich berücksichtige Lernunterschiede durch das Bereitsstellen einer Vielzahl an Möglichkeiten sein Wissen zu zeigen.