TEACHING THE DUCK, THE RABBIT, THE EAGLE AND THE SQUIRREL: TEACHERS TALK DIFFERENTIATED INSTRUCTION

BY

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The biggest mistake of the past centuries in teaching has been to treat all children as if they were variants of the same individual, and thus to feel justified in teaching them the same subjects in the same ways (Gardner as cited in Tomlinson, 1999a, p.9)

ABSTRACT

Student differences become more and more acute in today's classrooms. Our modern world is rapidly changing and the classroom societies become more and more diverse. There is an urgent need for teachers to react to these changes and particularly the classroom diversity in order to ensure learning. This thesis examines instruction methods that create a differentiated learning environment. It built on the experiences of teaching experts in the area of differentiated instruction and sought to discover effective methods to teach in a differentiated way. The methodological approach was a multiple case study lead under a constructionist approach. Four teachers who considered themselves as experts in the area of differentiated instruction volunteered to take part. They have been observed in their work environment, and their experiences and methods have been questioned in two interviews. A vivo approach has been used to transcribe the interviews and data has been analysed through analytic induction. Teachers generally agreed on differentiated instruction being a key feature of modern teaching. They admitted that they wouldn't want to teach in any other way. All four participants organised their instruction majorly around ability group teaching and differentiated according to the students' readiness to learn. They sometimes differentiated through interest but only rarely considered differentiation through learning styles and learning preferences when planning their activities. Nevertheless they used many methods aiming to reach every student's preferred sensory channel or intelligence at some point rather than differentiating through it. Overall, the researcher could observe students that seemed to be at ease and to be working according to their needs. The findings from the research identified that differentiated instruction is not a myth which only exists in literature, but that it actually can be put into practice. Various teaching methods were considered and the difficulties they implicate were being discussed. Readers can learn from the participants' teaching methods and reuse them in teaching situations. In observed classroom situations, their methods proved to be valuable and of considerable use. They can offer the readers an exciting approach to teaching and give teachers new ideas to vary their instruction. Nevertheless they cannot be generalized. There are many successful ways of teaching, in order to get to know more, further research would need to occur.

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CHAPTER 1

INTRODUCTION

1.1. PROLOGUE

There was a time, when animals went to school. Their subjects consisted out of running, climbing, flying and swimming, and everyone was obliged to take all courses. The duck was a fabulous swimmer, he even outperformed the teacher. He was an average student in flight instruction, but was a lost case in running class. Due to his poor grades in running, he not only had to be kept in after school, but was also told to drop out of

FIGURE 1: Differenzierung im Unterricht
Note: From Himmerlich (2005, p.00). Freely translated.

swimming class to practice running. Following these instructions for a while, the duck ended up as an average student in swimming as well. Average grades were acceptable though... [...]. The eagle was regarded to be a problem-student […] Even though he beat everyone in climbing class by being at the top of the tree first, he insisted on using his own method. The rabbit had initially been among the best in running, until he had to attend extra tuitions in swimming, and consequently suffered from a mental breakdown leading him to quit school. The squirrel was the best pupil in climbing until his flight instructor insisted on him starting the flying lessons from the ground and not from the tree top. He obtained muscle ache from overexertion during the initial training exercises and thereupon more and more poor grades in climbing and running. […] At the end of the year an abnormal eel, who could swim well, run a little, and was able to climb and fly, delivered the final speech as best pupil.[1]

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[1]   Freely translated from Bönsch as cited in Himmerlich (2005): "Es gab einmal eine Zeit, da hatten die Tiere eine Schule. Das Lernen bestand aus Rennen, Klettern, Fliegen und Schwimmen, und alle Tiere wurden in sämtlichen Fächern unterrichtet. Die Ente war gut im Schwimmen; besser sogar als der Lehrer. Im Fliegen durchschnittlich, war sie aber im Rennen ein besonders hoffnungsloser Fall. Da sie in diesem Fach so schlechte Noten hatte, musste sie nachsitzen und den Schwimmunterricht ausfallen lassen, um das Rennen zu üben. Das tat sie so lange, bis sie auch im Schwimmen nur noch durchschnittlich war. Durchschnittsnoten aber waren akzeptabel [...]. Der Adler wurde als Problemschüler angesehen [...] da er, obwohl er in der Kletterklasse alle anderen darin schlug, als erster den Wipfel eines Baumes zu erreichen, darauf bestand, seine eigene Methode anzuwenden. Das Kaninchen war anfänglich im Laufen an der Spitze der Klasse, aber es bekam einen Nervenzusammenbruch und musste von der Schule abgehen

1.2. RATIONALE

Where did this project have its roots? The answer is simple: in the classroom. Throughout her teaching experience, the researcher saw herself confronted by considerable student diversity. Being concerned about and committed to her work, it was "moral purpose" (Hopkins, 2006, p.17) that drove her to differentiated instruction (DI). She ached for emancipation in her classroom and realised that "fair isn't always equal" (Wormeli, 2006). "The essence of emancipation [...] is the intellectual, moral and spiritual autonomy which we recognise when we eschew paternalism and the role of authority and hold ourselves obliged to appeal to judgement" (Stenhouse as cited in Hopkins, 2006, p.18).

To pursue her goal of a fairer education, the teacher became aware that she needed to match her instruction to the individual learner. This task proved most challenging. She could not avoid over- or under-challenging some students. Convinced of the essential role of DI, she decided she needed to ameliorate her teaching strategies and characterise them by diversity, flexibility and choice (Miliband, 2004). Thereupon she chose DI as the area of her research.

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wegen des vielen Nachhilfeunterrichts im Schwimmen.

Das Eichhörnchen war Klassenbester im Klettern, aber sein Fluglehrer ließ es sein Flugstunden am Boden beginnen, anstatt vom Baumwipfel herunter. Es bekam durch Überanstrengung bei den Startübungen Muskelkater und immer mehr Dreien im Klettern und Fünfen im Rennen. [...] Am Ende des Jahres hielt ein anormaler Aal, der gut schwimmen, etwas rennen, klettern und fliegen konnte, als Schulbester die Schlußansprache."

CHAPTER 2
LITERATURE REVIEW

2.1. INTRODUCTION

Even though theories about differentiation, intelligence preferences and personalised instruction are well known to most teachers and research has noted their effectiveness, not too many educators seem to revert to such teaching strategies. Tomlinson, Brimijoin & Narvaez (2008) observed that even though teachers are familiar with the term and the general idea of DI, they don't make much use of it in their classrooms (Tomlinson et al., 2008). The researcher can only confirm this claim through her own experiences. Teachers often reflect and discuss the diverse needs of their students, but develop shallow DI approaches, so that it serves neither the students nor the profession well (Tomlinson et al., 2008). They appear to be insecure about how to fulfil the students' individual needs, even though they are aware of the classroom's diversity. Teachers state that they experience DI as one of their greatest challenges (Baumann, Hoffman, Duffey-Hester & Ro, 2000; Jordan & Stanovich, 2004; Tomlinson, 2004b). "Most general educators feel ill prepared to teach students with diverse learning needs" (Schumm & Vaughn as cited in Rock, Gregg, Ellis & Gable, 2008, p.34). Immoderate workload responsibilities, demands for large content coverage, and negative classroom behaviour make the challenge for teachers seem insurmountable, even though they often want to meet the needs of all their class members (Rock et al., 2008).

Realizing the issue, this research is designed to alert the readers to DI, awaken the possibilities for its use in the classroom and motivate teachers to use DI by offering practical and effective strategies.

2.2. WHY DO WE NEED DI?

Students are much alike. Like all humans, they have needs such as "nourishment, shelter, safety, belonging, achievement, contribution and fulfilment" (Quicho & Ulanoff, 2009, p.6). They seek for a sense of their own meanings, roles, and possibilities. They want to understand the world and find their place in it. They are craving for affirmation, affiliation, accomplishment, and autonomy and for adults who accept, value, and guide

them (Tomlinson & McTighe, 2006).

But students are very different too - just like the duck, the rabbit, the eagle and the squirrel. They vary in their nature and also in their day to day lives. Needless to say, that the students' unique lives have a prominent impact on their reaction to and their general experience of school (Tomlinson & McTighe, 2006). Students vary in their biology by gender, neurological "wiring" for learning, abilities, disabilities, and development. Some students benefit from advanced skills while others trail in their development. They have different degrees of privilege, differing in economic status, race, culture, support system, language and experience. Some students come from poverty, others from wealth, some from steady homes and some from poor family supports. Their position for learning varies with their adult models, their ability to trust, their self-concept, motivation, temperament and interpersonal skills. Some students revert to an active parental assistance in their education, some have to motivate themselves to learn and others think it's hard to do so. Finally, their general preferences disagree as their interests, learning preferences and individual preferences vary. Some students have a learning preference for learning by listening and some by application. Some students like math, some don't, and some don't care at all (Tomlinson & McTighe, 2006).

It is not hard to understand, that "one size doesn't fit all" (Wormeli, 2006, p.6). When teachers let the circumstances take course, they risk leaving some students behind. These students are at risk of failing educationally, a process that will most likely have negative consequences on their personal lives as well. "Fairness does not mean treating everyone the same; it means providing the support, help, and opportunity each individual needs in order to have an equal chance to achieve success" (Rief as cited in Rief & Heimburge, 2006, p. 11). Every human being is unique, and they all learn differently. They require responsive teaching based on their distinctions (Tobin & McInnes, 2008). It is important that teachers and students develop an understanding of this diversity. Students learn distinctly, have different learning styles, and use multiple intelligences. They need different kinds of help in order to progress successfully in class.

Literature notes the importance of DI even grows in the complex and rapidly changing world (Manning, Stanford & Reeves, 2010) and that classrooms today are

more diverse than ever (Smith & Throne, 2007). Their constant change is affected by many factors such as standard-based education, high student expectations, multiculturalism, student diverseness, new knowledge on human cognition, rapid changing in society and technology (etc.) (Gregory & Chapman, 2007). Lapkoff and Li (as cited in Rock et al., 2008) confirm increasing cultural and linguistic differences accompanied by parental expectations and community norms may be in conflict with the traditional schooling notions. Furthermore Voltz and Fore (as cited in Rock et al., 2008) indicate that the high poverty rate provokes increased probability of readiness discrepancies among the children starting school. Tomlinson (2004a) agrees that academic diversity grows among the learners. She could identify increasing populations of special needs students and ELL's, such as a rising number of students suffering under broken homes. On the other hand, she could observe more and more advanced learners wasting their time in under-challenging classrooms. Additionally federal policymakers demand even higher levels of sophistication of the broadest possible range of students as the modern world requires them to generate knowledge instead of just consuming it.

Beside this "ordinary" classroom diversity, teachers are often confronted by students with particular difficulties and special needs. The 26th Annual Report to Congress on IDEA noted that 96% of teachers have pupils with learning disorders in their classrooms (U.S. Department of Education as cited in Rock et al., 2008). Those students can have attention-deficit/hyperactivity disorder (AD/HD), learning disabilities (LD), or other disabilities, with neurobiological, medical, and/or mental health disorders; they can be gifted and talented learners, or immigrants who are English language learners (ELLs). DI becomes not only essential, but indispensable. Those students have special needs, and need help in their learning environment. Modern pedagogies have been developed to teach these students (i.e. DI) and integrate them in the normal classroom. This is sometimes referred to as the inclusive classroom (Rief & Heimburge, 2006).

These arguments highlight the diversity in classrooms, and create the need for DI. Nevertheless it is necessary to examine what the research says about the effects of differentiation in practice. There is considerable evidence to demonstrate the value of DI. In the area of math, Tieso (as cited in Rock et al., 2008) could find a rising interest, motivation and excitement about learning through DI methods, and he examined the

effects of curricular differentiation and found evidence that students who received DI performed significantly better in math then their fellow students who didn't. Baumgartner, Lipowski and Rush (as cited in Rock et al., 2008) studied differentiated approaches in reading instruction and reported positive outcomes in the students' instructional reading levels, the number of comprehension strategies used, the mastery of phonemic and decoding competences, and their attitudes towards reading. Hertzog (as cited in Rock et al., 2008) examined differentiation by using open-end activities and identified open-ended activities as beneficial for all learners. Odgers, Symons and Mitchell (as cited in Rock et al., 2008) found positive academic outcomes using DI in science. Gamoran and Weinstein (as cited in Rock et al., 2008) introduced DI in restructured schools and reported significant effects on student achievement. On the other hand, Noble (as cited in Rock et al., 2008) studied the effects DI had on teachers. He found that teachers developed an increased level of confidence in their ability to adapt instruction to students' needs. Fisher, Frey and Williams (as cited in Rock et al., 2008) and Lewis and Batts (as cited in Rock et al., 2008) did a longitudinal study on schools changing from traditional to DI and found positive results. It was recorded that the average high school student's grade level in reading improved from 5.9 to 8.2 after 4 years of DI. Moreover Lewis and Batts (as cited in Rock et al., 2008) provided evidence that after 5 years of DI the students' overall proficiency rate on state-mandated end-of-the-year tests improved from 79% to 94.8%. There is also evidence that students who experience DI develop positive learning characteristics – for example Wormeli (2006) claims that students who benefit from DI are competent, independent, creative and willing to take risks. They have a higher understanding of themselves as learners, leading to the capability to better advocate for themselves. They not only respect their classmates' differences but honour them. Students, who learn in a differentiated classroom, identify differences as strengths. They view themselves as beginners in some areas and as experts in others, accepting this variance as natural. They are well-suited for the world beyond school.

2.3. THE TEACHER'S RESPONSIBILITY

Teaching is an evolution, an autobiography, love, hope and possibility, anger and desperation, intellectual work and demographic practise and teaching shapes the future

(Hoenigsfeld & Schiering, 2004). A teacher holds an enormous responsibility for the student. The teacher is a leader in the classroom and can influence the class in many ways. Through the teaching methods, the teacher often decides, sometimes unknowingly, over success or failure. As Dr. Haim Ginott remarked in 1993, the teacher is the key element in the classroom:

> I have come to the frightening conclusion that I am the decisive element in the classroom. It is my personal approach that creates the climate. It is my daily mood that makes the weather. As a teacher, I possess tremendous power to make a child's life miserable or joyous. I can be a tool of torture or an instrument of inspiration. I can humiliate or humor, hurt or heal. In all situations it is my response that decides whether or not a crisis will be escalated or de-escalated, and a child humanized or dehumanized (as cited in Wormeli, 2006, p.9).

Caine and Caine (as cited in Gregory & Chapman, 2007) agree, that the teacher's belief in students' potential to learn and ability to achieve is vital. This can create a positive learning climate and impact the learners' state of mind. Students' feelings and attitudes will always be involved in their learning, and the teacher needs to understand that these can be and will be profoundly influenced by teacher behaviour. With this awareness, it is the teacher's decision to either continue teaching the traditional one-size-fits-all-way (Wormeli, 2006) and to hope that most of the students will achieve or to match instruction to students' needs. After all, the teacher is "the heart of differentiated instruction" (Rock et al., 2008, p. 34) and holds the primary responsibility for it (Tomlinson, 2004b). The teacher needs to value the students and not limit their progress because of their weaknesses. The teacher needs to appreciate the variety of students' learning and behaviour and commit herself/himself to instruct qualitatively (Rock et al., 2008). Each is supposed to have an "awareness, sensitivity, and understanding of academic, behavioral, and social and emotional difficulties" of the learners (Rief & Heimburge 2006, p.35), to respect the various ability levels and differences in student learning in order to create a motivating and comfortable learning environment (Rief & Heimburge 2006). Nevertheless, Tomlinson (2004b) warns, a teacher doesn't become an expert in differentiation over night! Teachers have to be aware of the necessity to dedicate themselves to continuously work on their professional maturation and evolution (Rock et al., 2008) because it is a career-long development to surmount the personal, professional and leadership acquisitions that they need to instruct in a responsive manner (Tomlinson, 2004b).

However many teachers worry that they will create more work by differentiating,

which Manning et al. (2010) admit to be initially true. They compare learning to differentiate to learning to ride a bicycle or to use a laptop. At the start, the learning process takes some extra time and some inevitable frustrations. Teachers have to leave their comfortable classroom setting behind for less predictable working approaches. They have to significantly change their ways of thinking about learners, classroom organisation, their personal roles, the curriculum and the instruction (Tomlinson, 2000). Nevertheless, once this initial period is over "teaching will be more productive and efficient, students will be more engaged and responsible, and behavioural problems will be eased" (Manning et al., 2010, p.147). Finally, the question is: do teachers have the will to move beyond their familiar teaching setting into an unknown format that will likely frustrate them and demand more effort, at least initially (Manning et al., 2010; Tomlinson, 2006).

2.4. WHAT EXACTLY IS DI?

The notion of DI is based on the movement of critical pedagogy, and was promoted by the ideas of theorists such as Freire (1970) and Giroux (1981, 1983). Critical theory is "the educational movement, guided by passion and principle, to help students develop consciousness of freedom, recognize authoritarian tendencies, and connect knowledge to power and the ability to take constructive action" (Giroux, 2010, p.B15).

Against the common belief, DI is not a new idea. History reveals that Confucius already theorised about its significance. He notified that people's abilities can differ importantly and even advised that in order to teach them effectively, it is essential to start where they are (Tomlinson, 2005). Furthermore, back in times of the one-room schoolhouse, teachers didn't have any other choice but to differentiate. Their students varied greatly in age, motivation and proficiency so that teachers had to respond to their individual needs when teaching. Even though the term *differentiation* might be new, the teaching philosophy itself is not (Strickland, 2007: Tomlinson, 2005). Unfortunately, with the one-room schoolhouses, differentiation vanished as well. Now pupils get grouped together according to their chronological age, in *homogeneous* classes and educators started teaching as one size would fit all (Tomlinson, 2005).
So what exactly is DI?

Differentiated instruction is doing what's fair for students. It's a collection of best practices strategically employed to maximize students' learning at every turn, including giving them the tools to handle anything that is undifferentiated. It requires us to do different things for different students some or a lot of the time in order for them to learn when the general classroom approach does not meet the students' needs. It is not individualized instruction, though that may happen from time to time as warranted. It's whatever works to advance the students. It's highly effective teaching (Wormeli, 2006, p. 3).

As outlined before, the philosophy of DI starts from the circumstance that many children are predetermined to fail because they have difficulties to learn with their teachers' methods. They need DI to support their individual growth (Lauria, 2010) and differentiation enables educators to reach the learners' diversity. Its supporters believe that all students have areas of strength and areas that need to be strengthened. Every pupil is seen as unique with a brain that functions in a unique way. Supporters of DI claim, that if teaching is adapted to the students' individual needs, all students can learn (Gregory & Chapman, 2007). It doesn't expect students to change for the curriculum (Huebner, 2010). DI catches students where they stand in their development, and pushes their learning as rapid and as far as possible in the context of a mixed-ability classroom (Tomlinson, 2000). While teachers boosts a high-quality curriculum for each student, they vary "support, task complexity, pacing, and avenues to learning" relative to the students' requirements (Tomlinson, 2000, p.25). While arguing for DI being a "common-sense approach", Tomlinson (2000, p.25) militates against the teaching method that aims for the middle, while hoping the students on the upper and lower extremes of the class take something out of the lesson. Instruction is fair when students obtain what they require to learn, not when they obtain the same teaching (Manning et al., 2010). The teaching-the-middle method is not only unfair, but also ineffective. In differentiated classrooms though, all students work on a high-quality curriculum, but instruction is characterised by flexibility and support for each student and each student group. Additional scaffolding or more challenging activities are provided to the demanding populations. In differentiated classrooms, there is no need to sacrifice some students and their needs for others (Tomlinson, 2006). "In other words, such classrooms would raise both the floors of expectations and the ceilings of possibility" (Tomlinson, 2006, p.32).

2.5. PERSONALISED EDUCATION

The term "personalised education" was coined by David Miliband (2004), the

British Minister of State for School Standards, in his speech in the London 2004 Conference. He defined personalised learning as an education that is organised around the needs, interests and aptitudes of individual students. Teaching is shaped by the various ways of student learning and raises the unique talents of each child. Moreover Miliband expressed his devotion to personalised instruction, feeling that it would be the current educational debate. The definition makes it clear, that personalised education and DI are based on very similar teaching ideas and are strongly associated. The researcher will use them as synonyms, just as Tomlinson does (1999b).

2.6. MYTHS ABOUT DI

Before providing further details about the nature of DI, it seems relevant to deal with the main misconceptions and myths of this teaching philosophy. Often even educators define differentiated practise in a very contrasting or even misinformed and wrong manner. "So, let's bust a few myths" (Wormeli, 2005, p.29).

A common view is that DI is the same as individualised instruction. Individualisation is *one* of many strategies of DI, and can be used when warranted, but it doesn't correspond to DI itself (Wormeli, 2005). "An individual teacher would go nuts" (p.30) if he would follow through a personal instructional program for each student (Wormeli, 2005). Another opinion is that students in differentiated classrooms would be *only* being taught via groups – but once again group-work is *one* teaching style utilised. Contrariwise the variety of grouping configurations corresponds to the conception of differentiation, including whole-class, small-group and individual work. Desired learning outcomes and student needs determine the appropriate instructional strategy (Dean, 2006; Strickland, 2007; Wormeli, 2005).

A further misconception claims that differentiated classes are less demanding (Tomlinson et al., 2008). Critics imply teachers mollycoddle their students, letting them "work only in ways that are comfortable for them or on topics of interest to them" (Strickland, 2007, p. 6). In reality though, undifferentiated classes are easier, they offer the students two opportunities: to either follow the lesson or to drop out if it is not working for them. Teachers continuously using DI on the other hand know their students better and look to engage all of them with their learning. They don't allow students to drop out. Teachers hold their students accountable and challenge them

accordingly. Wormeli (2006) explains this claim using the example of a nearsighted student – the student is unable to see the board and so the teacher provides glasses. This DI approach doesn't make the task easier, but more demanding. Without the glasses, the student has an excuse to withdraw from the learning, which cannot be done now as the scaffolds are in place for the student to engage. By meeting the student's needs, DI challenges him appropriately and enables him to thrive rather than simplifying his learning (Wormeli, 2005; Wormeli 2006). "Because we know our students so well, we know what buttons to push" (Wormeli, 2006, p.4).

A further myth about DI is that students would be ill prepared for standardised tests (Wormeli, 2005). In a differentiated classroom, pupils get taught the material in the way that suits their learning needs best, thus there is a higher chance for them to actually learn. If they learned and therefore manage the material, they will do perfectly well on standardised tests. DI maximizes students' learning, offering them the feasibilies to handle anything, differentiated or not. Thus the notion that students wouldn't be able to compete in the real world is not true. Some also imply differentiation to be unfair as students would receive different work amounts. Teachers don't distribute different workloads. As they distinguish the tasks for their class, they indeed increase the challenge for the advanced students, but try to keep the amount of work equal for everyone (Wormeli, 2005).

Another factor to consider is grading. Some don't understand that students are graded for learning even though they don't demonstrate the same knowledge at the same time as their fellow pupils. It is indeed illegitimate to insist upon student mastery on the same day of the grading period. How could all of the students be ready to show mastery at the same moment of time? It shouldn't matter when students learn something, as long as they show effort all along. After all not every toddler started walking "on the third day of the 11th month" (Wormeli, 2005, p.31), and it seems obvious that no one would expect this from young children. At this age, people still accept, that children show their mastery when they are ready to do so. A few years later, once they attend school, we evaluate with the "learn, or I will hurt you" attitude (Doda as cited in Wormeli, 2005, p.31), menacing students with poor grades if they don't achieve mastery. This is the wrong message; it would be more productive for teachers to help students to learn instead of emphasising records that detail students' deficiencies

(Wormeli, 2005).

Another myth states that there exists only one way to DI. This is a misunderstanding as DI is not a strategy, but a philosophy. It arises from numerous beliefs and strategies, which should be selected for curriculum adaptation (Wormeli, 2005). It is an integrate way of thinking about education, considering the learner as a whole, such as instruction and learning in itself (Tomlinson, 2000). "It is, in essence, growth toward professional expertise" (p.31).

2.7. GUIDING PRINCIPLES OF DI

The concept of DI lies in the modification of education relative to the students' needs with the objective to gain student success. Tomlinson (2005) indicates a specific "recipe" (p.263) for DI doesn't exist. Notwithstanding, teachers can rely on certain directions for differentiation, that can help them to acquire effective methods to instruct accordingly to the students' needs in a mixed-ability classroom. Some of the guiding principles of this teaching philosophy are listed below and are extrapolated from the works of Quicho and Ulanoff (2009), Strickland (2007), Tomlinson (1999a) and Tomlinson and Eidson (2003).

2.7.1. A Secure and Positive Classroom Climate

For high quality differentiation to function, a classroom must be a warm and welcoming place for all students. Students must feel well-off with who they are and what they need for learning. As they are supposed to share themselves with the teacher and the class, they need to believe that they will be accepted, valued and appreciated as a whole person, with their physical, emotional, and academic characteristics (Strickland, 2007). Teachers must offer them a feeling of equal importance to their classmates even if they are less able in different matters. In a classroom where students do different things at different times, it is essential that everyone feels equally valued and fairly treated. Students should embrace their responsibility in the process of personal growth. They must accept the risk of failure but need to feel supported all through the learning process, no matter if they end in success or not. A classroom should be "welcoming, respectful of differences, safe, growth-oriented, success-oriented, fair (and) collaborative" (Tomlinson as cited in Strickland, 2007, p.12). Teachers should nourish

their relationship to students, because it supplies the students with energy to learn (Tomlinson et al., 2008). A healthy and good learning environment creates a solid context for learning (Manning et al., 2010).

Joyce and Well (as cited in Ivie, 2009) however disagree saying that schools need to confront students to environments they feel uncomfortable with, because it provokes their change and growth. They believe that in order to become strong personalities, students need to feel ill at ease, a feeling that initiates substantial growth. Furthermore they say that if the environment and the student function too harmonically, the student never has to leave her/his comfort zone and is not challenged to develop. Teachers should make students leave their comfort zone, alter the ease and take on the unknown and ill-fitting (Joyce and Well as cited in Ivie, 2009). Based on the evidence previously outlined (Manning et al., 2010; Strickland, 2007; Tomlinson et al., 2008), the researcher believes that Joyce and Weil's view might be true for some individuals in specific situations (1996), but that in general people need to feel comfortable in order to perform well.

2.7.2. A High Quality Curriculum/ Focus on the Essentials

As Tomlinson and Eidson (2003) note, there cannot be effective differentiated teaching if there is no high quality curriculum. If a curriculum starts off with ambiguities, boredom or trivia, all three of them will only get worse as the tuition continues. A curriculum has to be "coherent, important, inviting, and thoughtful" (p.13). It only makes sense to differentiate if those conditions are fulfilled. A good curriculum can be described as "engaging, challenging, standards-based, scaffolded, spiralled, authentic, accurate, varied, interesting, developmentally appropriate, important, connected to earlier learning, pertinent to students' lives, (...)(incorporating) technology (...)(and promoting) inquiry and high-level thinking" (Tomlinson as cited in Strickland, 2007, p.12). Either way, before starting the concrete planning of an activity, teachers must decide about the fundamental concepts, principles, big ideas, skills, essential understandings, and questions of each content area to differentiate the instruction afterwards. They should focus on the essentials that students need to know, understand and be able to do and use it as a basis of high-quality curriculum (Erickson, 2002; Quicho & Ulanoff, 2009; Strickland, 2007; Tomlinson, 1999a, 2001). Teachers should

ensure that struggling learners concentrate on the fundamental knowledge rather than disjointed facts, while advanced learners should be lead to work on important complexities instead of repeating already known exercises (Tomlinson, 1999a). Nevertheless, it is important to remember that differentiation is supposed to extend a high quality curriculum, and not to replace it. It should be a teacher's goal to engage students in the curriculum, and help each student to gain most of it.

2.7.3. Planning Activities

DI basically defines the teacher's recognition and response to the students' varied needs. Simple classroom-situations in which the teacher rephrases a question, extends a deadline or provides extra examples in order to help individuals understand a learning matter are part of DI (Strickland 2007; Wormeli 2006). But there is more to DI then spontaneous courtesy. The reflection about education and the students, the close planning and preparation of curriculum and instruction are vitally important. To develop inclusive and personalised education, a good planning is essential (Dean, 2006). Successful differentiation needs a systematic planning of curriculum and instruction that is based on two essential goals; namely respecting each individual's needs, and maximising her/his learning (Tomlinson & Eidson, 2003).

This planning is not easy for teachers. Teachers need to know where they want to end up before they even start out, and plan how they want to get there. They have to have a high-quality curriculum and well-thought-out instruction in place before they start differentiating them. Tomlinson (1999a) admits that this is harder than it might seem (Tomlinson, 1999a). If teachers want the curriculum, instruction and assessment to be focused on the essential questions and the big ideas, they need to plan accordingly. Tomlinson and McTighe (2006) propose a "three-stage backward design process for curriculum planning" (p.27). In a first stage, teachers shall identify the desired results, look at their goals, consider the content standards and examine the curriculum expectations. Teachers have to make choices about the content they teach and clarify their priorities. In a second stage, teachers should decide on how they want to assess the students later on, what evidence for learning achievement they will accept. Finally, teachers can start planning the engaging and effective learning experiences and instruction, with the learning goals and the appropriate assessment in mind.

2.7.4. Respectful Activities

All tasks should be respectful of, and should be "appealing, inviting, thought provoking, and invigorating" (Tomlinson & Eidson, 2003, p.13) for each learner. The teacher should continuously provide learning options that fit each student's individual needs, honouring their commonalities and differences and showing a deep respect for the identity of the individual (Tomlinson, 1999a). Often teachers pay more attention to a particular student group, for example struggling students, leaving other students to cope by themselves. Supporters of DI realise that every student has needs, and the philosophy suggests all should be respected. DI doesn't have hierarchy among student groups, but an equality of their needs (Manning et al., 2010; Tomlinson, 1999a). All students are appreciated and even cherished, and they have "a voice and a choice in the pursuit of knowledge learning" (Manning et al., 2010, p.146).

2.7.5. Attending to Students Differences

As outlined already, students are different and have different learning needs. The most basic idea of differentiation is to adapt instruction to those needs. To reach this goal, most experts about differentiation agree that it is sensible to adjust education according to Tomlinson's classification into students' readiness, interest and learning profile (1999a).

A. Readiness

Readiness is "the current knowledge, understanding, and skill level a student has related to a particular sequence of learning" (Tomlinson & Eidson, 2003, p. 3). It refers to the level of complexity at which a student is ready to work, develop and gain new knowledge (Tomlinson & Eidson, 2003). Readiness is of a fragile nature, it can be influenced by various factors. Physical and emotional elements can affect students' readiness, just the same as previous experiences with the learning topic, the students' current physical and mental health status or the existence of a functioning connection between students and teacher (etc.) (Strickland, 2007). Readiness is therefore not a synonym for ability (Strickland, 2007; Tomlinson & Eidson, 2003)! If instruction is matched to readiness, appropriate challenge and academic growth of the learners is

more prominent (Tomlinson, 2004b; Tomlinson & McTighe, 2006). Furthermore interest and learning profile affect readiness to a great extend. Students are more ready to learn, when they are interested in the topic and when it is presented to them in a way that suits their learning profile (Strickland, 2007).

B. Interest

Areas of interest are what students enjoy most working on, learning/thinking/reading about, what they are most motivated to do. It includes general interests students have already, and specific interests they might find inspiring while working on a topic. When learning content is linked to interest, students can be more motivated to learn (Tomlinson & Eidson, 2003; Tomlinson 2004b). Teachers differentiate students' interest with the goal to initiate their connection of old information they already consider interesting, relevant or likeable with new knowledge, apprehension and accomplishments. This connection could make the new understandings more appealing to the students as well (Tomlinson & Eidson, 2003).

C. Learning Profile

In order to instruct in a differentiated way, teachers should assess the learning profiles of their students. Matching instruction to students' learning profile heightens efficiency of learning (Tomlinson, 2004b). Learning profile differentiation wants to help students to learn in their preferred ways and to increase the learning ways they are good at (Tomlinson & Eidson, 2003). Learning profiles are composed of learning styles, intelligence preferences, gender and culture (Tomlinson & Eidson, 2003; Quicho & Ulanoff, 2009). Strickland's (2007) elements framing a student's learning profile are comprised of: learning styles, intelligence preferences, environmental preferences, gender- or culture-related preferences and group orientation. Those distinct sources make already obvious that there exist different perceptions of *learning profile* and its nature. Nevertheless, most authors name learning styles and intelligence preferences when arguing about learning profiles. Those two elements seem as well to be the most complex ones, and will be analysed profoundly further on. Other parts of the learning profile, such as culture- or gender-related preferences seem to be traceable, and won't need a deep dissection.

C.1. Learning Styles

Several beliefs exist about learning styles. Accordingly, it is not surprising, that the Coffield et al. identified 71 different learning style models (Coffield et al. as cited in Ivie, 2009). The Dunn and Dunn Learning Style Model emerged to be one of the most popular ones and will be explored in this analysis. It says that a person's learning can be influenced by 21 (23) different variables of her/his learning style (Ivie, 2009).

So what exactly is a *learning style*? The Dunn and Dunn learning-Style model defines "learning style […] as the way each individual begins to concentrate on, process, internalize, and retain new and difficult information" (Dunn, Dunn, & Perrin as cited in Lauria, 2010 p.25). This model claims five strands of learning-styles with respectively four or more identified elements in each. The environmental components refer to the learners' orientation towards certain sound, light, temperature and seating settings. Motivation, responsibleness, perseverance and the demand of structure are part of the emotional elements. The sociological factors of the Dunn and Dunn model concentrate on the students' liking for working individually, in pairs, in groups, with or without an adult support, or preferring their variance (Lauria, 2010).

Furthermore, the model has physiological elements. They identify students' perceptual strengths (auditory, visual, tactile, kinaesthetic or tactile-kinaesthetic), time-of-day energy levels, and preferences for intake and mobility (Gregory & Chapman, 2007, Lauria, 2010). The perceptual strengths are descriptors of ways by which students approach information or process sensory stimuli. Scientific theorists believe that in order to understand those stimuli, the human brain differentiates them. Hence providing stimuli according to a student's sensory pathway can affect learning (Walling, 2006). Goyle (as cited in Walling, 2006) explains that most often learners have a perceptual strength being visual, auditory or tactile/kinaesthetic. Nevertheless preferring a sensory channel does not mean that the learner only learns through that modality, but that she/he learns best through it (Rief & Heimburge, 2006). Auditory learners learn best through listening (Gregory & Chapman, 2007) and visual learners learn best by "seeing, watching, and observing" (Rief & Heimburge, 2006, p.13). Tactile learners learn best when they can handle material, write, draw and be involved in the learning process by experiencing concrete activities whereas kinaesthetic learners learn best when they are

physically involved in learning activities which they recognize as being meaningful and relevant in their lives (Gregory & Chapman, 2007). Rief an Heimburge (2006) claim that even though most students have a preference for visual or tactile-kinaesthetic learning, teachers instruct most often through auditory means (discussions, lectures, etc.) using only a minimum of visual or tactile-kinaesthetic.

The last elements of the Dunn and Dunn learning style model refer to *psychological nature - s*tudents differ in their cognitive style preference. "The hemispheric informational processing styles of learners - global versus analytic and impulsive versus reflective" (Lauria, 2010, p.26) should be assessed. While left-hemisphere dominant learners use generally a more logical and rational thinking and tend to process in a sequential, linear way, right-hemisphere dominant learners tend to be intuitive, processing simultaneously and holistic. Again, preferring one hemisphere does not mean, that students do not use both hemispheres (Rief & Heimburge, 2006).

According to Dunn (as cited in Lauria, 2010) the awareness of and sensitivity for the students' learning styles help teachers to adapt instruction to the student. They can effectively organise class and plan instruction after their students' needs. In more than 40 years of research on the Dunn and Dunn Learning-Style Model, researchers noticed the advantages of diverse instructional strategies based on the learning-style preferences of students of all ages (Dunn as cited in Lauria, 2010). Several research studies executed in middle schools discovered that students performed essentially higher on assessments, when they benefited previously from instruction that was adjusted to their individual learning-styles (Lauria, 2010). Several American schools have reversed poor academic achievements of their students by instructing them in an approach responsive to their learning style preferences (Dunn & DeBello as cited in Lauria, 2010). Furthermore, researchers explored if there was a relationship between students' learning styles and study strategies. Dunn, Deckinger, Withers and Katzenstein (as cited in Lauria, 2010) identified that students studying according to their learning styles, achieved statistically higher achievement test scores then fellow pupils who were not provided homework prescription. Walberg (as cited in Lauria, 2010) claims as well, that study strategies need to be tailored to students' individual differences while Geiser et al. (as cited in Lauria, 2010) agreed that applying the learning-style theory to homework exercises, offers students the possibility to personalise their study methods while benefitting from their

individual learning-style strengths. Lovelace (2005) discovered in her meta-analysis of experimental research between 1980 and 2000 based on the Dunn an Dunn model that the data for the vast part proves evidence for an increased achievement and improved attitudes when the teacher taught using learning-style preferences. For example, Rosenthal and Rubin (as cited in Lovelace, 2005) identified, that students taught after traditional instructional methods expected a 30% success rate, while those exposed to learning-style responsive instruction expected an success rate of 70%.

Further studies demonstrating beneficial effects have been made (Banner & Rayner, 1997; Reid, 2005).

C.2. Critical View on Learning Styles

Even though learning styles and the Dunn and Dunn learning-Style model have many supporters, not all researchers concur with their studies. There have been many critiques of the Dunn and Dunn Model or other models and learning styles in general. Rayner (2007) collected some not so favourable terms to describe learning styles, different writers described them as snake oil, teaching elixir, a dangerous chimera, or "fool's gold peddled by slick professional trainers interested in a quick sell" (Rayner, 2007, p.24) or as a "clap-trap" that should be "binned" (Coffield, 2005, p.19)

> The field of learning styles suffers from almost fatal flaws of theoretical incoherence and conceptual confusion; for example, you can read about left-brainers versus right-brainers, pragmatists versus theorists, and globalists versus analysts. We collected thirty such pairings – the logo for the learning styles movement should be Dichotomies R Us. There is no agreed technical vocabulary and after thirty years of research, there is no consensus (Coffield, 2005, p.18).

Many researchers warn of accepting the concept of learning styles too quickly as there is only little evidence for its use. In general the criticism centres around the following ideas: some approaches place emphasis on to learner characteristics instead of learning itself, under-researched or controversial theoretical and practical applications, consistent psychometric failings, no certain reliability and validity, no clear evidence for an effect on achievement or motivation (Rayner, 2007; Hall, 2005). Despite the large amounts of research studies supporting the Dunn and Dunn learning-style model, the Coffield team (as cited in Ivie 2009) described it as questionable, because these supporting studies seem limited in several areas and there is a lack of independent research on the model. The Coffield team raised their concerns to use the model before its malfunctions have

been clarified. Furthermore, Ivie (2009) claims, that the Dunn and Dunn model is full of category mistakes, which occur when a term is used as if it belonged to a logical category without being in fact a member. The Dunns throw together behaviourist suppositions about the environmental components with constructivist premises about psychological elements and end up with an incomprehensible mixture of categories and variables (Ivie, 2009). Interesting as well is the critique of Hyman and Rosoff (as cited in Ivie, 2009) who called attention to an underlying flaw in the model, detecting that intelligence itself is not named in the Dunn's definition. All other factors that could influence learning are listed in the Dunn and Dunn model, but intelligence itself is not. The authors note that the exclusion of intelligence as a component of learning-styles just contradicts any logic, as intelligence is connected to brain and learning concepts (Hyman & Rosoff as cited in Ivie, 2009). Kaval and LeFever (2007) agree and outline that the Dunn, Griggs, Olson, Beasley and Gorman (1995) as well as Lovelace's meta-analysis (2005) (which argues in favour of the model) possess several limitations that significantly doubt the confidence of the findings so that there is no validation for the Dunn and Dunn learning-style model yet.

Despite the obvious lack of confirming research on learning styles, and therefore the criticism it attracts, the researcher believes as many teachers do, in its "face validity" (Rayner, 2007, p.26). The theories can provide learning concepts that motivate, liberate, and initiate productive dialogues between teachers and learners about the outcomes of learning-style instruments which in the end offer a pragmatic perspective of learning (Hall, 2005) that is surely positive. Furthermore it may help students to become more autonomous and self-regulated by helping them understand how they can learn and why they do so at different levels of effectiveness. Even though there are academic conflicts in the area of learning styles, researchers have good reason to continue working on the idea of learning styles, linked to the "learning of how to learn movement, curriculum process, differential pedagogy, and meta-cognition. Each of these aspects contributes to building a notion of the learner and a better-fit pedagogy" (Rayner, 2007, p.27). Not to forget, that the learning styles assessments contribute to a broader formative assessment, linked again to differential pedagogy (Northon & Lewis as cited in Rayner, 2007). This will lead to a larger awareness and deliberateness of skills, attitudes, knowledge, learning preferences and strategies (etc.) which on the other hand improves learning and

teaching. As long as the use of learning styles is not perceived as a replacement for knowledge content or a manner of reducing the student to a label or category, it seems to be essential to continue to contribute to this work in progress (Hall, 2005; Hall & Moseley, 2005; Rayner, 2007) and "descriptions of learning styles should be tools to break chains of habit and limitation" (Hall & Moseley, 2005, p.254).

C.3. Intelligence Preferences: Howard Gardner: Multiple Intelligences

Howard Gardner (1983) became well known in educational circles because of his theory of multiple intelligences described in the book *Frames of Mind*. He believed that both, psychology and neurobiology suggest the existence of several intellectual competences with their own developmental history. Thereupon he worked with children and brain damaged adults and was impressed by the following fact of human nature: "People have a wide range of capacities. A person's strength in one area of performance simply does not predict any comparable strength in other areas" (Gardner, 1999, p. 31). With his theory of multiple intelligences, Gardner challenged the widespread belief, that intelligence is a single faculty and that an individual is either smart or stupid (Gardner, 1983, 1999). He defined the human mind as a course of action of mostly separate intelligences that have only easy and inconsistent relations with one another. He declined the view of the mind performing steadily "at a certain horsepower" (Gardner, 1999, p.32) like a single machine used for all purposes, no matter what content or context (Gardner, 1999).

Gardner used biological and cultural research to classify the human intellectual competences and elaborated the following seven intelligences:

1. The logical-mathematical intelligence is defined as the ability to use numbers effectively, detect patterns, reason deductively, investigate scientifically and think logically. It associates logical thinking and reasoning.

2. Linguistic intelligence encompasses the sensitivity to spoken and written language, such as the ability to manipulate it. A person having strengths in linguistic intelligence can achieve mastery in language and express himself rhetorically or poetically, such as using language as a tool to remember information.

3. Spatial Intelligence is linked to the manipulation and creation of mental images

in order to solve problems. One is capable of perceiving the visual world accurately and to perform transformations on those perceptions. This intelligence is not limited to visual domains though, because blind children also form spatial intelligence.

4. Musical intelligence implies the excellence to appreciate, perform and compose musical pitch, tones, and rhythms. One is able to perceive, discriminate, transform and express musical forms and patterns.

5. People having a developed bodily-kinaesthetic intelligence are experts in using their entire body, or parts of it to surmount difficulties. They use their mental abilities to coordinate their bodily movements. They can express ideas and feelings with their body and have a facility in using their hands to produce or transform things.

The next two intelligences are often linked together, because they have a close association in most cultures, even though they are separated intelligences. Gardner names them as the interpersonal and the intrapersonal intelligence.

6. Interpersonal describes the ability to spot and make distinctions on the moods, intentions, and feelings of others.

7. Intrapersonal refers to self-knowledge and the capability to act adaptively on its basis. (Gardner, 1983, 1999; Saban, 2009; Smith, 2002, 2008).

These are the seven intelligences Gardner developed in 1983. He claimed that the multiple intelligences were not limited to these original seven however, and therefore he tried in later works to consider the existence of other intelligences. The additional intelligences turned out to be highly subjective and complex though, and therefore hard to define adequately. The naturalist intelligence refers to an expertise in nature-knowledge, its species, flora and fauna. It enables humans to distinguish, categorise and use certain characteristics of the environment. Due to its straightforwardness Gardner includes it to his list of the original seven intelligences. Not so the spiritual/existential intelligence and the moral intelligence, which he tries to define, considering them as possible, further intelligences. Realising their perplexity and crudity, Gardner is not disposed to add them to the list (Gardner, 1999; Smith, 2002, 2008).

Gardner's theory of multiple intelligences impacts educational practice in

classrooms in a way, that teachers understand now, what they intuitively knew: each child is unique and has strengths and weaknesses in various areas. Their thinking and learning happens in many different ways. Students have intelligence aptitudes in all areas, but they usually stand out in only two or three activity fields. Multiple intelligence theory is part of differentiated instruction, because incorporating it into classroom instruction helps to reach every student and foster their academic progress. With an awareness of the students' strengths and weaknesses, teachers discern where to start their instruction. Teachers receive a framework helping them to organise and reflect on curriculum assessment and instructional practices. Following this thought, many educators develop ways of operating in class that might be better adjusted to the individual needs of certain learners. They can identify how they motivate the students referring to their strengths and understand which other competencies need to be trained. Teachers can complement individual and group strengths and so they build a supportive and nurturing environment for all pupils (D'Amico & Gallaway, 2007; Gardner, 1983, 1999; Kornhaber, 2001; Rief & Heimburge, 2006).

While MI theory is a general manner of learning and teaching, it builds a valuable tool as well for teaching the extreme ends of the ability spectrum (Christodoulou, 2010). The author refers to gifted students and to students with learning disabilities. MI theory acknowledges that despite low verbal or mathematical skills, people can be highly intelligent in other areas, such as music, nature or social relations.

Baş and Beyhan (2010) studied the outcomes of project-based learning following the multiple intelligence theory by examining the students' accomplishments in and attitudes toward English lessons. They compared this experimental group to a control group, being instructed after the traditional methods. Their results were comparable to the results of many other researchers such as Gultekin (2005) or Meyer (1997). Researchers concluded, that students, who have been educated by multiple intelligences supported project-based learning method, were generally more successful, and their attitudes and motivation increased. Empirical data from the Schools Using Multiple Intelligences Theory (SUMIT) project shows that MI theory increases school discipline, such as parent participation and helps to contribute to the learning of each student regardless of her/his learning style (Shearer as cited in Saban, 2009). Douglas, Burton and Reese-Durham (as cited in Saban, 2009) found that year eight students scored

significantly higher on their post mathematics test, when they have been taught through a MI-based teaching method. Campbell and Campbell (as cited in Saban, 2009) discovered that students from MI schools develop basic skills, such as critical and creative thinking competences and are more satisfied because they succeed at challenging school tasks. Further supporting studies have been made by Kornhaber and her colleagues at Harvard University's Project Zero. They studied 41 US primary schools that followed MI practices for at least 3 years, and the schools reported improvements in many different areas such as student performance, student discipline and parent participation (Kornhaber, 1999; Kornhaber, Veenema & Fierros, 2003).

C.4. Critical View on the Multiple Intelligence Theory

Critics condemn the multiple intelligence theory to be "just another radical type of education reform that helps students to feel good at the expense of academic learning" (Sheenan, 1997, p.17). Furthermore they note that Gardner mixes up intelligences with talents (e.g. musical intelligence) (Sheenan, 1997). Sternberg (1991) states that Gardner's assessments "measure a nondecomposable composite of interest and motivation, initiative, abilities of various kinds, achievement, socialization, and enculturation" (p.266). Critics say that Gardner ignores the core meaning of intelligence as a term, which has always been associated with the thinking abilities that make one succeed in education (Willingham, 2004). Willingham argues that any interest or ability could then be redefined as intelligence, and offers the example of "humor intelligence" or "memory intelligence" (p.21). According to Allix (2000) Gardner's theory also misses of specific, investigate-able definitions of the psychological subcomponents for the multiple intelligences. Gardner only defined them vaguely which prevents researchers from studying their validity (Allix, 2000). Further contradictions have been noticed by Blomberg (2009). On the one hand, Gardner proposes a scientific justification for a more pluralistic pedagogy, but he denies on the other hand, the ability of science to determine itself the objectives of an instructional program. Gardner recommends an instruction in which students come "to understand the most fundamental questions of existence...familiarly, the true, the beautiful, and the good" (Gardner as cited in Blomberg, 2009, p.163). Based on this argument, it seems ironic, that he does not consider the area of values in any of his intelligences, leading to the

appraisal, that actually none of Gardner's intelligences has the capacities to develop MI theory itself. Blomberg argues, that the morality and the intelligences concur and that Gardner's expansive vision on a pluralistic view of knowledge would make more sense if his conception would acknowledge both, that normativity is crucial for the process of intelligence and that the striving for the "beautiful" and the "good", rather than only the "true" is referring in itself to an intelligent undertaking (Blomberg, 2009). Moreover Gardner's claim that all intelligences are separated and independent is criticised. Data over the past 100 years has proved that the executions of intellectual activities are correlated, which goes counter to MI theory which does not provide any explanation for this correlation (Willingham, 2004). At last, and most importantly, MI theory is criticised to have a lack of empirical support, as Waterhouse (2006a) summarises:

> To date there have been no published studies that offer evidence of the validity of the MI. In 1994 Sternberg reported finding no empirical studies. In 2000 Allix reported finding no empirical validating studies, and at that time Gardner and Connell (2000) conceded that there was "little hard evidence for MI theory" (p.292). In 2004, Sternberg and Grigorenko stated that there were no validating studies for MI, and in 2004 Gardner asserted that he would be "delighted were such evidence to accrue" (p.214), and he admitted that "MI theory has a few enthusiasts among psychometricians or others of a traditional psychological background" because they require "psychometric or experimental evidence that allows one to prove the existence of the several intelligences" (p.214) (Waterhouse, 2006a, p.208).

In summary, MI theory is commonly criticised to be deduced from Gardner's intuitions and reasoning rather than from the founding support of empirical research. Until now, no reliable assessment to identify and measure the multiple intelligences has been developed (Smith 2002, 2008).

Notwithstanding the critics, and the obvious lack of proof for Gardner's MI theory, the researcher believes multiple intelligences are important tools for DI as it has practical validity. As mentioned above, MI theory has been validated by its classroom application; many empirical studies support the theory in practise (Chen, 2004; Baş & Beyhan, 2010; Kornhaber 1999; Kornhaber et al., 2003; Saban 2009). In the final analysis, the theory offers strategies for flexible teaching, considering students' individual differences that try to reach them through various instructional ways. Similar to the theory of the learning styles, MI theory offers further strategies leading to student success because of the respect of individual differences. In that sense it doesn't matter if there are eight intelligences or a general intelligence with further abilities or talents. Gardner says that "MI is not a quick fix. But educators who thoughtfully use the theory

to support their larger educational goals, find that it is a worthy partner in creating schools of excellence" (Gardner, 1997, p.20).

C.5. Intelligence Preferences: Robert Sternberg: Triarchic Intelligence Model

Robert J. Sternberg (1985) proposes another intelligence theory: the triarchic theory of intelligence. His triarchic theory of intelligence presupposes three intelligence categories: the analytic or componential intelligence, the creative or the experiential dimension of intelligence and the practical or contextual aspect of intelligence. The analytic or componential dimension refers to the individuals' methods to process and analyse information. It is also defined as the critical portion of intelligence. Integrated into instruction, analytical tasks include "analyzing, judging, evaluating, comparing and contrasting, and critiquing" (Grigorenko, Jarvin & Sternberg, 2002, p.168). The creative or experiential dimension's task is the approach to new and unfamiliar situations and charges. It is itself divided into two categories: novelty and automatisation. Novelty shows a person's reaction to a scenario as she/he is exposed to it the first time, while automatisation controls the person's behaviour as soon as she/he repeats or even practices a task and gets an automatised sense for it. Creative tasks comprehend "creating, inventing, discovering, imagining, and supposing" (Grigorenko et al., 2002, p.168). The practical or contextual dimension relates to the individual's environment/sociocultural context. It is in charge of the individual's adaptation to and shaping of its current environment (Clarke, 1985; Koke, 2002; Sternberg, 1985a, 2003). Practical exercises involve "implementing, using, applying, and seeking relevance" (Grigorenko et al., 2002, p.168). These three competences result from the interacting of three information-processing components to which Sternberg refers to as meta-components, performance components and knowledge-acquisition components (Sternberg, 2003).

Meta-components are executive processes, they recognise and define the nature of a problem and try to solve it. They direct the mind. Performance components execute the actions the meta-components dictate. Knowledge-acquisition components are in authority of processing/learning new information. They selectively pick out relevant from irrelevant information and selectively unite different pieces of information (Sternberg, 1985a).

Sternberg used implicit and explicit theories to construct-validate the triarchic theory. A series of studies analysing people's conceptions of intelligence have been undertaken. They discovered that people have a more differentiated picture of intelligence than the one yielded by the theory of g[2] that people think it goes beyond g. This applies for US citizen's conceptions (Sternberg, Conway, Keltron & Bernstein, 1981), for experts' belief (Sternberg, 1985b), African people's idea (Berry, Poortinga, Segall & Dasen, 1992; Cole, 1996; Grigorenko et al., 2001; Mpfu, 1993) and Chinese people's image of intelligence (Yang & Sternberg, 1997). In summary Sternberg (2003) notes that practical intelligence seems to be suggested by almost each implicit theory.

Furthermore Sternberg worked on external theories which involved internal and external validation of the triarchic theory (Sternberg, 2003). The examination of the structure of differences in assessments testing people's analytical, creative, and practical abilities generally confirmed the triarchic theory, although not perfectly (Sternberg, Castejón, Prieto, Hautamäki & Grigorenko, 2001; Sternberg, 2003). Further relevant studies in the area of education are the instructional studies that have been undertaken. They showed that instruction which is matched to the students' triarchic pattern is beneficial for the students (Sternberg, Ferrari, Clinkenbeard & Grigorenko 1996, 1999) and that triarchicially taught pupils outperformed their fellow peers who were instructed primarily for memory or primarily for critical thinking (Sternberg, Torff & Grigorenko, 1998). A further study showed as well, that students following a triarchic instruction outperformed students who were taught conventionally, gaining most positive results in reading (Grigorenko et al., 2002).

C.6. Critical View on the Triarchic Intelligence Model

Gottfredson (2003a) criticises the triarchic model in many ways, by arguing that there is much more evidence in favour of the g theory than in favour of the triarchic theory, that the g theory correlates with many things, that the g has causal power, that practical intelligence is in fact job knowledge and not an intelligence, that the triarchic theory doesn't acknowledge genetic factors in intelligence, (etc.) and that the triarchic theory is just wrong. Sternberg (2003) replies to Gottfredson's comments, trying to

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[2] The concept of general intelligence (g factor) was developed by Spearman (1904). He found that in school, students grades were correlated even when for uncorrelated subjects. He concluded that intelligence is a general cognitive ability which can be measured.

defend the triarchic theory, but according to Gottfredson (2003b), Sternberg's article only rehearses his foundation-less statements that critics questioned at first place as if by doing so, he could beat off the critics. She believes that he rather shoots down the critics than replying to them, while he declares to do the opposite. In a false and spurious manner, this approach validates his theory by describing evidence in a picky and erroneous way (Gottfredson, 2003b).

Besides the critics, the research can see that Sternberg names his theory the triarchic theory of *successful* intelligence, which is finally the only aspect that really matters for this thesis. The triarchic theory respects students' differences, strengths and weaknesses, and proposes an instructional match to them. It believes in students' success and thus starts from a positive idea of learning. Triarchic theory refuses just as MI theory to judge people after a general intelligence factor whereon they then would be smart or stupid.

C.7. Gender- and Culture-Related Preferences

Gender and culture can affect how a person learns. There exist learning patterns and great variance for each gender and within every culture. Many elements can be influenced by gender and culture, such as "expressiveness versus reserve, group versus individual orientation, analytic versus creative or practical thinking, and so on" (Tomlinson, 2001, p.62). These preferences are part of everyone's general knowledge. People know, that boys differ from girls and that cultures differ from each other, therefore this claim is neither new, nor surprising. While girls have a tendency to like quiet and orderly classrooms and perform well in writing opportunities, boys like to be active and competitive, disrupting the silence. They may dislike writing and reading, but love activities like quizzes that offer the possibility to win (Dean, 2006). Furthermore, different cultures have different traditions, and put more or less importance into certain life values. Diversity pedagogy theory (DPT) points out, that there exists a "natural and inseparable connection between culture and cognition" and effective teachers "understand and acknowledge the critical role culture plays in the teaching-learning process" (Sheets, 2009, p.11). Children use cultural tools such as cultural devises like language, prior experiences and cultural knowledge, to gain new understandings. This instance should be recognised and used by teachers for instruction (Sheets, 2009). Even

though it is important, that teachers are aware of possible preferences and respect them, they should not force students into certain categories supposing that there have to be such preferences or differences. The blue-eyed blond girl could be really outgoing, a very logical-mathematical thinker, and love sports more than anything.

D. The Researcher's Position

Considering students' readiness seems to be a question of respecting the students' nature, which is essential in any social situation. Students' readiness just has to be taken into account; teaching in any other way doesn't even make sense. Accounting for students' interest will make the learning process more enjoyable for both parties. While students will like instruction more and therefore participate better, teachers can relish their fosterlings efforts. The researcher also believes that learning-styles and intelligence preferences are positive attitudes towards intelligence, and are just what is needed in school-life. Schools need teachers who believe in students' strengths and are willing to work on their weaknesses, in an overall positive climate. Learning style-, MI and triarchic theories provide frameworks for teachers to reflect on students' needs and thus improve instruction. In the end it is not important, if the theories are true in every way. Essential is that teachers learn about them, and choose the parts they believe to be most effective in their classroom to incorporate an overall respectful and successful learning for each individual.

2.7.6. Constant Assessments

Assessments play a major role in DI; they construct the basis for all decisions made in and around the classroom. DI and its instructional plan is based on an in-depth knowledge that teachers have about their students' needs, their readiness, their interests, their learning profile, their emotional frames, their difficulties, their weaknesses (etc.), which can only occur through assessing. Assessments offer teachers the possibility to get to know their students more intentionally and more explicit. Teachers need to become "assessment junkies" (Tomlinson & Eidson, 2003, p.14), everything students say or do is potential assessment data (Gregory & Chapman, 2007; Tomlinson, 1999; Tomlinson & Eidson, 2003; Tomlinson, 2005; Tomlinson & McTighe, 2006). Decisions in and about the classroom are taken on the basis of specific information the teacher

knows about the students. Wormeli (2005) makes a point about the inseparable bound between DI and assessments. He explains that when teachers put students into groups or let them choose their projects with no consideration of their personal needs, their instructional strategy can be identified as creative but not as differentiated. It turns into DI when teachers base their educational decisions on the outcomes of several assessments (Wormeli, 2005).

Assessments should take place before, during and after a learning session, so they can lead to a constant awareness of student knowledge, understanding and skill set related to the unit or lesson (Gregory & Chapman, 2007; Tomlinson, 1999; Tomlinson & Eidson, 2003; Tomlinson, 2005; Tomlinson & McTighe, 2006). In a differentiated classroom, "assessment always has more to do with helping students grow, than with cataloging their mistakes" (Tomlinson, 1999, p.11). Tomlinson and McTighe (2006) combine all these claims in three major principles of assessments. To start with, they say that authentic assessment is based on multiple sources of evidence to avoid measurement errors. Even the best test should not be considered as the only measure for any judgment (Kean as cited in Tomlinson & McTighe, 2006). There exist many different forms of assessment, most of them are formal assessments, such as essays, PowerPoint shows, oral reports, demonstrations, portfolios, reflective journals, student self- assessment, exhibitions, multimedia formats, peer reviews, etc. They can be informal too though, such as student observations or question probing (Allison & Rehm, 2007; McTighe & Wiggins as cited in Tomlinson & McTighe, 2006). Informal assessments are used to regularly update on the students' progress toward their goals. They are used to guide teachers in making curriculum-based decisions on modifying lessons, instructing concepts again, and reorganising topic education (Manning et al., 2010). Validity and reliability of assessment is achieved when several types of assessment collect the evidence of achievement. Various assessment methods are needed to evaluate the progress of diverse students effectively and accurately (Allison & Rehm, 2007).

As a second principle, the authors suggest the importance to match the means of measurement with the goals of the activity. As mentioned in the section of the planning of activities (see 2.7.3. Planning Activities), assessment evidence cannot be planned without considering the desired results. The authors inspire themselves by Marzano's

division into declarative and procedural knowledge, such as dispositions. Declarative knowledge can be defined as what students should know and understand, procedural knowledge refers to the capacity of doing something and dispositions stand for the attitudes or mind habits students should present. These categories have to be considered as they impact instruction and assessment directly and they decide on how teachers instruct and assess. For example, if students should get assessed in their declarative knowledge of multiplication in mathematics, they shouldn't be restricted by low language skills to answer mathematical questions. Carrier (2005) outlines the importance of multiple and alternative modes of assessment as there are no requirements for high levels of language proficiency.

As a third and last principle, Tomlinson and McTighe (2006) say that teachers should be clear about the purpose of the assessment. Diagnostic or pre-assessments precede instruction and inform about the prior knowledge, skill level, possible misconceptions, interests, learning style and/or intelligence preferences. Interest, learning style or intelligence preference inventories offer the opportunity to purposefully match instruction to the students' preferred interests, styles or intelligences (Gardner, 1983; Sternberg, 1985; Wormeli, 2006). Upon their results, teachers plan their instruction. Teachers should do pre-assessments before every major unit. Pre-assessments are not graded, so students are generally responding honestly (King-Shaver, 2008).

Formative assessments are executed during instruction. Means of formative assessments are skills inventories, class discussions, homework assignments, questionnaires based on instructional topic, questions as well as formal evaluation through teacher-made tests and standardised assessments (Manning et al., 2010; Quicho & Ulanoff, 2009). Formative assessments allow teachers to examine their students' stands at any given time and to use the gained information "to accelerate learning for some students and re-teach content to others" (Quicho & Ulanoff, 2009, p. 6). They are ongoing and help teachers to identify which students need some extra boosting and which some further challenges. They guide teaching and learning all through the instructional process. There should be a predominant use of assessments that are diagnostic and formative, because they offer quality feedback, motivate students, and improve learning (Alton-Lee, 2003).

At the end of a specific period of time, assessments become summative or evaluative, as students need to be graded with either symbolic numbers or letters or grading reports that explain the learners' achievements. The key objective of grading is a high-quality feedback provision to the parents and the students. Both populations should truly understand the information and use it adequately. Parents are supposed to support their children's learning process and enforce their success (Tomlinson, 2005). Several patterns shall be considered when grading: grades and reports need a clear basis of specific learning goals and performance standards and grading evidence should be valid and reliable. Moreover grading should build upon established criteria, which offers each student to have high grades judged against specific standards, instead of comparing student achievement in a competitive way inside a classroom towards arbitrary norms. Teachers should avoid grading on a curve. Grading and assessment are not synonyms, and not every assessment data should be included in grades! Grading happens as an end-point judgement about students' accomplishment, while assessments often gather information to help making instructional decisions. Diagnostic and formative assessments should not be included into grades (Tomlinson & McTighe, 2006; Wormeli, 2006)! "Not everything that can be counted counts and not everything that counts can be counted" (Einstein as cited in Wormeli, 2006, p.107) Teachers should avoid penalising students' who attempt multiple times to reach mastery. Grades should not be based on averages, because averages can mislead, but they should be grounded on various evidence sources, rather than calculated in an exclusive quantitative way (O'Connor as cited in Tomlinson & McTighe, 2006). Finally grades should focus on achievement and success, while other factors such as class participation, effort, progress etc. should be reported separately. Experts in grading propose a reporting system that supports standards and differentiation as the most effective and logic manner of grading. They deliver a more accurate picture of what students know, understand and are able to do which supports future learning and encourages growth (Tomlinson & McTighe, 2006; Wormeli, 2006).

2.7.7. Modification of Content, Process, Product, Affect and Learning Environment

So how do we differentiate? Some key elements need to be differentiated to meet the requirements of every student, by thoughtfully using the gathered assessment data:

instructional content, instructional processes, student products, the learning environment (Tomlinson, 1999; Quicho & Ulanoff, 2009; Strickland, 2007) and affect (Tomlinson & Eidson, 2003). Strickland considers the emotional endorsement and the learning environment to be the same. Gregory and Chapman (2007) claim, that in order to succeed, educators should differentiate content, assessment tools, performance tasks and instructional strategies for teaching and learning. These academics seem to give different names to the same elements though, because *assessment tools* and *performance tasks* can be classified under Tomlinson's *product*, while the *instructional strategies* are a synonym for *process*. The researcher therefore prefers Tomlinson's division of content, process, product and learning environment (including emotional and spatial effects). These are discussed below.

Another model of differentiation has been developed by DeSchenes, Ebeling and Sprague (as cited in Browning Wright, 2005). They consider nine types of curriculum adaptations to better meet the students' needs. These can be described in four major categories which are *instructional strategies*, *instructional materials*, *curricular content* and *assessment practices* (Bashinski, 2002). These categories are again similar to Tomlinson's division. Nevertheless the nine specific adaptations will be taken account in their relative categories of content, process, product and learning environment (including emotional and spatial effects). These concepts should be modified adjusted to the students' readiness, interest and learning profile.

A. *Content*

Content is the learning matter, it is "what students should know, understand and be able to do as a result of a segment of study" (Tomlinson & Eidson, 2003, p. 4). Content is what teachers teach, and when teaching has been effective, content is what students learn. It develops from different resources such as national state and local guidance, but is further defined by curriculum guides and textbooks. Finally teachers determine content using their knowledge of the subject and of their students. Content can be differentiated in consideration of readiness, interest and learning profile. By differentiating content according to the pupils' readiness, the material matches their capacity to do and understand it. The involvement of interest differentiation makes teachers choose curriculum ideas and materials that correspond to the students' interests.

Learning profile differentiation of content ascertains that students can achieve the material through their preferred learning ways (Tomlinson, 2000).

Teachers should first specify "what students should know, understand, and be able to do in a particular subject as a result of instruction presented over a day, a lesson, a unit, and a year" (Tomlinson & Eidson, 2003, p. 4). They can differentiate what they teach, by assigning for example some students 1st year spelling words, and other 4rth year spelling words. On the other hand, they have to think about and can differentiate how students access the specific content. As another example, the teacher can encourage advanced students to read a novel rapidly and independently while a struggling student can read it with peers and get additional time. The learning matter and its resources are selected strategically, according to readiness, interest and learning profile. Teachers can use "different genres, levelling materials, [...] a variety of instructional materials, (provide) [...] choice and (use) [...] selective abandonment" (Gregory & Chapman, 2007, p.3). Some ways of content access would be: teacher talk, textbooks, supplementary materials, technology, demonstrations, field trips, audiotape recordings, (etc.) (Tomlinson, 2001: Tomlinson & Eidson, 2003; Strickland, 2007). DeSchenes, Ebeling and Sprague (as cited in Browning Wright, 2005) propose curriculum adaptation by modifying the substitute curriculum and the quantity of content. By adjusting the substitute curriculum, a teacher offers the students alternative instruction and materials relative to their personal goals. With the adaptation of quantity the teacher decides of the number items a student is anticipated to learn. DeSchenes et al. (as cited in Browning Wright, 2005) furthermore suggested distinguishing the students' learning goals. In respect of the students' differences, teachers should vary their goal expectations. Outcome differentiation is categorised under product, but as the expected outcome or goal of an activity influences content, it seems relevant to outline this adaptation type at this point as well.

B. Process

Process is a synonym for activity. The difference between content and process may sometimes be blurred. Process is defined as the moment when students start to make personal sense out of the information, ideas and skills they have received (Tomlinson, 2001). As students engage to a problem, they firstly "have to make sense of

it before it becomes 'theirs' (Tomlinson, 2001, p.79).

Good differentiated activities have to be good activities in general (Tomlinson, 2001). Good activities use essential skills and information in order to help students understand the essential idea or answer the essential question. When teachers differentiate good activities, they can vary the degrees of sophistication, the time span or/and the scaffolds. They can be differentiated on the basis of readiness with a complexity match to the current skill and understanding level. Process differentiation can also be effected according to learners' interest, allowing students to choose about facets of the topic, or/and according to learning profile, providing students different ways of sense-making, so they can do so in their preferred learning way (Tomlinson, 2001). Teachers then develop worthwhile activities which challenge and advance their students while snagging their interests and respecting their learning preferences as well (Tomlinson & Eidson, 2003). With the variation of instructional strategies and activities, the number of students learning content and developing the necessary skills rises (Gregory & Chapman, 2007). DeSchenes et al. (as cited in Browning-Wright, 2005) suggest the following curriculum adaptations in relation to the learning process: quantity, time, level of support, input, difficulty and participation. Differentiating quantity does not only refer to the number of curricular items students are supposed to learn, but also to the number of activities they should complete to master a learning matter. The time that is offered to students to complete learning, a task or an assessment can be adapted. Input differentiation refers to the various instructional ways a learning matter can be presented to students, using for example visual aids, or hands-on activities. Teachers can also vary the difficulty levels of the learning activities and finally adapt the extent of active involvement of the students in activities accordingly to their needs.

C. Product

Product is the means by which students demonstrate what they know, understand and are able to do. On the basis of a product, students show that they have learned content. Again products can be differentiated according to the students' readiness, interest and learning profile. Same as activities, effective products should challenge and advance students. A good product "must cause students to think about, apply, and even

expand on all key understandings and skills of the learning span it represents" (Tomlinson, 2001, p.85). Products can take many forms; their flexibility makes them powerful, as they are sensitive to students' variances. Traditional tests are one form of product, but there exist many more opportunities (writing an essay, designing an experiment, and creating an exhibition, and so on) by which students can prove their knowledge. Even traditional tests can be varied in means of students' differences (Tomlinson, 2001; Tomlinson & Eidson, 2003; Strickland 2007; Gregory & Chapman, 2007). DeSchenes et al. (as cited in Browning-Wright, 2005) call product differentiation output adaptation of the curriculum, but refer to an equal instructional philosophy. Students can present their knowledge in various ways, adapted to their personal needs. As mentioned in the category of content already, DeSchenes et al. (as cited in Browning Wright, 2005) suggest as well the adaption of learning goals.

D. Learning Environment and Affect

A high comfort level raises the effectiveness of teaching. A classroom environment that offers its students security is more successful. Teachers should not give their students the feeling of a minor importance or worthiness than their fellow students who are more successful in school (Strickland, 2007). For their studies to be efficient, students need to believe in themselves and in the learning matter. Effective teachers create a climate for learning which makes students feel positive about their experiences in school. The trust and belief teachers offer their students are essential, they help creating a learning climate and affect the learners' state of mind. Feelings and attitudes will always be involved and highly influence student learning (Gregory & Chapman, 2007). A learning climate in a differentiated classroom is "safe, nurturing, encourages risk taking, multisensory, stimulating, complex, challenging, collaborative, team and class building and norms" (Gregory & Chapman, 2007, p. 6).

Beside the emotional deal of learning environment, a classroom should offer practical assets for differentiated intents and purposes. It should equip its students with the material and supplies they need to pursue their work. Furthermore flexibility in space, time and materials increases the teaching possibilities (Dean, 2006; Tomlinson & Eidson, 2003).Tomlinson (2005) summarises: "Attending to learning environment and student affect is not a matter of social work, but a pathway to support achievement"

(p.263).

2.7.8. Flexible Grouping

Flexible grouping offers pupils the opportunity to try various working ways, to experience themselves from different perspectives and avoids that they feel locked into certain classroom roles. On the contrary, they get to know new roles, contexts and situations with the chance to discover new interests, working ways and ways to look at their strengths and weaknesses (Strickland, 2007). In a differentiated classroom, grouping forms are constituted for different raisons and can change often. Before teachers start with a unit, they need to think which grouping will be most advantageous for the students' needs and the short-term goals of the unit. Teachers can choose various groupings initiating students to work as a whole class, in small groups, in partnerships or individually. These groupings are most often based on assessed readiness levels, interests or learning profiles, and then as mentioned before, assessments guide the teachers' instructional decisions. Students will sometimes work with peers that are like them and sometimes with students who are unlike them in these categories. Occasionally students will be able to pick with whom or which grouping they want to work, other times the teacher decides, and other times it can even be random (Levy, 2008; Strickland, 2007; Tomlinson & Eidson, 2003; Wormeli, 2006). "Students know, that they will be working with many different classmates during the year, just as they know that sometimes they will be working alone or as a whole class" (King-Shaver, 2008, p.7).

2.7.9. Teach-up

In order to maximise learning, students need to be appropriately challenged. Tomlinson proposes tasks that are a chunk too difficult for the learners: this pushes them beyond their comfort zone. Tomlinson calls them moderate challenges, in opposition to tasks that are far too difficult and tasks that are too easy. The second types threaten the learners, who get anxious and distressed, and start feeling dumb, but simple challenges suppress the learners' thinking and make them feel sleepy and bored. Appropriate challenges on the other hand need hard work and seem to be unachievable at the start, but with the right instruction, engagement and support-system, students are able to

accomplish them. If students achieve a goal they thought was beyond them at the start, they receive a strong sense of self-efficacy (Strickland, 2007; Tomlinson, 1999; Tomlinson 2001; Tomlinson & Eidson, 2003; Vygotsky, 1978). "The best tasks are those that students find a little too difficult to complete comfortably. Good instruction stretches learners" (Tomlinson & Eidson, 2003, p.14). Moreover Tomlinson and Eidson (2003) claim, that when teachers are in doubt, they should always teach up.

2.8. STRATEGIES OF DI

There are numerous ways to differentiate instruction. Rief and Heimburge (2006) listed the following examples:

  – Materials, tasks, and learning options at varied levels or difficulty
  – Multiple and flexible groupings of students
  – Multi-sensory instruction
  – Lessons, assessments, and projects that take into account students' varied learning styles and preferences, interests, talents, and multiple intelligences
  – Varying degrees of supports and scaffolds
  – Choices where, how, and with whom students may work
  – Choices about topics of study, ways of learning, and modes of expression
  – Assignments, projects, and students' products that draw on students' individual strengths and interests
  – Adaptations, modifications, and multiple approaches to instruction
  – A variety of assessments (for example, portfolios, written and oral exams, learning logs, and demonstrations)
  – Tiered assignments, which vary the level of complexity or challenge, the process or product (pp. 4-5).

Scaffolded instruction is a critical part of DI. Wood, Bruner, and Ross (as cited in Quicho & Ulanoff, 2009) define scaffolding as "a process that enables a child or novice to solve a problem, carry out a task, or achieve a goal, which would be beyond his unassisted efforts" (p.11). Quicho and Ulanoff (2009) refer to scaffolding as "temporary supports provided to students" (p.11). The idea of scaffolded instruction goes back to Vygotsky's zone of proximal development (ZPD). Vygotsky (1978) defined the ZPD as "the distance between the actual developmental level as determined by independent problem-solving and the level of potential development as determined through problem-solving under adult guidance, or in collaboration with more capable peers" (p. 86). The teacher or other experts, such as more capable peers, can provide the students with different supports (scaffolds) that help them through the task. In addition, teachers need to know when and how scaffold items or methods should be removed, in order to foster the students' independent learning (Quicho & Ulanoff, 2009). Specific strategies of DI

will be discussed in more detail later in relation to the study.

2.9. EPISTEMOLOGICAL PERSPECTIVE

DI is based on a diverse education, where teachers act as social mediators and students construct their knowledge in varied activities. DI refers to Vygotsky's (McInerney & McInerney, 2010) theory of social constructivism:

> What an individual comes to know and believe is largely based on the social and cultural processes in which he or she is raised. As learners interact with others in their social environment, they not only acquire new forms of knowledge and skills but also acquire the ideas, language, values and dispositions of the social group, making their experience a 'cultural learning experience' (Vasquez as cited in McInerney & McInerney, 2010, p.53).

Constructivists such as Bruner (1960), Dewey (1916) and Piaget (1971), explain that when learners encounter something new, they have to reconcile it with their previous ideas and experiences. Therefore they may have to change their previous beliefs or discard the new irrelevant. They "create or construct their own knowledge and understanding by building on previous learning" (Smith & Throne, 2007, p.6). Learners are active creators of their own knowledge. Constructivism is student-centred and its approach to learning and teaching claims the use of different teaching practices, which is the philosophy of DI.

Constructivism and DI assign central importance to the role of the teacher. Vygotsky defined the teacher as a social mediator who guides the students and mediates learning by organising instruction in a social way. Students shall develop "an increasing mastery of the language of learning and instruction" and gain awareness and control of their own knowledge and learning (Moll as cited in McInerney & McInerney, 2010, p.55). Teachers shall develop learning tasks reflecting on cognitive processes involved and thereupon determine content and instructional procedures. They want "to engage psychological processes and knowledge structures appropriate for the students to achieve the desired learning outcomes" (McInerney & McInerney, 2010, p.137). They give up their traditional role of "sage on the stage" (the omnipotent keeper of knowledge) to become the "guide on the side" (the facilitator of experiences and opportunities for children to learn)" (Smith & Throne, 2007, p.6). As constructivist theorists explain (McInerney & McInerney, 2010), meaningful learning happens when students discover knowledge themselves, relate old and new knowledge, apply knowledge directly and communicate it to others, and when they find ongoing

motivation for learning. DI tries to put all these factors in execution.

2.10. LITERATURE REVIEW RESUME

FIGURE 2 provides an overview of the literature review of DI.
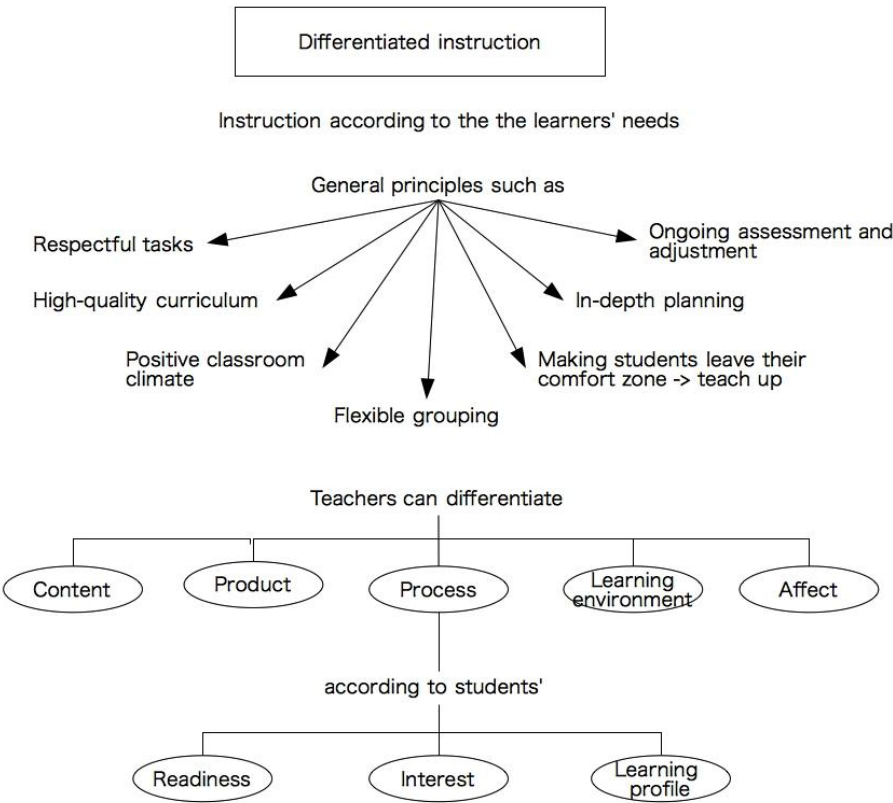
FIGURE 2: DI Literature Review Resume

2.11. LITERATURE REVIEW CONCLUSION

In summary, DI is defined as good teaching that intents to maximize student growth, motivation, and efficiency of learning by considering as often as possible their differences in readiness, interest, and learning profile (Strickland, 2007).

2.12. FORMER STUDIES IN THIS AREA

Carolin and Guinn (2007) such as Bailey and Hayes William-Black (2008) conducted similar studies to this current study. Carolin and Guinn (2007) observed five master teachers instructing in their natural classroom settings, which include students with special needs. During more than 35 hours, the researchers observed and interviewed these teachers, aiming to learn about their attitudes toward DI. Their focus lay on these teachers' general beliefs, their routine patterns and their explicit strategies. They could see that the five teachers' strategies built upon students' personal needs. They found four consensual features in their instruction: offering individualised scaffolding, referring to flexible and multiple ways to reach a learning goal, mastering the subject field and engendering a secure and positive classroom (Carolin & Guinn, 2007).

Bailey and Hayes William-Black (2008) sought to find out, how expert teachers in DI differentiate their lesson plans. They hereby concentrated on Tomlinson's division into content, process and product. Through the use of a survey, the researchers were able to identify three teachers as experts, as they offered them a clear and accurate definition of the teaching philosophy. The researchers observed the teachers in their natural setting, acting as nonparticipants and interviewed them additionally. They collected qualitative results such as work samples, lesson plans and other educational materials. The researchers found that all three teachers used unique activities to differentiate instruction. Nevertheless, they all used at least one method outlined by Tomlinson and various tasks were adapted to students' learning-styles. Moreover two of three teachers differentiated content, all three used various methods during the learning process and none differentiated product. Gardner's multiple intelligence theory was not directly used by any of the teachers even though they offered students multiple ways to reach national standards (Bailey & Hayes William-Black, 2008)

The authors of both studies expressed their interest in looking at experts' work in

order to learn effective differentiation practices. Bailey and Hayes William-Black (2008) pointed out that there is a need for further research in this area, to examine how teachers practically use DI.

2.13. BACKGROUND INFORMATION ABOUT THE NEW ZEALAND EDUCATION SYSTEM

In a first step, it is necessary to illuminate the New Zealand educational system. The New Zealand Education system is innovative and forward-looking; it combines established conventional fundamentals of education with the requirements of a modern society of the 21st century (New Zealand Ministry of Education, 2008). New Zealand's educational goals are to teach students how to "problem-solve, synthesise information, work with others, create and innovate" (New Zealand Ministry of Education, 2008, p.3). Education in New Zealand concentrates on students' life-long learning needs, and encourages critical thinking by using various learning tools, experiences and media. It orientates itself on research-evidenced best practise (New Zealand Ministry of Education, 2008). Especially since the positive results the New Zealand students achieved in the OECD's Programme for International Student Assessment (PISA) studies, the educational system has drawn international attention and interest.

School in New Zealand is compulsory between 6 and 16 years. Many students start education at the age of 5 though, or even go to early childhood education centres when they are younger than 5. The educational system consists of 13 Year levels. School education and the majority of early childhood education are free; they are owned by the public and funded by the government. Schools follow the national curriculum, but remain self-managing and are governed by trusted employees. Primary schools (Years 1-8) focus on a solid foundation in literacy and numeracy and secondary schools (Years 9-13) centre their instruction on subject-based learning. There is a compulsory curriculum for Years 1 to 10. It portrays the "key competencies and learning outcomes people need in order to live, learn, work and contribute as active members of their communities" (New Zealand Ministry of Education, 2008, p.13) instead of dictating what has to be taught by teachers and learned by students (see FIGURE 3).

The New Zealand curriculum allows teachers to flexibly use their expert knowledge and even summons them to "personalise learning to the needs it their

The New Zealand Curriculum

Directions for Learning

Guidance

Vision
Young people who will be confident, connected, actively involved, lifelong learners.

Purpose and Scope

Values
Excellence;
Innovation, inquiry, and curiosity;
Diversity;
Equity;
Community and participation;
Ecological sustainability;
Integrity;
Respect.

Key Competencies
Thinking;
Using language, symbols, and texts;
Managing self;
Relating to others;
Participating and contributing.

Learning Areas
English;
The arts;
Health and physical education;
Learning languages;
Mathematics and statistics;
Science;
Social sciences;
Technology.

Official languages

Effective Pedagogy

Achievement Objectives

Principles
High expectations, Treaty of Waitangi, Cultural diversity, Inclusion, Learning to learn, Community engagement, Coherence, Future focus

The School Curriculum: Design and Review

The School Curriculum

FIGURE 3: The New Zealand Curriculum
 Note: From New Zealand Ministry of Education (2008, p.12)

students and communities" (New Zealand Ministry of Education, 2008, p.15). The Ministry supplies schools and teachers with various exemplifications of teaching and assessment tools related to the curriculum and the benchmarking data. Teachers can use these with flexibility to develop student learning and to report their accomplishments. The education system puts great focus on formative assessments, motivating teachers to

modify their instruction on the basis of the resulting information. Adapting instruction to meet students' needs is defined as a fundamental principle of New Zealand schools.

2.14. RESEARCH QUESTIONS

The researcher believes that DI sounds promising, but it is complex to use and should be considered as a long-term change process. This process can be set up by considering the research as well as the work of experienced teachers who already differentiate their instruction effectively (Tomlinson, 1999, 2000). Huebner (2010) suggests that it "is best to begin by seeking out wisdom of other educators who have experience with DI, ground your own practice on the theory, and learn in a way that is meaningful to you" (p.81). The researcher agrees and maintains that there are teachers who differentiate very successfully. She believes in the gain of looking at such teachers' work. A closer look at what they do and how they do it may help others to address diversity with more success. With this in mind, the researcher has a particular interest in conducting this study in the New Zealand educational system that has been internationally praised after their positive results in the OECD's PISA studies. She wants to see what New Zealand teachers do differently and what they do particularly well. Most importantly to this study, the researcher wants to analyse how New Zealand teachers handle diversity in their classrooms. This led to the central research question: What do NZ teachers think about DI and how do they use it? Auxiliary questions can help to answer this basic query: How do teachers differentiate content, process and/or product? What scaffolds do they use in DI? What facilitates DI? What are the barriers?

CHAPTER 3
METHODOLOGY

3.1. INTRODUCTION

The methodological approach was a multiple case study lead under a constructionist view. Four teachers selected by their school principals as experts in DI were observed in their work environment, and their experiences and methods were questioned in two interviews. The study followed the strings of interpretivism as all participants and actors interpreted the data in their specific way. Interviews were transcribed using vivo approach and data was analysed through the method analytic induction. Further details will be described in the following paragraphs.

3.2. RESEARCH DESIGN
3.2.1. Strategy

The general methodology used in this study is that of a qualitative case study. "Qualitative research [...] emphasizes the importance of looking at variables in the natural setting in which they are found" (Key, 1997, p.1) and "case studies are detailed investigations of individuals, groups, institutions or other social units" (p.4). The study has been cross-sectional as it proceeded during a particular day, week or month, and "capture(d) information about how things [...] were at a pretty clearly defined moment" (Denscombe, 2010, p.101). A variety of methods have been utilized (i.e., interviews, observations, diary). The researcher's focus was in analysing and comparing the various observations, reactions and interview responses. Similarities and differences between practical work and the existing literature have been studied. The researcher was looking for effective DI methods.

3.2.2. Philosophy

The methodology utilised a constructionist approach as the researcher believed as constructionists do "that the social world is a creation of the human mind – a reality that is constructed through people's perceptions and reinforced by their interactions with other people" (Denscombe, 2010, p. 119). The study followed the strings of interpretivism which says that "the knowledge we have about reality is something that is

produced, rather than being discovered" (Denscombe, 2010, p. 119). Teachers, supervisors and the researcher interpreted the data in a specific way, leading to a production of specific knowledge about DI. The same study with different participants or actors might have led to varied findings.

As mentioned before, DI is based on constructivist theory. In a social context, constructionist and constructivist approaches complement each other in humans' creation of the world and themselves. A constructed ontological view seemed therefore accurate.

3.2.3. Negotiation of Entry to Research Site

Four New Zealand classrooms out of four different schools were studied in a multiple case study. Each classroom investigation formed a case. In order to select a site, the researcher considered the teachers' commitment and expertise in DI. The research was looking for teachers who applied the DI approach most effectively and were willing to share their knowledge. School advisers helped the researcher to identify schools known for DI. After contacting these schools the principals helped the researcher selecting teachers that were best suited for the research. Finally, the teachers were asked if they considered themselves as experts in the area of DI and if they would like to share their knowledge.

In the current study, in order to be defined as an expert in DI, all teachers had to meet the following criteria: first, they were to be selected by their principal as such, and second, they were to consider themselves experts.

3.3. POSITION OF THE RESEARCHER

The researcher is a young teacher with an honours degree in education. She has had 1 year of teaching experience in a Luxembourgish primary school where she was confronted with great diversity in her class. Because of her passion for teaching and her commitment to the students, she wasn't content with her teaching. Even though she could see the development of her students, she wanted to do better. She realized that she could differentiate her instruction more so to truly satisfy all the different student needs. She decided she had to learn how to differentiate her teaching more effectively. In addition, she could ascertain, that many of her teacher colleagues struggled with the

same issues, not differentiating much either. Nevertheless the researcher believed in the effectiveness of open learning methods based on constructivist theory. Furthermore she was convinced, that differentiation should be a part of everyday school life, honouring and respecting the diversity of the students. She thought that when students believe a learning goal is in their reach and they can taste success, interest and motivation increase automatically. Motivated students enjoy learning more, are more diligent and are happier overall with school, so that the class atmosphere rises. With her research and the findings of effective teaching strategies, the researcher hopes not only to learn herself, but also to demonstrate the requirement of differentiation in today's classrooms and to help other teachers to apply it as well.

3.3.1. The Researcher's Focus

The researcher's study focus lies in DI strategies, independent of the classroom construction. She believes DI is important in each classroom context, no matter if there are students with special needs or not. She is aware, that some needs yearn for more help, assistance, guidance and differentiation than others. Nevertheless, this research does not focus on special needs, but DI in general. The researcher was not seeking to research classrooms that just contained special needs students. She was seeking effective teachers using DI methods, no matter if their classes included or did not include special needs students. In the end, DI is essential for every student, the struggling, the average and the high-performing ones.

3.4. BACKGROUND INFORMATION ABOUT THE PARTICIPANTS
3.4.1. Amy

Amy is a young teacher with the responsibility over 30 year 5 and 6 students. Apart from the usual differences a classroom presents, one of her students spoke English as a second language, and five other children had been identified with learning and behaviour difficulties.

3.4.2. Emily and Victoria

Emily and Victoria, two experienced teachers, shared a year 2 class of 21 students. While Victoria started her day teaching the young students math, Emily, who held the

main responsibility over the class, took over after morning tea. Beside the usual differences a classroom presents, one student spoke English as a second language and two students had been identified to have literacy needs.

3.4.3. Clare

Clare is an experienced teacher who taught years 3 and 4; her students were between 7 and 9 years old. The class contained 27 students. Beside the usual student diversity, Clare's class contained a child with autism, a child with autistic features, a child with emotional developmental disturbances and nine children that spoke English as their second language. One student of the ELLs never acquired his home language properly, and therefore showed severe learning difficulties with English.

3.4.4. Laura

Laura, an experienced teacher, taught in a catholic school and was responsible of a year 8; her 32 students were between 12 and 13 years old. In Laura's mixed-ability classroom 4 students had been identified to have literacy needs, and another 3 were ELL's and showed difficulties in English too. 6 students had numeracy needs, another 6 students showed special abilities in maths, reading, writing and/or general knowledge.

3.5. DATA COLLECTION

Before data collection could start, consent was required from principals, teachers, parents and students (see Appendix 1-4). Students, whose consent was not given by either themselves or their parents, were not included in the study.

3.5.1. Initial Background Interview

An initial semi-structured, face-to-face interview with the teachers gave information about the participants' background and their initial views on DI. The researcher conducted, audio-recorded and transcribed the interviews (see APPENDICES 2-5). Thoughts and comments about the interviews were kept in a field diary.

3.5.2. Participant Data Collection

Before observing the classrooms, the researcher visited them during a full morning session. During this time, she explained her study to the class, and made sure

the children understood their rights as participants. For the rest of the morning, she acted as an active member of the classroom, talked to the students about various issues and helped them out when they asked her questions. This morning session was important as the students needed to get to know and trust her. They also needed to get used to her presence, so that the researcher could make sure they would act naturally during her later observations.

The researcher observed the students engaged in differentiated activities. The researcher was present at the scene of action, but did not interact (Key, 1997, p. 3). A diary was used to capture all the relevant information, observations, thoughts and comments. The researcher gathered a holistic description of events, procedures and philosophies which is, according to Stainback and Stainback (as cited in Key, 1997, p. 2), "often needed to make accurate situational decisions." During her observations, the researcher paid most attention to the methods and activities used in the classroom and therefore the teacher was the main subject she took note of for this study. Nevertheless, the students played an important role as well; their general behaviour was paid attention to as it reflects a method or activity's success. The researcher observed the four classrooms during several activities the participating teacher wanted to share. She spent 2 days in each classroom. Because considerable amount of data was collected in these 2 days, she decided to discuss. These activities were chosen using the following criteria: first, at least one of the three main parts of an activity, namely content, process and product, had to be modified according to students' differences. Second, the researcher wanted to have an equal amount of math and literacy activies to have varied data.

3.5.3. Follow-up Interview

After the initial data collection from the interviews and the class observations, the researcher collected her notes and wrote down a written report about each class, including the teachers' general teaching strategies such as the description of two specific activities. These reports were given back to the teachers. The teachers had the opportunity to correct them or add further information when they felt that the given information was inaccurate. Afterwards these reports and the interview data were analysed and put into the study report. These data reports were printed and given back to the teachers another time for their feedback. In a second semi-structured interview

(see APPENDICES 6-9), the researcher asked the teachers for further information about how they would overcome certain barriers in the classroom, with their instruction still being based on differentiation.

3.6. DATA ANALYSIS

The researcher transcribed the initial interviews using a vivo approach (Creswell, 2003, p. 192). Observations were coded under several themes, including content, process and product so to have all the data properly organized (see Appendix 5). The data have been analysed through the method of analytic induction (Ratcliff, 1994). Analytic induction involved inductive reasoning which allowed concepts to be modified. It also permitted relationships to occur throughout the research process with the ambition to achieve a most accurate representation of reality. In a next step, the second interviews were transcribed and added to the existing data. All the data were analysed again through analytic induction. It was intended to develop an in-depth picture of effective DI methods (Ratcliff, 1994). The research findings were regularly shared with the participant teachers and the supervisors.

3.7. DATA MANAGEMENT

During the research period, the collected data were kept in an electronic file on the researcher's personal computer. Afterwards it can be kept in an agreed place for 5 years, conforming to ethical considerations and requirements.

3.8. VALIDITY OF THE RESEARCH

It is commonly accepted that qualitative research is bias-based in the sense that the researcher's own values impact the study in significant ways (Creswell, 1994). Furthermore participants will in all likelihood not act naturally, knowing, that they are the subjects of research. Social research can therefore not offer a universal truth, but it can try to maximize objectivity and truth by trying to operate as valid as possible. This research was therefore built up on the key points for a validly qualitative research as developed by Key (1997). The researcher acted as a listener and properly interpreted the subjects' responses. In order to do so, the researcher was member-checking those interpretations with participating teachers and supervisors. An accurate record and good

preparation before entering the field helped to focus on the main information. The researcher included all the data in the final report, was candid and sought feedback from others. The research subjects and the research supervisors were included in this process. Balance between perceived and actual importance of the study was achieved by member-checking once again with subjects and supervisors commenting on the relevance of different incidents. The researcher attempted to write and describe accurately.

3.9. TRUSTWORTHINESS OF THE STUDY

Qualitative studies are qualified through their trustworthiness which "becomes a matter of persuasion whereby the scientist is viewed as having made those practices visible and, therefore, auditable" (Sandelowski, 1993, p. 2). A study is accepted to be trustworthy, if the reader judges it to be so. Therefore the researcher tried to persuade the reader of the credibility, transferability, dependability and confirmability of this study (Key, 1997, p. 5). In order to appear trustworthy, the researcher used several checks into her research design.

TABLE 1

Trustworthiness Checks Used by the Researcher

credibility	- Triangulation: using several data sources (interviews, field diary, observations) - Member-checking: sharing research findings regularly with my supervisors and the teacher participants - Presenting information that runs counter to the themes (Creswell, 2003)
transferability	- In-depth description of the research
dependability	- In-depth description of the research methods - Triangulation: using several data sources (interview, field diary, observations) - Regularly data sharing with supervisors - Regularly data sharing with the participant teachers - Catalytic validity (Cohen, Manion & Morrison, 2000) in case where participants might change and develop their teaching practices

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	(teachers' feedback after first interview)
	- Code-procedure: data was coded in emerging categories
confirmability	- Seeking for objectivity: open-minded and self-reflective approach (Denscombe, 2010)
	- Acknowledgement of personal bias – open position towards personal beliefs and options, using external facilitators (supervisors) and ongoing self-reflection.
	- Self-evaluation: awareness of the pros and cons of the approach (Denscombe, 2010)

The results of this study should be valuable and of considerable use, but should not be generalized. The work of only a few New Zealand teachers known to differentiate their instruction effectively were studied and this does not imply that every successful teacher in New Zealand teaches the way the research participants did, neither that one should teach this way in order to be successful. There are many successful ways of teaching. On the contrary however, it could offer the readers another approach to teaching and give teachers new ideas to vary their instruction.

3.10. RESEARCH LIMITATIONS

The researcher identified six limitations of the current study. The first was in the definition of expertise. As mentioned previously, teacher expertise was based on the professional opinion of principals and teachers themselves. Even though these two opinions are certainly of important value, the definition of expertise was defined on the subjective views of these people.

The second limitation surrounded the fact that not all students were given parental consent to participate in this study, so that some incidents of DI were not able to be included. However the number of students that were not given consent was very low, so it is considered unlikely to have been a large detriment to the study.

The third limitation concerned teachers' interviews. Teachers might not have viewed their own practices critically when being interviewed, because they may not have wanted to identify flaws in their instruction methods. Therefore, the semi-structured nature of the interviews offered the researcher the possibility to pose questions or comments to assist them to be critical.

The fourth limitation of the current study involved the students' behaviour. The students might have acted unnaturally with the researcher's presence in the classroom. However, the researcher tried to minimise or even prevent this behaviour by visiting the classroom before she started her observations.

The fifth limitation involves the sample size of this research. With only four classrooms being observed, the sample size was small and further research with larger sample sizes would be beneficial.

The last limitation has to do with observational studies in general. Even though the researcher tried to take note of all the happenings in the classroom, it was clear that it was impossible to identify all relevant events. Thus, potentially important information may have been missed.

It could be argued that another limitation was the Hawthorne Effect. teachers may have changed their behaviour because they were being observed. However, if teachers acted unnaturally in order to look their best, it only would have influenced the instruction positively, as they would have put more effort in than usual. With the nature of the study, such a variation in the instruction should not be a limitation. This study doesn't aim to control if teachers differentiate or not, but it aims to find effective methods of teachers who have some expertise in DI. If they specifically change their instruction for the better, it is welcomed, as the data will contain even more useful DI methods. Thus, rather than a limitation, teachers optimising their learning methods under supervision may be seen as a strength.

3.11. ETHICAL ISSUES

Ethical issues are basic for all social research because its acceptability "depends increasingly on the willingness of social researchers to accord respect to their subjects and to treat them with consideration" (Social Research Association as cited in Denscombe, 2010, p.60). Observing teachers interacting with children required careful ethical consideration. The researcher explained her study to the principals, the teachers and the students. She informed them of their rights as participants. Later on, consent was asked of all three parties. Additionally, parents were asked to consent to their child's participation in this research work. If children's consent had not been given by either themselves or their parents, they were not included in the study. All data in this

study was kept anonymously in the researcher's electronic file.

Ethical approval was granted by the Victoria University Human Ethics Committee.

CHAPTER 4
FINDINGS AND DISCUSSION

4.1. INTRODUCTION

The first findings that will be outlined resulted from the initial background interview. In this interview the participant teachers were questioned about their position towards and their experiences with DI. In a further step the classroom observations will be reported. The classroom settings will be analysed, followed by a resume of the general teaching strategies of all participants. The similarities and differences will be revealed and discussions will be initiated. The researcher will then continue with a demonstration of the participants' assessment methods which will be analysed as well. Finally two specific classroom activities from each teacher will be described in detail, compared with literature and discussed closely. To complete the research, a follow-up interview has been done. It dealt with various barriers and difficulties that can complicate teaching and hinder DI methods. The teachers' suggestions to overcome these barriers will be stated.

4.2. INITIAL BACKGROUND INTERVIEW (see APPENDICES 2-5)

4.2.1. Questions and Answers

How do you define DI?

Amy defined DI as teaching adjusted to the students' needs, strategies, skills and understandings. She suggested that group-teaching would be a strategy to work with children in a way that suits them best. Emily believed DI referred to teachers' awareness of their students' capabilities, and that they adjust their teaching to them. She proposed group- and individual teaching as alternative methods, and mentioned as well the adjustment to the students' needs. Even though Clare used DI on a daily basis and highly effectively, she was not familiar with the term differentiated instruction. However, she assumed that it would deal with the children's needs, and referred to the use of "a whole lot of different types of methods". Furthermore, Clare mentioned the risk of teaching the middle instead of paying attention to the groups of children at the low or the high end, and thought DI would refer to different teaching levels. Laura gave the following definition:

I would define it as a class room teacher catering for the needs of the students in their class by offering different levels of teaching, different types of grouping, and different forms of scaffolds or supports for the children within the room. It is about making learning available to everybody in that class.

How do you feel about it?

Amy felt that DI is important and said, that she "wouldn't want to teach in any other way". Emily said that personalised teaching is really important because all the students are engaged, feel challenged and are working. Clare thought that with the mixed-ability composition of her classroom and the school in general, they have no other choice but to differentiate. According to Laura, DI is constantly challenging, and teachers must work hard at it if they are to become effective in using it.

What student characteristics do you identify as requiring differentiation in learning?

Amy believed that both academic and social characteristics of the students require differentiation in learning. With regard to academics, reading, writing and maths are important, whereas with regard to social behaviour, inter- and intrapersonal intelligences are important. Amy referred to Howard Gardner's MI theory. Emily said that teachers need to identify students' prior knowledge in each subject in order to find out their starting point and teach them from there. Clare mentioned the need to identify the students' prior knowledge so they can help build upon this prior knowledge. Although she said that they cannot change everything, because external influences such as family and surroundings play a large role. Clare argued that gaining a clear picture of a child's family environment would be beneficial in further identifying that child's needs. Laura believed several characteristics required differentiation: specifically; learning styles, academic competences and personality types.

How do you identify these characteristics?

All four teachers provided similar answers: They would assess them throughout the year, let them fill out different surveys, observe them, interpret their work, and be attentive to changes (see 4.5. Assessments in the differentiated classroom).

What do you believe are the facilitators of DI?

Amy believed that teachers' organisation facilitated DI. Only in a well organised

classroom, teachers can focus on a group or an individual student, with the rest of the class knowing what to do. Students need meaningful activities that challenge them appropriately in order to work quietly, and only a well organised teacher will be able to offer them these. Emily credited student collaboration as a facilitator of DI. She discussed, that students can support each other and that the more able students can help their less able peers to understand and figure things out. Furthermore she mentioned that good testing facilitates teaching as it offers essential information and acts as a basis for DI. Clare thought that guidelines and a good planning to follow facilitate DI for teachers. Awareness of personal weaknesses and willingness to look for ideas from other teachers would ease their job for them as well. Moreover Clare believed that the visual aspect of a classroom made DI easier. Finally she believed that children's interest in school and motivation to learn made DI and teaching in general easier. Therefore teachers have to try and make school as appealing to children as possible. Laura thought that teachers' flexibility, knowledge and possession of good pedagogy would facilitate DI. These characteristics enable teachers to make decisions on their feet, which is according to Laura, crucially important. Things in the classroom change constantly and teachers often need to improvise. Moreover Laura believed that DI keeps the learning going, as teachers don't repeat what students already know. Finally she said, DI keeps the teachers on their toes and makes them think ahead.

What are barriers and constraints?

Amy defined the restricted time frame of school in a day and the high number of students as constraining DI. The physical size of the classroom is as well a barrier according to Amy. Emily mentioned the classroom size and the difficulty to ensure discipline and quietude. Furthermore she thought it would be hard to ensure that while the teacher is occupied with group or individual teaching, the remaining students actually work. Clare outlined that money can be an issue and hinder teaching, when the appropriate learning material is not achievable. She added that a non-communication and/or non-collaboration with the parents for various reasons can be a barrier as well. Too high expectations, too big of a workload and too short of a timeframe can lead teachers to rush through their planning and teaching, or even lead to a burn out. Clare considered them to be a further constraint for DI. Laura thought that the challenge of

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differentiating is a barrier. Teachers have to think ahead, be flexible, plan lessons in depth (etc.) which puts much pressure on them. They often worry about their teaching, wondering if they took the right decisions. Moreover Laura said that planning and preparation takes a lot of time, so that teachers can feel even more tensed.

How do you manage to differentiate successfully without overworking?

Amy suggested that teachers should be satisfied even if the job is not always done. In her opinion, teaching experience helps though a lot in order to manage DI. Furthermore Amy thought that the New Zealand education system empowers teachers to differentiate and that teachers already learn how to cope with it at teachers' college. In New Zealand teachers are modelled and expected to differentiate. Emily explained that the teaching philosophy is initially a lot of work, but she said that once it is in place, it is ok. Nevertheless Emily could see quite quickly how useful differentiation is in practice, which is why she believed it is worth doing and spending the time on it. Clare said that she does not manage not to overwork; she thought she would do too much. But she said that she has difficulties to identify when she has done enough. Laura also struggled with the workload. However, she proposed that the best thing to do is simply do the best you can, accept it may not be enough, but to remain content with the work you have done.

What do you gain out of experiences with DI, what positive and what negative experiences?

First, the teachers' positive experiences are reported. Amy experienced that children move on with their learning and understanding, become more self-managing and more in control of their learning. DI helped children develop a better awareness of their strengths and weaknesses. They knew what they needed to do next, and were able to set themselves goals more naturally. Emily witnessed an improvement in her students' focus and their self-managing skills. She also thought that her students felt more valued, because they were appropriately challenged and were paid more attention to. Clare observed children learn and achieve their goals, which she found very rewarding. Positive feedback from both students and parents was rewarding to Clare. Laura enjoyed how it felt when everything went right, when she could give each child or group what she/he or they needed. Furthermore she described situations in which

students started managing their own learning, acknowledged when they did not understand and asked for help or moved on if they understood the learning matter. Laura believed DI offered her generally a closer idea of where each child in her class stood in the learning process, and how each child's thinking process was functioning. She said she would know her students better and was therefore able to refer to that knowledge in teaching situations, which than again improved her teaching.

Second, the negative aspects were identified (although Amy did not have any). Emily experienced failure in her time-management, planning and teaching. She thought that she failed when her students did not learn and her lesson did not work out as planned. She then felt like her work was a waste. Clare felt negative experiences "when everything has gone to custard" and her lessons did not work for various reasons. She believed that this usually happened when she ill prepared them. Laura experienced that some children were not honest, and did not acknowledge their difficulties with a topic, so they did not learn. Finally she believed it was negative that the teaching way takes a lot of time to organise, embed and plan.

Where do/did you make mistakes when you were trying to differentiate and how do/did you manage to reduce them?

Amy thought that mistakes are linked to a lack of differentiation. Sometimes group-teaching is not differentiated enough, as children still differ inside their ability groups. But with the limit of number of hours in a day, she said that one is obliged to still group them. She tried to make time in the day to get around the groups she had running, but never found a real way to reduce this difficulty permanently. Emily experienced her year so far as successful even though she had some negative experiences (as mentioned before). She said she had to learn how to do it, as DI is not something that comes naturally. Emily received a lot of support from her school and colleges. The deputy principal worked with all the teachers on modern pedagogy, she read a lot of research to keep up with her professional development and could manage to reduce mistakes that way. Clare made mistakes in the classroom when making incorrect assumptions about how much the children understood, she rated herself as too controlling so that children often came to her for help, instead of encouraging the children to take an independent stance. Sometimes as well she did not give clear enough

instructions of her expectations so that lessons have faltered. She then accepted her mistakes and continued in faith that it would work out better the next day. She tried to reduce that by working with random groups from time to time, but as students are very clever, they rapidly understood what Laura was up to. At other times, Laura rated the students inaccurately; she either thought they would know more than they actually did or she took knowledge for granted that was not there. She thought that it is always a challenge to get it right, but she always tried her best to give the students what they needed in the classroom.

Did you always differentiate?

Amy believed she had always been differentiating no matter what level she was working at. She was taught to teach this way. Emily always differentiated, but changed her strategy over the years. Clare has always been differentiating her instruction too; she confirmed that she was taught to teach this way. She said though that it got better with time. Laura had always been differentiating, not realising though, that she was using differentiation. Like all other teachers, she was taught to teach this way. Nevertheless, she believed that her teaching had evolved over the years for the better.

4.2.2. Discussion

The four teachers' definitions of DI were similar to the definitions the researcher collected in her literature review. They all mentioned its critical component: teaching to the students' needs. Clare also confirmed what Tomlinson (2005) and Strickland (2007) mentioned, that the term "DI" would be new, but the teaching philosophy would not. Teachers also generally agreed upon the great importance of DI. Clare felt obliged to differentiate, as students differ largely in so many ways. Laura regarded DI a very challenging teaching philosophy, but she dedicated herself to continuously work on it. Altogether the participant teachers identified the students' social behaviour, the consideration of their surroundings, their thinking and personality types as requiring DI. All of these characteristics would in literature be classified under the students' learning profile, while some of them (like their surroundings, their personality types, etc.) can also influence students' interest. Furthermore, the teachers identified academic competences as in need of differentiation, which would be a part of students' readiness.

Their assessment strategies were consistent with the literature. The participant teachers explained that assessments are the basis of DI that they therefore should take place before, during and after learning sessions (Tomlinson 1999, 2005; Tomlinson & Eidson, 2003; Wormeli, 2005).

Amy and Clare mentioned that planning and organisation would facilitate DI, both are guiding principles in the researcher's literature review. Tomlinson and Eidson (2003) agreed on the need of a systematic planning of curriculum and instruction in order to differentiate successfully. Student collaboration can be classified under this principle too, because teachers need to organise the setting and the grouping to enable it. Furthermore their initiation of a good classroom climate and respectful activities can lead students to be willing to collaborate with their peers. Moreover Clare thought that a classroom which presents practical assets can facilitate DI. This claim is consistent with what Dean (2006) and Tomlinson and Eidson (2003) said. Literature as well confirmed Clare's belief that teachers should differentiate according to interest, as students are more motivated to learn if they are interested in what is being taught (Tomlinson & Eidson, 2003; Tomlinson, 2004b). As Laura mentioned, the teachers' flexibility, knowledge and possession of good pedagogy make DI easier. This claim goes back to the teachers' responsibility when teaching. Teachers need to have full awareness of their instruction, create a secure classroom such as respectful activities, and have a complete picture of the high quality curriculum they are teaching. The teachers who have been observed all said that they would work very hard, and did not seem to really know how to differentiate without overworking. Generally they thought that at some point one has to be satisfied with the work that has been done. However, they all believed that the more experience one had, the more efficient one could be. This has been confirmed by literature too; Manning et al. (2010) compared DI to riding a bicycle which gets easier the more you do it, but needs some extra time at the start. As the research suggests, the participant teachers had mainly positive experiences when they prepared meaningful lessons following the principles of DI, had a good curriculum and no untoward incidents. However, the research participants admitted to make mistakes while teaching. They forwarded the message though, that mistakes should not keep one off the track and drift a teacher away from DI. Teachers should learn out of their mistakes, stick to teaching philosophy and keep on trying to differentiate as one will be rewarded at some

point for the effort.

4.3. CLASSROOM SETTINGS

All four classrooms had similar settings. They offered much visual stimulation, including the following displays: words and images, complementary information about learning matters, organisation and structuring aids, classroom rules, former student works, drawings (etc.). In addition all classrooms were equipped with ample shelves and storage racks holding books (novels, history books, science books, etc.), learning materials (dictionaries, spelling aids, counters, etc.) and learning games. If announced the students were free to use these. The classroom of Emily and Victoria held many toys for the very young students to play with during defined moments of time.

In each classroom, the students' desks were moved together to form bigger areas that offered more space and enabled students to work together as a group. However, the desks could be moved around, if needed. All four teachers owned their personal desk, which they mostly used as a depositing rack during class time though. The classroom floors were equipped with a mat, and had several open spaces in the room. The mat made it comfortable for the students to sit down on the floor, and to use the open spaces as another working area. Each classroom dedicated an open space area to mat-time, which meant that teachers and students met here for whole class, group or even individual instruction. Students then sat down on the mat, and the teacher faced them sitting either on a chair or on the floor with them. Near the teacher's chair stood each time a small transportable whiteboard, which teachers used as a tool to explain learning matter or organisational information.

Amy's classroom offered a further piece of furniture, namely a big, but low wooden table. It was approximately 30cm high and situated near the meeting point on the mat. Amy put pillows around it, which made the sitting around the table more comfortable. It could fit twelve people and was used to do group-teaching, peer-tutoring or individual instruction. A further open space in the classroom could be used freely to sit down and read a book, to play a learning game or to discuss and work as a group (etc.). Emily's and Victoria's classroom had two open spaces. As the other teachers, they used one for mat-time. The second area was of use to play in free times, as the children in this class were still very young. Here they could find various toys, and also an art

table for art works and four easels with paper, paint and brushes ready to be used. Nevertheless this space could be used as well for group works or as a reading corner. Clare's and Laura's classrooms held two, respectively three open spaces, with one being dedicated for mat-time, and one, respectively two, being of free use for the students.

Each classroom had one or more blackboard(s) or data projectors that were specific to their room. Amy could refer to a big black- and a big whiteboard on the wall. Contrariwise to the small whiteboard, these were not directly used to teach. Nevertheless, they played essential roles in the class organisation, as they were used to inform students about their daily and weekly workload. Another teaching tool Amy could use to explain learning content was a big flat screen connected to her laptop. The flat screen was close to the mat-time area so it could easily be used for instruction. Emily and Victoria had as well a big whiteboard at their disposal. It was attached to the wall and mostly used to hold further organisational details instead as a direct teaching tool. Clare received a new teaching tool during the weeks the researcher visited her classroom regularly. The teacher and the students only started to learn how to use the Smart Board, an interactive whiteboard (IWB). Images and texts could be projected here, and manipulated on the board which reacted to touch. Words could even be written on the board using a special pen and digital ink. Laura's wall as well had a big whiteboard attached, which she did not use to teach but to display organisational or informational details. As a further teaching device, she reverted to a silver screen which could be pulled down from the ceiling. It was positioned near the mat-time area. A projector connected to Laura's laptop was used to project information from her computer on to the silver screen. Apart from Emily and Victoria's class, each classroom had computers available. Combining laptops and standard computers, Amy's students had access to 12 computing devices overall. Although Clare's classroom had only two computers, the class could withdraw themselves to a separate room with an additional 25 computers. Laura's students could make use of eight computers. A final and specific setting rests to be mentioned about Amy's class, who regularly collaborated with the neighbour class, a year 5 and 6 class as well. A small hallway connected both classrooms and a table in here served as a further seating and learning station for both classes.

4.3.1. Discussion

All four classrooms offered much visual stimulation. Rules, words, sayings, mathematical or literature guidelines or directions, former student works (etc.) were visually available to the students. They could easily be looked at or read through over and over again. Learning-style theory suggests teaching learning content through as many sensory channels as possible, and points out, that teachers often only refer to the auditory channel when they teach. By putting information up around the classroom after it has been discussed and worked on, teachers ensured that they stimulated the auditory and the visual channel. Furthermore the documents could be looked at over and over again and be remembered by repetition. Apart from the visual aspects, the classrooms had many practical assets that concurred with literature on DI. A classroom should offer the material and the supplies that are necessary for teachers to teach and students to learn effectively (Dean, 2006; Tomlinson & Eidson, 2003). All four classrooms offered a major amount of learning materials to which teachers and students could refer. Books, learning games, dictionaries, learning aids (etc.) were available, and either the teachers could use them to further explicate the learning matter, or students could autonomously refer to them as scaffolds while completing exercises, or to fill up their free time when they had finished their work. Learning materials and learning games can make the whole learning process more fun for the students, so they increase their interest and motivation. They continuously have most often the ability to stimulate the third and last sensory channel, namely the kinaesthetic one.

Flexibility is a crucial factor of DI, be it in materials as just elaborated, or in space, it alleviates education (Dean, 2006; Tomlinson & Eidson, 2003). All four classrooms were flexible in space. With the student desks being moved together to bigger tables, students could easily work individually, in pairs or in groups. Furthermore the mat on the floor made it easy for the desks to be moved around, without even making much noise. The seating arrangements could thus flexibly be moved around, in a more convenient manner adjusted to the requirements of the actual activities. The mat on the floor added further provision for classroom flexibility; students could use it as seating. They could use the open spaces around the room and sit comfortably on the mat on the floor. The transportable blackboard was another addition to provide such flexibility.

4.4. GENERAL TEACHING STRATEGIES

As observed, each teacher seemed to build teaching according to a routine. The various strategies seemed quite complex at first as the students worked on different exercises at the same time and changing from one task to another independently. Nevertheless, the students seemed to have full awareness of what was going on and of what they personally needed to do. They seemed to understand that their classmates did not always do the same exercises they did and how the general classroom management functioned. The four classroom managements will now be described in detail.

In Victoria's morning classroom routine, the students could write their name on the small whiteboard before she entered the classroom. If they did so, they had news they wanted to share with the class. It was planned that at a later moment, they could report their stories. In all four classrooms, the day started with mat-time. The teachers sat on a chair and faced the students sitting on the mat. Victoria requested the students to sit in a circle, while the others let them sit in rows. The teachers made a roll call, and greeted each student personally. They greeted their students using different expressions (hi, hello, good morning, etc.) and various languages, like English, Māori, sign language, Samoan or Japanese. Students could reply in the way and the language they wanted. In Amy's class, the students got the chance to report in a few words exciting happenings of their previous day(s) when they replied to the teacher. In Clare's and Laura's morning routine, they could raise their hands after the morning roll call was over to share their news in a few words. Depending on the workload of the day, Victoria decided to play some extra games before the students whose names were written on the board, got to report their story. On the day the researcher visited the class, they played the compliment game. A few students sat by turns in the middle of the circle while the others complimented them. Afterwards the circle moved into different rows facing the whiteboard, where the first person stood, ready to share some news. Now the rest of the class was invited to ask questions to their fellow student. Other narrators came in front and the activity followed the same principles, until everything had been said. After the greeting procedure, Laura and her students prayed together as a group and a community. Clare and her students followed the routine to meet the residuary scholars and teachers in the library. Students sat down on the floor and started the day as a school community

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together. Everyone was greeted, school issues were being discussed and they sang various (mostly Māori) songs together, accompanied by the guitar music of a teacher. Back in the classroom, they sat down on the mat again.

Amy, Clare and Laura explicated daily issues and workloads. Amy and Laura even commented on the work program of the whole week, as both teachers gave their students weekly programs. The students got the chance to ask questions about their workload. The teachers had the goal that all questions were asked at that moment, when everyone was still sitting on the mat, and listening to the work instructions. That way once the working time started, everyone knew what to do and disruptions could be reduced. Before Victoria moved on to the explanations of the daily activity, she took the class outside to do 15 minutes of fitness. The very young students needed a break, considering that the following math activity would demand great focus of them and respecting that they now already had to sit down for a while to listen, report a story and/or ask questions. This way the students could gain their concentration back and get ready to work. They went back to the mat where Victoria gave them the necessary directions to fulfil the following activity(ies). Again all questions needed to be asked now. Once work instructions were given, the students of all four teachers left the mat and followed their personal activity(ies). Some examples will be described later on. Before Victoria's students left for morning tea, they met with two other classes in the neighbouring classroom. During 15 minutes of communal time, different teachers read out stories and the group sang songs together. After morning tea, Emily took over teaching the class and, as all other teachers, she started her instruction with mat-time to greet her students and explain the following activities.

Similar to Victoria, Amy and Laura used fitness exercises, when they felt their students needed a break to regain focus and strength. Amy sent her learners out into the schoolyard to run a few laps before re-entering the classroom, and getting back to work. Laura on the other hand integrated regularly small fitness breaks into her instruction. Therefore every student stood up, facing the silver screen, on which Laura projected a fitness movie. The DVD was called 'Jump Jam', and had been developed by Brett Fairweather with the idea to include aerobic breaks inside the classroom (Kidz Aerobix, 2009). The students imitated the fitness coach of the video, doing the same physical exercises as he did. As this break was meant to be held inside the classroom, the

exercises did not include running, but they were still demanding, working on coordination, strength, self-control and balance.

All five teachers used mat-time to explain content to the whole class. Each time students needed directions for a new activity or issues had to be discussed, they met their teacher here, who informed them about the following course of action. At the end of the school day as well, the classes met on the mat. At this moment, Laura's class did another prayer together. Teachers now called up each student again, telling her/him personally good-bye and wishing a good afternoon. Same as in the morning, teachers and students used various expressions and languages to do so.

All five teachers used whole-class, group and individual instruction. When they were teaching the whole class, they most often called for the students on the mat to offer their explanations to the topic. They used posters, the transportable whiteboard or other teaching tools/learning materials (books, counters, etc.) to help explain the learning matter. When students worked on the learning matter, they returned to their desks though. Amy and Emily allowed the students to sit wherever they wanted, Emily even acknowledged them sitting or lying on the floor, as long as they got their work done. Victoria, Clare and Laura distributed more or less fix seats to their students. Victoria created social groups (*Yellow*, *Red*, *Blue*, *and Green*) which determined her seating arrangements. She based these groups on her knowledge of the class. She paid attention that every group had students with various capabilities, that the group members worked together cooperatively, and that close friends were put into different groups. She separated good friends with the aim of offering them opportunities to spend time with other children as well. Every week, the leader of the group changed in turn. The leader took over responsibilities, such as speaking out for the group, organising learning material or making sure the group members were working well. Students of the same group shared a table. Clare's students sat in groups of four. Clare created those social groups based on her student knowledge; she wanted each group to have a good reader and a good writer. Furthermore she was looking for students that seemed to work together cooperatively. Each group could choose a name for themselves, resulting the following: the *Guitars*, the *Shooting Stars*, the *Team Creatives*, the *Tigers*, the *Worldrulers*, the *Lightning* and the *Snowbreakers*. Each term, the group members nominated a leader who took over specific tasks for the group, such as speaking out or

gathering material or tools to complete a task. Laura's students sat in social groups as well. The sitting changed every week. Sometimes Laura let the students decide on which table they wanted to sit, other times she manipulated the groups, depending on the weekly activity (e.g. who worked best with who on a social and/or on an academic level) or the social learning (making people interact that usually don't interact, gender together/apart, friends together/apart). Inside the table group, students could choose on which chair they wanted to sit, which they often did spontaneously, each day at school.

All five teachers were mainly referring to whole class teaching, when activities were characterised by a more general knowledge (like sciences, history, etc.), general topics that each student needed to know in math or English and tasks that offered inner differentiation (like creative writing, drawing, etc.). Group-teaching and group-working were other teaching methods. On the one hand, all the teachers referred to social groups, either to differentiate by interest or when the learning matter did not demand specific ability boosting, but could be understood by a general audience. Group works advocate cooperation and unconstrained discussions, independent thinking and problem solving and each member can feel as an important part of the group, bringing in individual aptitudes. Finally, it is a fun and exciting way to work (Commonwealth of Australia, 2002). Nevertheless the main corps of the five teachers' instruction was built up on ability group-teaching. Throughout the year, the students have been assessed several times in math, literacy and spelling. With the gathered information the teachers were able to identify the students' strengths and weaknesses, their readiness-level, their previous knowledge and their individual needs. Based on that information, the teachers arranged them in different ability-groups for all three subjects.

4.4.1. How Amy Differentiated Instruction

When Amy worked with social groups, she created them accordingly to the activity she was willing to teach, considering different factors like interest, cooperation, friends, gender, (etc.). The built of the groups always depended on the goal of the activity. Amy's teaching was mainly grounded on ability groups though. In math, Amy created the *Red*, the *Yellow*, the *Blue* and the *Green* group. For literacy, Amy put together the *Brown*, the *Yellow*, the *Red* and the *Blue* group, while for spelling she created the *Purple*, the *Green* and the *Pink* group. All groups are enumerated from the

less to the most able group. Most of the time, the different groups' learning matters, exercises and tasks varied in the level of complexity. Throughout the year, the children got assessed over and over again, and therefore the groups could change at any time. The children were aware of that possibility. The big whiteboard on the wall of Amy's classroom played an essential role in the work organisation of the ability groups. It showed several charters, which informed the students about the tasks and exercises they had to fulfil (Must Do's), and about those they could do (Can Do's), if they wanted so. Furthermore it showed their timetable and some sheets with work advice.

The students received their weekly workload on Mondays (Must Do's). They were written down on the whiteboard, different task areas were shown in different colours. As the tasks had different deadlines, a second list called the F.I.P.'s (First Important Priorities) informed about the order (if there was one) in which they were supposed to be completed. Students worked on their Must Do's during school hours, but were allowed to finish some of the tasks at home. Every student received work that was adjusted to personal capabilities and needs, so they were mostly able to complete it without the help of others. They were responsible for their own work and had to learn how to manage it autonomously. If there was no order, the pupils could chose with which task and subject they wanted to start. Some of the tasks were the same for the whole class (creative writing, drawing, etc.) and some were specific to individual groups or even students (exercise sheets with different levels of complexity, different vocabulary to study, etc.). When they processed on their Must Do's, they could work individually, in pairs or in groups. They could choose themselves which work strategy fitted them best on that particular day. If they had a question or were at a loss, they were supposed to first ask for help from a more capable peer before heading to Amy.

While everyone was working on their 'Must Do's', Amy called for different ability-groups to meet her at the learning table. In a close atmosphere, and with students that have more or less the same level of understanding, it was easier for Amy to make sure, each student understood. Amy was teaching them as a group, but tried to boost the individuals' knowledge as far as possible. During group-teaching, no one outside of that group was allowed to ask questions, so that she could focus on these few pupils only, with the rest of the class working quietly on their 'Must Do's'. Students outside the boosting group had to continue working with their question being unanswered and re-

ask it at a later moment. With Amy's teaching strategies, the timetable varied for the different groups. Groups might have had math-boosting on different weekdays.

When individual students needed specific help during whole-class situations, Amy invited them to sit with her at the learning table, and helped them out right away. If they needed to be boosted during any other part of the day, she tried to help them individually, changing the workload or the instruction strategy according to that student's needs. The vocabulary the students had to learn was always individualised. It was based on the so called Spell-Write Essential Lists (Croft & Mapa, 1998). They are word lists that include the essential words needed in order to write. It is a spelling aid for students aged around 8-11years. Students only received new words, when they demonstrated proficiency in the spelling of their former learning words. Therefore the learning words could differ from student to student.

As the students were active during every minute of their school day, having always some meaningful learning to do, which is neither under-challenging nor overstraining them, they were occupied and some natural discipline was formed. Apart from that strategy, Amy used rituals to remind her pupils to calm down, such as clapping her hands in a certain rhythm, waiting for the class to respond with the same rhythm, while they stop talking. Or she called out in Māori *Tahi* (English: One) *Rua* (Two) and the class responded *Toru* (Three) *Whā* (Four). Furthermore she motivated for good behaviour with rewards. Each student owned a credit card with which they tried to collect virtual money by behaving well. Different actions (e.g., helping to tidy up the classroom, following instructions straight away or being a fantastic team member by working cooperatively) added different amounts of toy money to the card. Students could either buy small rewards with a little amount of money or save their money for more "expensive" prizes. Examples of small rewards were rubbers or pencils, while bigger rewards were to stay inside for morning tea, vouchers or anything that they dreamed of and that was feasible.

4.4.2. How Emily and Victoria Differentiated Instruction

Victoria created the mentioned fix social groups (*Yellow*, *Red*, *Blue*, *and Green*). Emily on the other hand did not have fix social groups, but rather created them as she taught the activity. Both teachers used ability group-teaching as their main instruction

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method. Victoria divided the class into three groups, the *Circle*, the *Star* and the *Lozenge* group, enumerated from the less to the most able group. When Victoria worked with one ability-group, she offered the two other groups some work they could handle on their own, either as a group or as an individual. Those groups were supposed to work quietly and to try to finish their task. During this time, Victoria and the third group sat on the mat and worked on a specific topic. When Victoria or the other participants used the open space on the mat for group boosting or individual instruction, they did not sit on their chair, as they did it for whole class instruction. They all sat down on the mat with the students, creating an equal and close atmosphere, in which it was easy for the student to ask questions, and for the teacher to detect difficulties and explain them.

Victoria's three ability groups received different tasks and instructions, adjusted to their abilities. When Victoria realised that a student did not fit into a group for a specific topic, that student could jump around and join either a more or a less capable one. Emily also created ability groups, some for reading and some for writing. In reading she inspired herself by the colour wheel from the New Zealand Ministry of Education. The Ministry gives out children's books to schools which are marked with a certain colour relative to the level of complexity and the appropriate reading age of the material (New Zealand Ministry of Education, 2010b). Emily used information from running records to help her identify which level of the colour wheel was appropriate to her students. Then she grouped her class according to these colours; students that were able to read books of a certain colour, e.g. light blue, were form the *Light Blue* group. When the researcher visited the class, there were four reading groups, the *Red*, the *Dark Blue*, the *Light Blue* and the *Grey*; all are enumerated from the less to the most able group. The colour grey is not on the colour wheel; Emily created that group for students whose reading abilities exceeded the highest complexity level of the colour wheel. In writing Emily created 3 groups, the *Purple*, the *Pink* and the *Blue* group, enumerated from the less to the most able group. Emily divided her class into these groups, so that while giving different groups different tasks to do, she could focus on the learning needs of a specific group and teach them appropriately to their needs. All three groups could therefore do different things at different moments of time.

When students appeared to be struggling to master a particular concept, and needed individual boosting, both teachers tried to offer them this support. In the

mornings, while Victoria was teaching math, Emily was receiving students that needed additional support in reading and/or writing in her office. This support program was called reading recovery. The participating students were out of her and of other classes. They joined Emily for half an hour and got their language knowledge pushed. At the moment of time the researcher visited Emily and Victoria; two students of their own class were part of the reading recovery program. These children were decided by the results of their 6 Year Net assessment. However, both teachers were open for individual teaching inside the classroom as well, if it was feasible. They would give the other students meaningful work to do, while looking at the learning needs of the individual. A further individualised assignment was the daily reading task. Each student got to take a book home every day, which was supposed to be read at home with the parents. These books were chosen in the previous reading lessons and were to help children gain fluency in their reading. The complexity level of the books was adapted to the students' reading ability.

Meaningful occupation was the key to discipline in class for these two teachers. Nevertheless, apart from complimenting the students for their good behaviours, Victoria built up on a rewarding system. She used the whiteboard on the wall to keep track of the positive actions of the four social groups named before. The group got rewarded when their members were active in class (e.g. by telling a story in the morning circle), when they behaved well and were polite, when they put much effort into work (etc.). The group with the most points every day could leave the classroom first for morning tea. The group with the most points at the end of the week received a star. The group with the most stars at the end of the term gained a special reward. Victoria was open for ideas for this reward, as long as it was feasible, students could wish for anything they dreamed of.

4.4.3. How Clare Differentiated Instruction

Clare created the mentioned fix social groups (the *Guitars*, the *Shooting Stars*, the *Team Creatives*, the *Tigers*, the *Worldrulers*, the *Lightning* and the *Snowbreakers*). When differentiating by interest, or when a task did not necessarily need differentiation, but Clare still wanted students to benefit from group works, she referred to these groups. Nevertheless, Clare's instruction was mainly built on ability-group teaching. At

the beginning of the year, the students had been assessed in math and English. Based on the results, the teacher created ability groups. Each group was allowed to choose a name for them. In math, the groups *Numbers, Fractionors* and *Additions* came into existence and in reading the *Chapters*, *Bookworms*, *Readers*, *Tintins* and *Poems* developed. Those names were chosen randomly and did not describe the learning matter of the group. All the groups are enumerated from the less to the most able group. Throughout the year, the children got assessed over and over again. The results of these tests could change the ability groups, when Clare saw that a student was either outperforming her/his group members, or was overstrained with the material. The students were aware of that possibility!

Two charts on the wall (one for math and one for reading/spelling) visualised the daily workload of every group. They changed every day. These charts looked similar to the following table.

TABLE 2

Clare's Reading/Spelling Chart

READING

Chapters	SSR (Super Silent Reading)	Crossword	Games Activities
Bookworms	SSR	Wordfind	Games Activities
Readers	Buddy Reading	Spelling	Teacher Time
Tintins	Buddy Reading	Spelling	Alphabet Activities
Poems	Reading assessment with teacher	Spelling	Alphabet Activities

As the chart visualises, the groups fulfilled different tasks at the same moment of time. Clare tutored some activities while the students were able to do others on their own. This enabled Clare to put all her attention to a certain group of students, and boost their knowledge specifically and appropriately. For both, literacy and math, the different groups owned a box situated on the shelf. The students got their work material autonomously out of these boxes, and could start off with their work right away.

Clare considered individual instruction as another teaching method. A student sometimes needed further help. With Clare's strategy to occupy the different groups with meaningful activities, she could easily pick one or two students and boost their learning individually if needed. Continuous individualisation happened with the spelling

words the students needed to learn. Students were being assessed on a weekly basis, and only if they proved mastery in spelling of their learning words, they received new ones. The choice of these words was based on the Peters Diagnostic and Remedial Spelling Manual (Peters, 1979). They worked on the personalised words during the same period of time as their literacy group peers, when the charter showed spelling time. Moreover, the students followed a personalised reading program. As mentioned before, the New Zealand Ministry of Education offers schools books and journals of various reading levels. The books are marked by a colour of the colour wheel (New Zealand Ministry of Education, 2010a), referring to the level of complexity and the appropriate reading age of the material. Clare's students had to read every day at home, they daily took a book home which matched their personal reading age.

Clare's main strategy to quiet the class was to occupy them with meaningful activities. Nevertheless she used rituals to remind her pupils to calm down, such as clapping, putting the hands up or freezing. When the children behaved well, they got rewarded. They put a card with their name into a Golden Box. Each Friday a few cards out of the Golden Box got drawn, and the winners received a prize. Obviously the more cards a student had put into the Golden Box during the week, the higher chances to win a prize in the end. If students behaved exceptionally well during the week, they received a diploma on Fridays. Apart from the individual rewarding, the students got rewarded as a group. Here Clare wrote the names of the social group leaders on the whiteboard. She took count of the good actions of the groups by making tally marks of it on the board. The group with the most points got a reward. Some reward possibilities were to stay inside during the morning break, or to get Milo and cookies for morning tea (etc.).

4.4.4. How Laura Differentiated Instruction

For some activities, Laura used the social groups she created for the table arrangements. For other activities, she worked with smaller social groups than the table groups. Here again, the reasoning for the creation of these groups deferred with each activity, considering interests, friends, gender, ability (etc.). Just as the other teachers, Laura mainly worked with ability groups during math and literacy. Students got assessed several times during the year, and based on the results of these tests; Laura created the ability groups for the different areas. She divided math into two separate

areas: number knowledge and geometry. In number knowledge, she created the groups *Stage 5*, *Stage 6*, *Stage 7/8* and *> Stage 8*. These groups were based on the strategy section of the number framework of the New Zealand Curriculum. They referred to *Early Additive*, *Advanced Additive*, *Advanced Multiplicative* and *Advanced Proportional*. In geometry, Laura created three groups, namely *Bronze*, *Silver* and *Gold*, and in literacy, she divided the class again into four groups, *Kauri*, *Kowhai*, *Rimu* and *Totara*[3], all enumerated from the less to the most able group. Throughout the year, the students got assessed over and over again, and Laura sometimes changed the constitution of the ability groups, a possibility the students were aware of. Three charts on the wall, two for math, and one for literacy, visualised the daily and the weekly organisation of the various groups. They looked similar to the following chart (TABLE 3):

TABLE 3

Laura's Math Chart

MATH	Workshop 1	Workshop 2	Workshop 3	Workshop 4
Gold	New Learning	Follow up	Maintenance	Topic Maths
Silver	Topic Maths	New Learning	Follow up	Maintenance
Bronze	Maintenance	Topic Maths	New Learning	Follow up

Each group had four workshops per week in different areas around the same topic. On the same day, each group worked in a different area, changing that area next time workshop activities were done. Every group got to work once in each area. Sometimes these exercises and tasks were the same; they just worked on them at different times. But mostly, they were different, and either differed in levels of complexity or constituted a whole different task. Each ability group owned a box situated on the shelf. Here the students could find their work material autonomously, and started off with their task right away.

Laura taught students individually when she detected that a student had particular difficulties or ease with a learning matter, and either simplified or complicated the content. As the different groups were occupied with meaningful activities, she was able

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[3] Māori names for four different types of New Zealand tree.

to sometimes pick one or two students and boost their learning individually. Laura individualised spelling as well, referring to the Spell-Write Essential Lists (Croft & Mapa, 1998). As mentioned before, they are lists with words the students needed to know the meaning and the spelling of. Once they finished these lists, Laura came up with interest words herself. Furthermore the students followed an individual reading program. The class went to the library each week, motivating students to read books. Each student followed a reading program, which demanded to take a book and read it back home. These books were matched to the students' reading age and interest. More able students read novels, while less able had similar alternatives, working through novel-type books with the support of the teacher. They got encouraged to record their readings shortly in a reading log in the back of these books. Depending on the reading ability and the book, the students finished at different dates with their readings and received new books again.

Laura's main strategy to quiet the class was to occupy them with meaningful activities. Nevertheless she used rituals to remind her pupils to calm down, such as clapping. Laura gave rewarding a thought, not eliminating the idea, but not being a huge fan of it either. She believed and hoped that in a year 8, students were intrinsically motivated. Nevertheless, good behaviour got rewarded in some way. Every week, the whole school met in a school assembly. Here students' good behaviour and/or achievement got acknowledged with certificates by the school.

4.4.5. Discussion about the Strategies

The participants' teaching strategies will now be compared to the principles elaborated in the literature review.

The five teachers had several strategies to ensure that their students felt secure and welcome in the classroom (Strickland, 2007). In the mornings, they greeted and in the afternoons they wished a good rest of the day to each student personally. Students felt welcome and equally accepted as all of them received attention. By using various languages, the different cultures that were present in the classroom were being acknowledged; and cultural identity was not only accepted, but interest was taken in it. Moreover, each teacher gave the students the opportunity to share some news in case they had something on their mind. Hereby teachers showed interest in the individual

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student as a person. Nevertheless they respected the students' privacy and did not force them into reporting something. Respectful activities are yet another principle of the differentiated classroom. Games like the compliment game that Victoria generated, added to the students' general well-feeling in the school environment, the first principle in the literature review. Overall teachers were working towards a healthy class and school climate. They tried to endow their students with a feeling of belonging to the class and to create team spirit between the students. A general positive attitude towards the school and the students, group and pair works as teaching strategies and strict social rules about what is right and what is wrong helped to achieve that goal. Beside the classroom area, teachers also tried to make students identify with their school as a whole, knowing and respecting their schoolmates in general and giving them the feeling that they are part of the greater school community. Activities such as the morning ceremony in Clare's school or the meeting with other classes before tea in Emily and Victoria's school added to that aim.

A further point that made students feel at ease in the classroom was that they knew what to expect. The teachers built their instruction upon a certain routine of which the students were well aware. Students could count on school being a point of reference, as Clare explained:

> And I think that (DI) is important because it keeps a safe learning environment, so they   can feel comfortable coming here. So if they walk in the door and they have had a crap morning with their parents, they know it's ok in the morning when they come to school.

This certainty of a secure place is part of the first principle and therefore consistent with the literature about DI.

Teachers planned their activities in depth, a further important principle of DI. Good planning is essential (Dean, 2006). In the mornings, while sitting on the mat, the whole day or even the whole week was already planned, and students received their workloads so they could organise themselves best. The teachers of the younger students did not confront them with too much information, and only revealed the daily program, while the teachers of the older students left nothing hidden. The weekly workshops and activities were clearly advertised on either posters or the blackboard. Only a good and in depth planning allows such a strategy. During mat-time teachers gave explanations about the next activities, and all five of them persisted on the students' questions being asked at that point. This strategy ensured work-time to be more advantageous, as it

would follow a smoother course of action with less or no interruptions.

Further activities added to a good classroom climate, such as the various fitness breaks some teachers set in place. On the one hand, fun activities like sports and fitness bound people together, as they share the same experiences, exertions and laugher. On the other hand by initiating fitness breaks teachers showed respect their students' general well-being. They recognised that the students needed a break from the academics in order to function adequately later. These activities can therefore be qualified under the guiding principle "respectful activities" as well.

The researcher could observe that all five teachers changed teaching and working groups constantly, depending on the activity and the students' needs. Only their flexibility in grouping allowed the teachers to teach to students' needs and to differentiate content, process, product, learning environment and affect.

In summary, teachers tried to implement most of the principles the researcher found in the theory of DI. They created secure and positive classroom climates, tried to teach a high quality curriculum and focused on the essentials for at least the less able students, they planned their activities in depth and respected their students' individuality during each task. They did attend to students' differences, but all five of them focused on readiness. Teachers' instruction was mainly build on ability group-teaching. They assessed the students' readiness-level in maths and English, and thereupon put them into ability groups. They rotationally taught the different groups individually, adjusted to the students' readiness-level. The small group allowed teachers to instruct in depth, realising students' difficulties with much more ease and being able to work on them or even fix them right away. While teachers were boosting the knowledge of one group, they gave the rest of the class meaningful tasks to do, which were again most often adjusted to their readiness.

The researcher could also observe differentiation through students' interest. Some teachers gave the students either individually or as a group the possibility to choose a topic of interest and fulfil a task around it. The researcher observed activities where students could choose the topic and/or the style (story, description, etc.) of their writing, the book/story they wanted to read, and the learning game they wanted to play. The researcher did not see interest differentiation in math, but teachers claimed that they would not be averse to it, as long as it would be a reasonable idea. Furthermore they

said they used interest differentiation in sciences.

With the exception of Amy, none of the teachers differentiated by learning profile. Laura did a survey at the beginning of the year which asked the students about their preferred learning styles, but she never made much use of the results. All five teachers replied when asked about learning profile differentiation, that they believed it would be very hard for them to integrate the theory in practice. Nevertheless they claimed their awareness of learning preferences, and their use of auditory, visual and kinaesthetic ways to explain and work on a learning matter. They did not differentiate by these learning ways, but repeated learning matter through as many channels as possible. They tried to hit each learner's preference(s) by using all of them. Through repetition of the same content but in various ways, knowledge as well gets automatically consolidated. When confronted to the topic of learning preferences, all five teachers had an idea of learning styles, but were mostly only aware of auditory, visual and kinaesthetic preferences. Amy was the only teacher using MI theory, but not as a general teaching strategy. She based a term project on Gardner's multiple intelligence theory, which will be described later on. No teacher referred to the triarchic theory of intelligence.

The researcher could not observe gender or culture related differentiation. Sexes and culture were accepted, recognised and equally treated, but the researcher could not see instruction that was differentiated on the basis of gender or cultural differences.

All teachers assessed their students frequently and based their main teaching strategy, namely ability group-teaching, on the assessement results. Assessments will be looked at closer in the following section.

Modification of content, process, product, affect and learning environment (Tomlinson & Eidson, 2003) was partly used by the teachers. When teachers differentiated, they mostly focused on differentiating content. All five teachers referred mainly to ability group-teaching, and differentiated by content then. They taught the groups at different times a different content that varied in complexity. Sometimes teachers taught the different groups the same general content, but did not teach it as in depth with the less able groups, and sometimes they taught distinctive content. The process was very often the same for each group, with the students meeting on the mat to get their learning boosted. Afterwards they confirmed the new gained knowledge by doing some exercises around the topic. Often the process varied in a way, that less able

groups could use more scaffolds than their more able peers. Or the process varied, because the content was a complete different one, so the activity itself was distinct. Sometimes teachers varied the process specifically for individuals or groups. Clare's student with the emotional development disturbances had for example most of the time a special teacher looking over her. Content and process were individualised accordingly to her academic strengths and weaknesses, but also and most importantly, accordingly to her emotional state. The researcher did not observe much product differentiation while observing the five teachers. Students showed their knowledge-acquisition in various formative and summative assessments. Some of these assessments differed from student to student, depending on their readiness, and others were the same for everyone. Other products were exercises students did after their knowledge had been boosted. As most of the teaching was done in ability groups, these exercises differed from group to group, but stayed most often the same inside the groups. The researcher could observe one project (Amy's smart goals) for which children could choose how to show their knowledge-acquisition. The project will be described later on.

Learning environment differentiation through interest happened in those classrooms that offered students the possibility to either sit wherever (floor or desk) or with whoever they wanted. Clare's autistic student and her student with autistic features were often taken out of the class into a quieter and more suitable learning environment for them. Her student with the emotional disturbances as well received special treatment and could leave the class if the learning environment did not suit her. These students' emotions were taken into account more specifically and all of them had a special educator who was in charge of looking after them. Teachers held respectful activities (Tomlinson & Eidson, 2003) including the respect of the students' personalities and emotions. Because the participant teachers knew their students so well, they knew which students needed an extra motivational sentence or who needed a more authoritarian instruction. They knew that some students had more trouble with working quietly and allowed these to be somewhat louder. Laura mentioned that teachers should also consider students' personalities when grouping them. She experienced that for some individuals it was better to let them struggle in a top group, than to move them down a group, because they couldn't deal with that emotionally. The participant teachers integrated their knowledge about their students' personalities into their teaching

with the intention to bring their students as far as possible. They also treated their students in a way that they believed would motivate the students most. One can conclude that as literature suggested, affect was considerate by the participant teachers.

Teachers used flexible grouping (Strickland, 2007), they referred to individual instruction, pairs, social groups, ability groups and whole class instruction. As this principle has been analysed already in depth, it won't be debated another time.

Finally literature suggested that teachers teach-up (Tomlinson, 1999) if they are not sure about students' readiness. As the researcher was not aware of students' readiness level, she could not observe teach-up situations. Discussions with the participants made it clear though, that they agreed to that principle.

4.5. ASSESSMENTS IN THE DIFFERENTIATED CLASSROOM

As the New Zealand school system suggests, none of the teachers used traditional tests that grade children. Teachers as well did not believe that grading a young child would necessarily be beneficial. They said it would focus a student on the wrong goals, like scoring in the test, instead of improving her/his learning, understanding and knowledge. Students would be put under pressure to score well on a test, instead of enjoying learning for life. The participants' students did not get grades, instead their learning achievements and further goals were reported in written or verbal form at the end of either the term or the year, depending on school and teacher.

All five teachers used formative assessments on a regular basis. On the one hand, they offered their students feedback on the go, when they did or hand in work. On the other hand, they tested them, and learned from the results on what they needed to work and focus on with each individual. These tests were to inform only though, they were diagnostic and not evaluative. They helped the teachers to identify where their students stood, which instructional input they needed and in which ability group they belonged. Based on the results of these tests, the teachers built up their instruction. Apart from the formal assessments, each teacher assessed her students informally. They observed their behaviour, asked the students questions about their interests, readiness, learning profile and understanding and studied their work. They broke down their products and took notes. As the teachers confirmed, informal assessments can deliver them precious information about the students' learning. This informal assessment could be formative,

initializing teaching and learning improvement, such as summative, offering information for the evaluation at the end of each term.

At the start of the year, essential information was delivered by the records of the former teachers. This information allowed the teachers to have a first impression of their new students. Further discussions with the former teachers were described as helpful and even enlightening.

At the end of either the term or the year, the teachers' assessments had apart from the formative, as well a summative concept. They helped to construct verbal or written reports about the students' achievements and to keep record of further goals.

4.5.1. How Amy Assessed her Students

At the beginning of the year, Amy introduced Gardner's ideas to her class. Trusting the students' judgement, she made them complete a graphical survey about their strengths and weaknesses in their multiple intelligences.

In math, Amy did the GloSS test (Global Strategy Stage Assessment) in the middle of the year which offered her information about the global strategy stage of her students "across the operational domains of the numeracy project i.e. addition/subtraction, multiplication/division, proportions/ratios" (New Zealand Ministry of Education, 2010a). Furthermore, she used the *I Can Assessment Sheets*, which were part of the New Zealand Numeracy project once every term (New Zealand Ministry of Education, 2010a). Moreover, Amy used ARB's (Assessment Resource Bank) (New Zealand Ministry of Education, 2010a) in math. These are short practice examples that inform about the level of competency. Amy decided how often and with whom she used them depending on when she taught strand maths[4]. In spelling she referred to the so called Spell-Write Essential Lists (Croft & Mapa, 1998). They are several lists with essential words needed in order to write. It is seen as an essential aid to spelling for students aged around 8-11 years. In writing, Amy did a poetic, creative writing assessment in the first and the third term and the transactional writing test in the second and the fourth term. Transactional writing works on the competence to describe factional, explanatory matters. Amy used the matrices from the Ministry of Education to

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[4] Based in the five strands of mathematics proficiency: conceptual understanding, procedural fluency, strategic competence, adaptive reasoning and productive disposition (National Research Council as cited in Sue, n.d.)

assess the students' writings (New Zealand Ministry of Education, 2010a). Finally in reading, Amy used the STAR (Supplementary Test of Achievement in Reading) (New Zealand Ministry of Education, 2010a) at the beginning of the year. Moreover she referred to running records. Amy used them twice a year with the students who were at or above their reading age and every term with those who were below their reading age. She regularly made running records with students who particularly struggled with reading.

The learning achievements and next learning goals of Amy's students were reported in written form in their portfolio which they could take back home at the end of each term. The portfolio was a record of the students' achievements in the key areas of learning. Students' accomplishments got compared to curriculum expectations. Numeracy and writing samples demonstrated the current skill level of the pupils, such as their progress over the year. Written reports cherished the students' accomplishments and set new goals for further learning of the students. The portfolio allowed the children to think about their learning and to plan for improvement and built a basis for discussion between the pupil, the parents and the teacher. So while all the mentioned assessments were formative throughout the year, at the end of each term they had a summative basis, as the results were used to evaluate the students, taking note of their achievements and of further goals and resolutions.

4.5.2. How Emily and Victoria Assessed their Students

In math, Victoria did the NumPA (Numeracy Project Assessment) at the beginning and at the end of the year. This is a diagnostic interview, used to test number knowledge and operational strategy with numbers (New Zealand Ministry of Education, 2010a). Moreover, Victoria did snap shots throughout the year, whenever she felt that she needed to assess some or all the students. She mostly designed these snap shots herself, but said that there exist NumPA resource examples, to which she could refer if needed. In reading, Emily did a partial 6 Year Net test after 5 weeks, and another one after 6 months and the full 6 Year Net at 6 years of age. This test is based on the Diagnostic Survey by Marie Clay (Clay, 2002). Every child in New Zealand should be given this test when she/he turns 6. While the two partial tests have a formative nature only, the full 6 Year Net test is of an evaluative basis as the results are compared to other six year

olds in New Zealand. A further reading assessment method of Emily are running records. The students in reading recovery had a running record taken each day, with the aim to get their reading up by one level every week. The levels Emily used, were mainly based on the colour wheel, but have been broken down further and were more refined. Emily also did regularly running records with the shaky and the average readers in class. Emily's top readers did not need to do the records as often, they only had one done a month.

At the end of the first and the third term, the Emily and Victoria met with the parents, and achievements, such as goals and resolutions were discussed. At the end of the second and the fourth term, the parents received a written report about their child's accomplishments. Moreover, the parents could request an interview at any time.

4.5.3. How Clare Assessed her Students

In math, Clare used the GloSS test (Global Strategy Stage Assessment) in the middle of the year (New Zealand Ministry of Education, 2010a). In spelling, the students did the Peters test at the beginning and at the end of the year. It was based on the Peters Diagnostic and Remedial Spelling Manual (Peters, 1979). The test had a formative background at the beginning of the year and a more summative at the end. Clare used the results at the end of the year to evaluate the students' spelling level. After the first spelling test, she diagnosed the students' spelling age, and bestowed the students with lists of spelling words that are supplementary and according to the Peters Spelling test. This contains essential words of different complexity levels students need to learn in order to write correctly. From these lists, each week, Clare gave her students 6 to 10 words to learn, adjusted to their spelling age. On Fridays, the students then did a spelling test on these words. If they passed the test, they received new words for the next week. If they failed it, they had to revise the words that were incorrect for the next week, while the correct ones got replaced by new words. The students completed these tests with a peer who read the word out loud for them and then they had to spell it. These peers had to be compatible, Clare chose working partners of different spelling ages, which were still close enough to read their peers' words. In reading, she did the STAR (Supplementary Test of Achievement in Reading) (New Zealand Ministry of Education, 2010a) once at the beginning and once the end of the year. Moreover, Clare

kept track of the students' ability level by doing running records once a month with her three lower groups. The two top groups did the e-asTTle (New Zealand Ministry of Education, 2010c) test instead, which assesses reading comprehension rather than reading compatibility. Clare put a lot of importance in informal assessments. She carefully took anecdotal notes, which are notes about the children's progress. At the end of the week, she then wrote these down in a reflection and classified them. They helped her to improve the teaching and learning and are of a formative nature, adding a summative background to it at the end of the year. At that point Clare added an anecdotal interview too.

In the middle of the school year, the students' accomplishments and further goals were being discussed in a parent-teacher meeting. At the end of the year, Clare handed out written reports about each student and her/his learning way. Furthermore the school had an open door policy, offering parents and teachers the opportunity to put up a meeting at any time.

4.5.4. How Laura Assessed her Students

At the start of the year, Laura did a survey with her class including a sheet asking about the students' multiple intelligences. It gave her an idea about the students' preferred learning areas, but she admitted that she did not work with that information specifically. Aware of the differences in class, she tried to use flexible teaching methods, giving her the security to reach every student at some point in their preferred way. She believed that it would be too hard to build up an individual program on the basis of each student's multiple intelligences.

Before starting off with a new subject, Laura tested her students' prior knowledge and readiness about the subject. Assessments of and around the learning matter gave her the information she needed to create appropriate ability groups for every student. Laura did the ARB's (Assessment Resource Bank) (New Zealand Ministry of Education, 2010a) which are short practice examples for English, maths and sciences. They inform about the level of competency of the students in each subject. Laura decided how often and with whom she used them. She sometimes created ability groups on its basis. These tests can be diagnostic or evaluative. The NEMP's (National Education Monitoring Project) (New Zealand Ministry of Education, 2010a) are similar to ARB's and there

exist tests for every subject and topic. These tests indicate the national standards, and give an idea, of what the students should know at a certain age, which is helpful for the teacher's discretion as well. The test has therefore a rather summative matter. Laura used them, when she felt a need to do so. The asTTle tests (New Zealand Ministry of Education, 2010a) exist in writing, reading and maths. In Laura's school, they had to do minimum one per subject a year. Within that test, teachers could decide to do separate tests for separate students, depending on their ability and on the aimed information teachers wanted to get out. Laura decided here as well, how, when and how often she used it, depending on the needs of her students. In math, Laura's students did the NumPA (Numeracy Project Assessment) (New Zealand Ministry of Education, 2010a) once each term, with data being collected in number knowledge, addition & subtraction, multiplication and division and proportions and ratios. In spelling, Laura did the standardised Daniels & Diack test (Daniels & Diack, 1958) with all students twice a year. Nevertheless, identified students did it more often if needed. This test informed Laura about her students' spelling age and also enabled her to analyse their known spelling patterns. Furthermore, she referred to the Spell-Write Essential Lists (Croft & Mapa, 1998) as mentioned before. Once the students finished these lists, Laura came up with interest words herself. In reading, Laura conducted the PAT (Progressive Achievement Test) (New Zealand Ministry of Education, 2010a) once and the STAR (Supplementary Test of Achievement in Reading) (New Zealand Ministry of Education, 2010a) twice a year with every student. They are similar to the asTTle test, with the difference that both are standardised. Moreover, she did running records and the Burt Word Reading Test (New Zealand Ministry of Education, 2010a) with students she was worried about. For the Burt Test the students have to decode words. Laura did the running records in the 5th and the 10th week of each term and the Burt test when she had a need further information.

As all other students, Laura's students didn't receive traditional grades. Nevertheless, they got marked on their homework. They also self-assessed themselves towards the criteria of it. Laura believed though that feedback they received from and discussion that were initiated by the homework were more important than an A or B for it. After terms 1 and 2, Laura, the student and the parents met and discussed the student's achievements, further goals and resolutions. Furthermore, Laura let all three

participants know, where the student situated herself/himself compared to the national standards. After term 4, the students received a written end of the year report, offering the mentioned information in a written version.

4.5.5. Discussion about the Assessment Methods

The New Zealand school system proposes that teachers use more formative assessments than summative alternatives. It tells teachers to assess their students several times during the year and to build up their instruction on these assessments. It tells teachers to personalise instruction based on the results of these assessments, which is what the theory of DI proposes (Gregory & Chapman, 2007; Tomlinson, 1999; Tomlinson & Eidson, 2003; Tomlinson, 2005; Tomlinson & McTighe, 2006). The New Zealand school system appears to be very modern and groundbreaking. For many years already, the New Zealand Curriculum promotes personalised instruction. It offers many assessments alternatives on the internet, which teachers can easily access and use. Some of the tests the teachers were obliged to use. This was either prescribed that way by the Ministry of Education, so that the results could be compared to national standards, or by the schools, so they could keep record of their students' accomplishments. Other tests were of free use and personal choice of the teachers.

All the five teachers used assessments mostly in a formative way. As theory of DI suggests, they built their instruction on the results they gathered. Beside the formal assessments, all the teachers put a lot of importance in their observations. They confirmed that during daily work routine, they often saw best the changes in students' work and understandings. Based on the observed changes, they could then formally assess and confirm, or object, their initial thoughts.

Only at the end of each term, the assessing turned summative to inform all parties about the children's learning accomplishments, their strengths and weaknesses and their needs of improvement. Students did not get grades, but received information. All five teachers believed that grades would only do wrong to such young learners. They said that grades put children into categories and could make them focus on the wrong goals, which would be doing well on a test, instead of wanting to improve their learning. Moreover grading could frustrate them when they don't have the capabilities to get good grades. Even though they would do their best, they wouldn't succeed. They could

associate school with non-achievement and exasperation and then turn away from it, as they would not recognise any sense in working, if they receive poor grades anyway.

The researcher believes that the assessment system of New Zealand is very effective. The observed students seemed to fit well into their ability-groups, which can be traced back to the formative assessments. The researcher therefore concluded that these have been successfully evaluated. Furthermore, students seemed to work because they wanted to learn and not in order to receive good grades or better grades than their peers.

4.6. SPECIFIC ACTIVITIES OF AMY

4.6.1. Amy Differentiated Math

As explained in further detail before, Amy did not teach whole class math activities. Instead the whole class worked on their Must Do's and Amy called for one group at a time at the learning table in the middle, which she taught appropriately to their ability in math for that topic. The four math groups always worked on the same general content, but the level of complexity changed. At the moment the researcher visited the class, the class learned about addition and subtraction strategies. The *Red* group learned how to add tens to a number.

$34 + 20 =$
$34 + 10 + 10 =$

The *Yellow* group learned to add and cross the tens barrier by splitting numbers into parts.

$17 + 5 =$
$17 + 3 + 2 =$

The *Blue* group learned to add and subtract by using tidy numbers.

$172 - 98 =$
$172 - 100 + 2 = 74$
$72 + 98 =$
$72 + 100 - 2 = 170$

The *Green* group learned to subtract by adding.

$492 - 276 =$

276 + ___ = 492

Because the math boosting was supposed to help the students with their Must Do practise sheet, students were supposed to only work on the sheet after they received their group instruction.

The boosting time of the *Red* and the *Green* group will be reported in further detail. Considering the readiness differences of the students in the *Red* group, Amy even decided to split it in half for the boosting time. The two weaker students met with another teacher, such as two other students from the neighbour class in the hallway. They learned to count with four-digit numbers. The teacher used various ways to bring the students an understanding of the construction of these numbers. To start with, she wrote down a four-digit number on a DinA4 whiteboard. Alternatively, the students had to read the number out loud, and to count up- and downwards. The teacher further asked to add or subtract two to or from the number.
Example:

6229, 6230, 6231, 6232, ...
3451, 3450, 3449, 3448, ...
3499+2=3501
2651-2=2649

Afterwards the teacher took four numbered dice, showing the numbers 1 to 6. The students got to throw them by turn and tried to construct the highest possible number by putting the thrown numbers together (for example: 6421). Then they named the number itself, such as the one above and the one underneath. As a third activity the teacher handed out 3 ice-cream sticks to each student. Those ice-cream sticks had an addition written on them. The students need to order them from the highest to the lowest result.
Example:

500+9000+20=
9000+400+30=
2000+4000=

The teacher controlled if the students put the sticks into the right order, and asked them to tell her the result of the three calculations.

During that time, Amy worked with the other two students of the *Red* group on the

learning table. She used a DinA3 modelling book as a teaching tool. This book was used by the *Red* group only. Compared to a whiteboard it has the advantage that one can always look up former notes. Here Amy wrote down her explanations and gave the students example calculations to do. She used different colours to make the visual picture more attractive. The students had to calculate for example 34+20, which as Amy explained, is the same as 34+10+10. She deepened this claim by looking at the construction of different two digit numbers and the amount of tens they contain. She always asked her students questions, and tried with hints to lead them to develop themselves the right strategy, instead of giving it away right at the start. After this addition strategy seemed to be understood by the two learners, Amy wanted them to prove this by answering some example calculations. Amy wrote some examples down in her modelling book, which firstly stayed under the 100 limit. The pupils were allowed to use a hundred counter as a scaffold. They had some time to think about the question, and when they knew the answer, they crossed their arms. This way Amy knew when both students had finished their thinking and when she could ask for the result. Both students told their result, and explained how they achieved it. If their answer was incorrect, Amy led them with small hints on the right path. The correct answer with the appropriate strategy was then written down into Amy's modelling book. Afterwards, Amy increased the level of difficulty by giving the students calculations up to the 1000 limit, such as 240+50. While the students were at the start still allowed to use a thousand book as a scaffold to find the results, they later on had to try to get the result without any aid. Answers and strategies were still noted into the modelling book. The equations were this way repeated respective corrected and made visually reachable for the learners. After the students understood the strategy, Amy took a practise sheet, which repeated what had been done during the boosting time. It contained some calculations that students were allowed to do with scaffolds, such as some they had to answer without any aid. The calculations were repeated in two written problems as well. Amy and the students went through the practise sheet, all questions were asked and answered now, and Amy let her fosterlings return to do their Must Do's, which included the sheet they just received. The two weaker students of the red group received a further boosting time with Amy at a later moment, where she explained the same addition strategies with the practise sheet as a knowledge consolidation.

When the *Green* group met at the learning table, Amy worked with them on the reversibility of math problems. She again used a DinA3 modelling book as a teaching tool, this time it was one private to the *Green* group. Every student was distributed a small whiteboard and a marker. By asking questions and giving hints, Amy made her students discover the following claim themselves: every subtraction can be turned into an addition with a known result, but an unknown in the addition itself. She wrote a few examples down into the modelling book, which the students had to solve on their whiteboards. The students had to visualise their calculating strategy on an open number line, a concept that is already well known by the pupils.

Example:

$458 - 127 = \underline{\quad}$

$127 + \underline{\quad} = 458$
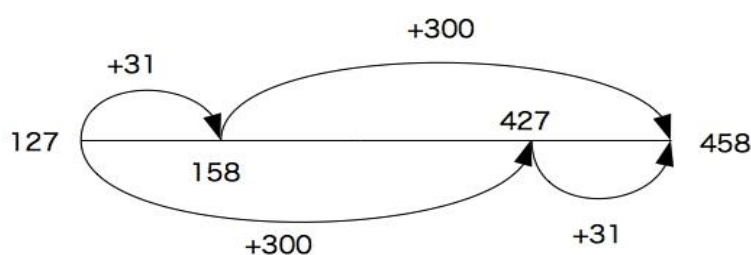
FIGURE 4 : Amy's Representation to Explain Adding Strategies

In their working routine, the pupils showed that they had finished the task by crossing their arms quietly. The different calculations were being discussed, and Amy visualised the correct answers with the appropriate strategy in the modelling book. As a next task, Amy wanted each learner of the group to invent five examples. They had to write them down on the whiteboard and add an open number line as well. Amy wrote a few examples on a whiteboard herself. Each student got the chance to report one of her/his examples; Amy noted a few of them into the modelling book. Incorrect answers got corrected by the whole group, while Amy always tried to put the author of the mistake on the right path, so that she/he revealed the personal false thinking process herself/himself. The task ended up in a group discussion before Amy took out the practice sheet of the *Green* group, which again repeated and consolidated the new acquired knowledge. It showed exercises for which the children needed to reverse subtractions into additions, such as a few written math problems covering the same

topic. All questions should be asked before Amy let the students go to do their Must Do's which included the just received sheet.

4.6.2. Discussion

This activity was differentiated by readiness. Students worked in their ability groups on different contents that were adjusted to their readiness level. The general content was the same for all students. It could be resumed under addition and subtraction strategies. Amy found, that two students from the *Red* group were not ready yet for some of the strategies, and therefore even split it in two. They joined another teacher to get their knowledge boosted. Amy did not differentiate process specifically. For all groups, she boosted their addition and subtraction strategies in the group, before she sent them off with an exercise sheet to practise the new gained knowledge. Nevertheless, process differed because content differed, and the activities were distinct. The two students who joined the other teacher effected game-like activities, the *Red* group was allowed to use counters as scaffolds and answered equations orally, while the *Green* group did not use scaffolds and answered equations in written form using a small whiteboard as a tool. Amy didn't differentiate product specifically either, but adjusted it to content and process. Students received an exercise sheet to show their learning. These sheets differed, because students learned a different content, but the form of the content stayed the same with it being an exercise sheet.

TABLE 4

Content, Process and Product Differentiaton in Amy's Math Activity

Differentiating content	Differentiating process	Differentiating product
The general content was the same (addition & subtraction strategies) but there were different levels of complexity, adjusted to students' readiness.	Process was adjusted to the content. Some groups/students could use scaffolds, such as counters. Two students did game-like activities, they others solved equations either orally or in written form after hearing explanation.	Product was adjusted to the content and the process. Students filled out a sheet working on the learning content they just received. Two students did not deliver a product.

This activity was a typical activity in Amy's classroom. As Amy suggested, it was a barrier that she worked alone. During teacher-time, she wasn't able to look after the

remaining students. These had to work silently alone, without interrupting Amy's group instruction. So students had to try and solve their questions on their own, or wait until later. Amy didn't have full control over them, she could hope they would be working, but could never be sure. But teaching and learning routinely followed these strings of instruction in Amy's class. The children knew what to do while their peers received group-teaching. They actually worked quietly on their Must Do's and looked focussed and engaged. They respected that Amy was not available for them at that point of time, and tried to find answers to their questions on their own, or by asking their peers. The students on the mat received personal help, the close atmosphere allowed Amy to better detect students' misunderstandings and directly react to their questions. With a classroom that fully understood, and even lived this teaching strategy, the researcher believed, that Amy and her students overcame that barrier. The students learned that Amy was not on her toes to help them all the time, and became more autonomous learners. They did not seem to take advantage of the situation of being less controlled by working less, but had the will and the motivation to get their work done anyway. The researcher enjoyed watching this teaching routine that seemed both, effective and fun, for the students and the teacher.

4.6.3. Amy Differentiated Learning Goals

Every student in Amy's class owned a personal portfolio. It had three major purposes: the communication of students' achievement compared to curriculum expectations, the celebration of their accomplishments and identification of target areas that need to be improved and the assistance of children's thinking about themselves as learners (Perry, 2011). The portfolio had a section that was devoted to personalised instruction alone. In this section, the students worked on a personal goal, called SMART Goal. SMART is an acronym which describes the five characteristics of the goal:

Specific:	I know exactly what my goal is!
Measurable:	I can tell whether I have achieved my goal or not!
Achievable:	I can achieve this goal- it is possible!
Reach:	I will push myself to set a goal that really helps me and other people!
Timeframe:	How long will I set those goals for?

To start off with the project, the children reflected on their strengths and

weaknesses, based on Howard Gardner's theory of multiple intelligences. Considering the complexity of spiritual, existential and moral intelligences, Amy chose to work only with the first eight intelligences of Gardner's theory. At the beginning of the year, Amy introduced Gardner's theory to her class. She explained, that all of them were smart, but in different areas. Some might be logical-mathematical smart, some musical smart and some natural smart. Amy believed that the students know themselves their strengths and weaknesses best. In order to assess their multiple intelligences, she therefore let them fill out a relative form. It showed a wheel divided into 8 parts, each being representative for an intelligence. The smarter the students considered themselves to be in a certain intelligence, the more they had to colour the representative piece of the wheel. This graphic assessment showed quite clearly on first sight the intelligence preferences of the individual students. The further SMART goals were based on this assessment. The students had to set themselves a SMART goal, based on their weakest intelligence. They could decide of the nature of the goal, as long as it is relative to their weakest intelligence. A student for example discovered her weakness to be interpersonal intelligence/people smart. Together with a classmate who had the same weakness, she did handcrafts and sold them at a public space. They donated the money they raised to the Christchurch earthquake appeals. Another student's weakest intelligence was logical-mathematical intelligence. He set himself the goal to complete 100 multiplication tables of the number 2 to 7 in 10 minutes. He practised each day, and finally completed his SMART goal.

4.6.4. Discussion

This activity was differentiated by learning profile, because students worked on their weakest intelligence of Gardner's suggested multiple intelligences. It was differentiated by interest, because they were allowed to choose a SMART goal, inside of the area of their weakest intelligence. It was differentiated by readiness as well, because that SMART goal obviously had to be in reach of the students' capabilities at that point of time.

The content was different for each student; it was adjusted to their learning profile, interest and readiness. Students worked in the area of their weakest intelligence, and then set themselves a goal they wanted to achieve and that was in reach for them. The process was different for each student, adjusted to their learning profile, interest

and readiness. Students could choose not only the content in the area of their weakest intelligence, but also the activity itself, namely the process. The product was differentiated by learning profile, interest and readiness again, adjusted to the activity the students realised. The product could be in written form, orally or showing their learning in some other way, like the mentioned students did by selling crafts. Nevertheless, the demonstration of the product was not differentiated. Every student had to illustrate the learning procedure in written form, decorated with examples and/or pictures in their portfolio.

TABLE 5

Content, Process and Product Differentiation in Amy's Learning Goals Activity

Differentiating content	Differentiating process	Differentiating product
Content was differentiated by learning profile (work on the weakest intelligence of MI theory). It was differentiated by interest (choice of goal inside of area of the weakest intelligence). It was differentiated by readiness (goal has to be achievable for the students).	Process was adjusted to the content, and so differed in the way content did. It was adjusted to the students' learning profile, interest and readiness.	Product was adjusted to the content and the process, and so differed in the way content did. It was adjusted to students' learning profile, interest and readiness. The illustration of the product was not differentiated.

This project went over a whole term. During the time the researcher visited the class, she could not observe the students working on their SMART goals specifically. Nevertheless, she had a close look at the students' portfolios, and asked Amy many questions about the procedure of the activity. It was a very challenging activity for the students, as they needed to work in their weakest intelligence, and find a challenging and meaningful SMART goal themselves. Depending on the choice of their activity, they used, or did not use various scaffolds. The researcher liked this project a lot, it seemed meaningful and effective, and it motivated students to work on their weakness!! Students seemed to have enjoyed the project, and were proud of the results, and the illustration of it in their portfolio.

4.7. SPECIFIC ACTIVITIES OF EMILY AND VICTORIA

4.7.1. Victoria Differentiated Math

The class met on the mat to receive orders about the following activity. Victoria

worked with the ability groups, explaining each cluster their following work due. After the *Star* and the *Lozenge* group received their directions, they walk off, and Victoria started teaching the *Circle* group.

The *Star* group received number fans as a learning material. They were a group of nine students. Each student had to create a double-figured number that differed from everyone else's number in the group. This done, they had to line up correctly, from the lowest to the highest number. The *Lozenge* group received a working sheet to fill out. The group contained only three students. They sat down at the same table, and even though they solved the equations individually, they discussed about the task and compared their results afterwards. Their sheet talked about elementary fractions. The students learned/revised how to divide the numbers 2, 4, 6, 8 and 10 by 2. These students finished early with their tasks. They silently took their drawing book and started drawing. The *Circle* group stayed on the mat with Victoria. They learned how to double numbers up to 10. Victoria used a white poster and put different amounts of coins on it. She hid them with a lid. Victoria now asked how many coins there would be if she would double the amount. The students, who knew the answer, put their hands on their knees to show so. The teacher started off asking easy equations. She firstly put one coin on the poster, hid it and asked the group of students to double that amount. She waited for every student to show that they finished by putting their hands on their knees, then she chose one to answer. The student gave the correct answer namely 2. Victoria visualised the answer as she revealed the coin and doubled it by adding another coin. The amount of 2 coins was clearly visible lying on the poster. With the following equations, Victoria only visualised the equation by doubling the coins she had at the start, when students had difficulties to double a number. When they understood it right away, she moved on to the next equation. She asked the students to double numbers in between 1 and 10. After approximately 20 min, all three groups were finished. The *Star* group presented their number line to the whole class. They lined up in the correct order in front of the class. Starting from the lowest number, the different participants read their personal number out loud by turn. They received applause from everyone else.

4.7.2. Discussion

This activity was differentiated by readiness. Victoria worked with the ability

groups she created on basis of students' readiness in maths. The content was different for each group. It was adjusted to what the students were able to do at that point of time. The process differed for each student as well; it was adjusted to the content, and was therefore differentiated by the students' readiness-level. The working form (group work, group-teaching, individual work) was chosen according to the learning goals. The three groups were group-taught in turns while the remaining groups always got meaningful tasks to do. Victoria also varied the activity processes; they included written work, oral work or even kinaesthetic work. By changing them up, she assured that students worked in their preferred way at some point. Both, the *STAR* and the *LOZENGE* group used their peers as their scaffolds. The students of the first group collected their common knowledge to fulfil the task. The students of the second group answered the equations on their sheet individually, but controlled their results together, using each other as scaffolds. Product was not individually differentiated, but adjusted to the content and the process. The *STAR* group demonstrated their knowledge orally, the *LOZENGE* group in written form, while the *CIRCLE* group did not deliver a product.

TABLE 6

Content, Process and Product Differentiation in Victoria's Math Activity

Differentiating content	Differentiating process	Differentiating product
Content was differentiated by readiness, all the content differed.	Process was adjusted to content. It was different for each group (group-teaching, group work and individual work) These differences were rather randomly decided than based on DI. The teacher mixed methods up so that students got the chance to work in their preferred way once.	The products were adjusted to the content and the process. They differed but were rather chosen randomly by the teacher, than based on DI. One group did not deliver a product.

As with for Amy's instruction, the barrier for this type of teaching would be that the teacher was restricted in her control over the remaining students while teaching a group. With the children being so young, the researcher could see that they had more difficulties than Amy's students to keep the discipline up and work quietly. Nevertheless, each student got the task done, and so teaching had been effective after all. The researcher liked Victoria's class management, the students' seemed to have fun, and even though the classroom was a little noisy, all the work was successfully finished

by the end of the lesson.

4.7.3. Emily's Differentiated Learning Goals

The SMART Goals were purported by the Emily's school. It indicated that every teacher should conduct this teaching strategy with her/his students. SMART is an acronym for the five characteristics of a well-designed goal, which are specific, measurable, attainable, relevant and time-bound. The school wanted its teachers to set such goals with and for every student in various subjects. Victoria and Emily both adopted the SMART Goals for their relative subjects, but the researcher focused on Emily's work. At the beginning of the year, after having assessed her students' writing skills and knowing where they stand, Emily sat down with each of them. Together they fixed a learning state where the student was at that moment, what she/he knew and was able to do. After discussing what the student would like to learn, they fixed a goal. This goal was specific, which means clear and unambiguous, so that the student knew what was expected. It was measurable, so that students, parents and the teacher could see the progress that has been made. It was attainable, which means, that even though it stretched the student, its achievement was realistic. A smart goal should be neither out of reach nor below standard performance. It was also relevant that it showed importance and made sense in the learning process. Finally it was time-bound, meaning it has a starting point, duration and a deadline. Deadlines motivated help to focus on the completion of a task. Apart from the final goal, they created small guiding steps that guide towards the main goal and needed to be reached first, in order to achieve the final goal.

FIGURE 5 is an example of such a goal setting from a student of the *Purple* writing group (the weakest writing group). Emily designed the SMART Goals symbolically as a ladder which students have to crest in order to reach the goal. She put the guiding goals in the rungs of the ladder, said though, that they don't have to be completed in the indicated succession.

GOAL:

I want to be able to write a story with capital letters and full stops in the right place. I want to be able to check my story and fix some of the words.

Read my story when it is finished and check the spelling. Fix the mistakes I can.

Read my story when it is finished and check if it makes sense and if all full stops are in the right place.

Read my story when it is finished and check if it makes sense.

Where I am now:

I can spell some words correctly. I can write a sentence and use a capital letter.

FIGURE 5: SMART Goals of Emily's *Purple* Writing Group

FIGURE 6 is another example of a student that is part of the *Blue* writing group (the most able group).
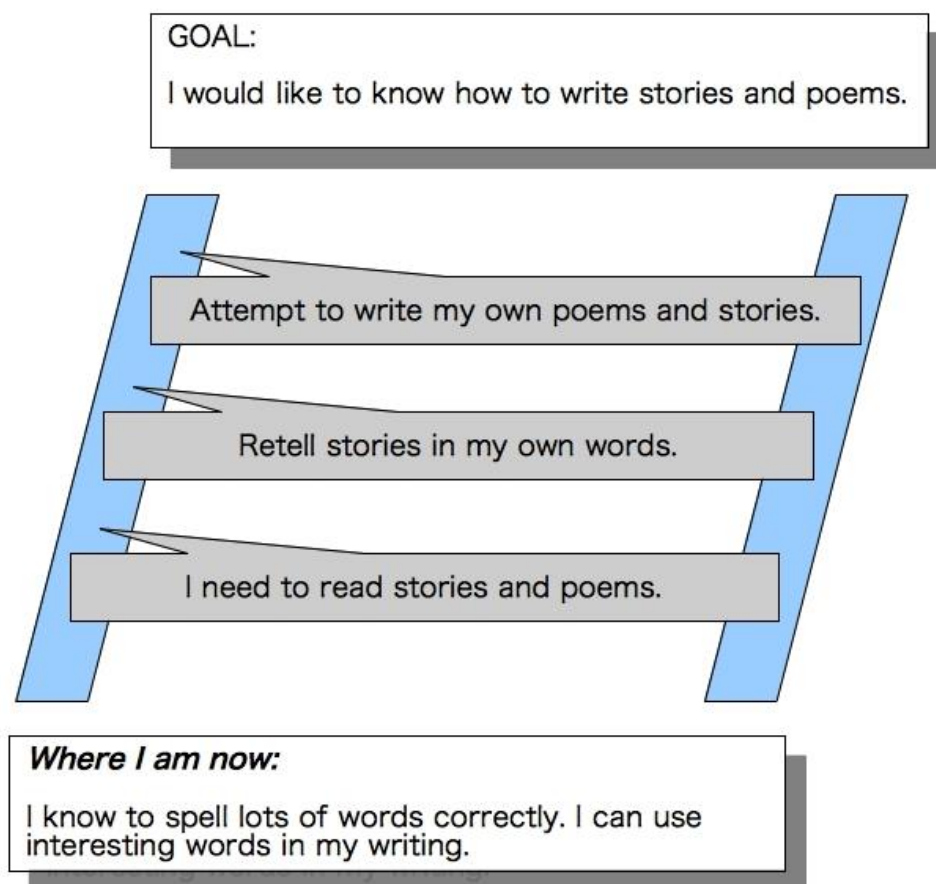
FIGURE 6: SMART Goals of Emiliy's Blue Writing Group

The students glued the ladder at the back of their writing exercise books, so they could always have a look at their personal goals. They could try to find out where they were standing, if they got closer to their goal and how much work was left to do. When either the student or Emily believed that a goal had been attained, they met and discussed the student's achievements together. They then defined where she/he stood relatively to her/his goal. If there was consensus on the achievement of goal, a new goal was set. Otherwise the areas of improvement and the areas that needed to be improved were determined. If Emily could see on the other hand that after a long time/at the end of the term, no or not many improvements had been made, she also arranged a conversation with the student. This time the raisons and the difficulties that stood in the way were defined. New strategies to reach the goal and necessary resolutions were initiated.

Beside the individual goal for every student, Emily created a class writing goal with all the students. The class goal showed general writing goals, that every student and the whole group together were supposed to reach by the end of the school year (see FIGURE 7).

GOAL:

We want to be able to write our own stories and to be able to check and change the when we have finished.

We need to know what looks right and what doesn't and where to go to check.
We need to read our stories out loud and see if we can make them better.

We need to know what a sentence looks like so we can put a full stop and write a new sentence.

We need to learn how to make a brainstorm and use it in writing.

Where we are now:

We can write and spell some words correctly. We can write one good sentence. We can get some of our ideas down on paper.

FIGURE 7: SMART Goals in Writing for Emily's Class

When Emily taught writing, she paid attention to the writing goals of the students, and made them paying attention to them too. When they wrote a story for example, they needed to check the different steps of their personal and the class goal, and use it as a checklist when trying to follow its steps.

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4.7.4. Discussion

This activity was differentiated by students' readiness. Depending on how well the students managed the written English language at the start of the year, the students received more or less complex writing goals. The overall content stayed the same for each learner, namely the goal of improving English writing as much as possible. Nevertheless, their individual goals differed. When completing a writing task, students were supposed to orientate it around these goals. Creative writing is generally intrinsically differentiated, which means that even though every student writes a story, they write it as good as they are able to do at that point of time. With these goals, creative writing sti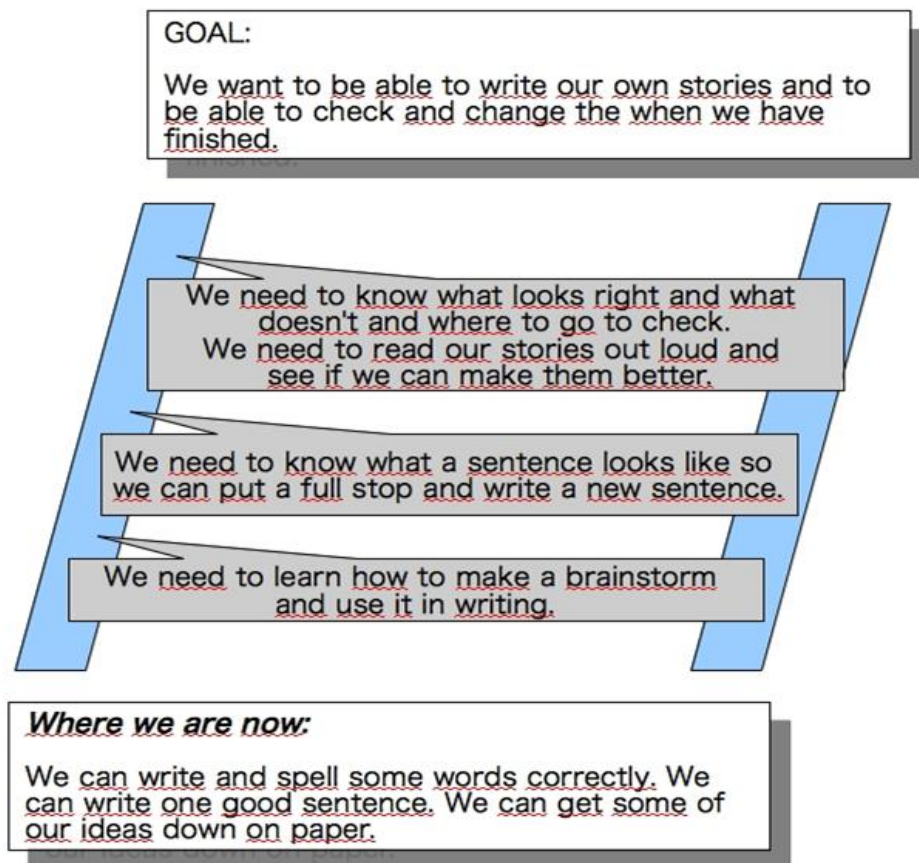ll stayed intrinsically differentiated, but some teacher differentiation was added to it. The goals helped students focussing on their personal and reachable writing aims. They were applicable for each writing activity. The process was differentiated by readiness in a way, that students had different scaffolds, or ladders to lean on and fulfil their writing. Students did a writing task, and controlled later on with their ladder, if they paid attention to their goal sets. The product was differentiated by readiness, demanding qualitatively higher products from some students than from others. Process and product depended on the writing activity.

TABLE 7

Content, Process and Product Differentiation in Emily's Learning Goals Activity

Differentiating content	Differentiating process	Differentiating product
The overall content stayed the same, but the degree of difficulty varied for every individual student.	The process was the same for each student, but the scaffolds (ladder) were differed in complexity.	The demand of quality of the products was different for each individual.

A barrier for this activity was the long process. While referring to the ladder quite often at the start of the term, students did not seem to use it very much at the end of it. When the researcher observed the students working on writing tasks, she saw only two students that utilised the ladder. When Emily reminded them to correct the writing using the ladder as a scaffold, students seemed annoyed by it. The researcher believes that the goals could have been more effective if they were less vague, and less far out of reach. In the researcher's opinion, more specific aims that would be easier and faster to achieve, would motivate the students more. Students would be proud to receive new

ladders regularly, knowing that they progressed already by a lot.

The ladder itself constituted a scaffold for writing, but students were most often allowed to use other scaffolds during writing activities. Some examples were books, dictionaries or writing aids. Most often they could also refer to their peers or the teacher for help.

4.8. SPECIFIC ACTIVITIES OF CLARE
4.8.1. Clare Differentiated Maths

As mentioned before, Clare divided the students into ability groups at the beginning of the year: the *Fractionors*, the *Numbers* and the *Additions*. The groups are enumerated from the less to the most able group. An organisation chart on the wall specified to the students right away what they needed to do. When a group had teacher-time, they met Clare on the mat, where she instructed the students according to their needs. Otherwise a different task was being indicated on the charter. Before starting the work as indicated, the students got the material they needed for the task out of their group box. Each group owned such a box which was situated on a shelf at reach of the students. It contained exercise sheets, working tools and scaffolds to complete the daily workload autonomously. Even though the tasks were displayed on the chart, Clare went over the different tasks once again orally, taking advantage of the close atmosphere with the group on the mat. During 20 minutes she would work with the *Additions*, while the *Numbers* and the *Fractionors* would do independent activities in pairs. All questions were supposed be asked now, as Clare did not want any interruptions during teacher-time. The *Numbers* and the *Fractionors got* their material and dispersed through the room, only one pair per table so to minimise noise and interruption, and maximise work focus. The *Additions* stayed with Clare on the mat.

The *Numbers* played in a group of three people. They used two dice, a pencil and a sheet showing graphics similar to the following ones:

67	67	67
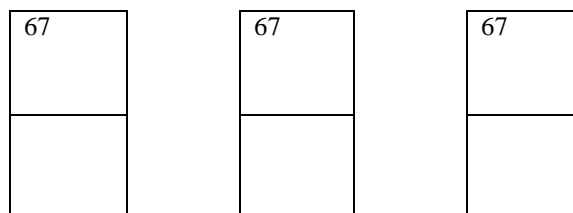
35		
21		
10	10	10

FIGURE 8: Graphic of the *Numbers'* Strategy Number Game

Every pupil owned a column. The first player rolled the dice and received for example 3 and 5. The player now decided to create either 35 or 53 and filled it into her/his column. The numbers had to be in the correct succession, from the lowest to the biggest. It was obviously a good strategy to think wisely about where to fill in the number, choosing a lower square for a low number and vice-versa. When none of the numbers could be used, because the succession wouldn't be correct anymore, the player had to sit out. The first player to complete her/his column won.

The *Fractionors* played in pairs. They played an addition and subtraction game using two dice, red and blue coins and the following chart:

1	2	3	4	5	6
7	8	9	10	11	12

FIGURE 9: Graphic of the *Fractioners'* Addition and Subtraction Game

The first student threw the dice and chose to either add or subtract the roll. She/he hid the result with a coin of her/his colour in the chart. She/he got a point, and the hidden result could not be used again. The second pupil threw the dice, added or subtracted her/his numbers and put a coin of her/his colour on the result in the chart. When the two possible results were taken, the student had to sit out, and the next player could give it a

try. The game was over when all the numbers in the chart were hidden. The student with the most coins on the chart won.

The *Additions* sat down in a half circle around the teacher on the mat. Clare sat with them on the mat, and used a DinA3 modelling book as a tool to write down her topic explanations and tasks. She used many different colours to make her writings and their sense clearer. The modelling book is advantageous to the blackboard in a sense, that the teacher can classify her instructive work and always look up past lessons. Today Clare taught about the amount of hundreds in a four- and a five-digit number. She introduced the topic using a story of her going to the bank. In her story, she wanted to get out 2315$, but unfortunately, the bank ran out of 1000$ notes. Clare now asked the group, how many 100$ notes the banker handed her out? While reporting the story, she wrote down the numbers such as the question in the modelling book. Furthermore she offered her students play money to find out the answer. Individually, the students tried now to find out the solution, either using the play money as a scaffold or not. The students had small whiteboards they used to write down their equation and their answer. When they had a solution, they put their hands on their knees, so Clare could see, they had finished. One student could present the answer, and explain how she/he found it. The answer was explained and discussed in the group, and Clare wrote down the solution in her modelling book as well. Her representation looked similar to the following:

$ 2,315 out of the bank,

in those notes:

$1
$10
$100

How many $100 notes do I get?

10x100 = 1,000

23x100 = 2,300

23 $100 notes, 1 $10 note and 5 $1 notes

Further equations were done following the same principle. The close atmosphere in the small group gave Clare the possibility to give some extra explanations to students who had difficulties with the topic.

4.8.2. Discussion

The activity was differentiated by readiness. Clare worked in the ability groups she created on the basis of students' competences. On the day the researcher observed math instruction, the *Additions* had teacher-time, but Clare taught every group alternately, so that on other days, she would teach other groups.

The content of each group differed according to their competences at that point of time. The process of the activity was adjusted to the content. Clare did not use learning profile differentiation, but she was aware of how students learn differently. Based on this knowledge, she tried to mix up the learning process, with them being sometimes auditory, sometimes visual and sometimes kinaesthetic. Today, two groups worked in a kinaesthetic way, they played math games. One group learned in an auditory and visual way, they were taught by Clare on the mat. None of the groups had to do a product in this lesson.

TABLE 8

Content, Process and Product Differentiation in Clare's Math Activity

Differentiating content	Differentiating process	Differentiating product
Content is differentiated by readiness.	Process is differentiated by readiness and adjusted to content.	

Just as for the Amy's and Victoria's activity, the teacher did not have the means to control the students who were not on the mat when she used this teaching strategy. Clare could not see if they actually did what they were asked to do, as she was paying full attention to the group on the mat. Nevertheless, Clare always had another teacher in class. In the mornings an educator watched the girl with the emotional disturbances, and in the afternoons, when the child with autism was in the classroom, he had a separate educator too. Even though these two teaching aids mainly looked after these two children, they also kept an eye on the rest of the class, so that Clare could rely on some support. Furthermore, the activity was well organised and the children were used to work this way. They autonomously looked at the charter to know what to do next; then got the material from the shelf and started working. Even though students were of a young age, they worked mostly independent. The barrier was therefore well solved by Clare.

The researcher liked the different activities, and enjoyed that Clare was doing various activities which all demanded different learning styles or intelligences. The students seemed to enjoy class and learn meanwhile, which is the main goal of each teacher.

4.8.3. Clare Differentiated Literacy

The activity started with a class meeting on the mat. Today's activities were defined, and questions were being asked and answered, before the students headed off to start with their program. A chart (see TABLE 2) on the wall visualised what the different ability-groups had to do. The *Chapters* and the *Bookworms* started with super silent reading (SSR). They grabbed a book adjusted to their reading age, and read during 10 - 15 minutes, until Karen told them to change to the next activity. The *Readers* and the *Tintins* did buddy reading, which meant that they worked in pairs. The *Readers* were the tutors of the *Tintins* and the *Poems* and assessed their reading skills. These pairs stayed the same all over the year, Clare created them based on her class knowledge, and she chose two students that were compatible to work together. Every pair was constructed of a member of the *Readers* (tutor) and a member of the *Tintins* or the *Poems* (tutee). The *Tintins* and the *Poems* were students that had troubles with reading. The *Readers* were average readers, and therefore able to help their buddies out with this task. As today the *Poems* read with Clare, their tutors from the *Readers* had SSR as well. The tutees grabbed a book adjusted to their reading age, and the tutors grabbed their buddy's reading form. Every tutee owned such a form; it had a chart looking similar to the TABLE 9:

TABLE 9

Clare's Buddy Reading Chart

Date	Title of the book	My buddy's reading was ... today	My tutor was ... today	Something that went well
		☺ ☺ ☹	☺ ☺ ☹	
		☺ ☺ ☹	☺ ☺ ☹	
		☺ ☺ ☹	☺ ☺ ☹	
		☺ ☺ ☹	☺ ☺ ☹	
		☺ ☺ ☹	☺ ☺ ☹	

The tutors filled this form out, they noted the date, the book title, and their judgement about their buddy's reading. The tutees on the opposite could criticise their tutor too. The charter in the form held several rows, and could therefore be used over several weeks. The tutees had to read either one article or one story, but the reading should not excess 10-15 minutes. After the activity was over, the tutees automatically changed to the next activity being spelling, while the tutors had SSR, grabbing a book themselves, and reading for 10 to 15 minutes. Often their SSR was cut short because of the next lesson. The teacher tried to avoid these problems by either withdrawing buddy reading one day or by extending the SSR. Clare's student with behavioural difficulties was part of the middle group *Readers*. Often unable to work with other students, she was not part of the buddy reading project. She read instead with her educator. The *Poems* got assessed in reading from the teacher. Individually they met Clare on the mat. She used the same buddy reading sheet as the other groups, assessing the students herself though. As the students had to wait for their turn, they already started their second task, namely spelling, while they waited for Clare to call them.

As a second activity the students mostly worked on their spelling words from the Peters spelling list. Depending on their readiness and abilities, they received six to ten words each week that they needed to learn. The *Chapters* took a crossword out of their group box. Here they found sheets that were already marked with their name, as some of these crosswords differed in the level of difficulty from others. They were based on the spelling age of the children, comprehending their learning words. The *Bookworms'* activity was similar, just that they did a word-find instead of a crossword, which dealt with random words. The *Readers*, the *Tintins* and the *Poems* learned their personal spelling words by filling out a vocabulary sheet with four parts. In the first square, they wrote down their learning words after they said them out loud. The second square was divided into two parts; it worked on the awareness of the syllables. Students wrote their words down, putting one syllable per column, saying the sound of each syllable out loud (e.g. num/ber). For the third square they repeated the same task. The last exercise showed twelve lines, on which the students wrote their words another time. The vocabulary sheet helped the students to repeat their learning words in a visual and an auditory way. It aimed to help them learn the words by the end of the week, when they were assessed on these words.

After the *Chapters*, *Bookworms*, *Tintins* and *Poems* had finished their work sheet, they could play games activities or alphabet activities. Clare always decided which game they play. Games activities usually included words and increased the students' vocabulary, such as *Scrabble*, *Scrabble Upwords* or *Bingo*. On the day the researcher visited the class, the students played Scrabble Upwords. The students had to create words with a certain amount of letters for this game. Alphabet games worked on spelling and sentences construction, some games the students could play were *Silly sentences*, *Chunks*, *Boggle*, (etc.). On the day the researcher visited the class, they played *Silly sentences*. The game had various puzzle pieces on which were printed different parts of a sentence: The players had to create well constructed sentences that did not have to make much sense (were allowed to be silly). Nevertheless, before they were allowed to play, they had to show their finished worksheet to Clare to sign and to allow the playing.

After the teacher had assessed all the students from the *Poems*, she called for the *Readers* on the mat. They learned to ask and to respond questions that helped understand readings. Clare asked the students of the group to name her all the question words and wrote them down in her modelling book again. Together they find *Who? Where? Why? When? What? (Which?)* and *How?* Clare wrote down, that these are the 5 W's + 1 H, a way that could help to remember them. She afterwards distributed an edition of the school journal. These journals contain small and interesting articles and stories, and are distributed for free to schools from the New Zealand Ministry of Education. The students had to look at the article called *Phil's machines*, and tell Clare what they thought the story would be about. Clare wrote their answer in her the modelling book, so that the students had a clear sight of what had been said. Moreover it allowed her to keep track of what had been done during group-teaching. She used a different colour for every student, so she could remember which student gave her which answer, and assess later on, who had difficulties, and who understood or even mastered it. The students gave the following answers:

Making a machine	Chocolate machines
Decorating machines	Factory machines
Art machines	Read machines
Word machines	Flour machines
Inventing machines	

The students read now the story of *Phil's machines*, Clare gave them time to complete the job, with the usual order to put their hands on their knees once they finished. As everyone was done, Clare asked, and wrote down the following question:

How did Phil get the job?

Two students had an idea and put their hands up. Clare asked them what they thought, and they said:

The truck was hard.   wrong

Phil drove the bulldozers.   answers

Again she wrote down the answers in the modelling book, and wanted the group to think about them. Did they sound right? They commonly decided that the questions did not sound right and so Clare marked them as wrong answers. She told the group in which paragraph of the text they could find the answers to the question, ordered them to reread it, and to put their hands on their knees once they thought they knew the correct answer. One of the students was asked to answer the question and she knew the correct response. Clare wrote it down in the student's colour in the modelling book:

Correct answer: Phil has always loved machines.

The time for English was over at this point, so they stopped. The activity and the further analysis of the story were continued the following week.

4.8.4. Discussion

This activity was again differentiated by readiness. Clare worked with her ability groups, which were created on the basis of the students' capabilities in reading and spelling and a certain point of time. The English lesson contained three small activities which were executed one after the other.

The content for the reading activity differed in levels of difficulty, the top groups read more complex texts than the lower groups, and therefore it was differentiated by readiness. Moreover interest played a role as well, as student could chose which book they wanted to read as long as it was in their range of capability. The process differed by readiness as well. While the top groups read silently on their own, the lower groups received reading support either from another student (buddy) or from the teacher. The

top group did not have a product, but the lower groups handed in a form that commented their reading. This form was not differentiated. The content for the second spelling activity was differentiated by readiness again. It was mainly based on Peters Spelling List. Each student had different words from this list to work on, adjusted to their individual readiness in spelling. The *Bookworms* were the only group that worked with random words. The process differed for the lower and the top groups. While the top groups did riddles to learn or repeat words, the lower groups practised by writing them down several times and saying them out loudly. The product differed for the different groups as well, they either handed it a riddle, or that form which showed the learning words they wrote down. For the third and last activity, the two top groups were doing the same and the two bottom groups were too. The content of the top groups was to practise English words, while the content of the bottom group was the construction of sentences. The middle group had teacher-time. Their content was the reading and understanding of a story called *Phil's machines*. The process of the top and the bottom groups was similar, they played games. The top groups played Scrabble Upwords, a game for which they had to create words with a certain amount of letters. The bottom groups played Silly sentences, a game for which they had to create correctly constructed sentences that did not have to make sense though. The middle group was on the mat, they read a story, analysed it, and answered to questions. Their reading and their discussions were teacher directed. None of the groups had a product for this activity.

TABLE 10

Content, Process and Product Differentiation in Clare's Literacy Activity

Differentiating content	Differentiating process	Differentiating product
Activity 1: The content differed in the level of difficulty, and so by readiness. Furthermore the students could choose which book to read in their range of understanding, so it was differed by interest as well.	The process differed for the top and the bottom groups, the top groups read on their own, while the bottom groups had either peers or the teacher acting as scaffolds and guiding their reading.	The top groups did not have a product, the bottom groups filled out a form.
Activity 2: The content was differentiated individually, based on the Peters spelling assessment. The words were differing in difficulty.	The process differed for the top and bottom groups by readiness again. The bottom groups' repetition sheet was not as hard	The product was the outcome of the process, so riddles for the top and a repetition form for the bottom groups. It therefore was

	as the top groups' riddles.	differentiated by readiness again.
Activity 3: The content was differentiated by readiness. The top groups played a game that asked for higher literacy skills than the bottom groups. The middle group's content was text analysis.	The process was similar for the top and the bottom group, they played games. It was different for the middle group though, who were reading and analysing a story in a teacher directed context.	

It was a barrier or a challenge for the teacher to keep discipline inside the classroom, when she was occupied with teaching a few students. Nevertheless, as for her math activity already, Clare managed this well. Student self-management has to be real good, as there were so many different activities going on. But as everything just worked and functioned fine, the activity was nice to watch. The researcher was impressed by how well planned and prepared Clare was, and how smoothly the activity went.

4.9. SPECIFIC ACTIVITIES OF LAURA

4.9.1. Laura Differentiated Maths

A number knowledge activity will be described. The class worked on workshop 3 when the researcher visited them. The mentioned chart on the wall defined what work the different ability groups had to do. It looked similar to TABLE 11:

Table 11

Laura's Math Chart

Number knowledge	Workshop 1	Workshop 2	Workshop 3	Workshop 4
Stage 5	Take 5 minutes: Working with a partner Foundation level	Teacher time	1 more and 1 less Using number fans	Addition and subtraction Salute 2 and 3 cards
Stage 6	Multiplication tables Salute 2 cards	Take 5 minutes: Working with a partner Intermediate level	Teacher time	1 more and 1 less Using number fans Decimals
Stage 7/8	Factors of numbers Write factors of? Write common	Order of operations	Take 5 minutes: Challenge working	Teacher time

	factors of? And?		with a partner	
	Multiples of numbers Play Buzz in groups		Advanced level	
Stage >8	Problem challenge	Bingo Fractions Decimals Percentages	Order of operations	Take 5 minutes: Challenge Advanced level

The *Stage 5* students worked in pairs of their choice. They used number fans to create up to 10-digit numbers which they showed to their partner. The partners had to read the number out loud and then add 1 and subtract 1 and say each result out loud. As a third task, they needed to explain how many ones, tens, hundreds, thousands, (etc.) the number had. Now they could switch roles, and the other partner answered all these questions about a number the first student creates. When the *Stage 6* students worked in this area, they did the same exercise, but utilised decimal numbers. The S*tage 7/8* students played Buzz, a game that focused on the learning of common factors and multiples of numbers. The *Stage 8* students played Bingo, another game for which they focused on fractions, decimals and percentages. On this day, the *Stage 6* students had teacher-time; they met on the mat with Laura. She used the small whiteboard to write down the content shown in FIGURE 10:
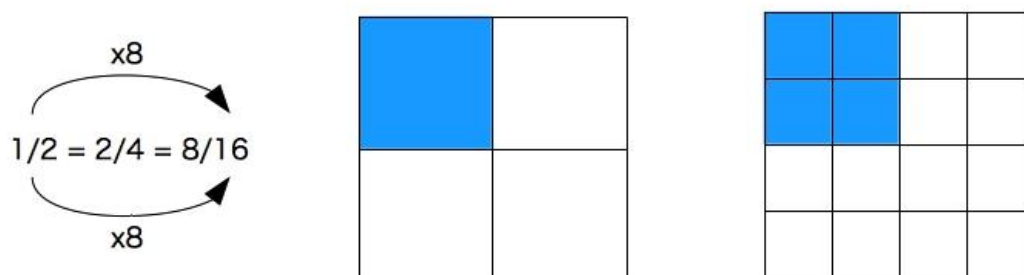

FIGURE 10: Laura's Representations to Explain the Multiplication of Numerator and Denominator

The group learned that when multiplying the numerator and the denominator of a fraction with the same number, its value stays the same. Laura gave explanations making it visual on the board. The students could ask questions. As everyone seemed to

understand, they received an exercise sheet which treated the same topic. The students returned to their desks to do the exercise. Meanwhile Laura walked through the classroom to check on the other students and groups, answered questions and offered individual help to those who needed it. The *Stage 6* students returned to the mat after finishing with the exercise. The people that could not finish in the given amount of time had to do so later. They now joined everyone on the mat. As no students had difficulties with the sheet, no further questions were being asked. If this would not have been the case, Laura would have either herself or let a more capable student of the group, explain the exercise again. She continued her instruction and used a hundreds board as a teaching tool. The fraction board showed 100 squares, which were white on the front and red on the back, forming one big square. Laura explained that the board showed 100/100, and she wrote the fraction on the whiteboard. She turned half of the squares around so everyone could see the red side. One could deduce that on the one hand half of the total square was red, and on the other hand that 50 small squares were red and that both referred to the same amount. With a graphical representation as in FIGURE 11, Laura explained the mathematical fact visually.

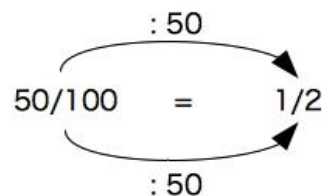$$\overset{:\,50}{\overset{\frown}{50/100 \quad = \quad 1/2}}\underset{:\,50}{}$$

**FIGURE 11: First Representations Laura Used to Explain
the Multiplication of Numerator and Denominator**

She went on saying that one should always try to keep fractions as simple as possible, looking for the highest common factor there is. She wrote the example of FIGURE 12 on the whiteboard, asking the students to simplify the fraction.

$$\overset{\displaystyle : 10}{\overset{\frown}{30/50}} \quad = \quad 3/5$$

$$\underset{\displaystyle : 10}{\underset{\smile}{}}$$

FIGURE 12 : Second Representation Laura Used to Explain
the Division of Numerator and Denominator

At this point, workshop time was over, and Laura stopped with the group instruction.

When *Stage 5* had teacher-time that week, they worked on creating numbers up to 10 digits. *Stage >8* students worked on a problem challenge which is a problem solving competition organised by the Statistics Department of Otago University. *Stage 7/8* worked on a multiplication strategy using doubling and halving to simplify an equation. Example:

$$18 \times 4 =$$
$$\downarrow {:2} \qquad \downarrow {\times 2}$$
$$9 \times 8 = 72$$

Figure 13: Representaion Laura Used to Explain Strategies to Simplify an Equation

On this day *Stage 7/8* students took the 5 minutes challenge. They worked together in pairs which they created by choice. Together they tried to solve 30 equations in 5 minutes. The equations involved all four operations, such as fractions, decimals, percentages, square roots and cubes. They were of an advanced level. The students had to time their working time themselves.

On other days, the other groups did the five minutes challenge workshop as well, but on different complexity levels. The *Stage 5* groups had the foundation level, the *Stage 6* worked on the intermediate level, and the *Stage >8* group took the challenge of the advanced level, but working individually. As the last group, the *Stage >8* students worked individually on an exercise sheet treating the order of operations. They had to answer a number of equations that involved 2 or more operational signs. On other days, the *Stage 7/8* students had to work for this workshop on an exercise about the order of

operations as well, with less complex equations though. The *Stage 5* and *6* groups on the other hand played a card game called Salute. The *Stage 5* practised addition with this game, and *Stage 6* played it in a way to practise multiplication instead.

When students finished early with a workshop, they autonomously looked for other activities they needed to finish. If there were none, they already started with their strategy workshop, described in a second chart.

4.9.2. Discussion

Laura planned her activities over a week, and then created these charts that informed the students about the workload of a whole week. The charter showed four workshops, so the class usually worked four times a week on these workshops. There were four different activity areas, which had a similar content, process and product, but they differed in complexity. On a daily basis though, the different groups worked in a certain area each, so that all four areas were covered each day by one of the groups. Each area had different processes, sometimes tasks involved playing games, and sometimes they were challenging the students' auditory, visual or kinaesthetic channels. Laura tried to mix her processes up, so each student could work in their preferred way once in a time. She assessed her students on their learning preferences at the beginning of the year, but decided to mix learning process up, instead of differentiating them. The mix of various learning processes also kept the students on track and made learning more interesting for them, as it kept them on the toes.

TABLE 12

Content, Process and Product Differentiation in Laura's Math Activity

Differentiating content	Differentiating process	Differentiating product
The content area stayed the same for each group, but the tasks differed by the levels of difficulty, so the tasks were differentiated by readiness.	The processes differed by readiness as well. Sometimes the activities were the same, just distinguish difficulty levels, sometimes they were different activities overall.	The products were adjusted to the processes and were differed by students' readiness.

Again, the teacher couldn't watch over the students working on their own while teaching the group on the mat. But Laura's students worked well on their tasks, so she was able to overcome that barrier. Moreover, Laura left the mat-group when these were

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finishing up an exercise and she walked though the classroom to check if anyone else had a question she could answer before returning to the mat. The researcher liked Laura's classroom management; it seemed to be effective and fun for the students.

4.9.3. Laura Differentiated Literacy

The class had literacy after morning tea. Before the teacher even entered the room, the students got their exercise book and started with a first task. Every week, they received a list with new words they need to learn. As mentioned before, this list varied from student to student, adjusted to their level of understanding. It was based on the Essential List (Croft & Mapa, 1998) on which they have been assessed beforehand. The students routinely worked on their vocabulary completing the following tasks: the firstly looked the definitions of the words up in the dictionary or on the internet, and noted them in their exercise book. In a further step, they wrote every word five times in their exercise book, a way to repeat and remember the spelling and the construction of the new vocabulary. They had to cover the word and do the same thing another two times. As a third exercise, they constructed a sentence with each word and finally they wrote the word with its definition on a piece of paper and fixed it on the vocabulary wall. The vocabulary wall was a poster attached on the wall, where all new words were collected. When they were finished with this task, they got a book of their choice and read silently.

While most of the students were working on their new vocabulary, Laura called for two students that had been assessed to have particular difficulties with spelling. In turns, they joined Laura on her desk. She worked one on one with them. They brought their exercise book, and she reviewed former spelling mistakes with them. After looking what they did wrong in former exercises, she asked them to dictate the words to her, saying every letter. If they dictated it wrong, Laura said the word out lout herself, pronouncing each letter so to help them find the correct spelling. She also tried to give them clues to remember the spelling of particular words.

A third group of a three students sat in an open space on the floor and played scrabble cards. They had to try to build words out of separate letters. This exercise was meant to give an opportunity of fun and social interaction while practising vocabulary. With this game, students could show to their peers how well they mastered their spelling. Laura basically chose randomly who was allowed to play, but she paid some

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attention to let students of a similar spelling level conquer against each other. More or less every student got a turn at some point, with exception of weak spellers, as the game would have stressed them out too much.

4.9.4. Discussion

This activity was differentiated by readiness. The content was different for each individual, depending on their assessment on the Essential List vocabulary (Croft & Mapa, 1998). Students only had to learn the words that they individually didn't know. They could move forwards, once the remembered the spelling and the definition of these words. The students that played scrabble had a different content than the others. Nevertheless it treated the area of English vocabulary. This activity was not differentiated, but just a fun way to repeat vocabulary. One could consider the not playing of the weak spellers as differentiation though. The process was the same for most of the students; they worked individually on their learning words, doing the same procedures to remember them. Nevertheless, students that had a lot of troubles with spelling received individual instruction from Laura. The group that played scrabble had a different process than the others, but as most of the students would play the game at some point, one cannot really consider it as being DI. The product did not differ in design, students wrote the same exercises, but it differed in words, which were adjusted to students' readiness again. The weak spellers that worked with Laura had a distinguished product; they spelled their words in a different form. The scrabble players didn't have a product.

TABLE 13

Content, Process and Product Differentiation in Laura's Literacy Activity

Differentiating content	Differentiating process	Differentiating product
Content stayed the same for most of the students, but the degree of difficulty varied for every individual student. The scrabble group had a different content, but still in the area of English vocabulary.	The process was the same for most of the students, differed though to the weak students who worked with Laura, and the scrabble group. Furthermore it differed by the levels of difficulty of the words the students learned, so it differed by students' readiness.	The product was the same for most of the students, differed though to the weak students who worked with Laura, and the scrabble group, who did not have a product. Furthermore it differed by the levels of difficulty of the words the students learned, so it differed by students' readiness.

The activity ran very smoothly, the students even started working before Laura

entered the classroom. Because the students were meaningfully occupied, Laura could allow herself to individually instruct weak spellers who needed her support. The researcher enjoyed the classroom atmosphere, which was relaxed, but effective, supportive and fun.

4.10. FOLLOW-UP INTERVIEW (see APPENDICES 6-9)

After reading this interview is there anything you would change or add to specify your point of view?

None of the teachers wanted to add anything to their first interview.

What indicators could you give to other teachers to deal with barriers such as:
- the restricted amount of time in the day in addition to the high workload of the students?

Amy said that teachers should organise the schooldays well, knowing where to start from and what they want to achieve. By doing so, they can eliminate things that don't seem as important and focus on the elementary learning matters. Another idea she suggested was to get started within one area of the curriculum, get it running and only then move on to another area, remembering to do one step at a time. Instead of doing infinite worksheets, Emily believed it to be a teacher's job to make sure that the students are actually learning. She indicated that working and learning are two different things and that by reducing the working situations down to these in which students are actually learning; teachers could avoid wasting their students' time. Clare said that in order to maximise students' work efficiency, teachers need to be well organised and planned. Nevertheless she pointed out that the students' work efficiency is influenced by many factors, such as their daily shape, the time of the day or the year, (etc). Teachers would need to respect these factors and adjust to them. Laura agreed and said that teachers should not drive the kids nuts by teaching too much. When the students need a break in their learning, teachers need to adjust. Furthermore she said that teachers need to prioritise what is important and critical to the students, and leave the rest behind. Structure and prioritisation are most essential to Laura.

- the high workload of the teacher?

According to Amy the preparation time decreases with the teacher's experience. Generally Amy and Emily believed that teachers have to develop their own systems and prioritise their work down to what is really helping the children. Finally Amy gave the hint of not doing everything at the same moment in time. Emily made the point that teachers need to realise when they are wasting time and stop doing so. Clare thought that she never overcomes that barrier, and she would always be chasing time. Laura said that teachers should ask for help and then share their ideas, resources and teaching practices with other teachers. Teachers could share their workload, and learn from each other's practices and challenges.

- the high number of students?

Good organisation and grouping the class are two possibilities Amy offered as an answer to this question. She added that teachers sometimes have to go with best fit instead of absolute fit when grouping their students because time restriction does not allow them to teach all of them individually. Emily agreed, saying that grouping would be a good way to handle a high number of students, but added that teachers need to have systems in place for when students that are not directly taught by them. Clare explained that teachers need to have really good managerial strategies that keep all of the students gainfully challenged at every moment of time. That way a teacher can avoid disciplinary difficulties. Laura suggested an assistant teacher to help out, but said that the main teacher has to ensure to work with the children that need the most support.

- second language learners?

Amy explained that she uses physical objects and pictures when working with children who speak another language. They show that two different words mean the same thing. Emily thought that second language learners are students with a specific need like any other students with a need, and they all need to be helped. When working with second language learners, Emily and Clare as well use pictures, cards and books that specifically develop their language. Clare likes to take pictures of the students in question in order to describe them afterwards. That way, the students can create complete books. She also makes her students draw pictures that express their thoughts and Clare phrases these thoughts later on in English for them. Furthermore she does

specific phonetic and alphabetical exercises with them. Laura can rely on a teacher aide to help her out with students having language needs. She pointed out that it is imported that these students' language and culture get acknowledged in the classroom. Any opportunities where she can involve the language of the student, she gets them to translate the other way for the class. She also gets them to bring along things from their particular culture that might be related to the classroom topic.

- disciplinary difficulties?

Bridget believed that teachers need to enter children's quality worlds referring to Doctor William Glasser's theories. She said that

> [...] it is about getting to know the child and finding a connection with them, so that they believe you are somebody important in their lives. Until you are that important person   you are going to have very little impact on them.

Emily stated that she is not into quiet classrooms. She believed that when children talk, they actually work and did not agree with disciplinary consequences. Clare on the other hand, stated that when there are extreme behavioural problems, the teacher, principal and parents should meet up to discuss the matter. In her school they seek a teacher aide if the situation is critical. Furthermore Clare supports the students themselves and rewards good behaviour hoping that little treats improve it. According to Clare, children who don't have behavioural problems need to be gainfully challenged at every point of time to avoid disciplinary difficulties. She added that one has to find something that quickens their interest so that they want to work and are not tempted to misbehave. Teachers have to get to know their individual students so as to differentiate them emotionally and to treat them accordingly. Laura said that teachers should be fair with disciplinary consequences, giving them a warning beforehand. Furthermore she believed in the essentials of indicating to the students their own responsibility in the teacher-student relationship to which both sides have to contribute. Nevertheless she likes to use some humour in serious discussions which eases the situation for the student. Laura suggested some managerial strategies as well like clear guidelines and consequences for the students. If these still seem to be unsuccessful, she believed that one would have to search for the reason behind the difficult behaviour. Teachers should try to find out what matters to and works for the individual student and adapt to it.

- a lack of parental involvement?

Assistant teachers have been set up in Amy's school to practise basic facts with the students who don't practise enough at home. Furthermore Bridget set up systems that enable the students to work independently at home without needing the help of their parents. Sometimes she goes to the parents' house in order to talk to them outside the usual educational setting. Many parents appreciate this as they feel more at ease. But if the parents still refuse to help their child out with school-based matters, then as Amy explained teachers should accept that situation and help the child out as much as possible in school. Emily said that she would not have control over what parents do or don't do at home with their children. She believed that if parents do nothing that is no excuse for teachers to do nothing. Teachers need to take responsibility for the children's learning irrespective of the parents' involvement. Clare felt that the contact with the parents needs to be treated with care. Even if parents don't show interest in school and don't satisfy their parental responsibilities, teachers should not judge them, but show understanding and support. Instead of criticising them for not working with their children, Clare would send the parents a note suggesting that the children enter the homework club of their school. If a meeting with them is necessary, Clare would let them choose the date and time. Laura reported that she had positive experiences when she involved the parents in school life from the start and engaged them in the whole learning process. In Laura's school they organise for example parent afternoons. These sessions seem to be more powerful to her than one on one interviews, as the parents can ask more questions or generate ideas from other people around them. Parents then know what their children are doing in school and can support them at home. The contact with the parents should be nourished and the parents should be given support, as very often they have had negative experiences with school themselves. Laura believed that the involvement of the parents may be influenced by the way the teachers approach them.

- a lack of student interest or motivation?

All four teachers agreed that teachers need to find a way to motivate their students by figuring out their interests, needs, strengths and weaknesses. Teachers need to find a connection to their students and the reasons for any disinterest and then try to figure out

a way to get around it. All four said that there is no real recipe for these matters, because each student and each class is different, acts and reacts in various ways. In addition teachers can improve their skills to motivate students and their understanding of human nature by simple teaching experience. Nevertheless each teacher gave a few pieces of further advice.

Amy had the suggestion to start working with the students strengths so that they feel good about themselves, and here she mentioned Howard Gardner's theory of multiple intelligences. If a child dislikes a certain subject, she suggested connecting it with a subject they like or they're strong at. Emily said that students are often unmotivated because they don't understand or are unable to complete a task. That way, teachers are not confronted with a lack of interest, but a lack of skills which students like to hide by acting bored. In that case teachers need to react and work with the students on their skills. Clare sometimes puts very motivated students in groups with rather uninterested classmates so that they help them to find some passion for the learning material. Another idea from Clare was to set deadlines, because they give students an aim to work for and make them feel satisfied once they are done. Laura said that sometimes children just don't know enough about a topic and therefore have the prejudice of it being boring. Other times they know already too much about a topic and are bored because everything seems repetitious to them. She suggested engaging students in surveys to find out about their interests and the knowledge they already have before starting a topic. Thereby one can capture the students by the things they like but actually get them to learn the things one wants them to learn.

How do you manage to maintain flexibility while teaching?

All four teachers mainly agreed that it is important to stay flexible while teaching and react to the students' interventions. Most of them thought that this would become easier with the teaching experience, once teachers get to know and understand the thinking and actions of children in general and of their own students specifically. They said that sometimes one just has to let go of the planning and go with the voice of the children when they are on something that really excites them. Amy thought that flexibility can be nurtured, but is mostly a quality of the teacher. Emily believed that things don't go wrong in a classroom, but follow a different path from which students

and teachers can learn. If a teacher is not focused on a plan but accepts that different path and interests, flexibility can be achieved. Laura added that nevertheless it is always good to have a plan B, C or D in case the initial plan goes wrong, which would also help to learn being flexible. She added that one should accept the fact that sometimes things don't work out.

How do you manage to think and plan ahead?

Amy said that she would use many good resources which would help her out with her planning. Experience would help her out as well, and she said that with the time one understands learning and teaching better. She also believed that her experience in different school levels made her more complete in her thinking. Emily said that it would help her and her students to make her planning explicit to them. This way she would have a better overview, while her students would know where to start from and where they are going to. Clare sorts her planning out in her mind, but stays flexible in the ways that she reacts to the students' behaviour. If the children grasped it, she will teach something different the next day, but if they haven't, she will go over it again. Laura believed that planning ahead goes with being timely and not leaving things to the last minute. That way the teacher has time to actually think about what the class needs, compared to what the curriculum expects and then settling everything into a long term plan which guides the teacher through the whole year. Once that long term plan is set, the teacher can focus on short term questions. With the final aim in sight, Laura said it would be easier to structure the day according to what is important in that initial plan. Laura added that flexibility and spontaneous actions are good, but generally children love structure, and the spontaneous should only happen if the plan is thrown in the odd.

Is it easier to differentiate in some subjects or subject areas than in others?

All four teachers agreed that it is easier to differentiate in the main subjects Maths, Reading and Writing than in the minor subjects like science or social studies for example. The reason they named was more straightforwardness of the main subjects, which makes it more obvious and identifiable to differentiate. Other characteristics about the main subjects that ease up differentiation are the work on a daily basis, better assessment tools and step by step programmes, which all lead to a clear continuum of

the students' development. Finally they admitted that often the mind-set of the teacher is more focused on or more used to the basic subjects.

CHAPTER 5
CONCLUSION

5.1. LESSONS LEARNT FROM THE STUDY

As elaborated in the literature review, DI becomes more and more indispensable in modern days and should therefore be an issue in today's classrooms. Literature though confirmed the researcher's beliefs as she started her study. Most teachers are aware of the need for DI, and even understand its effectiveness, but are too scared to approach it, thinking that DI is an insurmountable task. The participant teachers demonstrated the opposite. They showed that differentiation is not a utopianism of a few researchers, but can actually be carried into execution if one is willing to do so. They agreed that DI can be difficult to put in place and that especially at the beginning it takes a lot of work and time, but nevertheless all of them affirmed its worthiness. They demonstrated that once the teacher and the students are used to the new way of working, it rewards both; students achieve better results and teachers feel satisfied by seeing that. This is according to the researcher the most important lesson the participant teachers taught her: DI works and some people use the teaching philosophy easily on a day to day basis. The participants explained that teachers shouldn't be too hard on themselves, because in teaching one can always do better. They should accept that things can go wrong, and keep on trying to do better. All participants outlined that experience helps to improve with DI and teaching in general, so the major message would be that teachers shouldn't give up.

The researcher could tell that the vague picture of DI she had, became clearer and clearer all through her studies. The literature review helped her to get an idea of how differentiation could look like, but the classroom observations made the teaching strategies obvious and free of confusion or doubt. She could see firsthand, how teaching can be done. And she saw, that in the end it doesn't require witchcraft to teach according to students' needs; all it requires is organisation, preparation and motivation.

The researcher developed as a student, a teacher and a person through her work. Being able to observe and learn from expert teachers of a different culture was very exciting to her. The country, the life, the mentality and the school seemed so different from what she knew from back home.Talking to the participant teachers and to her

supervisors and observing four classrooms over 2 full days, the researcher concluded that DI is part of the New Zealand education system. Of course there are more and less effective teachers, and surely some differentiate more than others as well. Furthermore, it was discovered in this study that some areas, like learning profile differentiation, were not much used at all by the study participants. Nevertheles, the participant teachers confirmed that according to their personal experiences, most New Zealand teachers instruct in a differentiated way even though they're not calling it differentiated instruction. To them, it's just how normal instruction looks like. They learned to teach according to the different needs of the children and they seem to do so naturally.

5.2. RECOMMENDATIONS ABOUT DI

Why should we teach according to the students' needs?

As the participant teachers experienced, students enjoy school more in a differentiated classroom. They actually receive instruction that suits them and are consequently more motivated to learn. They feel at ease as their learning is boosted accordingly to their potentials. Once the students know how the build-up of the teaching methods functions, the course of action runs smoothly. With everyone working on something that fits their capabilities consequently, the discipline in the classroom rises as well. The students of the observed classrooms seemed to feel content with school and their education. Everyone seemed to be working at any moment of time, or at least knew what she/he could be doing. Teachers always had further spare but valuable exercises or work alternatives in place in case of students having finished the primarily work. The researcher enjoyed watching the participating classrooms, she could see the students working, learning and enjoying themselves while doing so.

On the other hand the teachers explained that they enjoy school more when they differentiate instruction. They said that they wouldn't want to teach in any other way. As a teacher they can only feel satisfied if they see that they are actually teaching their students something. It is obvious that in an undifferentiated classroom, there are always students who either can't follow the content with it being too hard, or who are bored as it feels too easy for them. That situation would frustrate the participant teachers and they wouldn't enjoy their job as much. They confirmed that they gain much satisfaction out of seeing that their class is running well and that their students are successful in

school and enjoy it.

5.3. SUMMARY OF THE OVERALL KEY IDEAS

To start with differentiation, teachers need to know where their students stand and what they need to be taught. They need to know who needs a more in-depth instruction in order to strive and who should only move forward slowly. They receive this information by assessing them regularly. The participating teachers were doing lots of formative assessments all through the year. Afterwards they used the information to prepare precise lesson plans. Good organisation and a clear planning were repeated many times by the participants as indispensable in order to promise good teaching.

All five teachers used whole-class, group and individual instruction. Teachers were only teaching the whole class, when a subject matter had to be discussed with the entire group like it is often the case in sciences or social studies. They also taught the whole group when a task naturally differed between students (ex.: creative writing). Otherwise they organised their instruction majorly around ability group teaching. They created these ability groups according to the students' readiness level which they had assessed beforehand. The teachers worked along a routine in which they taught one group at a time according to their potentials, while the remaining students did valuable work which they were able to resolve on their own. Teachers sometimes differentiated through interest and offered the students as a group or as individuals some level of choice in an activity. Only rarely teachers considered differentiation through learning styles and learning preferences when planning their activities. Only one teacher was using the learning preference theory actively in an activity. Nevertheless they taught through many sensory channels (visual, auditory and kinaesthetic) aiming to reach every student's preferred one at some point rather than differentiating through it. Furthermore they acknowledged the importance of learning through many sensory channels which helps students to consolidate their knowledge.

Individual instruction was considered by the teachers when a student needed some extra help or needed to be pushed further. With the students being valuably occupied, teachers could easily pick one out of the class and explain her/him something individually for a few minutes. All the participating teachers worked with individualised vocabulary lists.

The participants' classrooms offered much room to move around. Teachers also had lots of books and learning material at their disposal. Teachers didn't grade their students and only assessed them in a summative way at either the end of the semester or the year. They then received a written report or got to know their achievements and resolutions in a meeting with the parents and the teacher. The participating teachers showed much interest in their students' personalities. They greeted each student individually and tried to build up a personal relationship with trust from both sides with each of their students.

As a final word the researcher hopes that this work did not only motivate and help her to ameliorate her own teaching, but that this study could also reach other teachers or student teachers that are or were in the same position as she was. She hopes readers could find ideas and leads which they can reuse in teaching situations. She hopes that this study will add to a more differentiated and fairer education. Nevertheless the participants DI methods cannot be generalized. There are many successful teachers that surely have other effective methods through which they reach their students' needs. In order to get more ideas, further research would need to occur.

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APPENDICES

APPENDIX 1

Consent letter for schools

Consent letter for schools

Consent form for principal permission for school classroom to take part in interviews and observations

Project title: Teaching the duck, the rabbit the eagle and the squirrel: Teachers talk Differentiated Instruction.

This research has been assessed and approved by the Victoria University of Wellington Faculty of Education Ethics Committee (Reference Number: SEPP/2011/08 RM18300).

Please tick the following boxes to indicate that you agree with the statements and to provide informed consent for room (insert number) to participate in this project

☐ I have been given an explanation of the research project and understand this. I have had an opportunity to ask questions and have had them answered to my satisfaction.

☐ I understand that I may withdraw permission for my school to be part of this study up to the end of data gathering.

☐ I understand that the data collected on my school will be kept confidential to the researcher and her research supervisors. Any VUW technicians or peers who are asked to assist with coding the data will be required to sign confidentiality contracts.

☐ I understand that the findings published from this study will not include any information that leads to the identification of the children, the teacher, the school or me.

☐ I understand that all data will be destroyed five years after the submission.

☐ **I agree** to allow room: _____ to participate in this research. This will involve allowing the researcher to interview and audio record interviews with the teacher and observe and take notes during classroom situations.

☐ **I do not agree** to allow room: _____ to participate in this research.

Name _____

Signature _____

Date _____

Name of school _____

Please return this consent form to the researcher in the envelope provided.
Thank you.

APPENDIX 2

Consent letter for teachers

Consent letter for teachers

Consent form for Classroom teachers to take part in interviews and observations
Project title: Teaching the duck, the rabbit, the eagle and the squirrel: teachers talk Differentiated Instruction.
This research has been assessed and approved by the Victoria University of Wellington Faculty of Education Ethics Committee (Reference Number: SEPP/2011/08 RM18300).
Please tick the following boxes to indicate that you agree with the statements and to provide informed consent for your participation in this project and that of your class

☐ I have been given an explanation of the research project and understand this. I have had an opportunity to ask questions and have had them answered to my satisfaction.

☐ I understand that I may withdraw permission for myself and my class to be part of this study up to the end of data gathering without having to give reasons or penalty of any sort.

☐ I understand that the data collected on me and my class will be kept confidential to the researcher and her research supervisors. Any VUW technicians or peers who are asked to assist with coding the data will be required to sign confidentiality contracts.

☐ I understand that the findings published from this study will not include any information that leads to the identification of the children in my class, my school or me.

☐ I understand that all data will be destroyed five years after the submission.

☐ **I agree** to participate in this research. This will involve being interviewed and having that interview audio recorded. I will allow the researcher to observe and take notes of some classroom instruction and learning situations.

☐ **I do not agree** to participate in this research.

Name _____

Signature _____

Date _____

Name of school _____

Please return this consent form to the researcher in the envelope provided.
Thank you.

APPENDIX 3

Consent letter for families

Consent letter for families

Consent form for families to give permission for children to take part in observations
Project title: Teaching the duck, the rabbit, the eagle and the squirrel: Teachers talk Differentiated Instruction
This research has been assessed and approved by the Victoria University of Wellington Faculty of Education Ethics Committee (Reference Number: SEPP/2011/08 RM18300).

Please tick the following boxes to indicate that you agree with the statements and to provide informed consent for your child's participation in this project

☐ I have been given an explanation of the research project and understand this. I have had an opportunity to ask questions and have had them answered to my satisfaction.

☐ I understand that I may withdraw permission for my child to be part of this study up to the end of data gathering without having to give reasons or penalty of any sort.

☐ I understand that the data collected on my child will be kept confidential to the researcher and her research supervisors. Any VUW technicians or peers who are asked to assist with coding the data will be required to sign confidentiality contracts.

☐ I understand that the findings published from this study will not include any information that leads to the identification of my child, my child's school or myself.

☐ I understand that all data will be destroyed five years after the submission.

☐ **I agree** to allow my child: _____ to participate in this research. This will involve allowing the researcher to observe and take notes about my child's behaviour during classroom situations.

☐ **I do not agree** to allow my child: _____ to participate in this research.

Name _____

Signature _____

Date _____

Name of school _____

Please return this consent form to your child's teacher in the envelope provided.
Thank you.

Consent form for students to take part in observations

Project title: Teaching the duck, the rabbit, the eagle and the squirrel: Teachers talk Differentiated Instruction
Please tick the following boxes:
to show that you agree with what is said
to say that you participate in this project

☐ Michèle told me that she wants to watch my classroom as part of her project.

☐ I understand that it is my choice to help Michèle with her project.

☐ I understand that Michèle will write about my classroom and my teacher, and that some people will read this.

☐ I understand that my real name will not be used in Michèle's project.
I want my made-up name to be _____.

☐ **I** _____ **agree** to participate in this research. I allow the researcher to observe and take notes about my behaviour during classroom situations.

☐ **I** _____ **do not agree** to participate in this research.

Name
_____

Signature
_____

Date
_____

Name of school
_____

Thank you.

APPENDIX 5

Observation Sheet

Date: _____

Class: _____

Activity: _____

Differentiating content   Differentiating process   Differentiating product

Facilitators

Barriers

Scaffolds

Challenges

Relevant information

Thoughts/comments

Initial Background Interview with Amy

How do you define DI?

        I define it by looking at the individual, seeing what their needs are then trying to teach to their needs, and the strategies or the skills or the understandings that they need and so therefore I try and group the children and work with them in a way that best suits them.

How do feel about it?

        I think it's important; I wouldn't want to teach any other way.

What's student characteristics do teachers identify as requiring differentiation in learning?

        Well obviously we look at their academics, so that's the reading, writing, maths. Sometimes we differentiate for behaviour, social, or being self smart or being people smart. So it's looking at the person as whole so maybe that's where the Howard Gardner multiple intelligences come in as well especially at the teacher level looking at the whole student and seeing where their strengths and weaknesses are and working with those strengths to bring out their weaknesses.

How do you identify these characteristics?

        Well we do multiple intelligences quizzes; we've got our beginning of the year assessments. We've got our observations we do in the class room as well, and also I think sometimes we underestimate this but the gut feeling of that teacher, you getting to know that person and going with your gut.

What are your strategies to differentiate effectively?

        Probably our "Must Do's", "Can Do's" and how we set up the classroom so that the children can be self managing in order for them to be able to do things at their level or their skill ability or what they need to know next so that I can get on to target teaching children with what they actually need to know in smaller groups and that only allows me do that because the children know exactly what they need to do at certain times in the room around me.

Describe how the DI is used in your class room is actually the same…

        Yea I was thinking, "just look at the board".

What do you believe are the facilitators and affordances of differentiated instruction?

        What do you mean by affordances?

It's like the use of DI…

        Oh I'm not sure, um what I believe are the facilitators…

Facilitators are things that make it easier?

        Probably is the teacher organization, like if you're not organized you can't differentiate as well because you have got to know individual and you got to be organized for the individual things that go on in here. You can write by the set of your pants but you have also got to be very organized so that the children know what's

expected of them so they can be working at their level otherwise they get left with nothing to do.

What are the barriers and constraints?
       Time in the day, number of students in the class, all the same old, same old.

Do you use scaffolds and if so what do you do?
       That's probably where the F.I.P. and the "Must Do's" come in, and the colour differentiation on the board. Some children even have individual organizers, sometimes I put up a whole class organizer. I have check lists, yea basically the white board helps help the kids feel organized in the room and its interesting today as I was talking about it, Kendra's class, the class next door was in here and there was a boy from my class last year, next door and I talked about something on the board and he knew exactly where to look and where to find it. I didn't even need to explain, I said "and there is learning objects that every group can use to practice basic facts" – he naturally went. Then after school today he came and wrote them down, so that's yea. And I colour differentiate because I've worked with quite a few children that are dyslectic and things and so I can say to them, lacking in reading skills : "you just focus on the red things in the maths or it's the yellow ones on the F.I.P." Even though there is a lot of writing they can be directed to a certain area.

How do you manage to differentiate successfully without overworking?
       Being satisfied that the job is not always done. I think its experience as well, and also I think its maybe the New Zealand education system that we are "empowered to do that", we are taught about it at teachers college and we learn about it, we are modelled it and we are expected to use differentiated learning.

What do you gain out of experiences with DIs, what positive and what negative experiences?
       I not sure that there is any negative because you are actually targeting what the children need to know, rather than what you think they need to know. So the positives are you see children begin move with their learning and understanding, they become more self-managing, they become more in control of their learning, they know what their weaknesses and strengths are and they know what they need to do next, you know? They can set goals themselves more naturally so I think that would be the positives.

Where do/did fail when you were trying to differentiate and how do/did you manage to reduce this failing?
       Probably where you fail is, I know that I haven't differentiated enough at times so you end up with quite a wide range of skill or knowledge, or strategy, ability and you know even within your group that you working with, there is differentiation that needs to happen there. And so you can sometimes still have children working in groups with you that could be too easy or too hard for you because of what they know and what they don't know. Because you have only got so many hours in the day to get it all done so therefore you are still grouping children.

How did you manage to reduce that failing?
       I was trying to make time in the day to get around your groups that you have got

running, yea it is the age old question. I had a conversation with one of the senior managers at school today and I ended up saying to her I think you need to come and model it to me. Because you know how I work and I'm still struggling to get it done, so can you please come and show me, run a week for me so that I can see how you would do it and that got her a bit stumped because she knows how I do it and I'm like "if I can't do it, show me".

Did you always differentiate?

Yea, I've been teaching 14 years and I've always differentiated no matter what level I've been working at.

APPENDIX 7

Initial Background Interview with Emily

How do you define DI?

Well we always say we teach to the individual needs of children and I always think that you know what we say and what we do are often two different things and I think that it is actually important that we do know what our children are capable of and we teach to what they are capable of. So we are actually group teaching, we are individual teaching and we are not just taking everybody as the same. So we teach to the needs of the kids.

So how do you feel about it?

I think it's important I think that if the children aren't engaged, they are not going to be learning. So they have to feel that they're learning but also that what you're teaching them in class they are capable of learning that you're not missing people out, that you're not missing top bright students out because you are working - that everyone feels engaged, that you're working so everyone is challenged and learning, I think that is really important.

What student characteristics do teachers identify as requiring differentiation in learning?

So different skill levels of children, so in the prior knowledge they come in with you know there are some very able students and their prior knowledge is huge and sometimes I sit there and think "what are you learning today?" you know "are you learning anything?" I think it is really important that they say that about 80% of what you teach the children already know and you think we are just wasting 80% of the children's time, you actually have to find out what children know, so that you can teach from their end point rather than from their starting point which might be way, way back. But you also got to be careful that you don't miss out – you know that everyone's starting point is different and it makes it really difficult because it's true in science, it's true in math, it's true in everything that they come with. So it is difficult but you just have to - I think a lot of group teaching, working in pairs, getting those motivated students working together in little groups, working with kids that need help. You just got to work out where you got to focus your attention. It's hard.

How do you identify these characteristics?

We do quite a lot of different types of testing. So the 6th year Net is an observational survey that we use for reading and writing that identifies reading and writing. In maths, we test, we do the NumPA and that's individually with every child to find out where the gaps are and find out where they are in maths. So we do a lot of testing to start with, assessing to teach learning.

What are your strategies to differentiate effectively?

Well I think the first thing you got to do is you do all that testing and you've got to look at all that data. The data tells you what your children's strengths and needs are and you can group your class accordingly and you have to group teach a lot and you can't teach everyone individually, that's too hard. But if you can make the groups as small as possible and make sure that you define - have them quite closely defined so that there is not a broad spread in your group. You have got to look at your data and you got to really look where your gaps are what children's needs are.

Describe how DI is used in your classroom specifically.

So at the beginning of the year we set writing goals and I got the children to look at their writing and I got them to look at what they wanted to achieve and then the steps to get there. Every child has done that, and then I have used that information again and now I have writing boxes set up so now that all the children are in writing groups. But also it means the children can focus, they can think "ok, I know what I have to achieve to reach the goal I have set myself". Some children have actually already achieved it, we have got to sit down and do it again, and so I think it is really important that the children know. They have to have a clear idea of what they are capable of and where they want to go and they have to be able to look at their work and they have to be able to critique as much as you do. And maths that's all testing, the children are just tested and the same with reading, I just test them. And that tells me when they – there is no decision on that part but with writing it has collaborative, they work with me to set their goals. But with maths and reading it's a bit more – very teacher driven, that decision about where they are.

What do you believe are the facilitators and affordances of differentiated instruction?

Well the problem is, you know we say "we teach the individual needs of every child" – that is very difficult. And you can't teach in a class and teach one child, you have to group. And the groups can change and you can be flexible, but in the end you still got to have a working classroom and you have got 20 kids and so you are not teaching individually, so that is one of the problems. But then the good thing about that is the children talk together, they are collaborative, and that they build in each other's learning. You know the science that we are doing, they are all talking and those children who haven't seen or understand are listening to the conversation of the children who do see and understand and are listening. I mean that one of the biggest things that facilitate differentiation learning is actually the children supporting each other and talking together. And I think that's why I have quite a chatty classroom, they do talk quite a lot and I think that a lot of the research for children to gain an understanding is that you have to be able to talk; you have to have the language. And the other thing that helps with differentiation is having – if you're going to test – have good testing and that it is meaningful and that it gives you good information for teaching. It's not just testing for testing's sake; it is actually there to facilitate teaching.

And barriers and constraints?

The classroom, the fact that I'm not there with one child. So the physical size of your classroom – as I said to you when I group, the focus is on the group. It would be nice to be in a little sound proof box when you are teaching with a group. So that you're totally focused on them. But you are in a classroom and there are always other children and noise but you just have to make it clear that when you are teaching a group or talking to one person that that is their time and no one else's and they just have to learn that.

Do you use scaffolds, and if you do what do you do?

Certainly in writing I have been, and that's our goal setting ladder where the children at the bottom have what they can do and at the top of the ladder they have what they want to be able to do. And then all the way up, are the little bits that will get them to their main goal. At the moment I've done it for writing and in maths, which are the two main ones. For reading I haven't, I know in my head where every child needs to be but whether the children actually have that big picture they don't and they probably should but certainly in writing and in maths it's there.

How do you manage to differentiate successfully without overworking?

It has been initially a lot of work, I think that a first term I have spent getting the process in place, but once it's in place it's ok. But the first term is spent doing the goal setting and I kept saying to people "this is a lot of work, this is hard" but I can see how useful it's going to be, and if you can see how useful something is going to be it's worth doing, it is worth spending the time on, it's worth talking to every child about how they are going to get from where they are to where they want to be in their writing. And already I can see them referring to their steps and some of them have already achieved it and they are using it and they can see it being really worthwhile.

What do you gain out of your experience with DI? Positive experiences, negative experiences?

As I said the gains are that the children are really focused they can see where they want to be, they can see and that's really good. And it is - I think it is really an important thing to do, because I think children learn best when they are challenged and every child in the class feels challenged. And they also feel valued because you talk to them more and I think that is really important. And I guess the difficulty is the management, you can't do that every day, you can't make everyone feel valued every day, you know you get a few good days in a week or a few good sessions in a week a you think this is really good, and you can't expect this high level stuff all the time, it is - just you know it is hard.

So what negative experiences?

I guess you know there are days you think "what has anyone learnt today?", "have I been useful today in their learning? So you know and it is that time management thing and it is try – you know you feel like you have got to try and fit everything in. And some days I just think well actually we are not going to fit everything in and you just have to make the best value out of what you can do.

So where do or did you fail when you try to differentiate and how do or did you manage to reduce the failure?

I think this year has been really good, I have been a lot more focused and developing those individual goals has been really, really good and it's the first year I have done it – that first year that we really focused like this in this school and it's been really, really good. It's something I always think about, and you try different ways of doing it, but this has been really good because you have actually got, we have got a scaffold, the teachers have got a scaffold and you know we need it too, to teach differentiation. You have to be taught how to it and you know it's not something that comes naturally or that you can just pick up. You actually need a lot of support and collegial support. We are lucky we have got a school that really focuses on that, we have worked a lot on that this year, we have got our deputy principle who has been working with us on pedagogy and things. And it's been really, really good and just doing a lot of reading and research as well you have got to keep that professional sort of stuff up.

APPENDIX 8

Initial Background Interview with Clare

How do you define DI?

I sort of assume that it's dealing with the children's needs so you're teaching a whole lot of different types of methods. So you're doing thinking hats and you're doing Bloom's taxonomy you're doing hands on, you're doing theory. So that in a sense you're trying to capture from the really bright children to the not so bright but often you are teaching the middle. I suppose its scaffolding and looking at breaking up their program and looking at groups of children whose needs are more critical than others and then extending those who have really past their basics – I suppose it's just different levels of teaching really.

How do you feel about DI?

Well in this school it's possibly, probably paramount really I suppose because of the type of composition we have for our kids. So we have to scaffold, we have to teach the children from the sort of lower level and work up and add and add and add. But at the same time I think what happens is that you have got to realise that you have got children that don't need all that and need extensions. So in a way that's us sort of upper scaffold if you want to put it that way. But we don't need to use – we use the thinking hats more frequently, and we deal with inquiries sort of studies, so we are trying to get them to inquire what the situation is as opposed to teacher assisted or teacher directed.

What student characteristics do teachers identify as requiring differentiation in learning?

Alright, they don't have enough vocab to draw upon so their previous or their prior knowledge is very limited and that you can change some of it, but you can't change most it because it belongs to an outside influence such as family outings, group – all that sort of thing. So you can do that when you do visits so that gives you some prior experience, some prior knowledge, and you draw on that. And you use that top help the children – to identify children's needs. You have a variety of testing within the school that helps with the discovering or identifying with the children's needs and then

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planning – you plan to suit probably each level and at the same time you are getting assistance from outside resources such as the children going on to other external resources to help them with their reading and their writing. Because we know that that is important their reading because they can't do maths unless they read, they can't do writing unless they read.

What characteristics – you just said when they are having a weak prior knowledge?

Oh yeah, so weak prior knowledge – good home language if they speak two languages, so good grounding on their home language whatever that is and if they speak English very well to. That's important because they learn the structure of sentences. Having a positive learning attitude like if they are coming to school and they are being dumped on at home or they got pressures or stress at home, that influences their attitude when they come school so if you know their background with regards to their family life, that helps. Not only their background, if they've got stressful situations, but also if they're very – their families are very proactive, so they have a lot of activities outside, maybe they have extra tuition for maths, maybe they do a lot of club stuff like brownies, scouts, dancing, gym, swimming, those all add to their experience. What else... what's another characteristic? How they sit in class, if they are always in the front, does that mean that they prefer the front? Or do they have a hearing impediment? Or sight impediment? So then we test them at school, so that's another thing you got to keep an eye on. And then find out – then I suppose it is a process of elimination, if they can't hear, then they need a hearing aid. If they can't see, they need glasses.

How do you identify these characteristics?

Observations, internal little tests we have at school – school tests. Parents give us clues, some children have ILP meetings or family group meetings and the classroom teacher discovers things in that. ILP meetings are Independent Learning Plan or Education Plan. And that's where outside agencies, families and classroom teacher is involved. So that can identify characteristics. Information from the children's previous teachers, that makes a big difference, like we don't always get hard copies of children's records, often we get notified and we can go on the net, well not the net, they are called ministry of education records but sometimes we get hard copies and that's good to read.

What are your strategies to differentiate effectively?

You mean how do I set up my learning day? Ok I plan for all my subjects and in all my subjects there are groups and there are ability groups. And then I plan the different levels, then out of those, the less ability groups – the children who need lots of help, they tend to leave the class room to do external learning as well, other resources. And I do guest scaffolding, teacher directed strategies, I do independent strategies as well for those ones who can manage tasks and complete them by themselves, suppose those are different levels.

Describe how DI is used in your classroom.

That's real hard because I'm not sure what it is to start off with. Does that mean the records I keep for the children?
No, it means – you kind of answered the question already, it is what you do in your classroom to adjust teaching to the needs of the students.

We have LI (learning intentions) or WALT (we are learning today) and success

criteria and also we have modelling books for each subject. So for reading you'll have a modelling book for each of your reading groups and in that we – I do sort of different comprehension strategies and from there I write down the children's ideas and that helps me then use that information to put in their anecdotal books and that is also an indicator of what children need and how I have planned. The same with writing, I have writing groups and I have modelling books or each writing group and that then tells me what they need and I have – and I can check in each of the children's writing books and that also is an indication of what they have to do to do next, like next steps. And I use that information and put it in my anecdotal books I suppose that's also used as my guide planning. For maths we have modelling books as well with the WALT and the success criteria and that also helps me for the next steps as well, I suppose that's those things. And then there is maths sheets that I use as like a tick sheet and that is just an indicator of where they are. We also have tests – what they call Minister of Education test like asTTLe *maths* and GloSS and *I can*. So that's also helpfully. I presume that is what they want, the characteristics and what I do.

What do you believe are the facilitators and affordances of differentiated instruction? What are the best facilitators?
What makes it easier?

I suppose for just having guidelines like I have just mentioned, learning intentions and moulds and planning – ensuring that you have got a really good plan that you can follow. Having PD on things that you are weak on, getting ideas from other teachers, that could also help, ensuring that you're teaching to help the children learn is interesting as well as it is helping the children. Just having a whole lot of your classroom full of words. You know the visual aspect of your classroom. What else... and you as a teacher modelling those things as well, that's important, because for some children they're probably being – they have already made some judgements because maybe their parents have had an unsuccessful learning life so they have influenced their children. So if you can undo that and make it interesting for them. So I suppose it's the visual learning as well. And also having - making it so that they do things outside of class, that they might not have the opportunity at home, so giving them the opportunity of doing different things as well.

On the other hand, what do you think are the barriers and the constraints?

Of course language, that can hinder their learning, money which is fairly important now. So for trips and for gathering things, if you wanted to get it off the parents, not just the children but teachers not being bilingual, if there are some children who need support there. And as you go up in different levels of your learning life there is less involvement of parents, our school has an open door policy but that is not any fault of the parents, because they have to work, but that sort of thing. Not having that communication immediately. Workload, sometimes a few of the teachers have a workload that you do and that's not your fault I don't think but you do find that you can't fit everything in and therefore your lessons are cut short or you have a – you've rushed through it because there is so much expected of you to do. Not only that workload and doing your – writing down information to help your children because you can actually spend hours planning for your kids. I think and also the other thing is just saying when does it stop for your work life and when does it start for your personal life, because I think many teachers burn out. So those are barriers.

Do you use scaffolds and what do you do?

I think I do it unconsciously, and not realize I'm doing it until somebody points it out to me, it just comes automatically. What do I do? I do something which is fairly on a simplistic level like teacher directed and then I do the next step and I actually either bring the children down to model it or I have actually go around and show the children at their desk so I actually roam around the class room. And I make sure that their lesson is specific to my learning intentions and what I expect from them. So I don't know how I could verbally describe it, it is really hard. I'm not sure sorry, even though I probably do it all the time.

How do you manage to differentiate successfully without over working?

I don't know – I don't think I underwork – I think I do too much, but I don't know what to do to say "that's enough" of that differentiation learning and that's plenty, yeah I don't know how I can identify it. Because I think each teacher is different and each expectation of yourself is different too. So what I do would probably be totally different from my colleague just down the hall. Some teachers say I do too much, other teachers would say that is not enough, so I don't know.

What did you gain out of your experience with DI, what positive experiences did you have and what negative experiences?

Ok, positive, when a child says to you, "oh I know what to do now!" and when you've spent few months trying to teach somebody to read and they suddenly click, that's the rewards. When you have done something and you go back to it the next day and they know what it is, or even a few weeks later, so you know that they have had grounding. So I suppose that is the positive, so when you have got all the good feedback from the children. And also when your lessons have been successful, like it's – they have understood what you have taught them and you have used some good scaffolding, and you have gone home thinking that was great. When the children have been in a positive learning mood and you haven't spent half the time doing managerial sort of stuff, like management stuff. So that's all positive. And also you get compliments from your parents, I think. Great getting them from your teachers, but it means that the children have gone home and said something which the parents have picked up and that's been positive for them to. Negative experiences; when everything has gone to custard, basically, and that means you've ill planned it, or there has been a disruption in the class, not so much with these children but say there has been a child who has caused a total disruption and then you have had to put that aside. So there has been sort of – you could say children management, and when you have asked to do some work and you are busy focusing on the overload, I suppose those are barriers that I can think of at the moment.

Where do/did you fail when you try to differentiate and how do/did you manage to reduce this failing?

Often my failures are in my class, teaching; I have made assumptions that the children know and because I have made assumptions, they have got lost and so they have come back to me frequently they don't understand. But because the children don't say that they don't understand, that is not their fault, I have not picked it up. And the other thing is that's the problem on my fault, in fact it is probably a barrier, I'm too

controlling, so instead of creating more of an independent stance, they come to me just about for everything. So there I think is another failure and that will be a failure on the part that I haven't made clear instructions on what I expect. And it has really fallen down, so I just sort of – "alright, it hasn't worked", and I will do something else an I will try it again tomorrow.

Did you always differentiate? Or when you started teaching did you do a whole class instruction? If so, when did you start to adjust your teaching more to individual student needs and for what reasons?

No, I have always done – I was actually taught to do it like that, and as in having class modelling, and then group modelling. What's happened, it has become more specific – explicit learning. So it has become – so that your groups have either got smaller so you're really targeting specific needs and specific groups as opposed to having bigger groups and doing an average sort of thing, so that has changed, so it has actually got better. You have now made it more open so the children know what they are going to learn today, as opposed to you have gone ahead and just taught them and they just don't know what is happening. So the development has got better, its more refined, its more explicit and they know what you expect at the end of the lesson as opposed to "oh yeah, that should be right". That's the most paramount thing, each subject is now more specific, more explicit and the children are aware of it all the time. So we are sort of getting the children to help with you - create this final product – like the learning – like the success criteria. At the moment, I'm doing it but you can bring them in more and more and more. Also having things visually available, so they see what is the next step they can do, and that makes a difference as well. And I think that is important because it keeps a safe learning environment, so they can feel comfortable coming here. So if they walk in the door and they have had a crap morning with their parents, they know its ok in the morning when they come to school.

APPENDIX 9

Initial Background Interview with Laura

How do you define DI?

I would define it as a class room teacher catering for the needs of the students in their class by offering different levels of teaching, different types of grouping, and different forms of scaffolds or supports for the children within the room. About making learning available to everybody in that class

How do feel about it?

Challenged, everyday, and something that as a teacher you need to keep working on. Because it's not something that is easy, or you always get right the first time.

What student characteristics do you identify as requiring differentiation in learning?

I do think personality types comes into it. How students work best whether they work individually or as group or pairs or whether they work best with other people within their group. Just give me a minute to clarify. Students who's needs are different from others, students who – those who are struggling, those who need extension, those who think differently than others in the class or have different approaches or their actual

learning style is different to everybody else's as well. Maybe a visual learner or they may be a tactical learner, that sort of thing.

How do you identify these characteristics?

Observation, observing them, reading some of the notes that have been passed on from other teachers. But also asking the kids themselves, they are old enough now – at the start of each year fill in surveys about themselves that tell me about how they like to work or what they enjoy doing as well. Getting feedback from the students is critical, particularly for the older students when they do know what they are doing. But observation is key, because it can change. You can notice changes within a term, a year, so that's where I'm saying, it's challenging too because you have to keep changing things up.

What are your personal strategies to differentiate effectively?

Using data - using evidence that has been given to me to make good judgments about where your kids are at and what they need next. And to then group them according to that and to keep looking back at the groups that you have made of them so it is not – they are not set in concrete, that they can be fluid and kids can move within groups as well, so they are not stuck in groups. Changing the groups around often so that they are not always working in ability groups as well, have those kids who can be inspired by those other people who are around them but also they can learn from somebody who knows a bit more as well. And also working individually with students, identifying those students who have those particular needs that are specific to them and maybe no one else. And working with them on a one to one and having opportunities for that within the classroom and drawing upon the expertise of the other teachers in the school as well. So some students have an opportunity to be involved in interventions throughout the school. To extend them and also for those students who are strugglers. So using sort of a broad range and drawing upon other strengths as well - critical.

Describe how differentiating is used in your class room?

It's definitely I have groupings for the main subjects of literacy and mathematics, and lots of opportunities for students to work in groups, in pairs in other subject areas as well. And even within some of those subjects that there is sub groupings within those as well. Say for example like in mathematics I have different groupings for number knowledge then I have for number strategy but then within that number strategy group for students who click on to things really quickly, then I don't want to waste their time by making them sit there and go over it, that I'll give them the practice that they need and then I can move them on from that so I can have a very fragmented sessions where I might only be working with a couple of kids at a time but then sending some there and they come back and sort of. So it's kind of a bit fluid, and changing, and seems chaotic at some stages.

What do you believe are the facilitators and affordances of differentiated instruction?

Being flexible, knowing, having good pedagogy so that you can make decisions on your feet. Because things change all the time and because the students in front of you – some will get it and some don't, you have to have things in place. The good thing about that is about that you are not holding kids back to repeat what they have just already have shown you that they can do or they are having to do more of the same. So kind of the learning keeps going. And it keeps the teacher on the toes to, of thinking

ahead, being a forward thinker about where they are going to go next or what might be the next learning steps.

What are barriers and constraints?

The challenge of it being so flexible - the fact that you kind of have to be thinking ahead all the time. Worrying about not noticing somebody who knows something and you have only realized at the end that could have been learning something different or that they didn't have to sit through that. The worry that maybe that you have made a bad call for that particular lesson and the challenges of planning for it because I know it would be much easier for me to stand up the front there and try and deliver and teach to the whole class. And in terms of my time and planning and preparation and things, that would be so much easier, but I know that the injustice of that is to those kids that I may cater for the middle but what is actually happen to those ones who are at the struggling end and what happens to the ones at the extension end. And sometimes that's – I mean that is the barrier, it is the planning side of it because it does take time.

Do you use scaffolds and if so what do you do?

Yes, in some cases for those students that need them, that we spent first term talking about certain things about how the students can have structures in place to help them and then whether they choose to use them or not, depends on themselves, they have to make a choice for that. There are some particularly strugglers who do need those scaffolds in place, who do need the way to bridge the gap to get them to where they need to be. Things like graphic organizers for writing as well as spending the time with the teacher, with the planning and the brainstorming side of it and getting that all organized. Whereas I have got others kids in my class who are writing ferociously and were able to do that on their own independently without my input at that stage.

How do you manage to differentiate successfully without overworking?

I don't... I don't think any teacher does, I don't believe that to be true because you have so many different kids with different needs in your classes, I don't know the answer to that one, I really don't, if anyone has an answer to that I would be glad to hear it. I mean there has to became a point I suppose where you do the best you can, and it would be great if I had five reading groups in my class, but I can't manage five, I can't hear five guided reading sessions you know. And the same thing would be with maths, so you group the best you can and you try and cater for the kids within the groups you have got then try to cater for the individuals you have got in your class. I don't know, you just do the best you can.

What do you gain out of your experience with differentiate instruction, any positive or negative experiences?

The feeling of when you have got it right, you know when you know that this is what the group needs and then they get it. The great thing when you say to the kids ok "those kids who have got it you can move off on to that, anyone who needs further help and stuff to stay down here and the ones that actually need the help or haven't understood it stay back". I think it is when – the positive thing is when the kids themselves are honest with themselves and are able to say" I don't know that", or "I need more help so I am going to stay down there". I think that is the positive of it.

Which you wouldn't know if you were teaching as a class, the kids would just sit there. So there is that, and then there is the negative which would be the opposite of that, the kids who know how to do this then off you go, and then the kids you know that don't know how to do it stand up and walk away, so it is sort of a double edged sword because it can be a positive sometimes and sometimes a negative. I can't imagine teaching without grouping kids or without differentiating how I do things with different groups with different kids. I suppose – I mean the biggest thing I gain out of it is I have a much closer idea of where each kid is in my class because I am seeing some of them more often and on a one to one and I can watch them work with me and we can work on things together and I can see how they are thinking about things and what their thought process is and I can hear them talking about it as well. So I can talk about them, individuals and in groups as well with- from the top of my head. You know what I mean - I have a lot of teacher knowledge in my head of observation and the work that I have seen them do. I mean the negative experiences are the fact that it does take a lot of time to organize and embed and plan for as well.

Where do you or did you fail when you tried to differentiate and how do you or did you manage to reduce failure?

I mean I often not often but I sometimes, and sometimes it feels like often, get it wrong where I have grouped kids and the negative spin off has been – I mean kids are smart, they know which is the real mathematicians in the class and they know the group of the kids who struggle and where I have got it wrong or what I need to think about more is about sometimes about their personalities or perceptions themselves in terms of those groupings because sometimes if they move down a group, it may not be, but that has been more harmful, then them struggling in a top group you know. That sometimes I get the groupings wrong and it is not just that it shouldn't just be based on evidence that we should look where in terms of another topic in mathematics say, and some of them have felt a bit crushed by moving to what they perceive to be down a group but not really, and there is no way of doing that when you are teaching 12 and 13 years old they know, they know where they fit on the scheme of things. How do I try to reduce that – manage that, is to try to sometimes randomize the groups, but they are clever, you... I'm trying to wool over their so they know already. And sometimes I get it wrong, sometimes I think they know more then what they do and sometimes I take that for granted and sometimes you only find that out till the end. So then you end up rethinking about how you are going to do that topic or how you are going to fill that gap at another time with those students. I don't think it is a – its definitely not something that I get right all the time – and it is a challenge to make sure that the groupings are right or to make sure that I am giving kids what they need in the classroom.

Since when do you differentiate? Did you always work with the teaching strategy? If not, if you started during your teaching career, at what point did you think it would be necessary to do it and why?

It's been how I have always taught, but I didn't think of it as differentiation, when I first started, it was the way that I was taught, it was the way that I was taught to teach. I think too though like over the past particularly the five years that I have been involved in the literacy intervention in our school where we are targeting certain students within the school. And that's opened possibilities up for creative and innovative ways in which we can address the needs of students in our class who are at the

struggling end but I has also opened the door up too to think what we are offering the kids at the other end as well, the extension end. Not that it's different than what we thought in terms of what kids need but our school is based heavily and has put time and money into those kids who are the strugglers to pull the tail up from where they are by having time set aside for them, for teachers to work on a one to one with those particular students. So it has opened up a bit of a door to thinking about "gosh that has been invaluable and we have found real success in that for those particular students and now we need to think at the other end" and so that's where in my classroom now we have another teacher that comes in, and that other teacher is to support because I have quite a few needs in my room so to help support the struggling end but also – I'm very aware now that I want to start thinking about those kids at the top end. And even though I'm trying to cater for them in the normal classroom setting, that another teacher's expertise and skill in that particular area is invaluable. I think it is a continual journey, I don't think we have mastered it, we haven't, we haven't even mastered it with our strugglers but I think we have definitely getting there, we are getting good results with some of the students at that end by making things so explicit and focused for one particular student.

APPENDIX 10

Follow-up Interview with Amy

After reading this interview, is there anything you would like to change or add to specify your point of view?

No I think it is all pretty good, I think you have got all the information that you need there.

So what indicators would you give to other teachers to deal with barriers such as the restricted time of the day and the high workload to the, of the students?

Well what recommendations for how to differentiate so that you can overcome some of the barriers?
Yeah, like it is all like for other teachers that maybe don't know how to handle it the way you do and the first barrier would be the restricted time of the day.

I guess, I guess you have got to look at the big picture and look at the benefits from doing, from teaching children what they need to know and the biggest thing would be, how to do it, would be … hm… is probably organisation, so have a good look at your timetable and figure out what is really important and what it is that you want to achieve. And maybe eliminate some of the stuff to start with that isn't, isn't so important for the children at that time. Or I would say try it in one area of the curriculum first, so if you are, like maybe look at your math program, and get it running in your math program and then move into maybe your literacy program. So start small and then move out. So the more you start doing it, you start finding out systems for yourself. Does that make sense?
Ehm.

Yeah.

Okay. What about your personal workload, the workload of the teacher, if that is really high, like how do you overcome that barrier?

Well it is like anything, when you start something new, you always spend more time doing it. And then as you do it more, you start finding your own shortcuts to get to what you need to do. So I think when you first start something, expect to work a little bit harder, but then as you get a rhythm it gets easier and easier and easier. Yeah so like you know, I have here, I have got my four different math groups and so now I have a system that I can just easily go to a book, and quickly go "right, ok, well these children did this last week, so they and they" you know, and I figured that they knew this and this and this and now they are ready for the next step. So you have got like a time sequence to refer back to as well. Yeah, so once you get, got to develop your own systems basically, yeah.

It is getting better with the time.

Yeah it is, it is. It gets easier. But teaching is one of those things, the more you know, the… you realise the less you know. And the more you know, you realise how much more you can do for individual children with what their needs are. Yeah, and again you have got to prioritise so that you actually are helping children with what they really need rather than trying to do always everything all the time. So if I have a child, especially children with quite, with learning needs, I will have like, they'll keep doing the whole curriculum, but I will have a real push maybe on their maths for a period, and back off another area. And then go back to the other area that maybe they need to have another push on. Because if you try and push everything at all the time, sometimes that is too much. Yeah so it is a bit like going back to, you know, as a teacher start differentiating in one area, if you are trying to do all it becomes too big, too big and you stop doing it.

Yeah, so it is kind of like the way you said now, on the one hand the workload for the students, you have less of that and you have less work like for yourself when you just get on a certain area.

Yeah, yeah you have focus areas at different times. It is a bit like in our own lives, we might focus in on a certain area, like for example if you are buying a new house you spent a lot of time thinking about what it means to buy a house. And other areas in your life would not be so full, because you have got to concentrate on that area. So you do that with children as well.

Yeah, okay. How do you manage to overcome the barrier of a high number of students in your class?

Probably through organisation, and through grouping them. And sometimes you just have to do best fit, because like, in some of my math groups, it would be better to maybe have them divided into three groups, rather than two, but sometimes you have just got to make it fit into two groups, because that is all the, all the time you have got. So you can differentiate right down to the individual, but when you have got a larger group of children you have to maybe group them together and try for best fit, rather than absolute fit.

Yeah.

Yeah.

What about the language barrier, when a child does not have English as his or her mother tongue?

Oh, lots of materials. So a great example is, when I was in Norway, I was with my friend's kids, and he came home from home with his homework that he had to do.

He was only seven and he has some English, but mainly Norwegian and he was learning *Repeated Addition* using money. And so I said to him "go and get your pocket money" you know, and I explained, drew a picture and he went and got it, so I got the actual money. And so I was doing it with materials. So that, materials, like using physical objects so that even though you are speaking English and they might be speaking another language, you have got the materials and the pictures to go back to. So you can use two different words meaning the same thing. Yeah that is how I do it.

How do you overcome the barrier a lack of money? Like maybe for, on the one hand for yourself, material that you would like to use and on the other hand when the students don't have the money to pay for their exercise books.

Often the school might buy it or otherwise I might buy it or you improvise with what you have got really, you beg, borrow. You know you put up "please" and stuff like that, you just, you just find resources where you can, you get really good at, really good at just improvising with what you have got. Yeah.

How do you overcome the barrier of a lack of parental involvement?

Well we have, we have got to be using our teacher aides to practise some basic facts this term, because we don't have enough children practising them at home or I set up systems, we have got Ultra-net on the computer and I set up systems where the children can do it themselves. Or I have been known to rock up to kids' houses and knock on their door and talk to their parents at home. And that is often a good way to actually break down the barrier between home and school, because some parents do not have good experiences with school themselves and feel uncomfortable in a school. So if you go to their houses that sometimes can make a difference, because you are on their territory rather than your territory. Yeah that works quite well.

Did you ever have a case where parents really refused to do anything or did not like school or ...

Yeah I have had, I have had parents who have said that they don't want their child doing homework and I have just said that is fine, that is your choice. And I, because I am not, I don't believe in a lot of homework for children. I think actually life is learning. They learn a lot from being in our world as well as at school. And school and home and the world is their education, not just school. Yeah. In fact John Hethey's research about homework, if you Google John Hethey and homework you'll find some information about that.

Okay.

Yeah.

How do you manage to be flexible the whole time, to improvise and just knowing what to do at the right moment of time?

I think, I think that comes with experience. The more you teach, the more you understand children and what they are thinking and you can sort of, second guess and fly by the seat of your pants, so to speak. And also I think it is a teaching style, I think many New Zealand teachers are trained that way. And then when we go into schools we have had professional development to help us understand children and how they think. And we use a lot of tools to help children reflect on their learning and those tools then help us understand how they think as well. Yeah, I think it is just a nature rather than, you can nurture it, but I also think it is a nature.

How do you manage to think ahead and do a good planning?

Probably by using lots of really good resources that we have at school, so… like if I think about maths, we have got really good resources that show the continuum of the children's learning, so you, you can look at what they have been doing and then think about what their next steps are. Also if you look at, like the interview that we do with individual children at the beginning or the end of the year and that shows us where their learning is at, at that point and so then we can go to the continuum and look at what their next steps might be. Yeah. And also experience, the more you teach the more you understand children and what you are teaching. Also teaching at different levels; so like I have taught right through the primary years, I have taught from 5 year olds right through to age thirteen year old level and I think from teaching all those different levels, you get to see the continuum of child development as well. Yeah.

How do you manage to overcome the barrier of no discipline in the classroom?

I think it is about getting into children's quality worlds. So I have done some work with Doctor William Glasser and he is all about getting into children's quality worlds. He believes that if you are not in a child's quality world, you will not have any impact on their learning. And so it is about getting to know the child and finding a connection with them, so that they believe you are somebody important in their lives. Until you are that important person you are going to have very little impact on them.

How do you get that connection?

You got to find something in common or find something that you can talk to them about. So I don't know whether you remember the little boy xxx in my class. And last year when I knew he was coming into my room I made a point when I was on duty to single him out and actually talk to him, and show an interest. And that has helped this year him coming into my room, because he knew automatically who I was and that I actually cared. And I took time to listen to him, which meant he was more prepared to work with me. Yeah, or you find a common interest, and you tell them about yourself, things that you do. Yeah. Crazy things that happened in your life, you bring things in, you share things…

Yeah so it is not only them sharing but…

Yeah and then they can share back and make connections with that too. So you become a person rather than a teacher as well. Yeah.

Do you think that it is easier to differentiate some, in some subjects or subject areas than in others?

Yeah, absolutely. Maths is easy, because it is so… step by step. Reading is easier too, when I'm learning to read, and then reading to learn, yup. Writing gets a little bit difficult, because, but even with in that you have got a continuum of developmental writers through to independent writers. Yeah I think in all areas you can differentiate but there are more straightforward areas that are obvious to see development is easier to do it in.

What about sciences and like not…

Yes, yes, you can still do that, but probably because I teach at primary level, our sciences are integrated into our inquiry and it is more looking at what children are interested in. Process so it is a little bit different. Yeah, but as you get older, you probably could do it quite easily, because you could see different understandings and

look where kids are interested in, go on different tangents. Yeah.

What do you do when a child has little motivation or interest in what you are teaching?

Go and find a way to motivate them. You got to look at who they are, and just figure out, ok, what is it that they need to do. How is it that I am going to get them to actually buy into this. We are lucky in our school that we have… our children are learners and they are passionate about learning. We have a culture of learning, so we don't have to worry about that too much, but with children that I found that are harder to motivate, you have got to find a way of connecting to them as a person. And once they buy into that they are much easier to motivate. And it is like, if you find… and often you work with their strengths first, because if you get them feeling really good about their strength that does bring up all they other areas in their life too. That is where the multiple intelligences are quite good too.

So if the kid is now really really, like hates math for some reason…

But loves sport? You praise him in sport and get them feeling really good about being a leader in sport and then when they come into the classroom to do their maths, often that gets pulled up too, because they are feeling good about themselves and feeling valued in the classroom and therefore are more willing to take risks.

APPENDIX 11

Follow-up Interview with Emily

After reading this interview is there anything you would change or add to specify your point of view?

No not really I think that you know, it is really important that we teach to the needs of children and I think reading it and I, yeah I still think that.

Ok. The following questions will be around the challenges of DI and it is more about you giving hints to other teachers or indicating to other teachers how they could overcome these challenges or barriers.

So what indicators could you give to other teachers to deal with barriers such as the restricted time of the day and the high workload of the students?

Well if they have got a high workload, you want to know, that you know, every part of their day should count, I mean doing, doing work and being busy and actually learning are like two different things you know and I think often teachers think that it is a quiet classroom and where everyone is busy and they are learning, but that is not necessarily true. You know worksheets are not learning. And so you have to think about the way you manage your class and so that when the children are, you actually want them learning and they are actively doing things that, that they are working at a… where they are, where they are, you know at a level that is challenging for them and you don't want them to be, you know I think it is two different things working and actually learning. So you need to look at your program and see, are you adding value, what can you change, is this helpful, or is it not.

So what would your hint be to overcome restricted time would be…

I mean there are lots of things I know, especially where the older children are, in our year group it is not so much, but the older the children are and they do go off often, they are doing different things. And I, I think that sometimes teachers undervalue the

different things they are doing and but they are all important for those children too, like I know that children go off and do sports here and they do young leaders, and they are doing all sorts of things, but just because they are not in the classroom it doesn't mean they are not learning and that they are not. So when they are in the classroom, you have to think, prioritise what do you think the students need and what, what can you let go.

So yeah, in resume you are saying to make the point to the important thing and leave the, even though it may seem important to do a worksheet, maybe leave the worksheet beside and…

Yeah and you know, you have been in my classroom, and my children do… when you know I don't see the point of tying them to a chair, so when they are finished and they are playing, they are playing you know and that is fine. They are not disrupting anyone else, they have done all the things they need to do. You don't need, you know, the time that is valuable is the time that they are with you.

Okay. How do you overcome the barrier of the high workload of the teacher?

Yeah, that is hard and I mean and when you are teaching to differentiation, things that does not become easier. I think you just have to have, you know the children have to know what they are doing and when. That it is easier, you know like, you can tell the classroom, I can tell this classroom runs well, because if I have to leave for any reason and I come back, everyone is still busy. Doing what, and they haven't even noticed I'm gone. You know I think you just have to be organised, you have, the children have to know what is expected of them and when. And that is the way to do it. You have to you know just have good systems in place.

But as a teacher you need to work a lot to do that planning, so how do you organise yourself to not be like overworking and the question is really focused on the work you do and how do you overcome the barrier of working too much instead of working enough that the classroom works.

And I think, you know, I know and I think it also comes down to trying not to waste your own time. Like I often find that I waste my time, my own time and I think "Oh this is just ridiculous". You know I can get hung up on trying to find a website and I just think "this is a waste of time". So you have just got to decide that we, you know you have got to realise when you are wasting your own time, and stop yourself and get on with what is important. So today I came in and thought "Right I am going to get my book boxes, I am renaming on my things and I am going to get that done before I do anything that could waste my time" like trying to set up stuff on the computer sometimes that could take a lot of time. You think "yeah get the important stuff done and leave the time wasting stuff to the end".

Yeah that is a good point. How do you overcome the barrier of a high number of students in the classroom?

Well they say that a good teacher, if you are a good teacher, the number of children don't matter. But I find that, you know, the more children you have, the more you are probably stopping to say "be quiet" or the more, you know, the more physical space the children take up which can be hard. And I think that what you have to do is, is I have said before, is that group that matters, the group you are teaching and you just have to have to yeah have good systems in place for those children who, who are not being directly taught by you at that very moment. They have to know that there are things that they can be doing that is not interrupting you teaching. Yeah.

How would you overcome language barriers of students that don't have English as a native language?

I have had a few children and what those children lack… often they have got very good skills in their first language, what they need are really nouns and I make lots of cards and pictures and you know like "cat, dog, house, doll" so they and they match. You know so I set up activities specifically for their language development. But having taught juniors, I also know that good books that they can go through that are easy and that they pick up language. So they need to be worked, it is the same thing, you know they need individual time with the teacher, because they have got a need in an area, just yeah, like any other child who has got other needs, like reading needs or math needs. You have to make time for those kids.

How do you overcome money barriers? Children don't have exercise books, pencils…

I… it is a quite funny, because I pull all the books, I put them all in a cupboard and then as children run out, I just hand out books. But the parent that actually was a bit worried about that, is actually a parent in my class, he is poor and he said "but I have to pay for these books and you just hand them out" and I said "yeah but they are all together and it doesn't, you know if your son runs out, he will always have, you know, and was trying hard, you know and it was quite interesting. He was the one that got sort of up tight that I pulled all the books together. But also I find that if I pull the books, they don't get lost, they don't get damaged, they don't get, you know, kids don't waste them. They, I take them and get them out as they need, because otherwise, they, if they have a whole lot of books in their tote tray, suddenly they are using them for drawing and scribbling and making paper planes and... It is better to take them all away and get them out as they need them. So that is it really, yeah.

How do you overcome the barrier of a lack of parental involvement?

We have that discussion in our staffing all the time and I am paid to teach. And I am paid quite well and it is my job and all parents can do… I don't expect parents to be teachers. All I expect them to do would be to listen to their child reading at night or play games or talk, you know. You would have to start, I don't, I think that we can put a lot of pressure on parents to do more than, than they have time for necessarily, and I bet lots of parents work. And I think being a parent is different from being a teacher and it is important for parents to spend time with their children, talk to them, talk about what they like, what they are doing and what they are enjoying and you know, playing, just playing games like dice games and reading to them. And those sort of things are valuable, I don't expect parents to be teachers. That is my job.

But what if parents don't do that? What if...

I have no control over that.

Yeah but when children go home and come back and they never do their homework? And there is no help from the parents and they… I don't know, how would you handle that situation?

Well at this school we have a no homework policy. I mean, we only expect parents to listen to their children read. We would like them to read to their children. I mean I have no control over what parents do and don't do at home. And I have these children six hours a day, and I am the teacher, it is my job to teach them and I can't. And I think what often happens is, I hear teachers say it all the time "oh but the parents do nothing". But that is not, no excuse for a teacher to do nothing. You know and I think it

goes "oh it is the parents' fault, it is the teacher's fault, it is the"… someone has to take responsibility and I am the one that is paid. It is my job to take responsibility for child's learning. You know, I have control over this time, and if I have got a child struggling in my class, it is my job to make sure that they are not struggling in this class. So yeah.

Okay. How do you manage to be flexible the whole time in class, when something goes wrong, to improvise, like what, like a teacher who has for example a good plan knows how to run the lesson and then something goes wrong and then you have to be flexible, but how? Like what indicators could you give to someone who does not know how to be…

I think, I don't think things go wrong, I think things go on a different path and I think in a classroom the main voice you should hear is actually the children's not the teacher's. And often I find myself in a situation where a child is saying "oh but I really wanted to dadela" and I think "Oh that is a really good idea, we will do dadedadela" you know and I, I think, I don't think teachers should, I mean, I think, it is, when I was started teaching I was very planned and overly planned and now I think I go a lot more with, with, with what is going on in the classroom. I listen more to the children. I think that is really important for the children to have a voice and what they are learning and how they learn and what excites them and if something excites them and it is not within my head well tough, we will just go with it. You know.

How do you manage to think ahead and do a good planning to really be prepared to have maybe a plan A and a plan B and a plan C?

We have been talking about this yesterday. And what is really important is actually that the children know the plan, the children know where they are going which has been good the goals' step, stepping that the children know where they are and where they are going, because they have got to know the pathway. It is no good to speak in my head and I think children, eh teachers actually and I need to make things more explicit and make learning more explicit and the learning pathway more explicit for children. And we have just set up student profile, we have got student profiles in maths and now we are just setting them up in writing and it is really good, because then the children can actually see "oh this is what I need to do to be a good writer, at this, when I am this old" you know and they can actually see the pathway and I think that learning needs to be, the pathway needs to be explicit for children.

How do you manage to have discipline in the classroom?

I am not into quiet classrooms, I am not… no, the kids in here are not quiet and I used to think that a good well run classroom is a quiet classroom, but I think when children are quiet, they can be thinking about anything. That may not be anything to do with what they meant to be thinking about, but if they are talking, I know if they are on task or not. Because I can hear the conversations. And often it is when they are loud that I think "oh" because if I have done something and they go to their tables and suddenly they are all talking and I listen to it and they are excited, you think "oh this is really exciting them, they are excited, I can hear it" and you can hear them all talking and you think this is great! So you have to have talk and there has to be noise and there has to be, you know. And yes you do need quiet at times, but I think when I, often I think when I want quiet it is actually my problem, not the children. And I need to do something to like, sometimes I just take a group of kids out of the classroom and teach them

somewhere else. They are, you know who's problem is it if the class is noisy? Is it mine or is it, is it? You know. And I think if they are not writing and they are happy and they are excited and they are talking, let them talk.

Do you think that it is easier to differentiate in some subjects or subject areas than in others?

Yeah I think that that there probably is. Maths and, maths is such a, you know, you so and we were talking about it this, and of course you say, you know people, maths is, you we tent to teach it so much in isolation and it is easy, it is sort of easy, but in fact we, we were talking, when you do math well, it, it, it actually is harder to differentiate, because suddenly, you, I think we should not be teaching in such discrete little blocks, like this is reading and this is maths and this is… I think, you know, our lives are not like that. I have just been doing reading groups and we, we did a book on giraffes and then they wanted to know how tall a giraffe was. So then we got the rulers and the children, this is reading, and then they measured out how tall a giraffe was on the floor. And I said "that is not really good, because we cannot really see" so then they got paper and then they did it all over again. And then they went outside and they held it up. And that was our reading group but we were doing maths and I think, and it just came because the children. And then the next time, they wanted to know how big a blue whale was, because they have seen something out the city, but then they knew the process. So they went off and did it themselves. So I think that when, when you are really teaching well you cannot see when maths is happening and when reading is happening and when science is happening. Everything happens all the time and it is and it is and I think in a good classroom there is a lot of excitement and the children are enjoying what they are doing and, you know… They are, they are… And, and, and once, you know and, and if they have learned something and they can apply it to something else, you know, like when they read about giraffes and then they could measure it, then they and then they wanted to know and then they knew what the size, you know and then they could apply it to something else they wanted to know and they did it themselves, I think that is when you know that things are going well, when they can take information they have learned and apply it in other areas.

So, sorry, but in resume you say that every subject is the same or math is easier…

No I don't think it is the same, I think that maths can happen any time and reading can happen at any time.

No, I, I, the question is about differentiation, which subject is easier to differentiate.

Differentiation, easier, sorry, yeah that's right. I, I think, yeah, I think maths can be, because it is taught in a discrete way and so is reading, reading is taught in a discrete way. You teach reading groups, you know their levels, so you know exactly where they are and things become a bit, more difficult in some, some of the other subjects like sciences or social studies, where some of the children come in with a different knowledge. I mean two children are coming in with different knowledge in reading and maths, but we have got these tests and they say "you are here and then in reading you are here" but in science and social studies we don't.

So science and social studies is harder?

Yeah it is a lot harder.

Okay. What would you do when a child has little motivation or interest?

I try to find out what is the interest and it can be very hard. I mean I have taught,

taught a child who had, and often little motivation is often a low skill levels, they have a low skill level so therefore they just think "I cannot do it" and therefore they start opting out. So you have to increase their skills, you have to increase their skills and if it is literacy or whatever it is that is holding them back, you have to help them get better at it. So that, because I find it that when children have more skills, they become more engaged. And disengagement is often, they don't know what to do. So you have to really work, work at helping them through that. I have just took, taken a boy off reading recovery, the twenty read program, he was on for forty weeks. And so he has doubled the time, but he has come off and one of the teachers was walking pass, she said "I have never heard him talk so much in my life, he is suddenly, he is happy" and his skill levels have improved, he has caught up with some other people in his class and he is not scared anymore to give things a go, because he has got, you know, he can read, he can read quite well now, he can do some things quite well. That is, yeah I think, yeah that is the thing.

In your first interview, you said that students felt more valued now that you differentiate. How did you know that they felt more valued and have you any indicators that other teachers might find useful?

I think that they, that I can tell, because they are happy to be at school and all the parents say, you know, we read that the kids love coming here, and also the parents tell me about they say "oh that we have been talking about this at home" because the children have gone home, excited and started talking, doing things at home, because they have been doing it at school and, and they will come to me and say, you know, or they, you know, they will say, they will, you know, they will say "you are a good teacher" or I, you know, "when we did this, remember when we did this" or, you know and I, I have different conversations with different children, depending on, on their, you know, on their abilities and things. I mean it is sort of, it is quite anecdotal really, you know, it is hard to tell when, but I just think the level of engagement is higher, I can see the children progressing, you know. I mean that is the sort of thing, I can, I can show, you know the progression. I have not got any child in this class who is reading below their age. So I know that things are going well. And I have worked hard with those children who struggled and they have caught up. So yeah, those are things that you can see, yeah.

APPENDIX 12

Follow-up Interview with Clare

After reading this interview is there anything you would change or add to specify your point of view?

Not on hand, I haven't had a real there was ... something here, no not on hand. What I had to find is DI, I didn't realise is what you already had in mind and I just didn't have a title to it.. no, no, nothing.

So what indicators could you give other teachers to deal with barriers such as for example the restricted time in the day?

How could you help yourself out, well apart from being well planned, that you go zoom zoom zoom… that would be one thing you could overcome, but there is no

real, there is no real way of overcoming that sort of barrier with the time restriction because it depends on the mood of the children if they're all really geared up to learn, it depends on the time of day that you've got your lesson, and also it depends on what time of the term, because some of the children at the end of the term and you want to push some learning intentions, are exhausted, you know, you got to read them. So all I can say is being well planned, so if that lesson falls down you... or there is not enough time, you can continue it the next day. Sometimes the class can be totally unruly and you just have to throw your hands up in horror and say "no good", not going to work today. So you will have to pick up something that is a little bit more, easier for them to learn or to assimilate, but unless we have longer schooldays, you could overcome that, I can't see that happening. You could, which I do anyway, include their week work and their homework that would help. There is no way you could get teachers' aid to help you out unless you have children that require teachers' aid, so you couldn't actually ask for teachers' aid so that's not a priority or a goal, like something to get… what else could you overcome time span … time span. All I can say is making sure that you're well planned.

So that was kind of about when there is a really big workload for the students that they have to do and not enough time. What about the workload for you of you, how do you overcome that you have a lot of work to do?

How do I overcome it? With difficulty. In fact I don't personally, I can't speak for other teachers, but I don't personally feel as though I ever overcome it. And last term I was coming here on Saturdays, and that was a no-no previously. It's just that the paperwork, the expectations, the national standards, expects us to have our children up to a particular level by the end of the year. And because of the diversity of our children, most of our children won't get there. So the workload means that I have to keep my finger on what they know and what they don't know and how much they shift and how much I'll have to go over. And then at the same time I've got to ensure that the children who shift quite drastically are still gainfully challenged. Otherwise I'm going to be doing the same thing, because the children who know, will be bored. So it's just trying to make sure that my planning includes all those bits and pieces. So there's never, there's never enough time in the day for me to do my work. I don't know as a teacher personally I don't think I leave it, I am always chasing my time. And I think all teachers would tell you that. I mean here I am in the school holidays. And I haven't seen any other teacher yet. I don't mind doing some of the stuff I do out of the school hours, because that keeps me organised in my mind. I hate being in a mess I get really frazzled. Yeah so that's a personal thing. I don't think a lot of teachers are like me. But there is definitely some, but there's not a lot. I've got to be able to come into my classroom and know that's done, that's done, that's organised, that's organised and then I'm focused on teaching and I don't have all these peripherals floating in my head.

What do you do to overcome the barrier of a big classroom, when you have really a lot of students?

Oh that's really hard. The thing that really comes into place is your management. Yeah… sometimes when you have too many children, well a lot of children, because there is no way you cannot have too many. But if you have a lot of children, in some respects you are only processing the teaching because you are not giving them quality teaching. Because all it needs is a couple of children to upset the management of your

class and the whole class is influenced by those children. So you would keep them gainfully challenged, you have to ensure that you've got your finger on your management, you do all your managerial strategies and there is no way any other teacher can pick up your class. You know like take children of your hands that is because there will be probably classes as well so… what else do I do…Just keeping them gainfully challenged and that way hopefully because they are heads down tails up they're not going to go around and disrupt anyone besides them and not going to cause grief with anybody and you can then pull in the children who need lots of help and allow the other children to work independently. And at this level, one of the things I have to do, is teach these children to work independently, because they are still quite young. Yea they are sort of like… they are bridging the senior level, you know they've just come from juniors where everything was at a different sort of level and they are moving on to seniors which the senior teachers will be expecting them to be independent.

So the hint would actually be to teach the students to work independently so you can focus on…

On is not so ones who need a lot of input by teachers and that's also keep your eye pinned on all those other children who are hopefully working independently, but having a big class can be a nightmare for some teachers, yes… Especially if you have a couple who have behaviour problems.

Yes this kind of goes into my next question: how do you overcome discipline problems in a classroom?

If they are pretty over the top, there is usually assistance from outside agencies and there is strategies in place for that child or children. And the parents are brought in as well, so there is usually a parent, family conference, meeting where it is discussed between the principal and the teachers involved with the child. And if it is critical than we seek assistance like a teacher's aid, if we are eligible. If we are not sometimes the school pay out of their funding for a certain length of time. And hopefully in that length of time we attempt, we won't resolve it, but we attempt to make that behaviour problem less. Or give lots of support to the parents who might be able to follow it through too. But we have to have the parents on board, because what we do here at the school, we hope that it happens at home so it follows through. And there is lots of rewards given to the child or children who do well at achieving their… because each, there is a goal for each day and it's a small step for each day, that doesn't, that works for them but it also makes the rest of the class feel undervalued because they wonder why that particular child is getting rewards, because they see it a reward for being naughty. An it is really hard to explain that they need assistance, they need help and we need to support them an we hope by do giving them this little treats that they will improve their behaviour.

What about children that actually don't have behaviour problems but that still don't want to work or don't have the discipline…

You have to find something that will… that is their interest. Usually it's boys because they just hate writing. They don't mind reading, but they just hate writing. So you have to find something what appeals to them and it is usually things that are real boys stuff like skateboarding or surfing or motorcar racing and you just have to try to use that to encourage them to write. And a lot of other things that they enjoy doing, you try and use that as something to pinpoint for their reading and writing and their maths. But it is often, you know like children always say "oh I'm bored, I'm bored, I'm bored"

but what it is, is that they don't know what to do. Yeah they don't know what to do next. So you try also to give them a little bit of responsibility and those ones who are struggling, you try and get them to be the tutors so they help somebody who is just a little bit less in their ability than they are and than that gives them a little bit of kudos and they think "oh yeah I can help that" but in actual fact what you're doing is you help them to help each other, hopefully.

So as long as they think they are useful in the classroom and they know what to do…

Yes, yeah and they have a little bit more respect for themselves too, of course it is a self-esteem thing too as well. Because they do lots of little avoidance activities like dropping their pencil on the floor and spending five minutes trying to find it, going around the classroom trying to find an eraser so that they can rub out one mistake. So you know, it is all avoidance technique. So if you see all that you need to actually grab hold of them and bring them down to the floor. And what I usually do is, I might have a group, but I might see somebody wondering around for the last few minutes and I'll pull him down and say "Oh come and join us, you will be able to help us, do this" you know, sort of trying to encourage them that they are a useful member of the class.

Yeah, which is again differentiation, because you grab that one student. And maybe it is even emotional differentiation.

Yeah that would be too, because some of our children have been told that they are not very good at this, you know at learning, or they are not very good at reading or they are not very good at maths by, you know their families, whether it is their immediate or their extended or their friends. I mean children are pretty, you know, smart. You know, they know the pecking order of groups, ability groups and all that. But if you just encourage them and if you swap them around frequently then they also sort of think "oh, oh, oh what am I doing in this group?" or "yay I'm in this group" you know. Keep those groups flexible.

How do you overcome the barrier of language? When children have troubles, when they don't really have the English language as their mother tongue?

Ah right, we have some ESOL strategies and one of the things I do, is I take photographs of the children doing things and then we use them as the subject and I use little words with them and we play with the words and I sit down and actually give them, do some time with the alphabet and we do a combination of phonetics and just doing separate words and then putting them in sentences and still using photographs of them, like they could be sitting at their desk reading. And you could use that, what they got in their hand as a book, so that is the word. So and so is reading a book, or so and so is sitting at the desk, so and so is wearing a red jumper. So you can actually build on it and then we also go through the alphabet, just doing the sounds of the letters so that when they see the letters, they know what it sounds like. Orally they are usually pretty good, because they pick playground English and stuff like that. And if their parents speak a little bit of English, that helps too. But it is all just step by step and giving them books that you have done some writing with them and they have got the same words, so they are actually seeing themselves, a photo, you know they made little books of themselves and you are getting books that also have the same words so they are sort of recognising the words as well and also doing recognising the sounds. Getting them to draw pictures and then talking to me and then I will write the sentence for them and about what they drawn or what they did on the weekend or in the holidays. And then I will read it with them, and then they will read it to me. And then I might cut up those, I

might write those on a piece of paper and then cut them up and then get the child to put them together...yeah… It is a whole lot of different little wee strategies you could use.

How do you overcome the barrier of money, when you don't have enough money for the things you would like to do?

As in school equipment and stuff? Oh that is something that I don't have any say in. If I want something in the classroom like a new bookcase, I just have to put a proposal to the principal and if he thinks it is ok he will just get it for me, but when it comes to small things like I buy pencils for the class and prizes for the class. What else do I get? And I get sort of a couple little stationary things for the class; I would buy out of my own pocket, yeah. But big, is that what you mean, little items?

Yeah, but as well with the students, when they can't maybe afford their exercise book, their pencil,...

Oh I see what you mean, oh okay. If they can't, what I do is I buy it myself and then I get them and then I write a note to their parents and I just say that I've just bought, you know, the children's books and whenever you can afford it, you can give me some money for it. Or what I could do is make an arrangement with the office manager and she will then just tick off what has been paid. When it comes to lunches, I have always said to the children that if they have no lunch and they want to buy some lunch, they are to ask me and I will give them some money for that. But we also have our librarian, she does lunches for the children who forgot their lunch or who don't have any bread at home, but I usually pay for that, yeah.

How do you overcome the barrier of the lack of parental involvement?

Oh that is real hard. We have a home school partnership and we try and encourage our parents to come to that. And if there is some concerns about the child I usually try, I do write a note to the parents and I ask if I can meet with them. But I always when I have a note going home to the children like if there is something happening in our classroom I always write at the bottom "if you have any concerns you are welcome to come and see me". So I have an open door policy which the whole school does anyway, but as the children go up, sort of the years, the parental involvement becomes a little bit less than when it was when they were juniors. We have parent teacher meetings, we have home school partnership meetings, we have if there is any, sort of any things really worrying about the child I will then ask the principal to sign a letter or write one for me and then we get the parents to come in and with the principal, and me and the child, and we have a little discussion. If it is to do, it is quite some serious thing.

For their learning I have to rely holy on parent teacher meetings unless there is something specific that I want to talk to the parents, then I write a note.

So like if, for example you can tell that the parents don't work at all with the children at home and they come to your meeting and they say like they are going to change but they are not, is there any hint you can give…

Yes I usually write a little note, I usually suggest that if it is to do with homework, I usually say that, you know "there is a homework club at school, put" you know "it's really good if your child came even if it is only once a week, or twice a week". The homework club is Monday to Thursday, so they can choose any day and any length of time because it goes from 3 o'clock to 4:30. An I usually suggest that, or what I do, I then write a little note "this is happening at school, is there any way that you and

I could resolve this? It would be great if you could come to school and we have a little meeting, any time suits you". So I always throw the ball in their court, so let them choose the time and let them to choose the day and I usually give them a week. Because sometimes it takes a week for the child to realise "oh I have got a note to my mum". But what happens is, I usually put the note in their lunchbox. So whatever happens, the lunchbox has got to be washed or food has got to go back in there. Yeah, that is how I overcome that.

How do you manage to be flexible the whole time, because in the differentiated classroom, what has been said by several teachers was "you really have to be flexible the whole time in the class". So how do you manage to do that?

No when you say flexible, you mean when they learn something, when they are learning something or something happens?

Yeah when something happens and you just react to what is happening, you don't..

You don't follow your plan…

Yeah you don't follow your plan, but you react to what is happening. Like what is, of course it is different for everyone, but what is a hint you could maybe give to other teachers to let them know how it is easier to maybe improvise?

Ah, yeah that happens quite frequently. We have things that children like to discuss. Like I could be doing something and then children bring up this, and it could be happening in the news, right then and there. And I might think "Oh why not use this, because they are all discussing this all at once" so…

Like Norway? Like what happened in Norway?

Yes, yes, yeah. Exactly. And then we will have a discussion about, you know behaviour and I will try and use that with what we are using for PB4L (Positive Behaviour for Learning), you know being positive, being caring and being respectful and all those sort of things. So I mean it is a good band wagon to jump on and then thinking of you know, that is a form of bullying, you know, because it is a form of bullying in a different way. And in this case here, this person wanted to sort of overcome, he had these ideals and he felt that everyone should agree with that. And then that might be a discussion, you know, "do you think", you know "what he did was a good thing? And why?" And then you ask all these questions and "what about the children at" you know "who were killed?" Those sort of things and so that would be, that would be often a different tangent, but it interests them, because their parents would have been talking about it and there, and there, all the children, you know, would get together and talk about it. So I would probably use that as a story writing activity or a discussion. Or it might even, like go on to PB4L, or it might be a good Geography: "Where is Norway? Where is Oslo?" you know, "How far are we away? How much do you think that would affect it? Do you think it would ever happen in New Zealand?" you know. So that is I think, if that happens, you should go with the flow, because that really is the exciting, that is the exciting part of teaching I reckon. I think the planned work can come another day, but that to me is really exciting. Because they are all keen. I mean, they are all going to have weird ideas, but it is their ideas, so I talk about, you know "we need to listen to somebody else's ideas" even though you might say "oh, pooopoo" but it is still their ideas.

So you are going with the intimacy and the motivation?

Yes and that has happened quite a few times in my class... what was the other thing that happened? Oh I can't remember, but I can… oh the earthquake, the

Christchurch earthquake! We actually dispensed with learning, the very first one, the one that happened at night. And then of course the big one that happened at daytime. And so we talked about liquid fraction and, you know, what it is. And so we went on to a little bit of science and why did, why did the earthquake happen and then I explained, you know, about the plates. And I had some children who actually knew about these plates all around the world. It was amazing. So we talked about, you know, different plates and how they can actually go on top of one another and sort of lift. Then Japan happened, and we talked about Tsunamis and it was actually reeeaaally good, I mean not good for the people involved, but good for the children to learn. Yeah, so we did quite a lot of that actually.

How do you manage to think ahead?

Well in my case I try have my planning already sorted out in my mind and I usually find that if what I do today, if I feel the children have grasped it, I will do something different tomorrow, but if they haven't I will repeat or go over it a little bit. But think ahead… you mean think on my feet, or do you mean planning ahead?

Planning ahead.

Planning ahead… I used to have to take the day's lesson and I can make some alterations in the day's lesson eh in the next day's lesson. For example a couple of my math groups are really quite good and I might do this new lesson today and I think "oh yes, some of them already got it" but I won't do a new one the next day, I want to recap on it. And then I'll start thinking "well if they recapped on that, I might just do a little bit of the next step", just you know, just to make them really interested. So yeah, you have to think about. Not that I, you know, lie in bed and say "oh tomorrow we are going to do this", but it is just sort of whizzes through your brain.

Is it easier to differentiate in some subjects or subject areas than in others?

In some subjects it is easier, like in reading, writing and maths, the basics. In other subjects, it happens, but sometimes your mind-set is, because of those three arts as they say, your mind-set is sort of thinking more in those, because those are quite important to the child's life. And topic work and science and social studies, that is important but is not, has not the same importance as the other three things. So you tend, I do, still do it then, but it is not as obvious as in maths reading and writing. Like we did fizzing and foaming and I had about five children who, or even a little bit more, who actually went ahead and wrote up their activities and I just gave them guidelines on what they had to have and they just went ahead and wrote it all. And then I had the rest had to have a lot of help. So I had things already, what could I say, typed out. All I had to do is cut things out and stick them in their visual diary so they knew that is what they had to do. And then there is other children who were just totally lost and who I had to be with. And I sort of grouped them together and so I spent a lot of time with them. So yeah it does work in other topics but it is more identifiable in reading, writing and maths.

Yeah and how do you overcome the barrier when a child has little motivation or interest?

Really hard. It is, I try and put them with children who are pretty motivated, so I might say "Oh so and so, if I put you in this little group here can you, and these guys help you, they might be able to give you a little bit of a hand", and some of them do, so

it is a little bit of peer assistance if I am helping somebody else who is really stuck. The other thing is, I will give them deadlines that they need to do it by. So if they have to have something done by the end of next week and I keep reminding them "have you done this, I will give you some help". And some of the children have got good work ethics and they will say "oh can we do some at lunch time, please?" And it is not always the one who needs motivation, but I encourage that one to do it at lunch time and I say "oh so and so, you can do it at lunch time as well with these guys and I will help you then". And then hopefully they have done that work and they can sort of say "oh I've finished, I've finished, I've finished". It is quite hard, quite involved.

APPENDIX 13

Follow-up Interview with Laura

After reading this interview is there anything you would change or add to specify a point of view?

No I think it captures the thinking that I do as a classroom teacher about all the kids in the class and those kids that need a different tactic or a different way of being taught. And I get it right some of the time and I get it wrong some of the time too. But as long as you're learning from what you are doing that is the most critical thing.

The next question would be about challenges in the classroom and hints you could maybe give to other teachers how we could overcome those challenges, so indicators could you give for example to other teachers to deal with barriers such as the restricted time in the day. And big work load of the students.

Definitely prioritizing what is important, getting rid of all the administrative and the unimportant things in the day and working out what is the most critical things. I do think there needs to be a balance though in terms of you have been teaching all day and you drive the kids nuts. If you were teaching them all day and that they do need breaks in their learning in terms of them to just engage their brain in another way, doing something completely different. So I just think its structure, the way that you structure your day and prioritize. By doing that you are showing the kids what is important and what is important is the thinking involved in what they are doing.

How would you overcome the barrier of the big workload of yourself, of the teacher?

Making sure that people are willing to ask for help if they need it is the biggest thing and sharing the workload. We all have students in our room who have different ways of learning and if we shared that ore with one another and our own strategies that we are doing in our classrooms and maybe that would- working with other teachers of the same school working together- or even outside of schools has worked for us. The sharing of resources and ideas and good teaching practice and that is part of the quality learning circles that we do, the professional learning communities that we have set up within our school and also the wider we are actually starting to branch out to other schools to meet with them. So I think the sharing of that is a way for people to share their good practice, but also the challenges they have. And I don't think the workload is ever going to get any easier because every teacher wants the best for their kids that are in their class.

How do you deal with the high number of students in your class?

Ensuring that those students who need the most help are getting it from the most qualified person in the room and by that I'm meaning that if we are able to use teacher aides, we use them in a capacity to support what the classroom teacher is doing. But those students who are struggling may need, they need the most qualified person who is the teacher to help them and vice versa for students at the other end as well. Most qualified person to help them and that's not saying the other kids don't need a classroom teacher as well but our support staff and teacher aides and other people that can get into the school can help in a different way can help with the support of the teacher.

So do you have the possibilities of teacher aides quite often?

Yes, and other teacher support as well, not just teacher aides but other teachers that are able to come into classrooms and that is just the way that we have been able to organize our staff and the importance we put on helping all those students at those different spectrums and with their different needs.

What if the number is still high with the teacher aides inside of the classroom, there is still a high number for you to look after them? The teacher aide would take the struggling students away?

Or possibly, the teacher aide could be working in the classroom alongside the teacher as well, so they are not taking kids out, they can be working alongside, so they come in the classroom and they may be, it might be to be involving reading an article so the teacher aide might be working with those students there who need to know about inference from the article or while you are working with other students.

So it is really like team teaching?

Kind of but, I mean the teacher aide is being supported by the class room teacher and is not expected just to "do" as well.

How would you overcome barriers of language if the student has a different language to the English and doesn't understand and actually is a really smart student but doesn't understand the language?

Acknowledgment of that language in the classroom, a visible presence of that language and any opportunities where you can have multi, the language of the student and getting them to translate the other way for us, so that we are actually being enriched by the fact of learning another language for a particular topic, or topic words or what we are talking about, a subject. Thinking about in terms of getting them to bring along things that might be related to what we are talking about in the classroom from their particular culture and acknowledging and celebrating that, that difference as well. I think the thing is having a visible presence in the classroom and seeing it as accepted. And then that's enabling people to make links between their own language and English as well. We also have support for students who are second language speakers as well. So we have a teacher employed that we are able to use in the classroom and outside as well so the students can go off for one on one for practice whether it would be oral language or whatever it is they need or whether it's reading or writing, so they have an opportunity for that and then there is the opportunity to go into the classroom as well to support students.

How would you overcome money barriers for example students not being able to buy their exercise books and pencils?

We have a pastoral care as part of our special character, as part of any school pastoral care but in ours, it is done in a very respectful and supportive way and it involves families and in terms of making contact with them if there are issues about getting the right resources so no students miss out, in terms of the money situation.

How would you overcome the barrier of the lack of parental involvement?

Tricky one, some of the interventions that we have had success with, particularly for junior school students have been when we have had parent afternoons where the parents have come in and we have run sessions about some of the interventions where their children are involved, and then getting them on side, and getting them on board so then they can play the games and they know what is exactly going on in school so they can support at home. That has been very successful and whilst it is so successful further up in the school and particularly in year second and we are wondering whether it is the time of the day and some of the strugglers that are the hardest to more are at that older end because parents think they can have a hands off approach to it all, so it is, I think it is about education and finding the right time in the day to meet parents and to talk about. And I think the whole getting a group of parents together, it is probably more powerful than trying to talk to them one on one in a parent/ teacher interview, situation because they can ask more questions or generate ideas from other people around them. At the moment we are just trying to start up a couple of night time sessions.

Did you ever have a parent that didn't come at all?

Definitely

How do you handle that if the student doesn't do homework and the parents don't answer your calls?

Letters were sent out saying that their students were involved and how important the parent's role is in intervention of their child to be successful. Trying to play out the bit about, I mean every parent wants their child to be successful and sometimes it's perhaps the ways the school has approached it, or perhaps the way that we haven't approached them so it hasn't been comfortable enough for them to come into school. Some parents still feel a bit funny about coming back into to school and wondering whether they are able to help in some way. So we are trying to think of ways in which we can engage these parents who sometimes are the parents who struggle with literacy and numeracy and with these sorts of issues themselves as well. We are just trying to think outside the square by perhaps getting other people in and sometimes its cultural so getting someone from their particular culture who is a parent at this school to help talk to them alongside them. So we are trying to think of different ways to try and engage parents in the whole process because it works when parents are involved, kids strive.

How do you manage to be flexible the whole time in the classroom?

Knowing that some things will work and some things won't, and just accepting the fact and acknowledging the fact when things aren't working that something needs to change and it usually the teacher that needs to change either what they have planned or what they delivered or what they are doing.

How do you think that you can learn to be flexible or improvise because I can imagine teacher's having a good plan and then it doesn't work out and then they don't know what to do?

I think to start off with that is really good is to come up with a plan B, C and D. Try an activity out, think about if this doesn't work where might it go, and if this

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doesn't work where might it go. But I'm not saying do that for everything but to start yourself thinking about being flexible. And it's all learning whether it works or whether it doesn't and to accept the fact that sometimes things are not going to work out but there is always something to learn for making mistakes. And I think as long as your being open about that with the kids as well then they see that mistakes are what we are here for and what we learn from.

How do you manage to think ahead and a good planning?

I think being timely, doing things in a timely manner, not leaving things to the last minute. Giving yourself time to think what the kids in your class actually need. And then starting with what they need and thinking about to what our NZ curriculum and what experiences and thing s our students need for now, and then settling that into some sort of long term plan so you have a bit of a guide to when and where and how. Once you have that and you work out then well what is it that you want to see form the students? What is it that you want to capture? What parts of their work do you want to see? What they can do? Where they are at with certain things? You can kind of set some of the assessment up prior. Then you have a bit of a focus, then you know where you are going and also you can structure your day accordingly to what's important on that plan. And yes it is great to be flexible and spontaneous, but kids love structure, they like to know what is happening and when it is happening and throwing in the odd spontaneous something you know is good for them as well.

How do you manage disciplinary problems in the classroom if kids don't behave?

I think I'm firm but fair, and I give children I would say warning. I sometimes can diffuse a situation with humour and they know that being sort of told to get into mind sort of thing without I think the older the kids are the more that that becomes perhaps your, the most important tool is humouring them back to where they are suppose to be and then knowing that this a partnership, a teaching and learning and if one sides not pulling their weight then they need to be made accountable. So consequences are really important when it comes to students not towing the line but they also need to see very clear guidelines with the classroom is going to operate or how themselves are going to operate within the classroom.

What if they really don't care about consequences, about not being able to go for lunch or whatever the consequences are?

It's about finding out what it is that matters to them. And for some students it might be they are not going to be with some students or it might be that they are not going to art. It's finding what's going to hit most for them because size does not fit all. I mean some kids in my class would go "YAY!" for not going to P.E. and others would be upset if I said that they were not going to technology on Fridays. So it's about finding whatever works for the individual students more so then setting a one size fits all. I don't send kids out of the classroom, I think that is a cop out, personally I think that is a cop out. I would only do it if I thought I was going to say something to the child I shouldn't say or they were going to say something that was going to disrupt everyone else. And the only time I do that is if I am out there with them, I'd only send them out there if I was going to go out there with them. I am very lucky in the classroom that I have got that it doesn't raise itself as I have had it in the past where I have had to remove the child from the classroom and I have done all sorts of strategies, it just depends on the sorts of kids that you have got and what they respond to and what they

don't respond to as well.

Do you think it is easier to differentiate in some subject areas than in others?

Yea, I do, I think maths is really easy, easier, not easy but defiantly easier and I'm not sure if that is because of our assessment tools that make it easy for us to see the results. Whereas science we become more into students who are inquisitive, have enquiring minds and want to find out and it doesn't actually matter what it is in science they want to find out about. Then it becomes a little bit trickier in terms of, to engage them all the time you know you have maths and reading to get on with. So and I suppose our literacy and numeracy programmes are things we do every day and not all teachers make sure that their literacy is linked to the topic or the theme that they are doing for the day, and sometimes it is what you have to do, another skill to learn. So that makes it tricky for them to see a connection between, if they are really fascinated about stars and neutrons, and you give them a reading lesson on you know plants then that makes it tricky.

What would you do if a child has little motivation or interest in a topic? Or a subject area?

Try to find out why, and sometimes it's because they can know very little about the subject, they don't know how interesting it can be, so it is about presenting it to them in a way, that is the wow factor. It can also be the other extreme, that they have been taught before, they have heard this before, they have learnt this before, and why am I learning this again? So I think about it at the very start or at the start of the year it is about finding out what your kids know or what they don't know. Asking them what they think about things, what are the things they like finding out about, what subjects do they most at school, which ones don't they like and why don't they like them. So I think engaging kids in that sort of conversational survey is invaluable to give the teacher a bit of an overview of what the kids think about each subject. Thinking of things that as a classroom teacher that you can weave into what you're planning to do and capture them by the things that they like but actually get them to learn the things that you want them to learn, which isn't always possible in an authentic way, but in looking for any opportunities where you can do that, because people will always be engaged in the things they like. So if you can find a creative way of teaching what they need to know without them and using something they like then it usually gets them interested.

In your last interview that the children didn't always acknowledge the difficulties that they were having, what strategies do you use to find out when this is happening and what do you do about it? And how would you adjust the teaching of that particular child?

I think with that it's about the one to one the discussions and conversations, conferencing you can have with students on a one to one. And that's definitely come out in the end of last term where we have done some analyzing of students in my class with maths and some of the conversations that you miss when kids are working in a group that you don't hear about their thinking or the things that as a teacher you think they know because they are doing it but an actual fact they don't understand. And that has definitely come out in some of the conferencing that I have done with students. So it is about asking them, about using tools that we have got to get that information, so using the diagnostic tool or the diagnostic interview for that. And so it is about investigating

further, so that you are 100 percent sure about what they know and it is them answering and not you assuming. How do I adjust my teaching? It could be the way that I have grouped, it could be the sport they might need, and extra teaching time in the classroom. It could be that they might need an intervention of some sort meaning another teacher coming in and helping, it could be me finding out more about where they are at and how to move them. So talking to other teachers, talking to their previous teacher, what can I do differently, what has worked in other subject areas for them and help them to make shifts. Because maybe that technique or whatever I have used there might help them particularly for maths or whatever subjects it is.