

Report on the findings on use of the LP model with T2 level data analysis

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Part 1: Using the LP Model

1. The LP Model

Making sustainable changes in schools and kindergarten - The LP models impact on teacher competence, students learning outcome and school culture

LP means Learning environment and Pedagogical Analyses. The model was developed in Norway based on research showing that learning problems and behaviour problems both are connected to different aspects of the school context. Class management, well-being and teaching styles can be some of these aspects. This means that many of the challenges in schools are strongly connected to the practice in the classrooms (Nordahl et.al 2012). In the LP model the learning environment is central, and the model is based on knowledge we have of the connection between the school's practice and the student's development.

The main principals in the LP model were developed and tried in a pilot project in Oslo from 2000-2002. The results from this project were brought on to a wider project in three Norwegian municipalities from 2002-2005.

Since 2006 the LP model has been implemented in about 300 Norwegian schools and kindergartens, and about 500 schools and kindergartens in Denmark. The model provides a structured way for teachers to analyse challenges they have in their everyday work.

The LP project in Tartu was initiated in 2013, started in august 2014 and ended in June 2016. Seven schools have participated in the project.

This report underlines the importance of developing schools and kindergartens as learning organisations, and shows how the LP model can be a useful tool in that process.

2. Professional learning communities

To improve the school or the kindergarten it is not enough to restructure the staff into new groups. Educators at all levels have to work hard, systematic and structured. In their work, they have to keep focus on students' learning. Discussions in groups and networks must have a specific form and a specific mission. A professional learning community is defined as "... educators committed to working collaboratively in ongoing processes of collective inquiry and action research to achieve better results for the students they serve" (Fullan2009).

This research highlights two topics that have relevance to the schools and kindergartens as learning organizations. The first is about *professional development* of the teachers and the second is the need to create *opportunities for teachers to work and learn together*.

2.1 Professional development

In schools where teachers expand and develop their teaching repertoires, it is more likely that they will provide an increased range of learning opportunities for students. The classroom must be established as an important center for the teacher's professional learning.

The headmaster must have a systematic and integrated approach to staff development and she/he has to support the teachers as they engage in activities concerning development and improvement. It is not enough to send teachers to different courses where they can get new knowledge. The schools and kindergartens leaders have to create a learning community in the school where teachers can discuss new knowledge and relate it to the context of their daily work.

The goal of working with the LP model is to create conditions that offers perpetual learning for both students and teachers. The schools and kindergartens have to create an environment where innovation and experimentation aids the daily work. Improving the learning environment is a responsibility of every member of the organization.

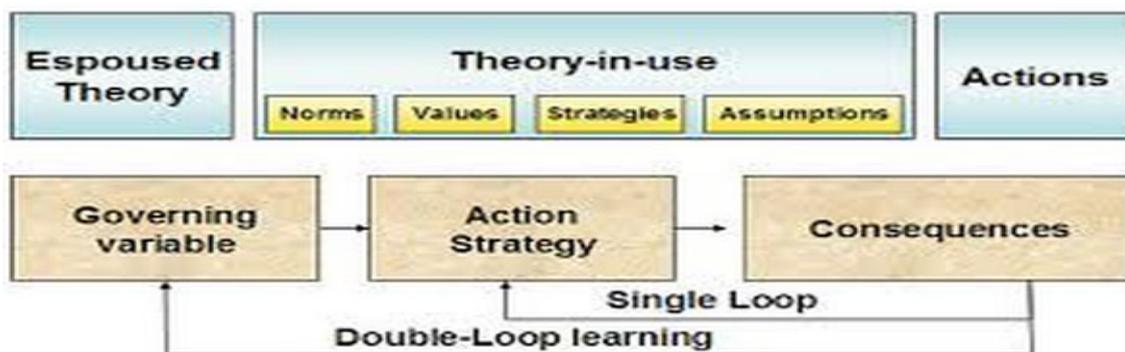


Figure 1. Single and double-loop learning

This model describes two ways to learn from our experience, single-loop and double-loop learning. The model is based on Chris Argyris' theory about learning organizations. The single-loop learning involves connecting a strategy for action directly to the results. If we do not reach our goals with a particular action we often try a new one repeatedly, and we may never succeed.

If we are working systematically and structured with a case, analyze before action and evaluate both goals, measures, results, the process and the variables that makes us behave as we do, we will most likely learn more about why we succeeded with a specific measure. Re-evaluating and re-forming our goals, values and beliefs is a more complex way of processing the information. Collaborating with other colleagues and analyzing the actions and underlying understandings involves a more sophisticated way of engaging in an experience. This is double-loop learning and it looks at the cases, the actions and the results from a wider perspective. Working with the LP model stimulates double-loop learning.

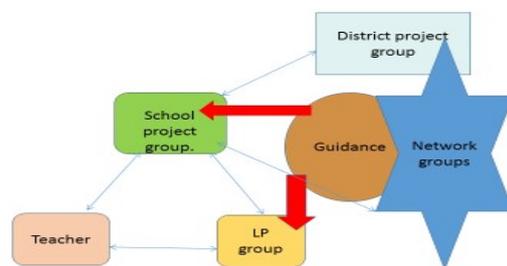


Figure 2. The organization in the LP-model

The teachers in schools and kindergartens are members of a LP group. They should have regular meetings, preferably once every other week. The meetings should last for at least one and a half hours. Each LP group has a group leader. The group leader participates in the school's or kindergarten's project group. The headmaster is the leader of this group. The project group participates in the municipality network, where they meet project groups from all the other schools and kindergartens that are implementing (or have implemented) the LP model. These networks should have a leader, preferably from the municipality level. The LP groups receive consultation twice every semester from a consultant. The consultants also participate in the networks and they should also attend the lectures that are given during the implementation period.

2.2 Opportunities for teachers to work and learn together

The headmasters in schools and kindergartens have to prioritize school development through the LP model. They have to find time for teachers to work and learn together in LP groups. Research has shown that shared goals and teacher collaboration influenced teachers learning opportunities. Teachers' involvement in the change process seems to increase when the work environment signals the importance of changing or developing the school. The teachers must use the analyze model to discuss and reflect on different topics happening in the classroom

systematically over time. Fullan (2009) points out six factors that characterizes a learning organization:

2.2.1 Shared mission or purpose

The essence of a learning organization is the commitment and the focus on the learning of each student. All educators in a school or a district embrace high levels of learning for all students as the fundamental responsibility of those who work in the organization. In such an organization, the members create a clear vision and the vision guides them towards how their school must be to help students learn. A collective commitment helps each teacher to contribute to create a learning organization. Shared mission, vision, values and goals will address how the teachers shall work and it will clarify why their day-to-day work is so important. The headmasters and the group-leaders must emphasize the importance of this to make the teacher's actions in the classroom constantly better.

2.2.2 A collaborative culture with a focus on learning

The collaborating team is the fundamental building block in an organization. The members in the LP groups are mutually dependent on one another to achieve common goals. Collaboration alone does not lead to results. The members have to focus on the case they have chosen and to make the learning conditions better for all students. The members must be open-minded and willing to share experience for their daily work. They must work together to analyze the impact of professional practice to improve results for their students, their team and their school.

In the LP model, it is important to use the analyze model systematically over time. Teachers must discuss cases from their own practice and be willing to observe each other so that the LP group together can reflect upon sustainable factors and later on effort-based solutions.

2.2.3 Collective inquiry into Best practice and current reality

Collective inquiry promotes shared knowledge among educators in the same school and when the school's project group is a part of a network it stimulates shared knowledge in the whole community of teachers. The teachers will act more informed in the classroom and their responses to student behavior will be more adequate. Collective inquiry increases the likelihood that teachers will arrive at consensus. Teachers in schools with high degree of collective efficacy are often more curious and open to new possibilities. The headmaster and the group leaders have to focus on the staff's capacity to change and support those who are unwilling to participate in school improvement development.

2.2.4 Action Orientation: Learning by doing

One of the principles of the LP-model is that when deciding on measures, one of the measures should always be about how the teacher works, and what changes the teacher can make in his/her attitudes and actions. When using the analyze model, one always ends up with different measures to execute in the classroom. When a teacher discusses a case in the LP group, the group works systematically and structured with the case. They have to bring new information into the group through theory, talks with students or observations in the actual

classroom. The LP-group suggests possible measures and the case-holder tries the chosen measures for a period of time (3 to 6 weeks). The best way to learn is learning by doing. Learning by doing will develop a deeper knowledge and a greater commitment than learning by reading, thinking or planning. When the teachers are trying the new measures, they have to take notes and discuss the results in the LP group after a period of time. If the chosen measures didn't have the desired effect, the group should discuss the case again and see if they should choose a different strategy

2.2.5 A commitment to continuous improvement

Systematic processes in the LP-group over time will engage each member in the school or kindergarten in an ongoing cycle of learning. They will constantly gather evidence for children's learning and develop strategies to build on what works in the classroom or kindergarten and to discover weaknesses in their own teaching. They will help each other to implement new ideas and they will look for knowledge that will stimulate constant improvement. The analyze model will help the teachers to study the impact of the changes and to discover what was effective and what was not.

2.2.6 Results orientation

In a learning community, the members have focus on learning for both teachers and students. They collaborate and have focus on collective inquiry and continuous improvement. They are action oriented and assess their work on the bases of results rather than intentions. The evaluation process in the analyze model involves all the stages of the model. If the work does not have the intended results, any stage of the analyze model can be changed or revised.

3. School and kindergarten culture

Culture is defined as “... *the assumptions, beliefs, values, expectations, and habits that constitute the norm for an organization*” (Fullan 2009;94). When talking about cultures we often use the image of an iceberg to show the complexity of an organization and to emphasize the importance of working with the underlying perspectives that defines a culture.

In all organizations, there are standards and structures for how we act when we are together. In Edward Schein’s definition of culture he emphasizes the patterns of mutual assumptions that the colleagues have learned and adapted through previous experience. This can be who amongst the staff one is more likely to listen to, who cooperates with whom, is cooperation based on learning from each other and how one reacts to new challenges (Schein 2010).

This can also be described as the school or kindergarten’s code, meaning the standards, values and traditions that are important to the everyday work. The word “code” can be very suitable in this context, because very often the culture is something that you have to decode, and it can be difficult to understand. The place we work is a social system where different patterns of cooperation, collaboration and understanding develop. Although there can be different groups and different understandings in a school or kindergarten, there will be some things that are special, something that distinguishes one place from the other. This is what we refer to as the school’s or kindergarten’s culture.

Andy Hargreaves describes five different cultures, that will influence change and development work in schools (Hargreaves 1994):

- **Balkanization**
This term is used to explain how collaboration can create divides rather than unity within a school. In balkanized situations, patterns mainly consist of teachers working neither in isolation, nor with most of their colleagues as a whole school, but in smaller sub-groups within the school community.
In this kind of culture, groups often tend to compete against each other instead of collaborating. The challenge will be to break up these small groups and establish good development work that includes all teachers.
- **Fragmented individualism**
This is a culture where teachers mostly work on their own, they are content with their ways of working and are not very interested in change. There can be many good teachers who manage well within their classrooms, but there is little or no mutual practices in the school or kindergarten.
- **Contrived collegiality**
In this culture the cooperation between teachers is initiated by the management and is mandatory for all teachers. Teachers have little or no influence on decisions, and have to execute centrally made plans and ideas. This kind of organizing will usually not enhance teacher’s work satisfaction or loyalty to development work.
- **Cooperation**
Teachers cooperate, but the cooperation is impulsive and based on a need or necessity in the moment. The teachers themselves take the initiative for cooperating, it is not initiated or organized by the headmasters.

- Moving mosaic

A mosaic consists of different pieces that must fit together to make a whole. The pieces can be restructured and changed and put together in many different ways, but they always make a whole picture. The teachers participate in different groups, and they are actively engaged in the development work. Mosaic organization structure weakens the membership of subgroups and faces challenges together. This might be one of the ways to build the school as a professional learning community.

The culture in a learning organization is inclusive and everybody feels involved in school improvement processes. The culture is recognized by supportive, respectful relationships. It is a lot of trust among the staff and the relations are a sort of glue that ensures good cooperation among the members. Collaboration, investigation and reflection are the important aspects. Investigating the practice means to look for new and better ways of improving the practice in order to give all the children in the school or kindergarten the best education.

To change school or kindergarten cultures takes time. As a leader, you have to hold on to the mission and the goals for your developmental project. You must be patient and support new actions in the classroom. You must repeatedly turn to the question “What would it look like if we really meant what we said?” (Fullan 2009;98). Both leaders and teachers have to use formative assessment and each teacher must describe how they know their students are learning. In addition, you have to investigate if the students are acquiring the intended knowledge and skills. To improve the teaching process the teachers have to get information and precise knowledge about effective techniques. They must be in a constant dialogue with colleagues to make the techniques a part of their daily work.

In working in the LP groups teachers discuss each other’s challenges and everyone participates in the development of the school. Basic values, standards and rules are discussed in order to develop mutual understandings. According to Hargreaves (1994), the modern school demands a mosaic approach to development work, with flexible and open-minded teachers who have a shared interest in developing their schools and kindergartens in order to improve the children’s and youth’s learning.

4. Teacher competence and teacher's learning

When educational methods and pedagogics are founded on the best actual knowledge about how to create good schools, then we can say that we have a practice based on evidence. In 2008 the Danish Clearinghouse for Educational Research at Aarhus University (2008), presented a report made for the Norwegian Department of Education. The report highlighted three competences that were the most important for teacher to have in order to improve learning for all children.

These three areas were subject competence, relational skills and class management. These areas are also central in the theoretical basis for the LP model. This is described in the book "LP-mudel", which is given to all teachers. The model emphasizes the importance of always discussing and taking into account what the teacher can do differently in order to solve challenges in the classroom. To do this one must analyze all the three areas; subject and relational skills and class management. By sharing experiences and studying and discussing theory related to the actual challenges each teacher develops new knowledge and competence.

The classroom is an arena for learning for both teachers and students. The teachers must constantly find new ways to strengthen relationships between students and between students and teachers. They must also strive to find more effective teaching strategies. Educators need to develop their pedagogical language to improve how they talk about students and teaching. Different terms can mean very different things to different people. Every person develops patterns or mental models that represents the complexity of the world in which we live. We try to fit in new information into these mental models. These models filter our observation and experience about for example the theory according to the LP model, to help us make sense of it. In the LP groups the teachers constantly help each other to create new experiences and to act in new ways. The leaders must support these new experiments and stimulate the teacher's investigations to find new and better ways to do their teaching. "It demands constant and consistent commitment to sustain direction during the extend period of time" (Fullan 2009;97). The goal is to be "a school that uses the principles and theory of the LP model", not only to be "a school that implemented the LP-model".

Teachers who collaborate systematically over time and together investigating their own and each other's teaching, seem to manage teaching better than those who only work individually. Collaborating increases teachers' collective efficacy. Research also documents that the collective beliefs endorse individual teachers' efficacy beliefs, reduce the stress that teachers may attribute to children's misbehavior and provide a positive school culture and learning environment (Gibbs & Powell 2012).

4.1 Learning in the LP groups

Teachers tend to think that the best way for them to learn is from other teachers' experience (Opfer and Pedder, 2011). Opfer and Pedder found that if teachers shall learn and do something new in the classroom, the teachers need time to develop, absorb, discuss, and practice new knowledge over time. The teachers' learning process need to be long and intensive rather than brief and sporadic. The topics they work with must have a strong

connection to the teachers' daily work and the pedagogical processes in classroom the teachers are engaged in, to promote effective learning. They have to discuss specific situations from their own teaching in light of new theories and research. Collaborative professional development produces changes in teachers' practices, attitudes, beliefs and students' achievement (Opfer & Pedder 2011).

The headmasters have to stimulate and motivate teachers to bring a specific situation or a case from their own practice to the LP group and work with the case together with colleagues. The challenge must be something the teacher thinks she can do better and something she really wants to work with. Giving the teachers opportunity to choose the challenges to work with themselves increases the motivation to participate and to develop himself or herself as well as the whole school or kindergarten.

Everything teachers do in the classroom should have a purpose and a specific goal. The goal must include better learning for students. They must ask themselves: "If I change this, how will this improve the students' learning?"

The stage in the analyze model: "gathering new information", is an activity where the teachers investigate their own and their colleagues teaching methods and classroom management. Colleagues can observe a specific situation in the classroom or you can gather information through a survey among students or parents. When you know what and how to gather information about, the LP group makes a plan concerning the assembling of information. The headmasters must make adjustments in order to make it possible for teachers to help each other collect information they think they need to make changes in the classroom.

Together teachers analyze, rethink and reflect on the challenge and the goal using the new information about the case. They analyze the information in order to find those factors responsible for causing the problem. Collective analysis of the challenge takes place in order to find an appropriate way to deal with the problem.

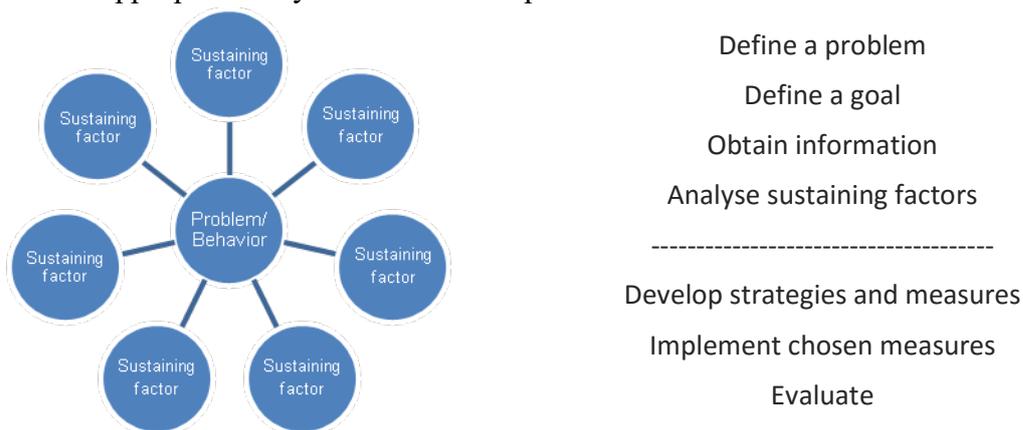


Figure 3. Systemic analysis, context circle and the analyses-model.

5. Enhancing the student's learning through working with the LP model

Developing the learning environment is an important goal in the LP model, as described in the LP book. These factors are defined as significant in the learning environment, and play an important role in student's learning outcomes (Nordahl et.al. 2012):

- Relations between students and teachers
- Peer relations
- Standards and rules in the schools and classrooms
- School management
- Class management
- The school culture
- Commitment, motivation and effort
- Home-school cooperation

Differences in these factors can by far explain differences in student's outcome, both socially and academically. There can be differences between schools in the same municipality, and there can be differences between classes within the same school. In order to explain these differences, it is not enough to only consider student's prerequisites and the teaching. The learning environmental aspects play a significant role, and must be taken into account when changes and development work are suggested.

These factors are the core factors in the discussions in the LP groups. When making a context circle and analyzing the challenges, the learning environment must always be discussed. What changes can be made to improve class management or classroom standards? In what way is the school culture sustaining different challenges? How can we achieve better communication with student's parents? Schools that have a good, inclusive learning environment also tend to have better results on student's academic achievement. This is why the learning environment must be of high priority when changes in schools are discussed.

6. Innovative schools and sustainability over time

As a headmaster in school or kindergarten, you can use the context circle to analyze the culture with different perspectives on learning together with the staff. You should be a model and at the same time signal that it is important that the school/kindergarten uses time to think twice about different situations in their daily work.

The LP group has to be *a good team*. The LP model suggests that the leader of the school put the teachers together in groups after considering how to make a good group. The model also suggest that the group leaders are handpicked and that the head of the school/kindergarten has regular meetings to discuss with them how the implementation is going. All the members of the LP group are responsible for the communication climate in the group. The members must support each other, give constructive feedback and participate in the discussions and the reflections. In the project group, the communication in different LP groups must be on the schedule every meeting. If the communication in the groups is in some way counterproductive, the head of the school has to make some changes. The headmaster must support a cultural shift towards more collaboration and less competition among the staff.

When the group as a whole and each teacher reaches the goal, the group must remember *to celebrate* the results. It is also wise to share success stories with the entire staff and together celebrate the good results. Success stories can stimulate other schools to work harder if you share the success stories in the network. The leaders in schools and kindergartens can present cases and results from each group and through statistics show the staff what the whole school has been working with and its achievements.

The leaders in schools and kindergartens must keep themselves informed about the work in the LP groups. Through meetings with the group leaders or the project group. The project group meetings should also have a focus on the cases the groups are working with. The teachers must participate as expected and bring forward cases from their own work to the group.

The headmasters can participate in LP-meetings when they are invited, or they can ask to be invited. In the meetings, they can give positive feedback to the communication process in the groups and also focus on how the groups are working through the analyze model or the commitment to the group and the LP-model.

Collaboration in groups with teachers who teach different subjects, to use the analyze model and to focus on learning from each other is often a new way of working in schools. Leading a learning organization and changes in school demands leaders who are patient and persevering. The headmasters must stimulate the teachers to participate and look for successful issues both in the LP-groups and for each teacher.

The leaders are responsible to incorporate the LP way of working into the culture of the organization. To develop learning environment and class management is an ongoing process and the school has to continue analyzing their practices also after the implementation period is over.

The aim of the continuation of the LP-model is to develop the culture in the municipality, the schools and the kindergartens characterized by innovation and continuous development as learning organizations and professional learning communities. It is important that the municipality, schools and kindergarten take a conscious and joint decision that the work with the LP-model shall continue when the cooperation with the Norwegian partners is over. All staff must participate in the process. A collective process regarding the decision to continue with the LP-model ensures ownership and increases the commitment of the staff in the following work.

6.1 To build capacity for change

Readiness is defined as the individual's "beliefs, attitudes and intention regarding the extent to which changes are needed and the organization's capacity to successfully undertake those changes" (Oterkiil 2014:11). If readiness is not present among the staff, the new interventions most probably will be met with resistance. The leaders of the schools must investigate both the teachers readiness and the schools capacity for changes using the analyze-model, so that they can identify powerful sustainable factors in the staff.

The community and school leaders have to create readiness and capacity for continuous and sustainable learning in their schools participating in a school based development project. We have to build capacity on several levels and within several system in the educational system. Capacity allows people to learn continually from the ever-changing world around them. Capacity is "a habit of mind" and not something you create at a specific time and then you are finishing it. Capacity is a complex concept and Stoll (1999;4) define capacity to be "*a power – a "habit of mind" focused to engaging in and sustaining the learning of people at all levels of the educational system for the collective purpose of enhancing students learning in its broadest sense*". Capacity or the lack of capacity in an organization could be the reason why so many schools fail to translate and implement school based interventions.

We build capacity when we give the teachers the opportunity to learn and to put the knowledge into practice. They must have the opportunity to identify challenges and discuss new knowledge in the light of their experiences together with colleagues. Collaborating with colleagues in groups and in network talking about students learning condition and learning will increase the relations between them and the collective teachers efficacy.

6.2 Plan for the continuation of the work with the LP-model

It is challenging to schools to continue the work after the implementation period is over. In the implementation period schools often have external help, lectures, guidance and visitors from the program-holder. Strong and supportive leadership, leadership at many levels, characterizes schools that successfully continued the work after the implementation period. Successfully schools make plans and see them through, renews activities and new members are included in the work according to the principles of the program.

The community, the schools and the kindergartens have to make plans for the continuation of the LP-model. The plan must include the factors below:

1. Evaluation and identification of needs
2. Planning continuation of the innovation
3. Establish evaluations procedures
4. Maintenance and development of teachers skills
5. Training new employers
6. Establish maintenance routines
7. External consultants

6.3 Loyalty to the LP-model

Loyalty is another success factor in interventions. Teachers and head masters must be involved and committed to the LP-model because we know that involvement in the program enables schools to implement change successfully. Constantly developing schools and teachers is hard work. According to Giles and Hargreaves (2006;124, 125) “...*secondary schooling with its age-graded, subject-based curriculum and lesson-by-lesson schedule has provide remarkably resistant to the influence of successive reform movement*”. Even innovative schools fade out over time, rejoin the mainstream, and look like any other school. Giles and Hargreaves found three sets of circumstances that weakens the sustainability of innovative schools.

1. Teachers and leaders create a common animosity and resistance to change.
2. Change in leadership, policy, the loss of key faculty, pressure for surroundings, parents and some teacher seem to draw the schools center back toward the conventional grammar of schooling.
3. Reductions in resources, historical critical incidents, relations between school district and the school and standardizers reforms.

6.4 How to reduce the impact of these factors?

The initiation stages is the most important step building commitment to the LP-model among teachers and school leaders. In this stage, the municipality and the headmasters have to build a foundation for the project so that all the teachers know what the community and the school will achieve using the LP-model. The purpose of the process is to understand the work that needs to be done to achieve the schools or kindergartens visions and goals. As a leader, you have to facilitate discussion to increase a common understanding of the project before deciding to continue the development. Identify the benefits and the risks when using the program and discuss together whit the staff what to do about them.

7. Trainings in the LP-model

Working with the LP-model requires that everyone involved participates in trainings. This project arranges trainings for all teachers, school leaders, project leaders and consultants. Some of the trainings are for the whole group, but there are also specific training for groups, like group leaders and consultants.

7.1 Trainings for all teachers, group leaders, school leaders and consultants

At the start of the project all the involved groups participate on a two day training about the use of the analyze model. The trainings focus on the theoretical background for the model, research and theory concerning how to build good learning environments. The analyze model is explained, step by step, so that everyone gets the opportunity to practice and to ask questions if anything is confusing or difficult to understand. The trainings involves both lectures and group-work.

All through the project period there are trainings with different topics, all related to establishing and maintaining a good learning environment. The topics are chosen in agreement with the schools and the project management, based on an evaluation of what areas the teachers need to develop. The topics can be: class-management, home-school cooperation, how to deal with behavioral problems or about the importance of building good and strong relations between students or students and teachers.

One major goal in working with the LP model is to ask questions about old habits and routines when it comes to working with challenges in the learning environment. In order to achieve new perspectives that can lead to a change of actions, it is important to both give the staff new knowledge and also give them time to discuss and digest the new knowledge. They must discuss it and compare it to their own practice, and then make changes in appropriate areas. This is why the trainings are organized as a combination of lectures, group work and discussions.

Training can also include counseling in the LP groups. This gives the participants in groups a good opportunity to discuss questions and topics with the trainers. In many ways, it can be easier to discuss theory when it is connected to a practical case the groups are working with. The trainers also get a better understanding of the different challenges the groups deal with, and can adjust the trainings accordingly.

7.2 Trainings for consultants

The consultants have an important role in the LP-work. They visit each group approximately twice every semester. Their role is to help and assist the groups both with challenges they might have with specific cases, difficulties with understanding the use of the analyze model or with problems concerning communication or cooperation within the group.

The consultants bring new views and perspectives to the groups. They do not take part in all the discussions in the groups and can therefore, if necessary, ask questions and help with negative or difficult communication patterns.

The trainings for the consultants focus on effective strategies for counselling in groups, communication patterns and problem solving. There is also an emphasis on using the analyze model, since it is necessary for the consultants to know the model well and to have a good understanding of how the model can be used in different situations.

7.3 Trainings for group leaders

Many years of experience with the LP model shows that the group leaders have an important role, and have great impact on the way the groups work with the different challenges. The trainings for the group leaders emphasize the work with the analyze model and gives the group leaders more opportunities to practice the model.

The trainings have different topics; communication in groups, problem solving, developing a learning organization etc. The group leaders are also encouraged to bring challenges to the trainings, challenges that concern the work in the LP groups. In the trainings, we discuss these challenges by using the analyze model to find measures the group leaders can test in their groups.

Although each group has a group leader, it is always emphasized that to establish and maintain a good working atmosphere in the groups is the responsibility all group members share. In the trainings, we also discuss this, and how the group leaders can get support and help from the school's project group.

8. The trainings in the Tartu LP-project:

August 2014

- Training for group leaders, consultants and school leaders in Hamar, Norway.
Topics covered: Systemic theory, leadership in times of change, school culture, strategies for capacity building in schools, evidence based school development, how to be a group leader, communication in LP-groups, the analyze model.
- Training for all teachers in Tartu, Estonia
Topics covered: Research about the learning environment, good schools, good teachers, practical work with the analyze model

October 2014

- Training for all teachers (voluntarily)
Topic: Home-school cooperation
- Training for group leaders and consultants
Topic: A learning organization

March 2015

- Trainings for all teachers
Topics: Class leadership and the teacher, class management, contributions from school, contributions from home, the learning environments influence on students well-being.
Experiences from working with the LP model from the perspectives of a project leader and teacher from Norway.
- Group counseling

August 2015

- Trainings for new schools and kindergartens. Topic: the analyze model
- Trainings for group leaders and consultants

October 2015

- 2nd day of training for schools and kindergartens
- Training for group leaders and consultants
- Lectures at the “Haridus festival”
 - What is the LP model
 - Home-school cooperation
 - Class management

March 2016

- Counseling in all the LP groups

9. How to continue the work with the LP-model, recommendations

This project's main goal is to enhance and improve the education children and youth in Tartu receive, both academically and socially. By implementing the LP model the schools will learn to use the analyze model, a tool for understanding and dealing with challenges teachers meet in their everyday work.

Research from implementing the LP model in Norwegian schools shows that this, in many ways, can be a complicated task.

When working with teachers we often see that when it comes to solving problems or finding good measures to use in the classroom, the way from the problem to the measure seems to be very short. There is seldom a good, thorough analysis of the challenge, and in that perspective, the measures often tend to have very little long-lasting effect. They are often based on previous experience or advice from a colleague who has experienced something similar in his or her classroom.

The main tool of the LP model is to analyze the challenges the teachers have and to find appropriate measures for these. Systemic theory emphasizes the interaction between the individual and the context, and when planning measures one should try to reduce the factors that influence and sustain the problem, rather than try to find the one solution to the problem. The solution will often be very hard to find, and instead one ends up with measures that are not specific enough to deal with the problem.

How to work with the analyze model is thoroughly described in the booklet given to all teachers at the start of the LP work. All the stages of the model are described and discussed in the book. It is written with the purpose of being a helpful tool for the teachers when they are discussing their own cases in the LP groups.

The ideas in LP model as an intervention program are not self-executing. *“The process of successfully implementing school based interventions will demand a great amount of time, effort, capacity and readiness”* Oterkiil (2014; 1). Implementing the LP model involves a lot of work for both teachers and the school management. The municipality, the schools and kindergarten involved in the intervention need an implementation perspective on the innovation. Implementation is defined as *“a specified set of activities designed to put into practice an activity or program of known dimensions”* (Fixen, Naoom, Blasé, Friedman and Wallace 2005; 5). The implementation processes for the LP model is described in detail in the Innovation and the Model booklets (Jahnsen and Nordahl 2011, Nordahl, Jahnsen, Tinnesand & Støen 2012).

Fullan (1991) says that to change a school you need 75% hard work and just 25% of the success can be connected to the model the school have chosen to work with. It takes three to five years of working with the new ideas before the principles in the intervention program is institutionalized as a part of the school's daily work. The experience from the implementation

of the LP-model in Norway and Denmark also shows us that the schools needs at least two years of intensive work to implement the intervention.

The schools in Tartu have been working with the LP-model for one or two years. To continue with the LP model without external partners as Hedmark University College, we recommend that the municipality in the cities participating in the project follow the implementation closely for the next 1-2 years.

Both the municipality and the school management must be heavily involved and responsible for the planning and the implementation of the LP model in this period. It is not sufficient that just some individual teachers accept the responsibility. The whole school should be involved, and the school management must ensure that conditions at school both pedagogically and practically, are such as the implementation of all the principles in the LP model become a part of the teachers' daily activities at school. This joint responsibility in schools is especially important because the students' learning environment should not be a separate subject nor have a separate place on teachers' timetable.

9.1 Structures that promote sustainability

When the project period is over, it is important to ensure that the knowledge and practice acquired in the period will not be forgotten and unused. It is therefore important to continue with some of the structures and groups that were established in the project period. If the scaffolding is taken down, there is a big possibility that the work will not be continued.

9.2 Meetings in the school's project group

After the implementation period is over, the school's project group should continue to exist. This group should carry on with regular meetings where they discuss the LP work, discuss and decide topics for trainings and make necessary changes in the LP groups.

The continuation of this group is also important in order to keep the headmaster informed of what the groups are discussing, and if the development work is taking the direction and pace that the management intended it to.

9.3 Continuous training of group leaders

The group leaders have, as mentioned before, an important part in the development and success of the LP groups. It is therefore important to continue the trainings for this group. The topics of the trainings could both be about research that concerns the learning environment, teaching and other school-related topics, but it could also be about group management and development work.

If the group leaders are given opportunities to receive new training it will probably be easier for them to meet the demands of the other group members. Very often they are expected to have more updated knowledge, and to be given training can give them more confidence when it comes to leading the groups.

9.4 Networks

There are many possibilities to establish networks within the structure of the LP model. One network that has been very successful in Norwegian schools is between group leaders from all the schools in the municipality. The network could also consist of the school's project groups, and will also include the headmasters and the consultants.

The networks should meet on a regular basis, e.g. once or twice every semester. Before the meetings, the participants must be asked to send in topics or cases that they would like to discuss. This ensures that the topics will be of interest and importance to the participants.

Network meetings are meant to inspire the participants and bring new energy to the LP work in the schools. It is also a meeting place where one can discuss problems and challenges in the groups and get support and help from colleagues, who might have experienced similar situations.

9.5 Meetings in the LP groups

The project group should make a plan for meetings in the LP groups. The meetings should be held on a regular basis where participants discuss challenges and use the analyze model in their work. If it is possible to also continue using consultants, it is advised to do so.

10. Evaluate the implementation process

The leaders in the schools and municipalities must know if the schools have reached any of their goals. This can be done simply by sending a questionnaire to all the teachers to answer. The school leaders and the municipality can discuss what the schools should have achieved depending on how long they have been working with the LP model. One item in the questionnaire could be “Do you as a teacher in this school use the three different perspectives outside the LP group to plan your lectures or meetings with parents?” Another question could be about collaborating. Do the teachers use the LP model, do they help each other to solve difficult situations in classroom? Is the analyze-model only used in the LP groups, or is it used as a tool for understanding difficult situations?

The results of these surveys can be used to improve the implementation process in new schools.

10.1 What are we implementing?

The municipality must ensure that all the staff and the school management have a good knowledge of what they are implementing and how. We recommend that the main elements of the model are repeated once a year, for example at the beginning of the school year.

1. The schools and kindergartens aim to improve the student’s and children’s learning environment.
2. The teachers are to implement knowledge-based theory and research in the classroom and in the kindergarten. Knowledge about class management, the authoritative teacher, good relations, assessment for learning, how to structure and lead children through the learning process, managing problematic behavior and how to develop their own working environment with focus on the culture. These topics are described in the LP booklet.
3. Learn to use the analyze model to become more analytic and structured when working with children and youth.
4. Collaborating in groups and with the whole staff – developing the culture of the school.

The implementation period is the time for *practicing the new skills*. The group practices the analyze model and each teacher tries new measures in the classroom. The group members must be generous with one another. There must be room for trial and error, and for reflecting on the outcomes of the measures.

10.2 Implementation plan

To strengthen the implementation both the municipality, and the participating schools and kindergartens have to make an implementation plan for the work. The plan must describe how the schools and kindergartens use the LP model to improve the learning environment and develop a culture for learning among teachers. The teachers must have a good understanding

of why they need to change the way they are teaching today. The *goals* must be clear, specific and founded in the organization;

- Where are we going?
- Why and how do we use the LP model to help us get there?

It is also necessary to define milestones:

- What can we achieve in two months?
- How do we know if we succeed, what is the measure for success?

The goals must be realistic and possible to evaluate and measure. The plan must also describe how to evaluate the work and it is recommended that the municipality, the schools and kindergarten evaluate the work twice every year. To evaluate the work strengthens the teacher's commitment to the intervention, the LP model.

The implementation plan must describe all the different activities in the LP project, like lectures and networks. It describes who participates at the different activities and who is responsible for the activity.

The municipality project group leads and coordinates the actions or activities that include all the staff in schools and kindergartens and is in charge of the networks between schools, group-leaders, consultants and headmasters. The headmasters coordinate the work in the schools and kindergartens. The group leaders coordinate and lead the work in different LP groups.

The content of the implementation plan can be:

1. Arguments for using the LP model
2. Goals
3. Milestones
4. Group leaders and LP groups
5. Different activities, training, meetings, network
6. Consultations – LP groups
7. Evaluation

10.3 How to analyze the results from the survey

On the website for the survey, you can get a lot of information about the school, and the classes. Every questionnaire have a lot of focus areas and questions. We recommend that you start to analyze the results from the whole school by looking at the focus areas. Try to get an overview and a picture of the situation at the whole school. The headmaster can ask the LP groups to use the analyze model and to identify both negative and positive issues the school can work with. You have to ask yourself why the results in this area are so good (or not so good), and why it is different other areas. What is the connections between these areas? Look for patterns in the scores of the whole school and discuss why the situation is like this.

When you have made an overview of the school, you can start looking at the different questionnaires and the items or the questions. Then you always have to take into account the

standard deviation. Also, remember you can always use the analyze model to discuss and reflect on the situation on different levels and point out what to do next.

The headmaster can discuss the results for each class with the class teacher. You can choose some of the areas and present them for the school board, the municipality, the parents and the students. Discuss the challenge you have chosen with the group and find some areas that you can work with together. This is a good way of involving parents in the school development process.

Part 2: Data Analysis

11. Data and research informed school development

To enable implementation of school development, building a professional capacity and well-founded educational interventions, it is crucial that there is reliable and relevant data about the school. Such data can be student learning, wellbeing and development for teachers, educators work on management and the parents' role and relationship with the school. "In school, we need robust evidence as a basis for educational interventions. Anything else would be like groping in the dark" (Helmke 2013, 13).

If we use data as a basis for the educational efforts, do we then risk that there is too much focus on trivia and surface learning and too little focus on deep learning and social and personal development? The answer is that also the social and personal dimensions of students' progress can be mapped. The questions used in the survey also consider the students' social skills and personal development, and the study provides the opportunity to assess the correlation between academic, social and personal development. Likewise, there is also data for teachers' and educators' way of working and their working conditions, which are related to the purpose of the school: the versatile learning, development and well-being of students.

How does this affect teachers, educators and teachers' professional judgment? Will it be weakened or narrowed when your work is based on data? Thomas Nordahl answers: 'No: The professional discretion and the unique teachers who encourage students will always exist in schools, but this is not sufficient if you want to improve learning for all students in a school or in a municipality. One must on the basis of data develop the collective capacity of the school by engaging all teachers in discussions about what is good teaching, how it looks and what results it provides, so that the cooperation between teachers and educators is strengthened' (Nordahl 2015, 15). Thomas Nordahl concludes: 'We need teachers, educators and school leaders who pay attention to each student, establish a good relationship with them and also have a moral meaning and emotional attachment to their work' (Sharrat and Fullan, 2012). The use of data is not about removing these important qualities. Instead, the use of data will contribute to the validity of teachers', educators' and school leaders' assessments. In addition, these educational measures will increase the likelihood that each student develops well academically, socially and personally and thereby realize their possibilities (Nordahl 2015, 17).

11.1 Professional capital in the education system

Professional capital in the educational system deals with three kinds of capital: Individual capital, social capital and decision-making capital. Individual capital - or as it is called by Hargreaves and Fullan (2012) - human capital, is a term for all the knowledge and all the skills that a competent teacher and educator must necessarily possess in order to stimulate each student and groups of students as to best possibly realize their learning and development potentials. Social capital is the opportunity and ability to cooperate. A school must develop a common ideal and a common goal for its educational efforts, and it should create a professional language for the teaching staff. The teaching staff have to work together, for example as team around the class, subject or year group. Decision-making capital (Resolution Capital) is a term for the exercise of professional judgment.

Good teaching, in other words, requires individually skilled employees who cooperate and exercise judgment in the specific teaching situation, and act based on evidence and experience. Altogether, this is what Marzano and DuFour (2015) call a professional learning community.

12. Methodology

This report covers the first mapping study conducted in Tartu. The survey has four informant groups:

- Students
- Teachers
- Contact Teachers
- Parents

The T1 is the survey results on how content the various informants at the school are at the start of the project. In addition to using the survey results to analyze, discuss and work on developing each institution's practice, the survey can be used at the municipal level, for example as a basis for new local initiatives and development. In addition, the survey results are interesting because they provide on how the school is experienced by teacher, student and parent alike. It may be interesting to compare these results in order to find differences and similarities in the informants' experiences. The survey represents a snapshot of conditions in schools in the municipality.

T1 provides the opportunity to point out differences between students' well-being, inclusion and learning outcomes. From this data, it is possible to identify links and explanations in the form of statistical correlations.

The analysis of the results of this first survey we have chosen to focus on the following themes:

- Student Data
 - Well-being
 - Behavior
 - Relationship between pupils
 - Relationship between students and teacher
 - Education
 - Expectations of coping
- Class teacher Data
 - Alignment
 - School Academic Achievements
- Teacher Data
 - Teacher Competence
 - Cooperation on education
 - Cooperation on students
 - Education
- Parents Data
- Girls and boys in the municipality
 - Social and professional function - rated by teachers
 - Well-being - rated by students

The methodology chapter presents the methodological approaches for the survey. The chapter includes a section on the use of statistical analysis and finally a short paragraph on the evaluation results shown as a 500-point-scale, primarily presenting the survey-results.

12.1 Operationalization of the measuring instrument

The survey has used a separate questionnaire for each of the four informant groups. The survey's intention is to identify what may be considered key areas in each school in terms of teaching and other

educational activities, social relationships among students and between students and teachers, communication between the groups, students' competencies and professional skills, employee collaboration, and the cooperative level between the parents and the school.

The questionnaire for pupils from 1st - 4rd grade contains 25 statements that each student has to answer. They answer by clicking on one of three possible smileys. For students in 5th - 10th grade, the questionnaire is designed as 76 text-based questions that each student must answer. The questionnaires for teachers and parents are designed the same way as for the elder students.

The operationalization of the measuring instruments is made up of factors identified by research as important for pupils' wellbeing, learning and development (Nordahl et al., 2012). Measuring instruments that are used in the quantitative mapping study for schools, are inspired by measuring instruments previously used in a number of studies in both Denmark and Norway (Nordahl et al., 2010, Nordahl et al., 2013). The survey questionnaire is divided into two main areas. One area relates to contextual variables in the school, such as learning, teaching, relationships, welfare, special education and school culture, while the second deals with individual variables, such as behavior, social skills and the student's competence in specific subjects.

12.2 Contextual variables

Within the contextual variables, Hattie (2009) refers to factors in the learning environment, which are important to both the student's social and academic learning and development. Conditions of importance for these purposes include factors such as teacher-student relationships and relationships between students, students' general well-being, inclusion, students' views on the school and their experience of the teaching content and methods.

Relationships in the school are thought to form important conditions for student participation and actions in school. These relationships are considered here as part of the school's learning environment and it is documented that the relations between students and teachers are essential for student experiences, learning outcomes, and behaviour at school (Hattie, 2013).

12.3 Individual variables

Individual variables are mapped through four individual variable fields. Three of these are strongly linked to the pupils' learning and well-being. In the study, behaviour is mapped through the students' own assessment. Social competence is defined as a set of skills, knowledge and attitudes necessary for mastering different social environments, which makes it possible to establish and maintain social relationships and contribute to the welfare and development (Ogden, 1995). Social skills can be seen as an individual variable, linked to both the knowledge and attitudes of the individual and the skills people use.

The last individual factor is the students' academic achievement and performance in school. Several empirical studies show a strong correlation between the quality of different aspects of the learning environment and students' academic achievements (Nordahl et al., 2013: 67-68). In the study, the school's academic performance is mapped through teacher assessments.

13. Statistical analysis

13.1 Frequency Analysis

To get an initial overview of the material, both in terms of the subject and the spread of responses, all item level for all variables are frequently analysed. Frequency-allocation provides a picture of the material within the various measuring instruments.

13.2 Factor and reliability analyses

Reliability-analyses have been carried out in all areas; on each question and on every item of the different factors. A factor is made up of different questions or items that together describe a larger area of interest, for example behaviour. The purpose of factor analysis is to find areas that can be used in further statistical analysis.

The quantitative mapping study is based on factor- structure used in previous measuring instruments (Ogden, 1995, Nordahl, 2000 & 2005, Sunnevåg & Aasen, 2009, Nordahl et al., 2012).

Based on this structural factor, subscales or factors of the data are made. Also developed are sum scores, for example the sum of all issues in a theme or main concept. To examine the reliability or stability of these factors and sum score, reliability- analyses are calculated using Cronbach Alpha.

13.3 Variable analysis and endpoints

When working with data and school improvement, it is important to identify the differences and similarities between schools and classes in each school. The relative differences between schools are evaluated based on standard deviations in measurements. That is, the differences between the current institutions indicated in standard deviations. This statistical measure of the differences is used in T1 as an aid to assess the practical significance of differences between institutions.

In the figure below, an attempt has been made to produce variance and average of two schools (A and B) (Nordahl, 2015). 68 % of the variation in the measurement would be within +/- one standard deviation, and 95 % of the variation will be within +/- two standard deviations. The differences in average in figure 4 is approximate half a standard deviation.

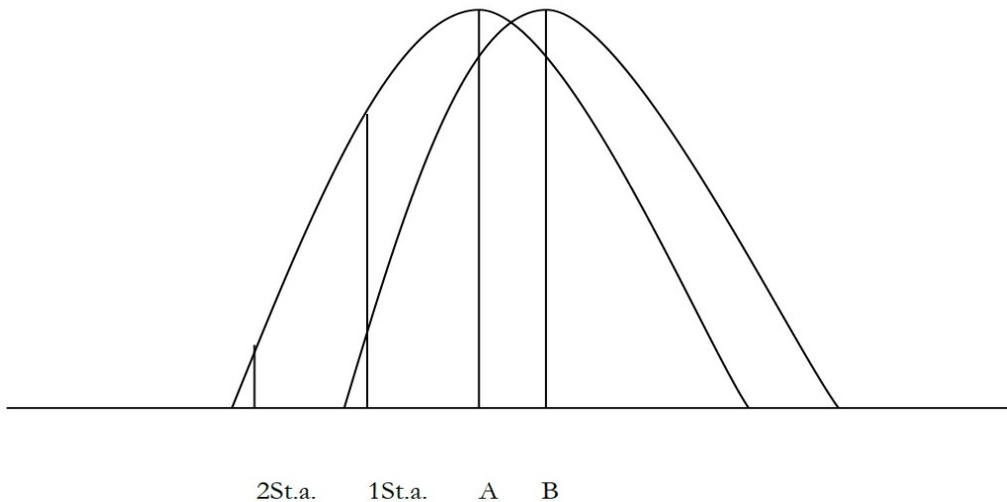


Figure 4. Two data sets (A and B) and standard deviations

With weighted standard deviation, we mean the calculated average of the standard deviation of the measurements. Particularly important is the spread of the material and the differences between the mean values of the different variables. The advantage of specifying the differences in standard deviation is that the differences between the variables may be evaluated relative to each other. The weakness with use of standard deviation, however, is that it is a more uncertain goal, when the variance in measurements is not normally distributed.

13.4 500-point scale

The results in this report are on a 500-point scale. The 500-point scale shows both the mean and standard deviation. In the scale, 500 points are always the average of the results presented. All mathematical calculations that spread and standard deviation are always included in the current 500 points. This means that the average for all institutions in all areas of focus is always 500 points irrespective of the scale used in relation to alternative answers or the number of questions in each area of focus.

In this calculation, a difference of one standard deviation is the same as 100 points. This gives a more exact target of differences than if you consider only at average performance.

When comparing averages, it is important to consider the statistical significance implying that there is a degree of certainty in the differences observed. The range of the deviation from the average number in a data set is given in standard deviations. An accepted norm for statistical significance is that there is less than 5% (two standard deviations) chance that the difference is due to the statistical error. In the 500-point scale, with one standard deviation equal to 100 points, this corresponds to 5 points.

14. Results on wellbeing

In the comments on the differences in averages used in the report, words like "little," "some" and "large" are used. These terms are based on ranges in terms of a standard deviation, where 11-33% of a standard deviation is "a little", 34-66% are "some", 67-100% are "large" and more than 100% are "very large". In points, the percentage are calculated to be for "little differences" 55-165 points, "some differences" 165-330 points and "large differences" 330-500 points.

In general, there is little difference between the schools in every aspect of the survey. Most schools' scores fall within the average, within 0- 10 point from the 500 point. It might be interesting for each school to examine their own results, to see whether any grade differs from another and use that as a starting point for working with the LP model.

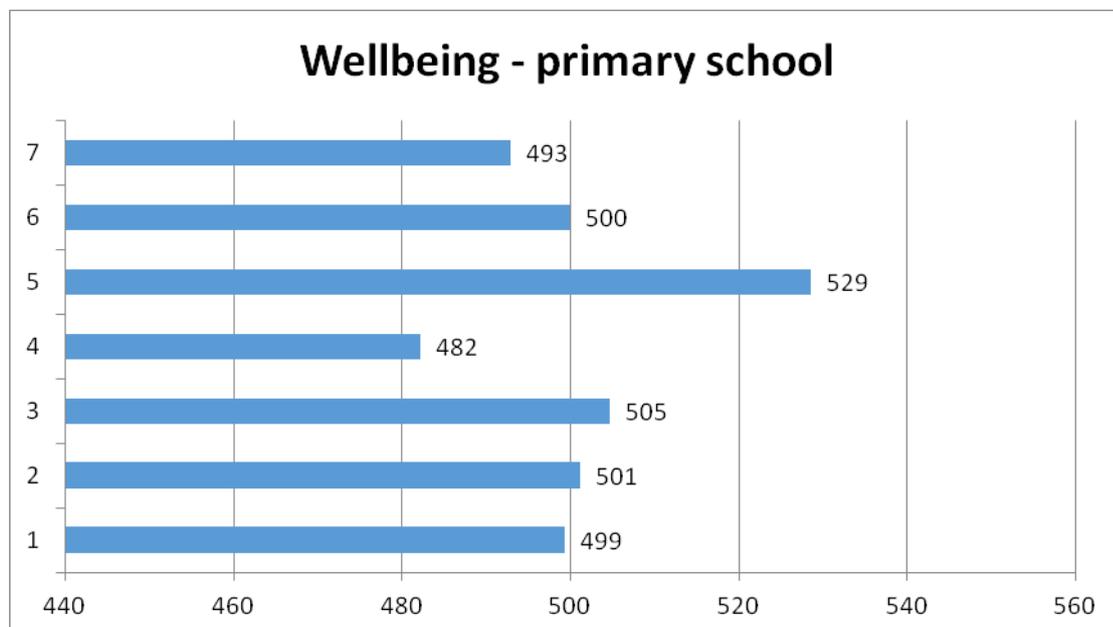
The comparison between schools is done in order to get an overview of the whole survey, and can be used for starting or fulfilling a "data and research informed school development".

14.1 Wellbeing

The pupils' well-being has a significant impact on their learning and benefit from schooling (Hattie, 2013). The results are split between primary and secondary school, where primary school is defined from grade 1st-4th and secondary school from grade 5- 10.

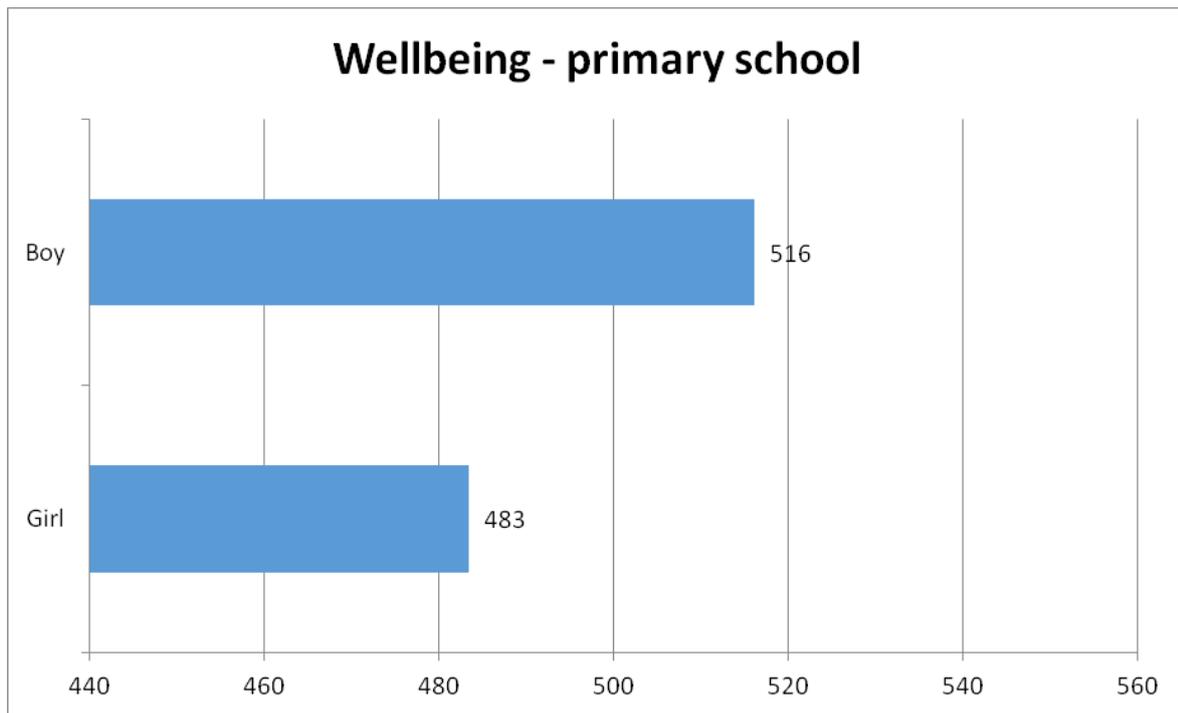
14.1.1 Primary school

Differences between schools:



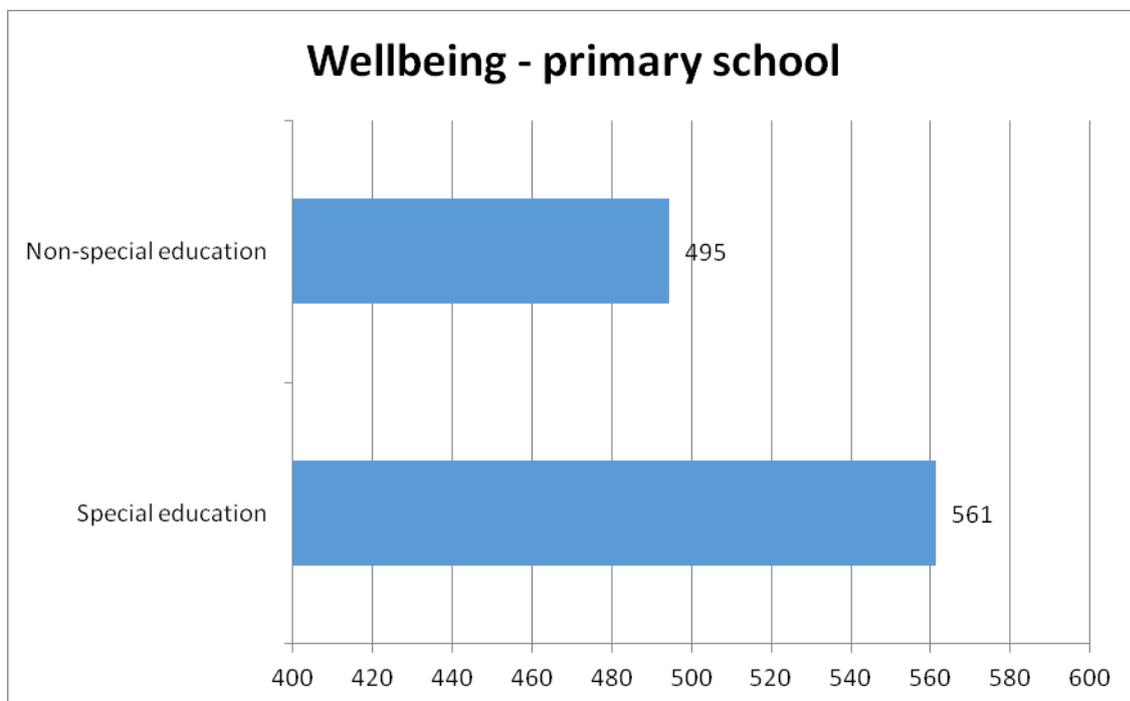
When comparing school 1, 2, 3, 6 and 7, we observe that the students' wellbeing does not differ significantly from one school to another. School 5 differs positively, while school 4 differs negatively from the average.

Differences between gender:



All over the boys' score, the wellbeing score is higher than for the girls in the primary school. The difference is $\frac{1}{3}$ of a standard deviation. While not by much, this difference is an interesting area for further study.

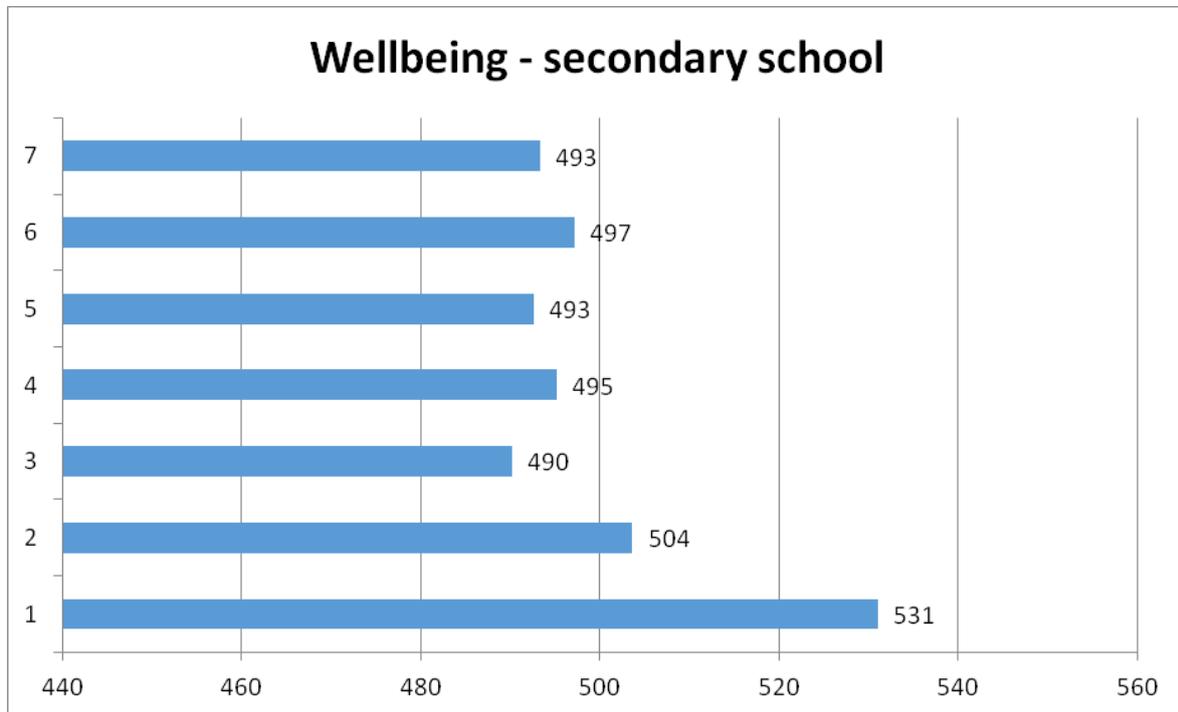
Differences between special education and non-special education:



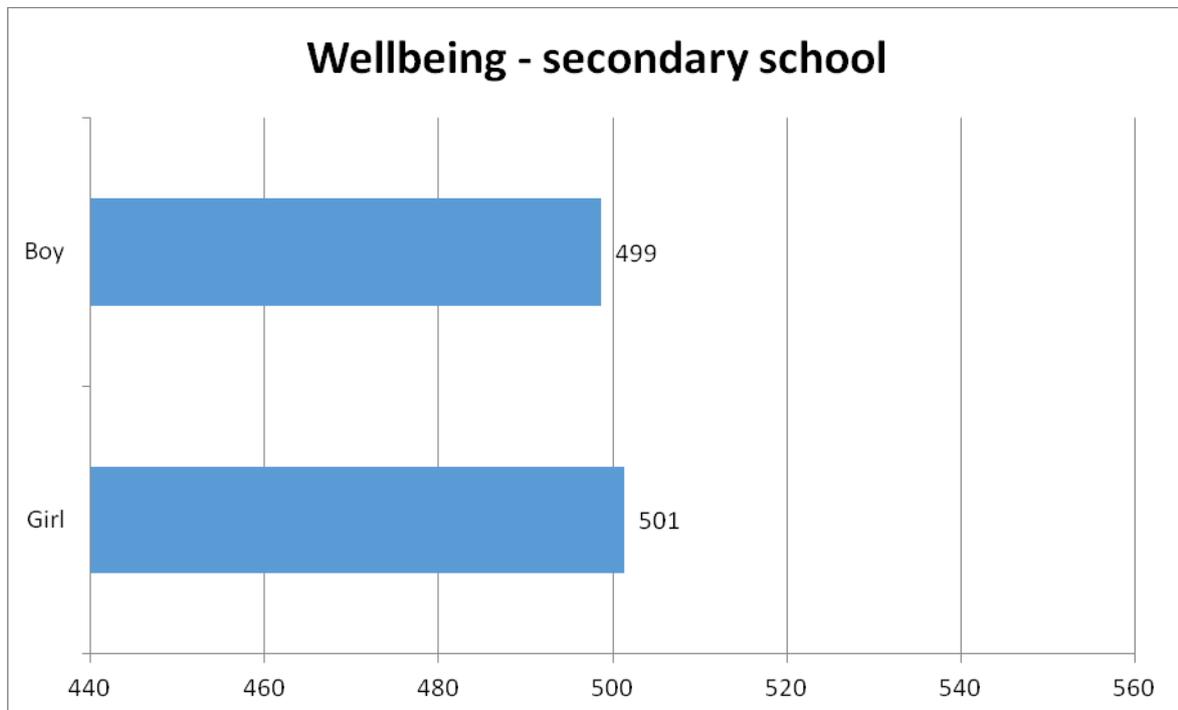
We observe that the students in special education in some aspects score higher than the other students.

14.1.2 Secondary school

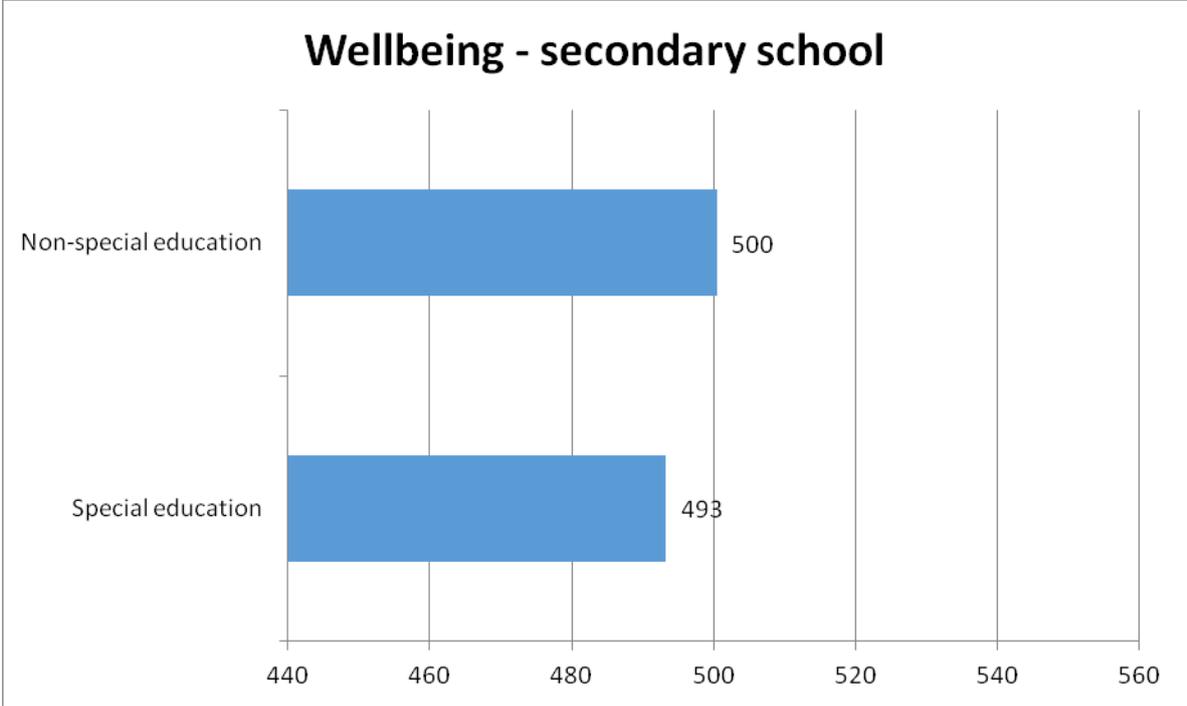
Differences between schools:



Differences between gender:



Differences between special education and non-special education:



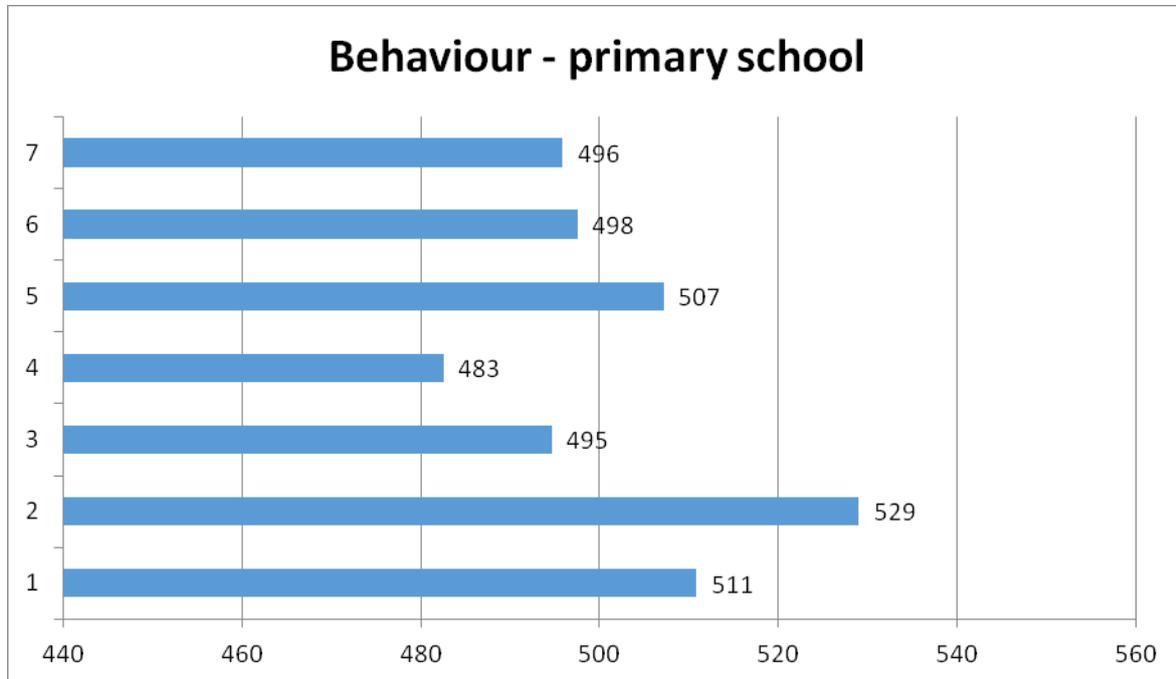
14.2 Results on behaviour

A challenge for development and maintenance of a good learning environment, is the incidence of disruptive behavior, as such reduces the learning opportunities, both for the student that disturbs, and the other students in the class.

International meta-analyzes show that negative classroom behaviour has an effect of 0.68 and thus ranks as no. 16 out of 150 studied factors (Hattie, 2013).

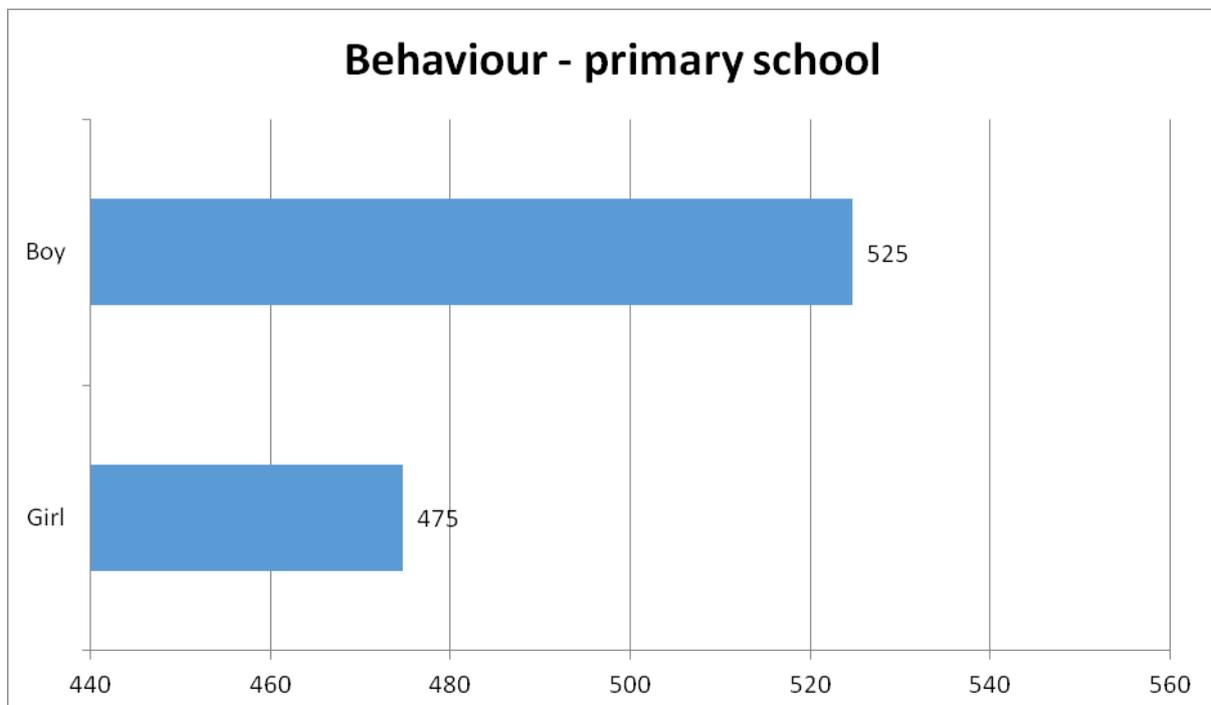
14.2.1 Behaviour - primary school

Differences between schools:

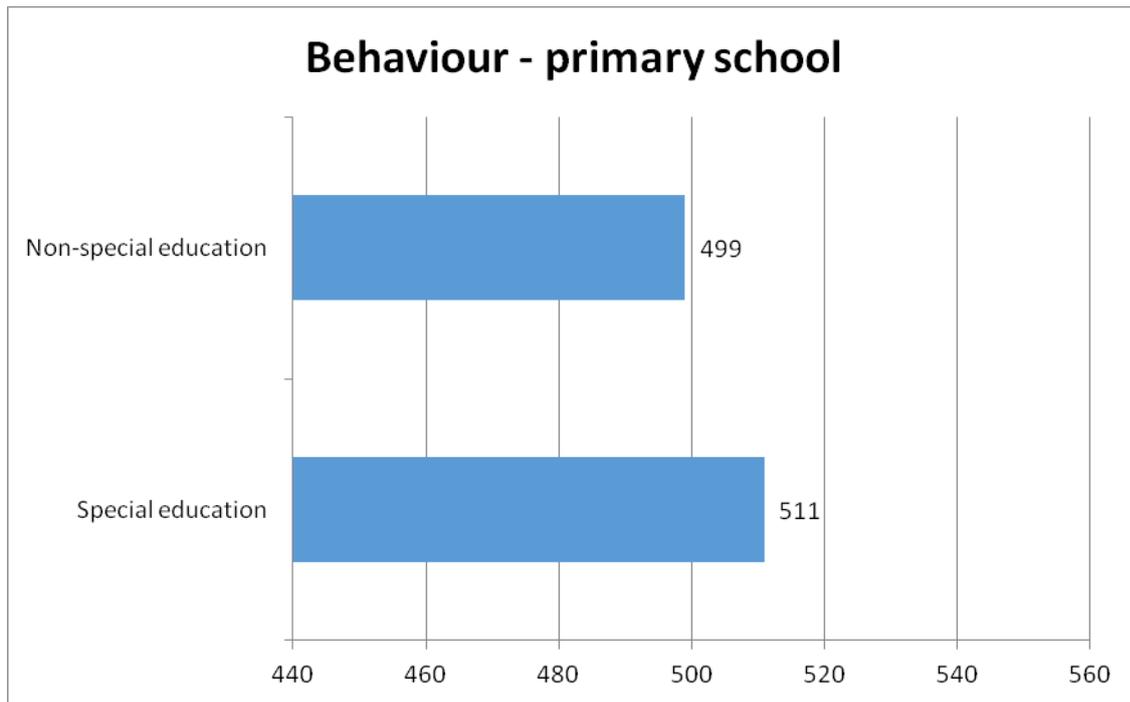


We see that the difference between the best and poorest scoring school is almost 50 points. This is half a standard deviation.

Differences between gender:

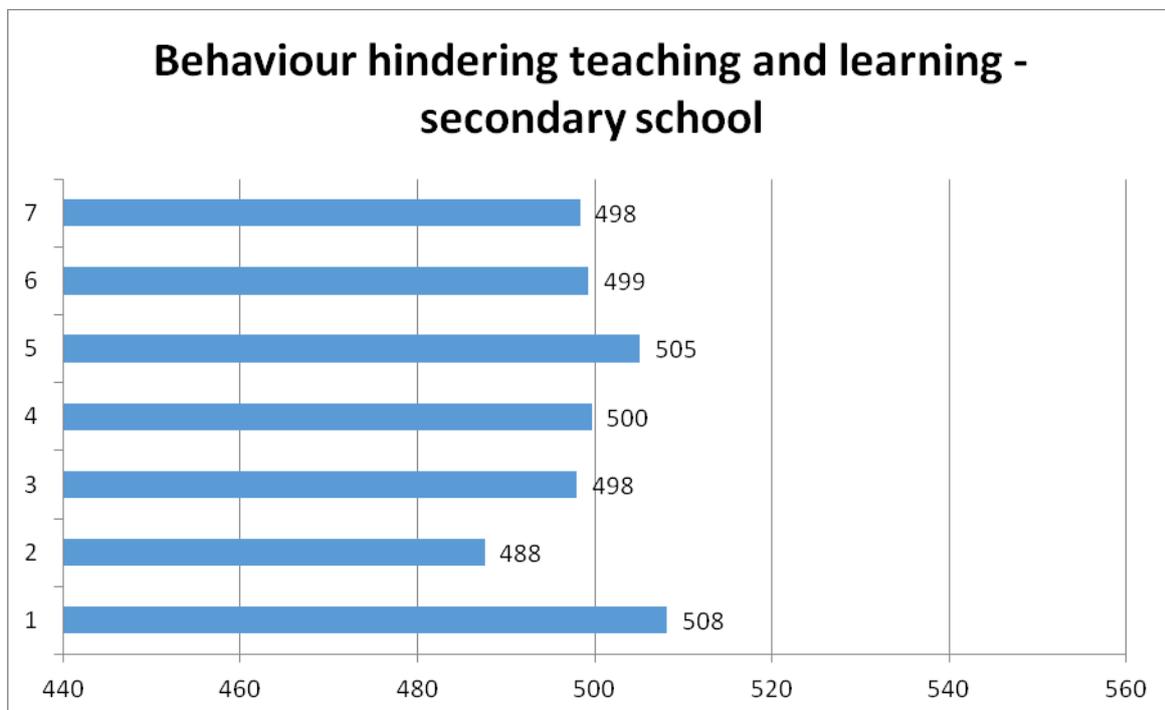


Differences between special education and non-special education:

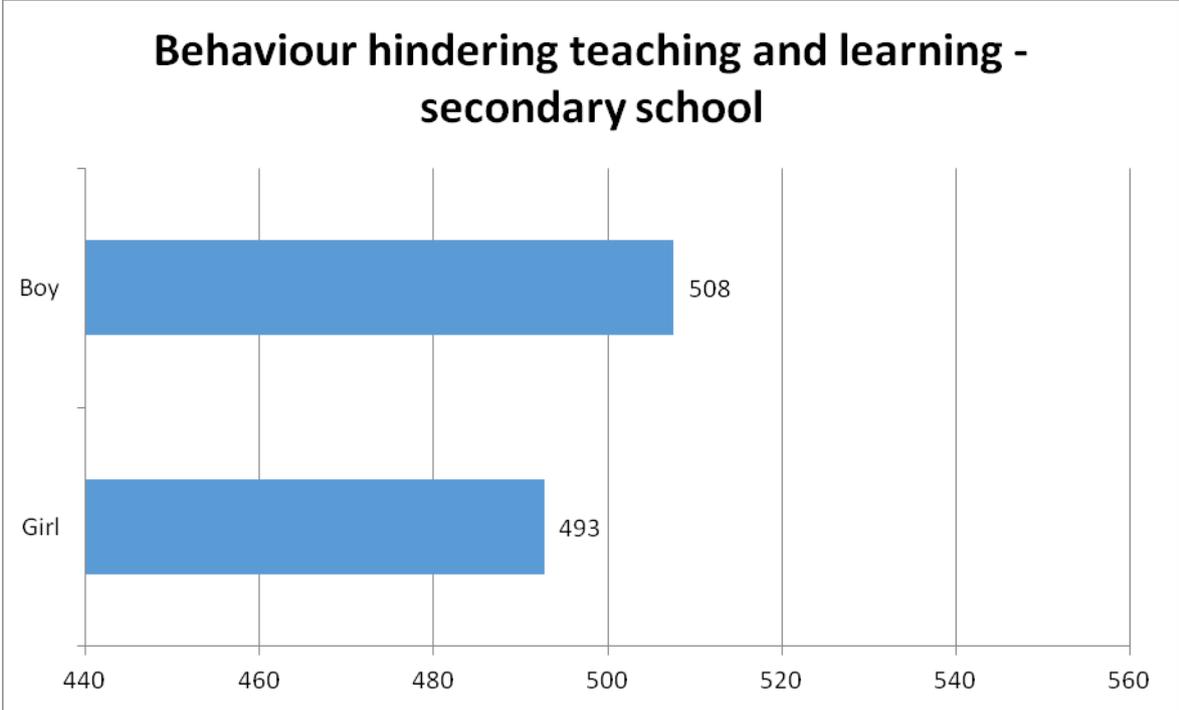


14.2.2 Behaviour hindering teaching and learning - secondary school

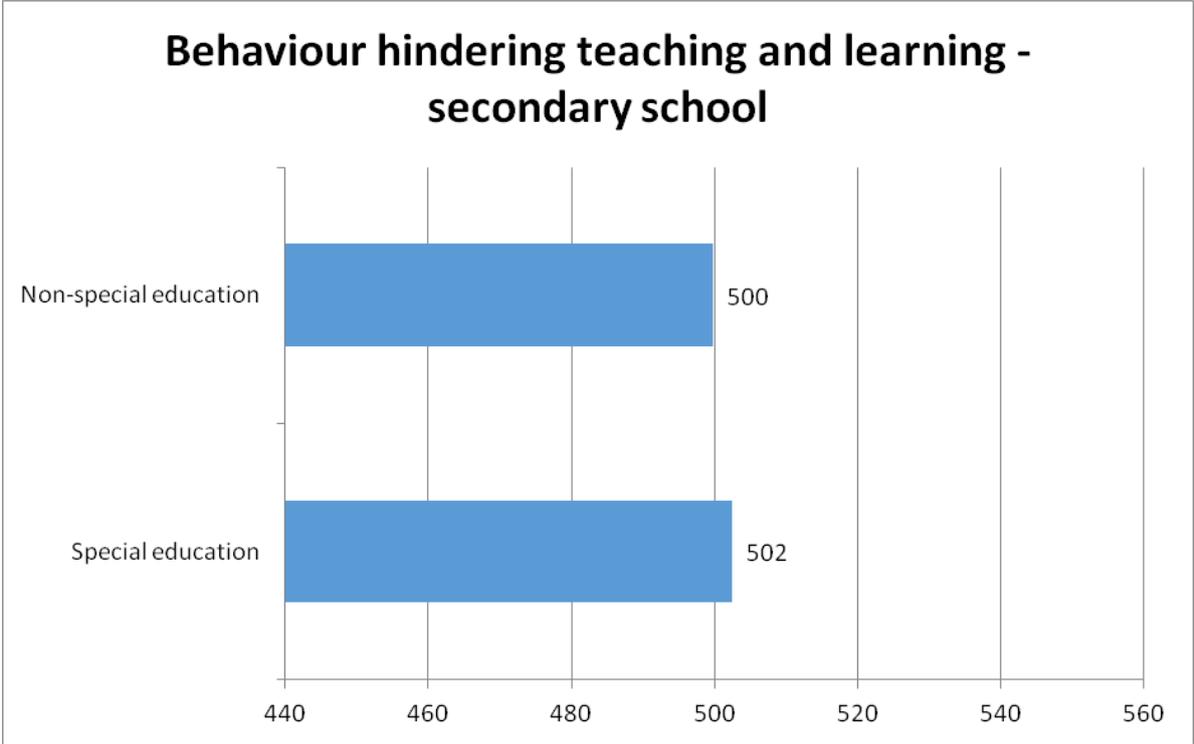
Differences between schools:



Differences between gender:



Differences between special education and non-special education:



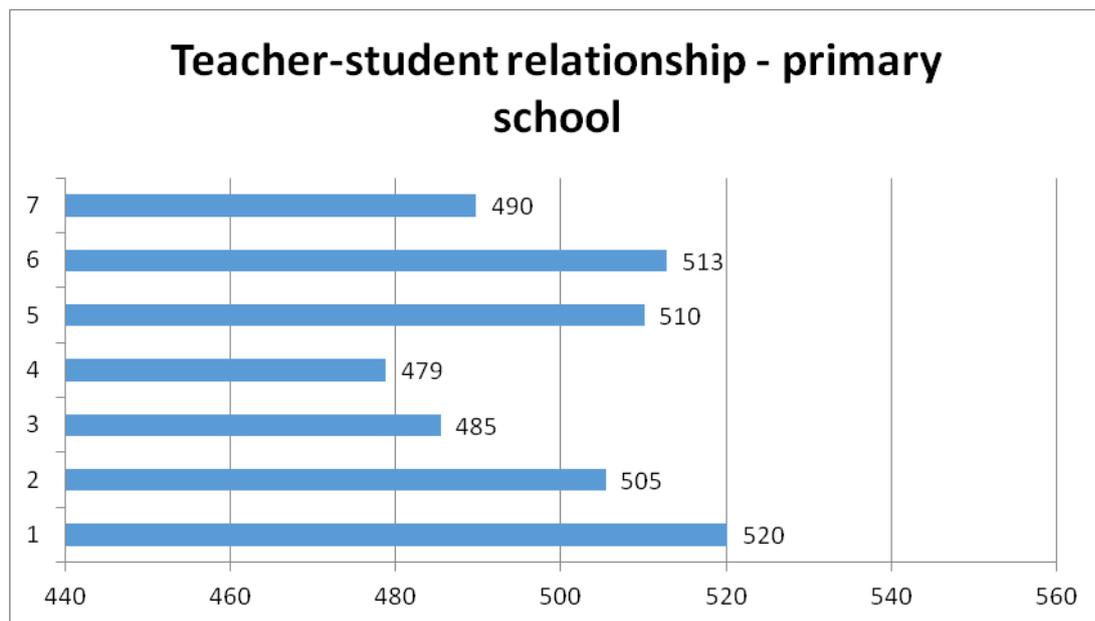
14.3 Results on teacher-student relationship

The relationship between students and teachers is naturally a very important quality factor.

Relations between teachers and students in grade 1 through 4 are assessed through five questions. Examples include "When I'm sorry, I can talk to the teacher," and "My teacher wants me to feel good." The support and interest from teachers in grade 5 through 10 is assessed through nine questions, of which the following are examples: "I have good contact with my teacher." "My teacher encouraged me when I'm in a learning- process".

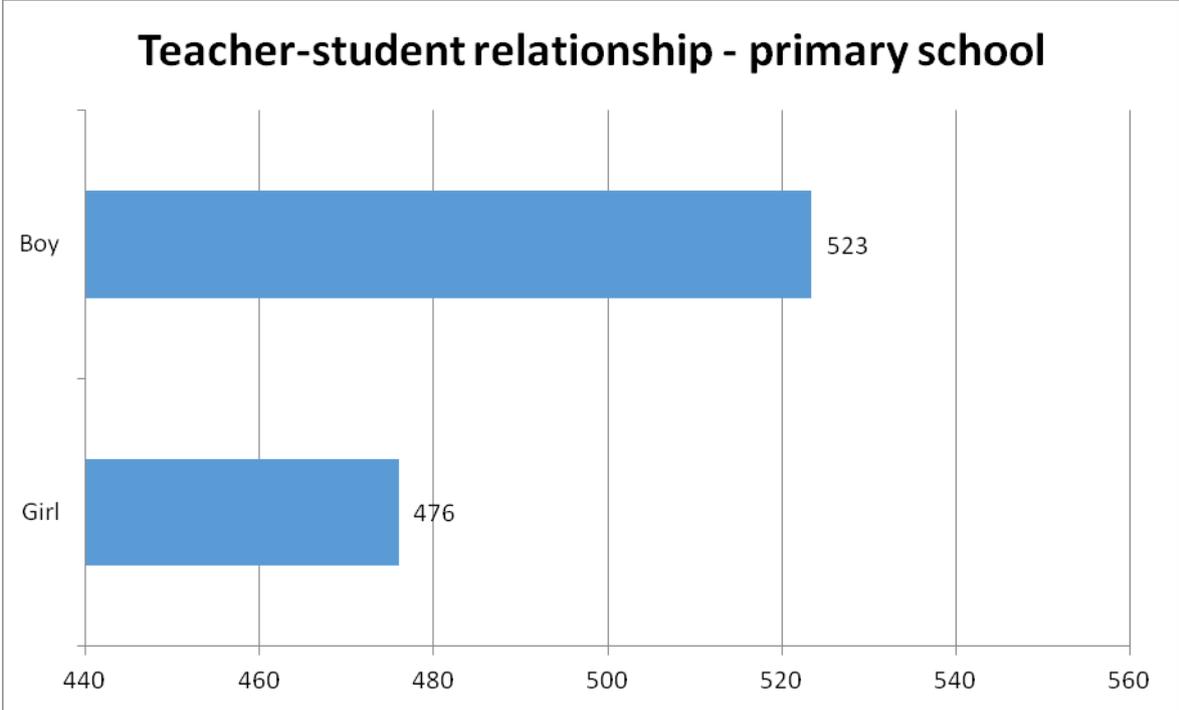
14.3.1 Primary school

Differences between schools:



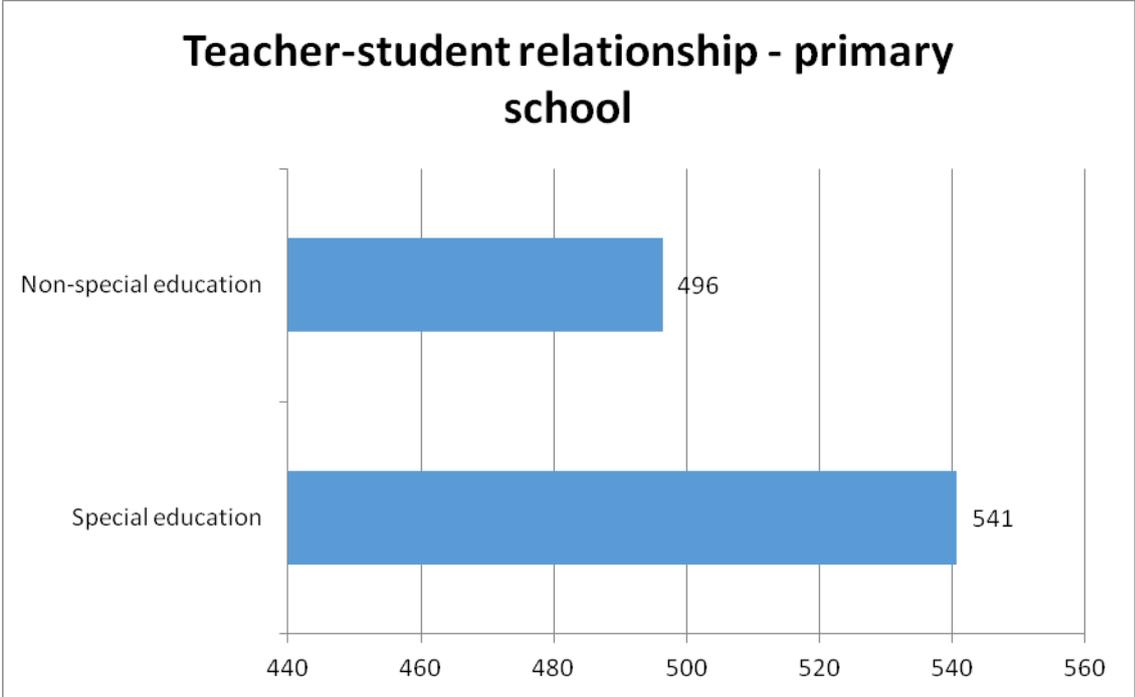
There is a difference between the schools in teacher- student relationship. The best school (7) scores 41 point better than the poorest school (4). They both differ little from the average, but this area can be interesting to discuss and why there is somewhat a gap among the schools.

Differences between gender:



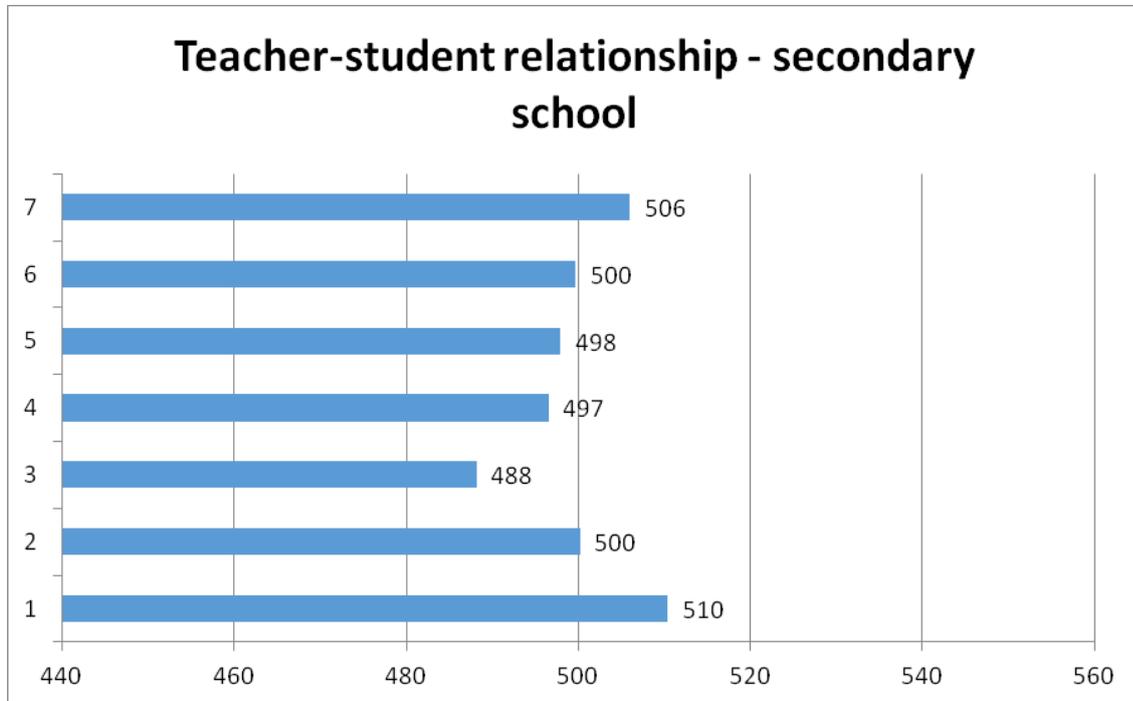
We note that the boys score half a standard deviation higher than the girls do. This is a relatively significant difference

Differences between special education and non-special education:

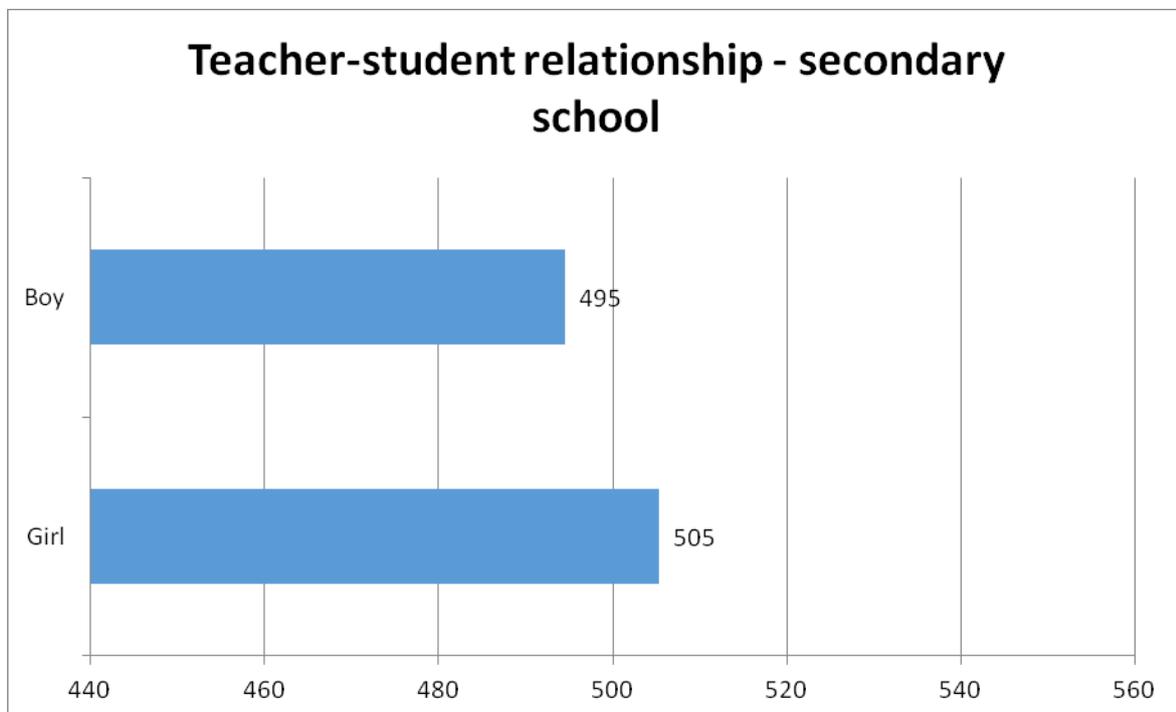


14.3.2 Secondary school

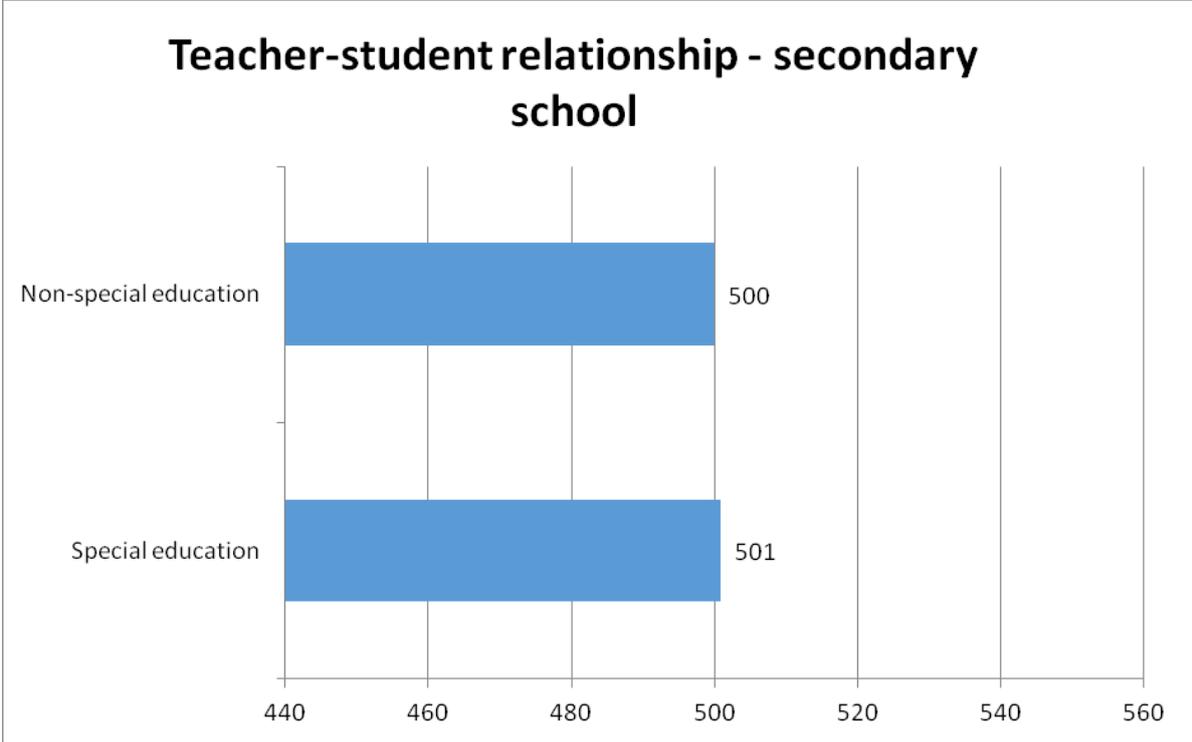
Differences between schools:



Differences between gender:



Differences between special education and non-special education:



14.4 Results on relationship between students

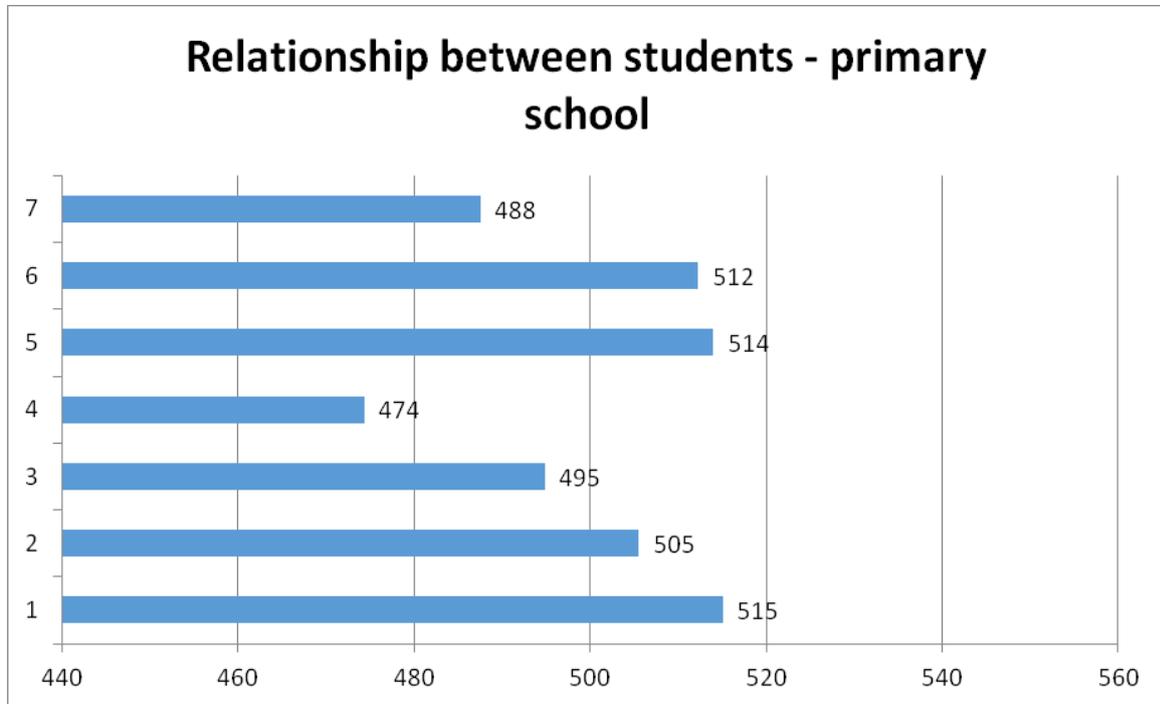
Relations between students are important as a micro-system that will affect students' development and learning through mutual interaction over several years. This is illustrated both theoretically and empirically in international research.

Social relations/ Relationship between students in the class goes on whether or not the student is part of a community and is illuminated by four questions that students had to answer. An example is: "I feel lonely at school."

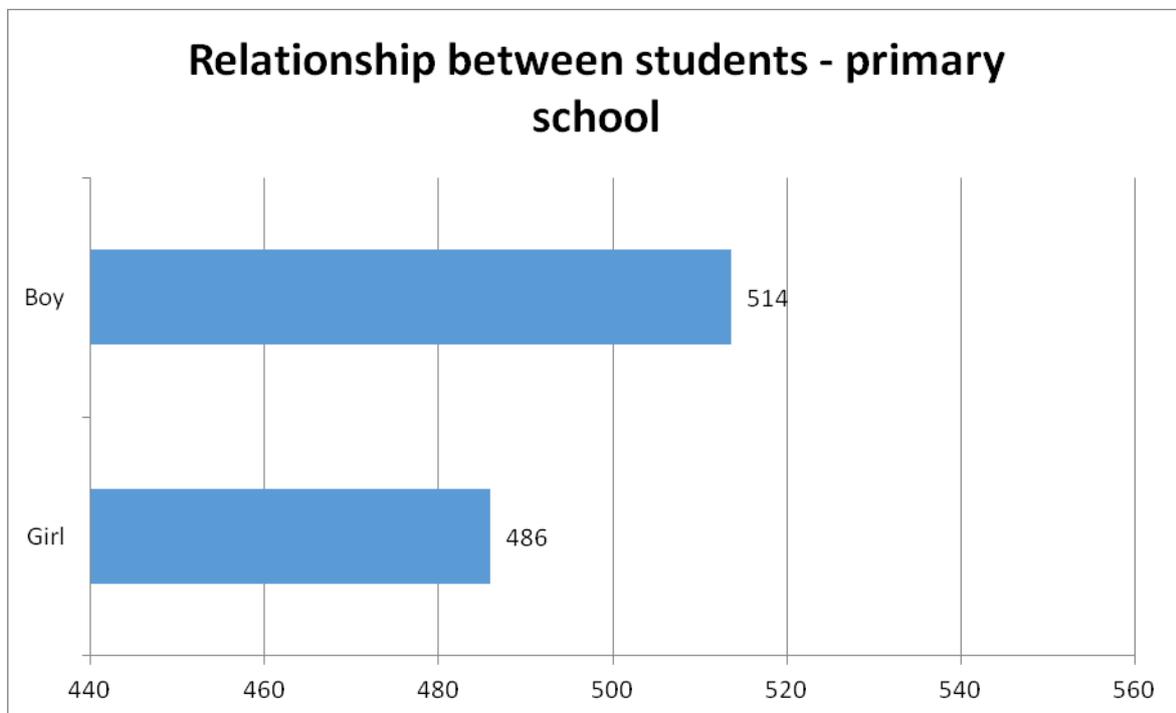
By learning culture, we mean how students collaborate with one another in class.

14.4.1 Primary School

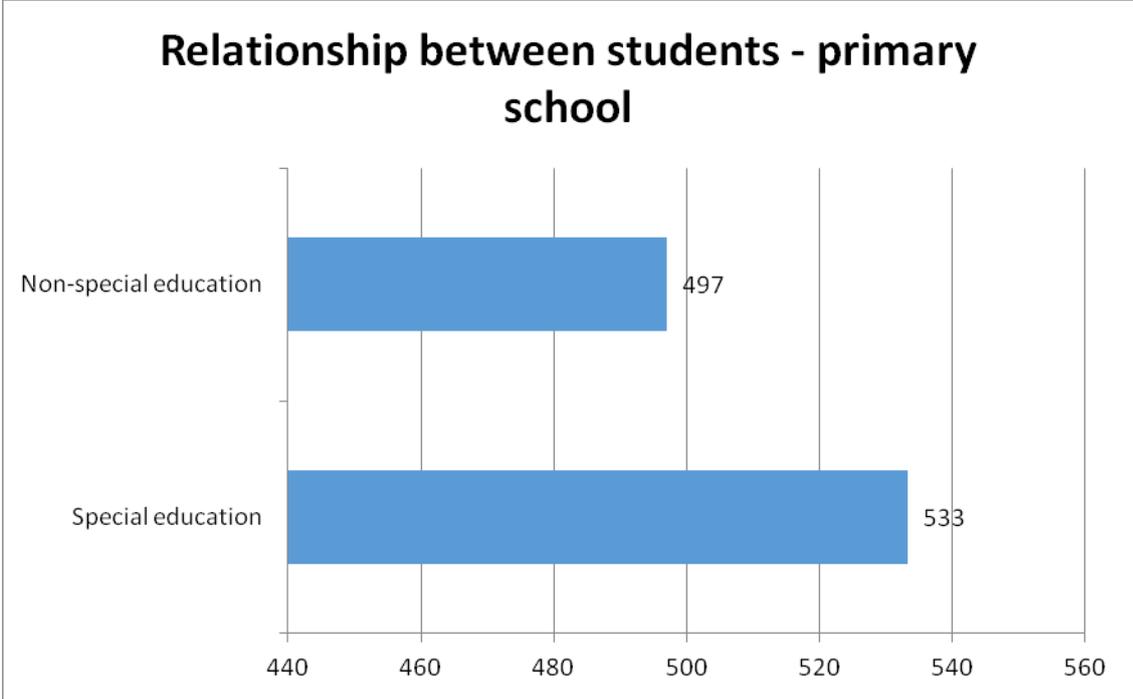
Differences between schools:



Differences between gender:

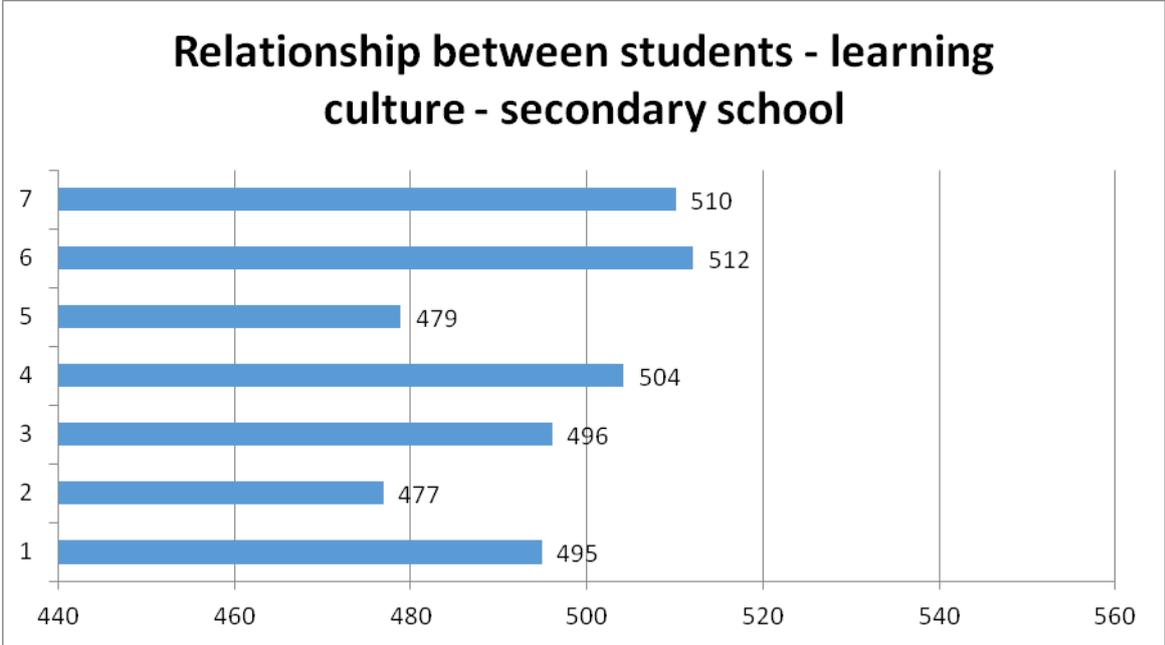


Differences between special education and non-special education:

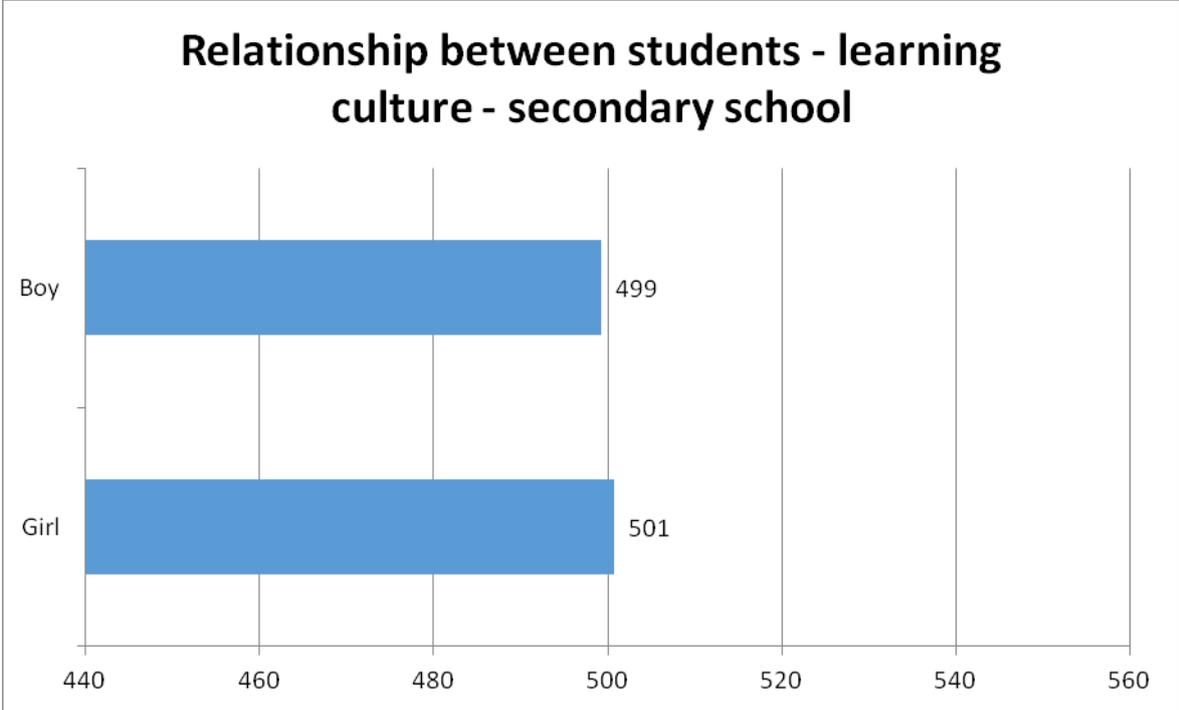


14.4.2 Learning culture – secondary school

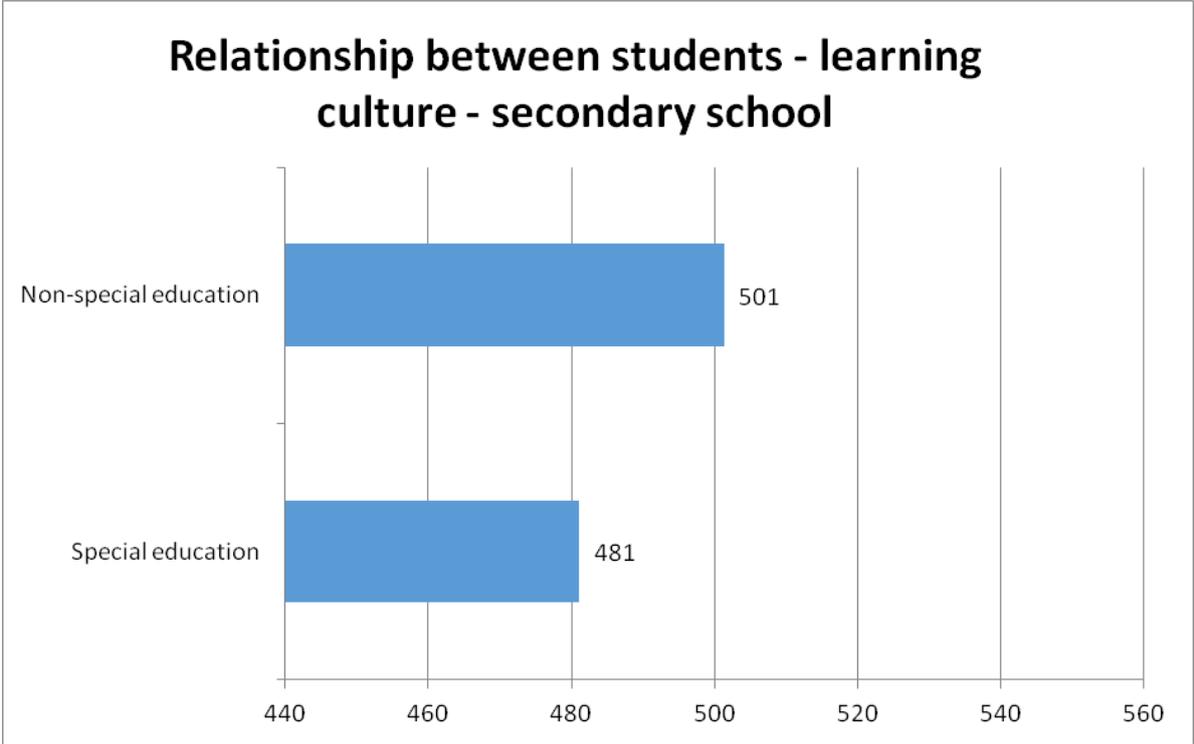
Differences between schools:



Differences between gender:

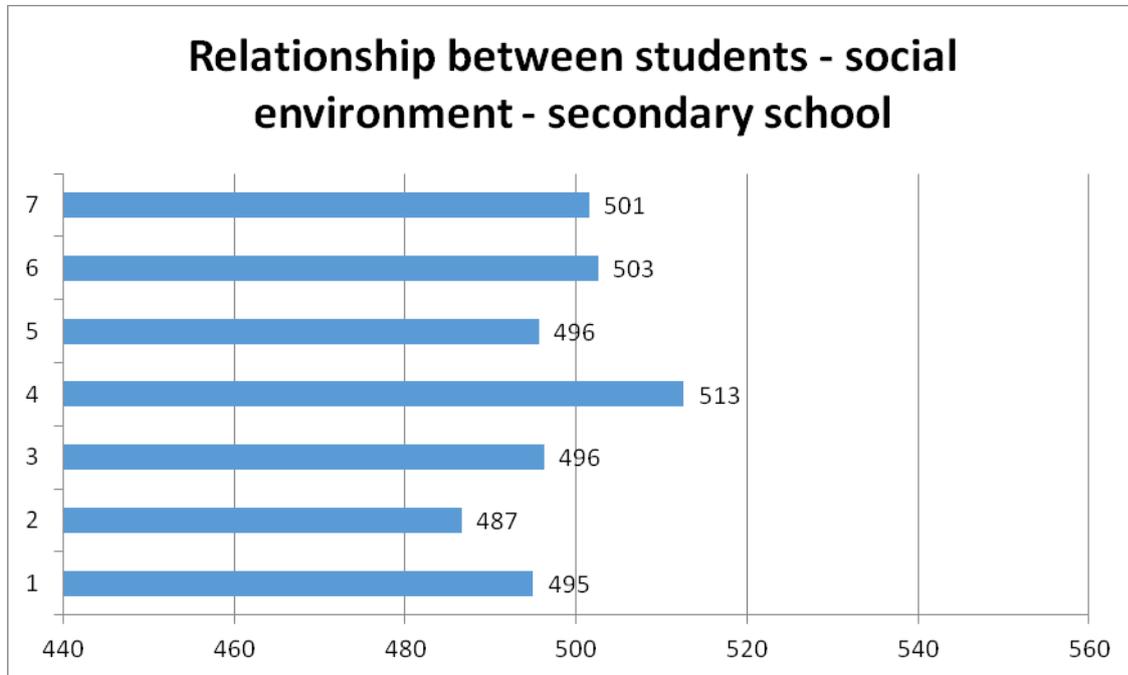


Differences between special education and non-special education:

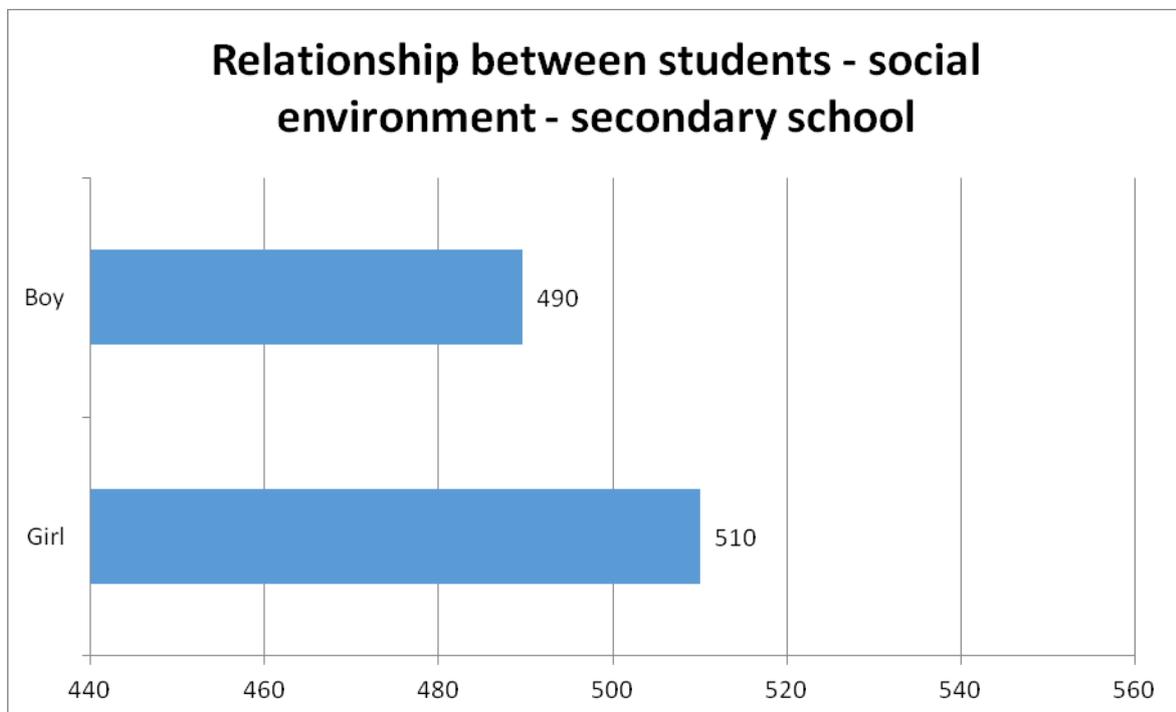


14.4.3 Social environment – secondary school

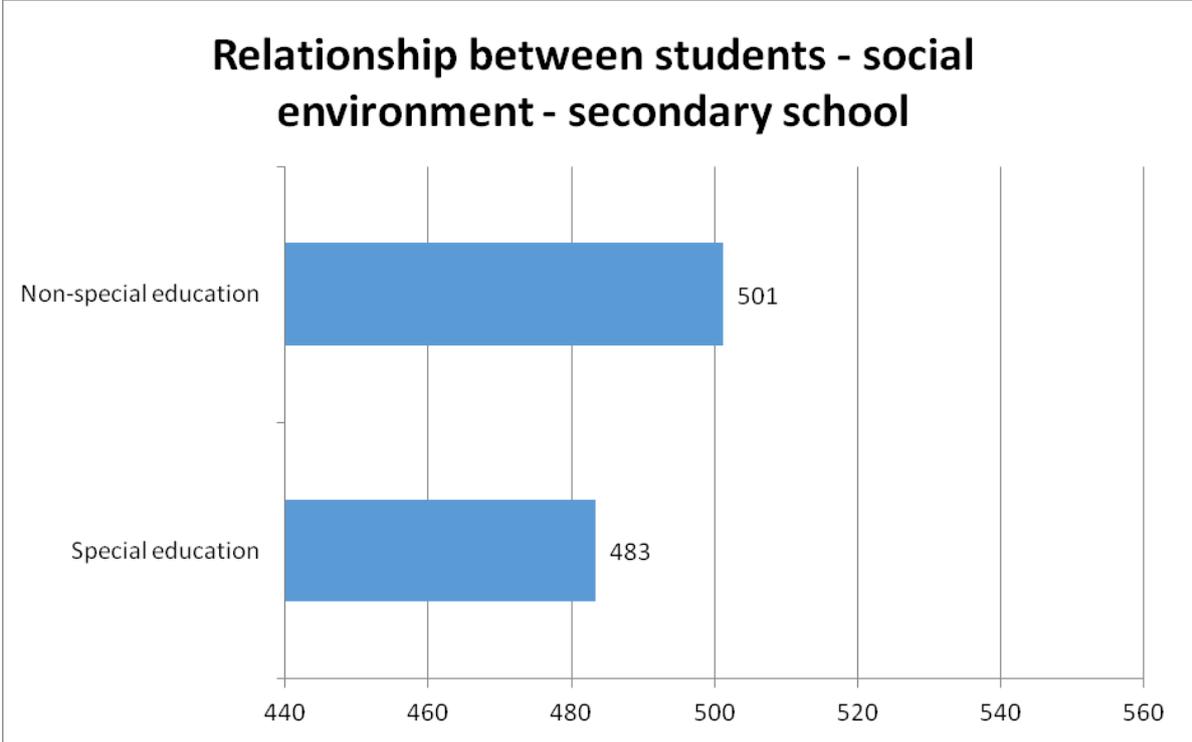
Differences between schools:



Differences between gender:



Differences between special education and non-special education:



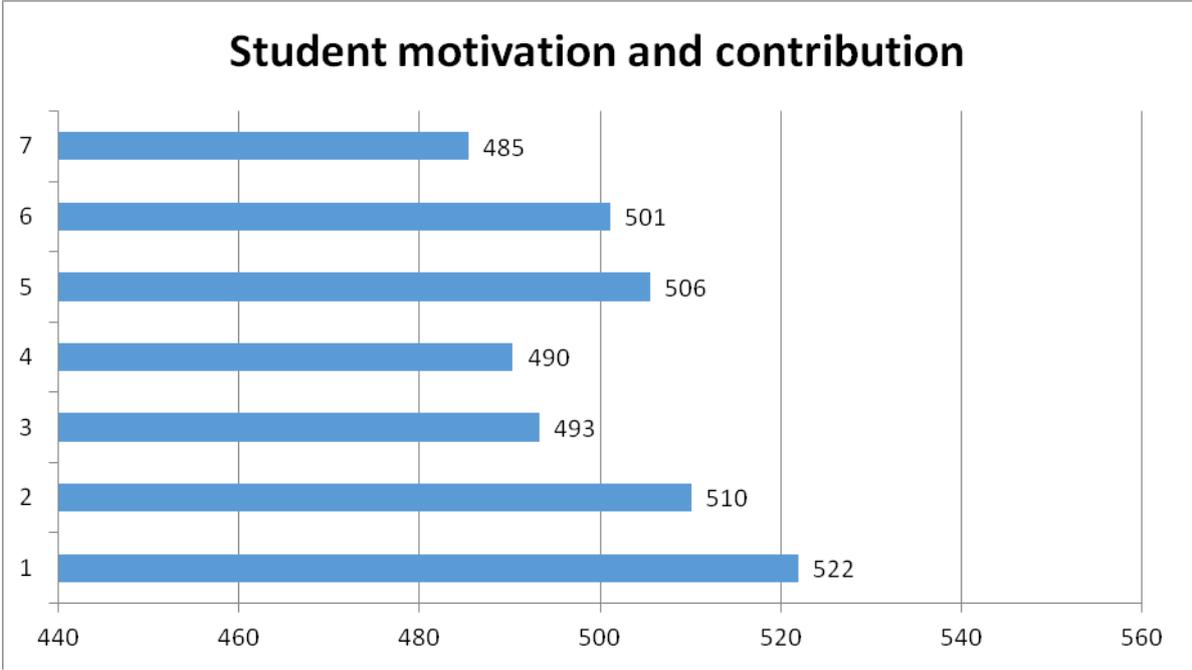
14.5 Results on student motivation and contribution

Primary and secondary school are shown together.

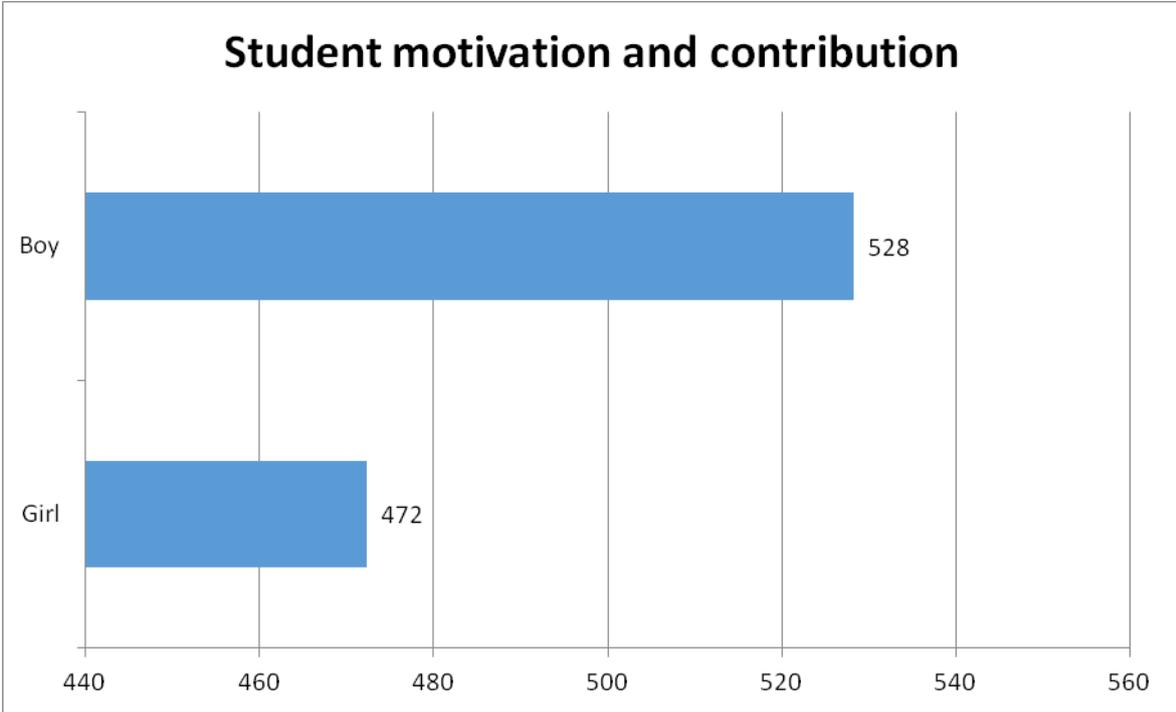
The way people are motivated to act is related to their belief in their own abilities. However, it is important to distinguish between different forms of confidence. Hattie and Yates (2014) identify three confidence levels: the overall self-esteem; perceived competence in the domain level; and confidence at the task level, self-mastery. Albert Bandura (1986) was the first to define the phenomenon systematically. He uses the term "self efficacy". If you do not have self efficacy, you will quickly reduce effort in the task or simply give up. There is also evidence that high expectations to succeed in a task have a positive effect on performance and learning (Schunk et al, 2008).

The survey deals with the expectation of coping, and the area is evaluated by giving the students four questions. Two examples of this are: "I continue, although I have to do at school is difficult." "I give up if I think the tasks are too difficult."

Differences between schools:

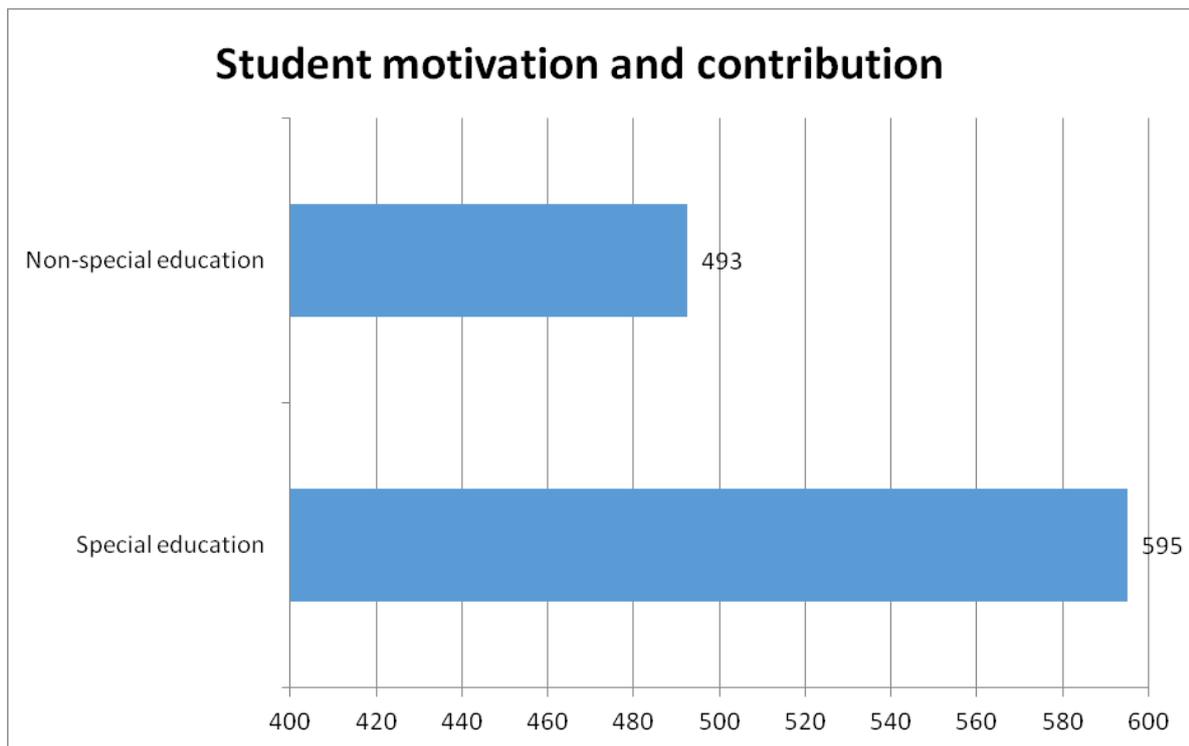


Differences between gender:



We see that the boys evaluate their motivation and contribution higher than the girls do. It is interesting to compare this student-evaluation to chapter 7's table over girls' and boys' performance in specific subjects, where the girls' score are equivalently higher.

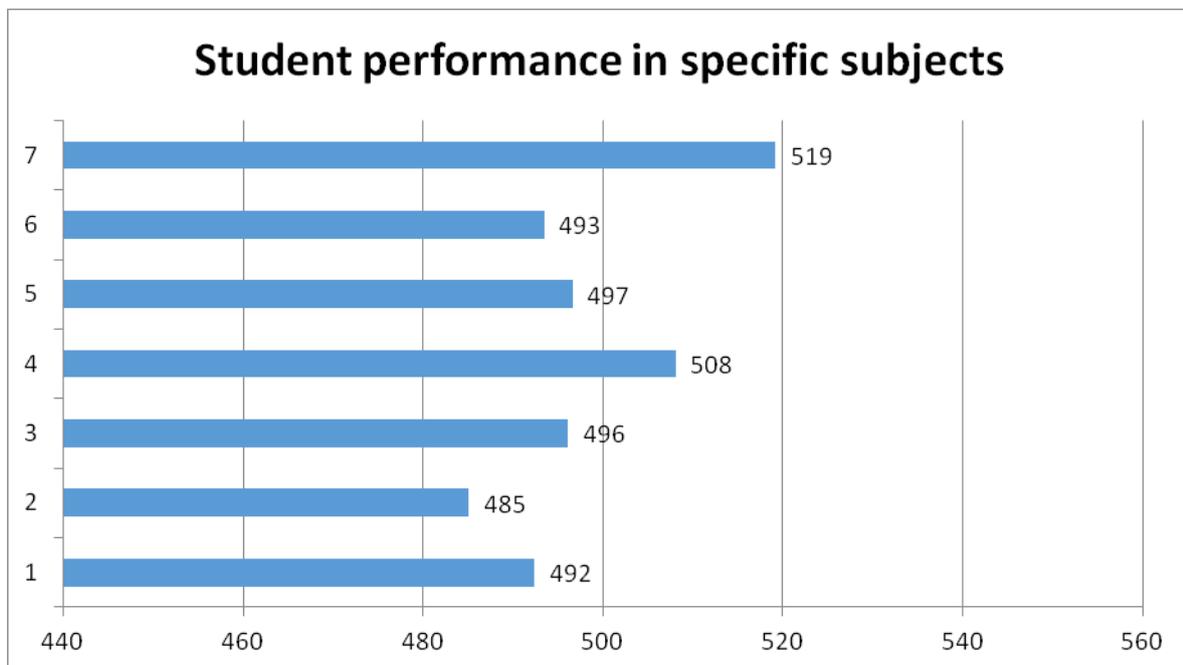
Differences between special education and non-special education:



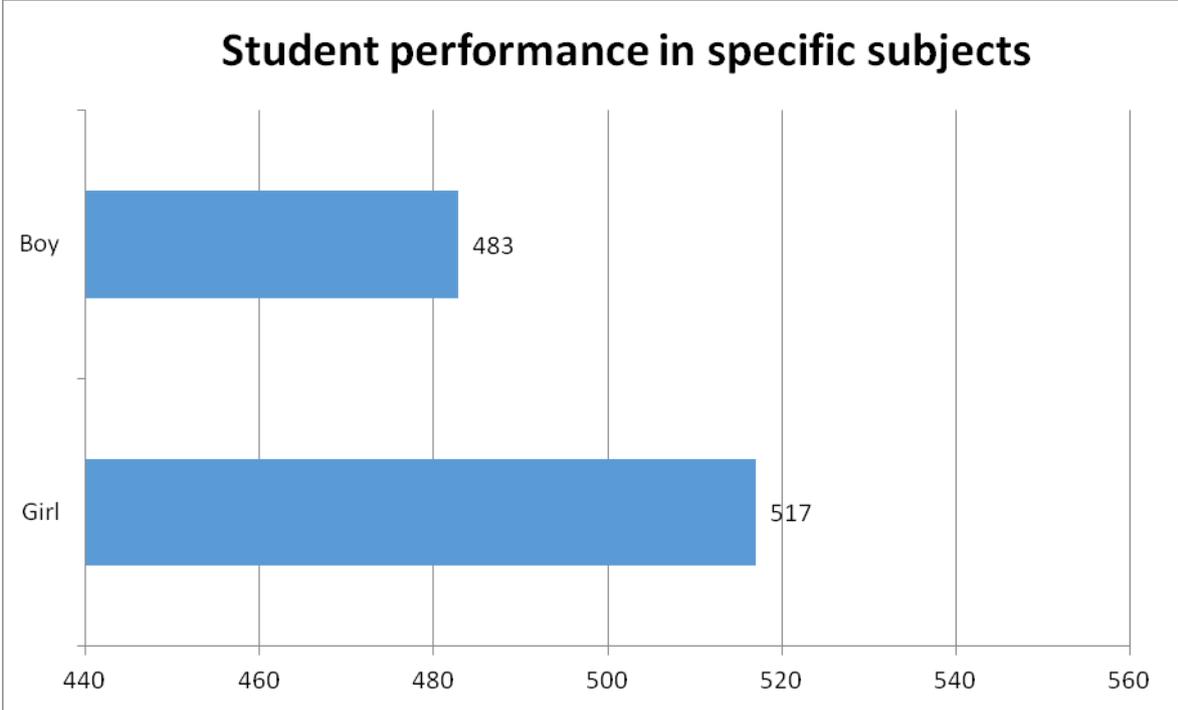
14.6 Results on student performance in specific subjects

Primary and secondary school answers are grouped together.

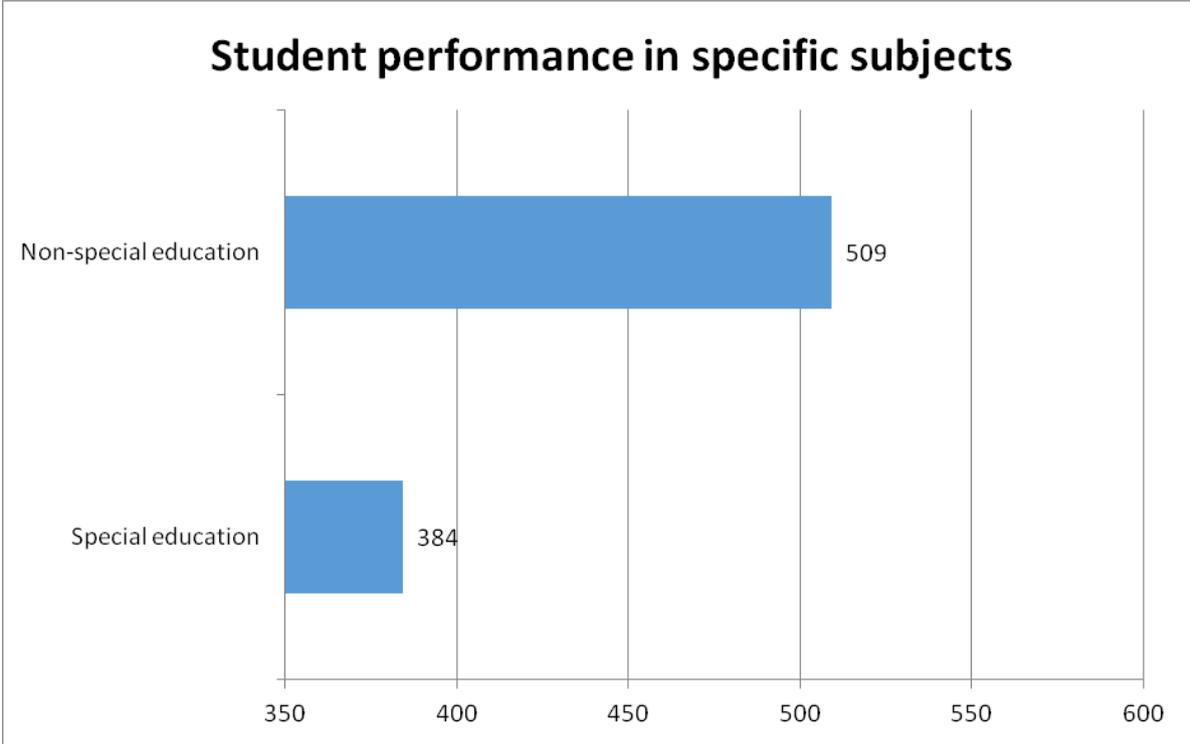
Differences between schools:



Differences between gender:



Differences between special education and non-special education:



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