

Preventing and overcoming underachievement in gifted primary school students

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This article is about giftedness, underachievement, executive skills and teachers' attitudes in primary schools.¹ Underachievement is a hot issue when it comes to the education of gifted students. The lack of high-level performances is seen as a missed opportunity for their personal development and seen as a missed result of their education. In this article, firstly, the definition of underachievement is discussed. Secondly, the concept of learning is explained. The third topic addresses executive functions and skills and the way they influence the learning process. Last but not least, suggestions for a different perspective and a different approach are given.

What are we talking about?

School performances in themselves are not a reliable measure when it comes to recognising gifted potential. Not every gifted student is a high performer or high achiever. Nor is every high achiever a gifted student. Therefore, outstanding school performances should be seen as only one of many indicators that a student may be gifted. If school results lag behind, while at the same time other indicators of giftedness are being observed (i.e. an IQ > 130), then low results are subsidiary to the other indicators.

However, it is not the intention of this article to discuss how gifted potential should be recognised, instead it presents the argument that even without a formal 'label' of being gifted, education should be challenging for all students and therefore also for gifted students who are not recognised as such. Our starting point is that giftedness refers to a student's developmental potential (Gagné, 2010; Heller, 2010; Sternberg, 2002; Subotnik, Olszewski-Kubilus, & Worrel, 2011). This potential can be expressed in different domains, mentally or physically. We focus on students who have the potential for intellectual giftedness. Students who are potentially intellectually gifted can, under the right circumstances, develop this potential in a way that enables them to become high achievers (Subotnik et al., 2011). They are able to excel in one or more academic domains; they have the ability to learn at a fast pace and are able to cash into their potential by getting high results. Crucial is the constituent part 'under the right circumstances' (van Gerven, 2013). There is a reciprocity between the developmental process, the student's ecological system (see figure 1) and the student's personality. The interaction between these different (f)actors is of influence on the developmental process and so also influences whether the student will excel or not (Gagné, 2010; Freeman, 2010; Freeman, 2013; Reis & McCoach, 2000; Subotnik et al., 2011; van Gerven, 2013; van Meersbergen & de Vries, 2013). According to Gagné, a talented student shows outstanding mastery of systematically developed competencies in at least one field of human activity to the degree that it places the individual at least among the top 10% of 'learning peers' (Gagné, 2010). The word 'achievement' relates directly to the evidence of the outstanding mastery of these systematically developed competencies (Sternberg & Zhang, 1995). However, is it correct to state that if a gifted student does

¹ This article is written from the perspective of a pedagogue and teacher-educator and focuses on relevant information for teachers. Topics are discussed in a way that directly relate them to a teacher's day-to-day practice. Psychological nuances are only taken into account if they are directly relevant to concrete suggestions for interventions.

not show evidence of his or her potential by delivering high performances, then the student is an underachiever? That statement is a challenge in its own right when it comes to education and the role of the teacher; which we will come to later in this article.

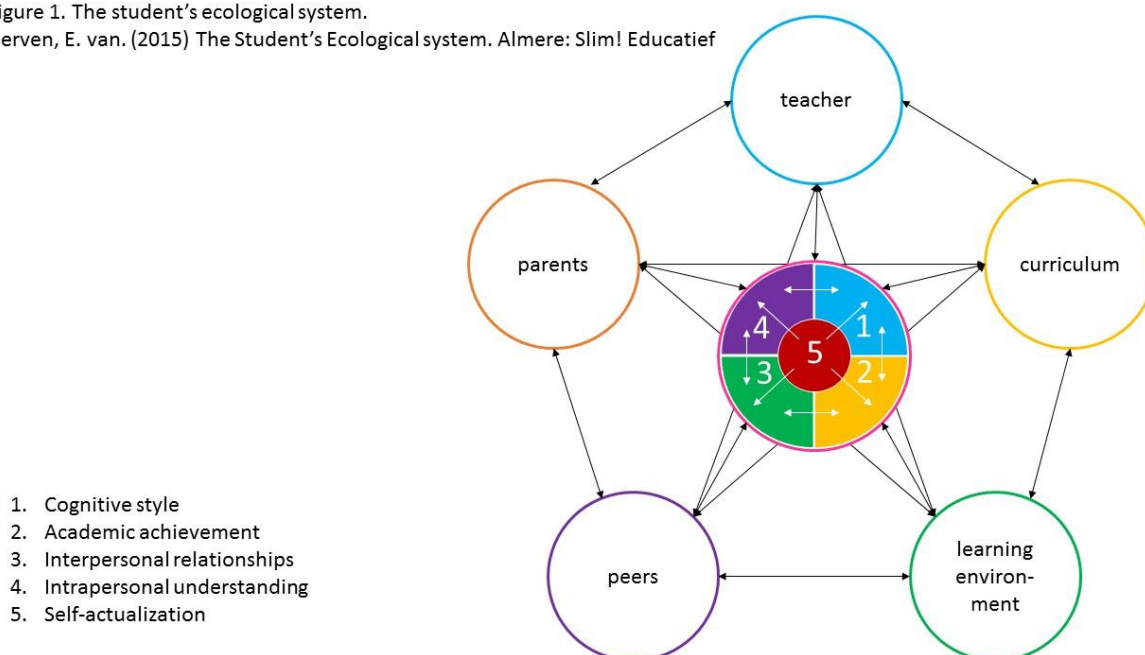
Underachievement is often seen as the discrepancy between a student's achievement and a student's potential. Mooij, Hoogeveen, Driessen, van Hell & Verhoeven (2007) suggested that this discrepancy should be considered as an indicator for underachieving when the student's achievements are at least one standard deviation below his or her score in an intelligence test. Using this definition means that twice-exceptional students should be seen as underachievers, because their achievements in the domain of their disability are often one or more standard deviations below that which might be expected, based on their intelligence (American Psychiatric Association, 2014; Brody & Mills, 1997; Kroesbergen, 2017; van Gerven, 2017; Weterings, 2017).

However, considering the fact that gifted students who are hindered by a learning disability or a behavioural disorder are still able to perform at above average level, it can be stated that, within the domain of the disability and the domains hindered by a disability, these students are still performing at a very high level. Had the student not been gifted, the results would not have been as high. Without their high learning potential, they could not have compensated for the difficulties they experience in the way these students do. Moreover, it often takes a huge effort to achieve these results. Therefore, underachievement is about more than just a discrepancy between intellectual potential and achievements (Webb et al., 2005). Twice-exceptional students should not be considered as underachievers in the domains that are affected by their disability. Reis and McCoach (2000) added this perspective to their definition of underachievement.

Sousa (2003) explains that underachieving is circumstantial, meaning that a student can perform below his or her potential at school, but might excel outside of school, or even at school but in another context with another teacher or another subject or even other classmates. The concept of the influence of the student's ecological system (van Gerven, 2015; van Meersbergen & Jeninga, 2012) on the student's performance and well-being puts this into an even broader perspective. It implies that the fluidity of the profiles of Betts & Neihart (1988; 2010) is even more significant than the interpretation currently in daily practice at schools.

Figure 1. The student's ecological system.

Gerven, E. van. (2015) The Student's Ecological system. Almere: Slim! Educatief



In figure 1 the influence of the student's ecological system on the student's performance and wellbeing is visualised. As in the concept of Response to Intervention (RtI), the student is placed in the centre of the action (Pameijer & van Beukering, 2007; Robertson & Pfeiffer, 2016; van Meersbergen & de Vries, 2013). Academic achievements, cognitive style, interpersonal relations and intrapersonal understanding are of influence on the student's ability to self-actualise. These five factors interact with each other. Each factor is influenced by the five external (f)actors: the teacher, the parents, the curriculum, the physical environment and the peers. At the same time, all these (f)actors influence each other as well. This model not only shows the complexity of a (gifted) student's personal development; it also shows the complexity of educating a gifted student, and therefore also the complexity of the concept of underachievement.

Bearing all this in mind the following definition of underachievement takes shape. *Underachievement means performing and achieving at a significantly lower level, for a longer period than might be expected, based on the student's intellectual potential under optimal educational circumstances, when unhindered by a specific learning disability or behavioural disorder* (van Gerven, 2013). At this point, we will go back to where it all starts, the core business of education: learning.

[Subheader] When teaching results in learning

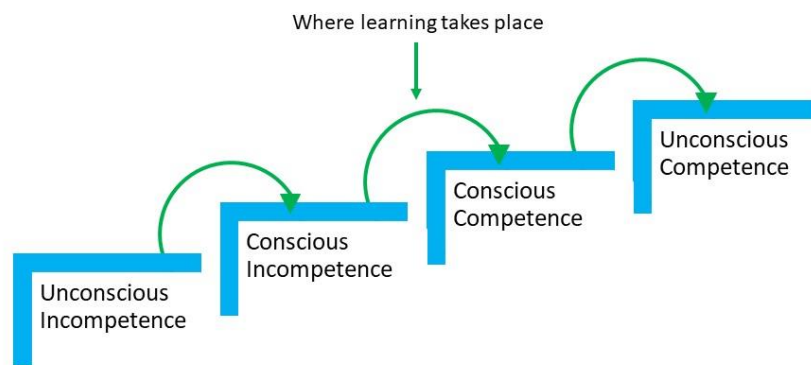
Learning is not just something that mysteriously happens to students. A good education means that the teacher intervenes purposefully in a way that makes it possible for a student to develop his or her potential through working hard and putting in much effort, in a well-prepared educational environment (Claxton & Meadows, 2009; Hattie, 2013; Marzano, 2007). In this context the student goes through four stages of development:

1. Unconscious incompetence
2. Conscious incompetence
3. Conscious competence
4. Unconscious competence

Figure 2a. "Where learning takes place".

Four stages of development (based on Maslow, 1954).

Gerven, E. van. (2013) Knapzak Praktijkgidsen. Begaafde onderprstereders. Nieuwolda: Leuker.nu



Learning takes place during the period of transfer between conscious incompetence and conscious competence (Maslow, 1954), (See figure 2a). The application of newly acquired knowledge and skills in the stepping up stage (between conscious competence and unconscious competence) is to be seen as practising in the zone of proximal development (Vygotski, 1978). What happens in both stages, is that the teacher wilfully intervenes in a way that changes the student's knowledge, skills and behaviour. A student who is learning will make mistakes, will ask questions, will experience uncertainty. The teacher accepts that when the student starts working on the assignment, he is not yet competent. In order to help the student in this process of mastery and becoming competent, the teacher instructs the student, supports him and offers him on a daily basis 'vitamin T' for Trying, 'vitamin F' for coping with Failure, 'vitamin D' for coping with Disappointment, 'vitamin P' for Perseverance and 'vitamin C' for Celebrating successes.

Without realising it, gifted students are often offered classroom assignments which are a match for most students but that are below their learning potential. Their experience is that they have not done the given assignment before and that, nevertheless, they are able to achieve highly. So, where most students in a classroom have a true learning experience while doing their assignments (experiencing change from being a conscious incompetent to conscious competent), gifted students will associate these success moments, based on unconsciously acquired competences, with 'learning'. They were unconsciously competent and became conscious of their competence by doing the assignment (See figure 2b). Having explained this and taking into consideration that learning is education's core business, I dare to state that our concerns should not be focused on the fact that some gifted students are underachievers, but on the fact that most gifted students are 'under-learners'.

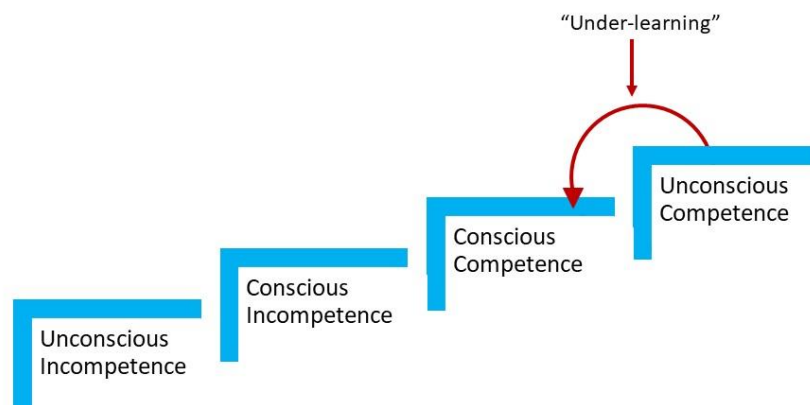
It is important to realise that the student's experiences in this learning process are shared with every actor in the ecological system (Claxton & Meadows, 2009). As a teacher, expectations may be built on a student's results, based on previous achievements and performances while doing classroom work. That means that the teacher expects a gifted student to complete a new assignment with a 100% score and without any help if she has previously experienced that the student was able to

accomplish this on a regular basis. The same applies to parents and - just as importantly - to peers. Everyone expects that the gifted student will excel time after time. No one realises that if a student can complete an assignment with a 100% score without putting in any effort, that this student is most likely performing below personal learning potential. They fail to realise that when a student is truly learning, it is not likely that he can do this without any instruction or help and still reach a 100% score. The most significant risk in this situation is not that the student develops a so-called fixed mindset but that, because a real learning experience takes place, the environment stops supporting the student as soon as his results are not in line with their expectations. Therefore, when the gifted student is truly learning and trying to develop himself from conscious incompetence towards conscious competence, instead of supporting the student, we withdraw our support and suggest that the student takes on a less complex activity so that he will not make any mistakes anymore and can complete his assignments more independently. If a situation like this happens several times in a row, we cut off the student's choice to stay with an activity, replacing the activity with one on a lower level and by so doing, we unconsciously create an the ecological system that supports behaviour that leads to under-learning.

Figure 2b. "Under-learning"

Four stages of development (based on Maslow, 1954).

Gerven, E. van. (2013) Knapzak Praktijkgidsen. Begaafde onderpresteerders. Nieuwolda: Leuker.nu



Executive skills

While learning, students develop their executive functions (Cooper-Kahn & Foster, 2014). Gifted students are no exception to this. Executive functions are cognitive processes that are required to control a person's behaviour in order to be able to finish a task adequately within the time that has been given, in a way that the required standard is met (Cooper-Kahn & Foster, 2014; Dawson & Guare, 2009; Kroesbergen, Verkaik, & van Gerven, 2017). Executive functions can be described at two levels; a cognitive level and a behavioural level. The cognitive level refers to the processes that control thinking as well as behaviour. There are three executive functions: inhibition, shifting and updating. Inhibition is the ability to suppress dominant reactions and therefore sustain attention, keeping silent when sensible, et cetera. Shifting refers to the ability to switch attention from one thing to another and to switch between required behaviours. Updating is the ability to store new knowledge and skills and connect new information to earlier acquired information. The combination of shifting and updating reflects itself in being flexible. Executive functions are a mental process, but what goes on in a person's head can be made visible in their actions. The behavioural level of

executive functions are the executive skills. Based on the triad of inhibition, shifting and updating, these skills can be divided into three groups. The individual skills belong together like a horse and carriage, and they all influence each other.

- Inhibition
 - Response inhibition
 - Emotional control
 - Sustained attention.
- Updating
 - Metacognition
 - Working memory.
- Shifting
 - Flexibility
 - Task initiation.

Dawson & Guare (2009) distinguished a fourth relevant group of skills that, although based on the prior groups, can be seen separately:

- Planning
 - Planning and prioritisation
 - Organisation
 - Time management
 - Goal-directed persistence.

The way these executive skills develop depends partially on predisposition and partially on the educational context used to teach the student. It is a bit of a chicken and egg situation. Executive functions are necessary in order to be able to learn, but a student has to be placed in a situation where learning is required in order to transform these functions into skills.

According to Gathercole & Alloway (2013), executive functions are a reliable predictor of school success. That is quite logical considering that the way we teach often calls more on a student's executive skills than on his intelligence. Research from Kornmann, Zettler, Kammerer, Gerjets & Trautwein (2015) shows that students with good executive skills are more likely to be recognised as being gifted than students without those skills, even if they are not gifted at all but have an IQ just above average, and their successes are based on their well-developed executive skills. Gifted students with good executive functions but who are not being challenged to use them in an educational context are, despite their high IQ, less likely to be recognised as gifted.

So, learning, in itself, is a state of mind that is needed during childhood to provide a person with the opportunity to develop the necessary skills everybody needs in order to become a successful, intelligent adult (Dweck, 2006). The call on executive skills becomes more intense under the following circumstances:

- The less familiar the task is, the more the task will be experienced as difficult. The more difficult a task is, the stronger is the call on executive skills.
- The complexity of the mental procedures required for a task increases by the number of steps that are taken in these procedures and the familiarity with the individual steps. Increasing complexity means an increasing use of executive skills.

- Learning becomes more difficult once the gap between old and new competencies enlarges. The larger the gap, the more the use of executive skills are required.
- If a task requires several mental procedures to be combined (i.e. in enrichment tasks) the complexity of the task raises to a superlative level. The more steps that have to be taken, the more combinations made, and the less familiarity there is with them, the more need there is to effectuate executive skills. Therefore, higher order thinking skills as described by Marzano & Kendall (2007) call more on executive skills than tasks that are at the level of recognising, recalling and executing.

Based on widely spread research we might assume that gifted students have perfectly good executive functions as long as they are unhindered by a specific learning disability or a behavioural disability (Kroesbergen, Verkaik, & van Gerven, 2017). If a gifted student is educationally challenged, they will be able to put these well-developed executive functions into use and transform them into well-used executive skills. However, in daily practice, we might observe that not every gifted child has well-developed executive skills. That raises the question about the origin of the problem. If there is no neuro-biological explanation for the less developed skills, the answer should be sought in the student's educational context. The development of executive functions on the cognitive level as well as on the behavioural level is frustrated under the following circumstances:

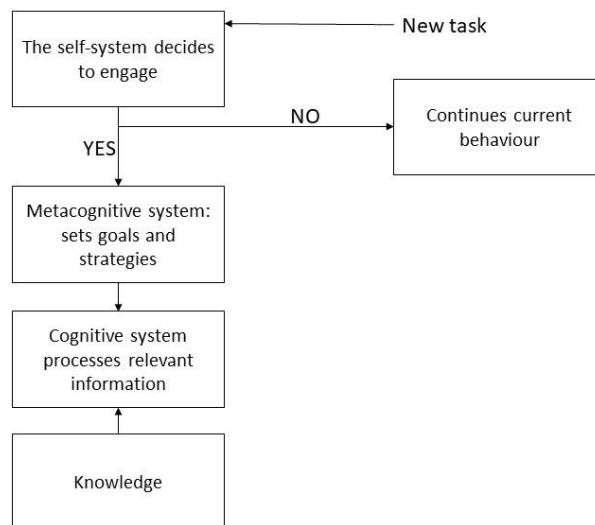
- From an early age, the gifted student is placed in an educational context where he is most familiar with the mental procedures that are required.
- The gap between formerly developed competencies and the 'to acquire' competencies is too small to create true learning experiences.
- Only lower-order thinking skills are trained, and no complex mental procedures are required.
- The student is allowed to withdraw from learning experiences because he does not perceive the experiences to be 'fun'.

As a result of this, good functions will not transfer into good skills. This creates a 'domino effect': without good skills, good achievements lag behind, without good achievements no enrichment activities are offered, without the enrichment activities the chance that a gifted student may develop good executive skills decreases rapidly.

This domino effect refers to an educational situation where under-learning and underperforming is (unconsciously) encouraged. It is likely that underachievers and under-learners have not developed the necessary executive skills. At a new challenging level, the student is confronted with an assignment that makes him consciously incompetent. The student has not experienced this before and is now forced to take on the challenge by himself ("you are such a good student, you can do this on your own" or "I'm sorry, due to the 'no child left behind act' I have to invest my time in the special needs students"). Under these circumstances, it is only reasonable that the student experiences a frightening situation. It is not likely that he takes on the challenge that he is confronted with. The emotions he has to deal with are those of being afraid of the unknown and the fear of failure (Whitley, 2001). The behavioural model of Marzano & Kendall (2007) as shown in figure 3 explains perfectly how this process works.

Figure 3: Marzano's & Kendall's behavioural model.

Marzano, R.J. & Kendall, J.S. (2007). *The New Taxonomy of Educational Objectives*. Thousand Oaks: Corwin Press. Page 11.



Once a task is offered, the self-system is activated. The student will explore his motivation for a task (Csikszentmihalyi, 1999). This is where Deci & Ryan's (2000) triad of relationship, competence and autonomy comes in: 'Do I relate positively to the learning objectives of this task?' 'Am I competent enough to take this task on?' 'Am I in a position that offers just enough autonomy to make personal choices during the learning process?' In service of this exploration at a metacognitive level, the student estimates his chances for success. He does this by checking at a cognitive level if his knowledge and skills are developed enough to have a chance of being successful. If he concludes that it is unlikely that he will be able to end the task as successfully as everyone expects him to, motivation to engage with the task will drop below zero. As a result of this, he drags his feet and does not initiate working on the assignment. Once started, he is not able to sustain his attention as fear of failure distracts him. It might even be that, because he has not yet acquired the basic skills for the task, he has to shift his attention to seemingly unrelated simple activities to acquire those skills. By so doing, the gifted student may endanger his social status of being someone who is always successful; other students might see him as someone who boasts about knowledge but isn't able to do simple things. The thought that this might happen adds to the level of anxiety that has already been raised by being confronted with the feeling of being consciously incompetent. In addition to this, during assignments within a group, a gifted student hardly needs to plan and prioritise, therefore is unlikely to be developing time management skills effectively, and, if the tasks are easy, the student has not needed to organise his behaviour to structure a task, so another executive skill has not developed. Back at the self-system, there will be a negative response to the task.

Facing a challenging educational situation is a scary experience. If it is a student's first experience at school, he will take it on, just because all the others are doing the same. By doing so, he builds the stamina needed for learning. However, if it takes one, two, three, four or even five years before he has this experience, it is most likely that he will aim for the closest emergency exit. This student will claim that everything offered is boring him to death and therefore he does not feel the need to become involved. Everybody is familiar with this response because he showed it under all

educational circumstances before, so no one is surprised. The student will be excused from this assignment, another challenge is offered, and the entire process starts all over again.

From this perspective, under-learning cannot be turned around and overcome just by offering the student some enrichment tasks or letting him participate in an enrichment project. A completely different attitude is required from all the actors in the student's ecological system (Galbraith, Delisle, & Delisle, 2002; de Bruin-de Boer & van Gerven, 2009).

[subheader] A different perspective on underachieving

A superior level of mastery requires intense practising, after all, practice makes perfect. Failure and practising go hand-in-hand. As soon as a gifted student needs to practice, it cannot be expected that a superior level of mastery will emerge on the spot (Matthews & Folsom, 2009). A gifted student who practises to master a new competence and puts in an effort to do so, cannot be called an underachiever if he is failing during this process. In this case, failing only makes visible what still has to be learned (Dweck, 2006). The assumption that a gifted student can be recognised by his constant high achievements does not acknowledge the natural characteristics of the learning process. Venderickx (16-02-2017) compares this process with the scouting and training of young athletes. When a young athlete is scouted, and an intensive training programme starts, scout, trainer and athlete accept that the innate gift has still to be developed. No one expects the young athlete to be as good as an Olympic medal winner is after years and years of practice. They all know that climbing to the top is a struggle that can only be overcome by putting in a joint effort. So why should anything else be expected from a student with the innate ability for academic success?

The starting point should be that, within the student's educational context, they perform, learn and achieve at a maximum level. If the student's achievement does not match the teacher's expectations because she has another perspective of the student's capabilities, it says more about the educational context and the teacher's mental framework than about the student (van der Wolf & van Beukering, 2012). It also says something about the balance between the success rate of the student's effort and the way the educational context has offered the necessary scaffolding for learning. The term underachievement, therefore, says more about the construction of the educational and developmental process than about a student's achievements. Turning this process implies that all partners in the student's ecological system will have to play a different role. The interaction between the (f)actors in the ecological system will be forced into a new order (van Gerven, 2013).

If a student's behaviour does not reflect his intelligence and learning potential, the student is sending out an SOS. Underachieving and under-learning are ways of behaviour. Behaviour is just the message. Behaviour can change, but in order to accomplish change, effort from all the parties involved is necessary. The teacher wants the student to 'do better'. However, telling someone 'to do better' does not lead to 'better achievements' if the educational environment does not invite them to 'feel better'. The same applies when it comes to the behaviour of an underachieving or under-learning gifted student. If the teacher wants the student to change and get his act together, changing her actions is an essential part of the process. In order to make sure that the student can match her expectations, the teacher has to adjust her pedagogical-didactical approach. By creating a learning environment where an optimal balance exists between the offered educational level, the student's capabilities, the necessary scaffolding and the student's achievements, the chances for success are optimised (Galbraith et al., 2002; Hattie, 2013; Sternberg, 2009).

In daily practice, there is often a split between what is most desirable and what is most workable. Often ending up as more desirable than workable. If that is the case, then the teacher should adjust her expectations. Under less optimal conditions, it is unrealistic to expect that a student is fully able to actualise his learning potential, because the teacher has not had the opportunity to help the student in the way that is needed. However, it is equally unrealistic to expect that education can offer the most desired context for all students at all times. As always, the truth lies somewhere in the middle (van Gerven, 2014).

[subheader] So what can you do?

The concept of Response to Intervention is not only applicable when it comes to school results. This concept is also extremely useful to intervene with behavioural problems. Experience in the Dutch educational system shows that this process does not always have to be accompanied by lots and lots of paperwork and numerous meetings with huge groups of specialists (Pameijer & van Beukering, 2007). In order to keep this approach workable for teachers, in this context 'KISS' (Keep it Simple and Stupid) is the motto. Combine Rtl with a Solution Focussed Approach (Furman, 2006; Måhlberg & Sjöblom, 2008; van Meersbergen & de Vries, 2013; Wolters, 2011), and we get what we call a 'Change Oriented Approach' (van Gerven, 2015).

Waiting for the student to change spontaneously does not get us anywhere. That is why we have to start influencing the situation ourselves. This implies that there has to be a change in what has always been done before. Up until now, these interventions have not changed the situation. They did not work, and therefore it is safe to assume that they will not start working miraculously now. The problem is that there is no quick fix when it comes to education. There is no intervention that will work under every circumstance with every student. We all accept (and even plead) that all children are unique; if so, why expect a 'one-size-fits-all-solution' when it comes to pedagogical and didactical strategies? A Change Oriented Approach means starting to accept that interventions should be customised. Changing behaviour means teaching the student to let go of previously ineffective behaviour and replacing it with new effective behaviour (Furman, 2006; Wolters, 2011). That involves creating ownership for the problem with all the actors from the student's ecological system. Once they feel ownership for a part of the problem, they can think of personal solutions in a way that shares ownership in a solution. That is how learning objectives aiming for 'new' behaviour are made visible.

The next step in this process is to systematically explore if the intended interventions may lead to the desired change. The idea of a systematic exploration is not to work with answers but to start by asking questions. Every question involves another intervention or another approach. Every question can be answered from the perspective of the persons involved. The more these perspectives can be taken on, the bigger the chance that the preferred change can actually happen. The next step is to start thinking in terms of cause and effect and imagining a chain reaction to the intervention. 'If I do this, the student might respond like... that means that I have to....' Think of what could be helpful to realise an intervention, what barriers can be expected during the process, what emotions have to be dealt with, whose emotions are they, and why are they of influence?

Working based on the Change Oriented Approach takes time. Thinking through possible options and interventions is not easy. However, by so doing, time is saved that would have been invested in

acting on a trial and error basis. It prevents the frustration of unexpected failure at stressful moments when we cannot afford to make mistakes.

Preventing and overcoming underachievement and under-learning means that a shift in the accent of pedagogical and didactical strategies is required. There is no longer the assumption that development comes spontaneously. Interventions are selected to create an environment where the student feels invited by nature to develop new, desirable behaviour. As teachers, we consciously choose to support that development, and remember that, if a student has something to learn, the teacher has something to do.

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