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Why do Pupils in Primary and Secondary Education in Sint Maarten have Low Test Results
in Dutch and Mathematics?

An explorative study of the Impact of Risk and Protective Factors experienced by principals
and teachers

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Abstract

According to the Supervision committee (Begeleidingscommissie, 2014), the Dutch and mathematics performance of students in primary and secondary schools in Sint Maarten are below average. However, the understanding of the possible factors behind this phenomenon are still not clear. The goal of this research was to identify the experienced risk and protective factors by teachers and principals that influence the low performance of students in mathematics and Dutch in primary and secondary schools, so that the Inspection can introduce new policy based on these factors. Drawing on the theory of Bronfenbrenner (1977), potential factors that drive these low test results are analyzed. By doing so, an analysis was undertaken based on two methods. First, a survey was sent out to 173 mathematics and 67 Dutch primary teachers from 17 schools. In addition, in-depth interviews were conducted with principals and teachers in mathematics and Dutch from primary (n = 11) and secondary school level (n = 7) to attain more correct information about the factors. In line with the theoretical arguments presented in this thesis, specific environmental factors – i.e., communicational-, teacher-, exam-, and school based factors – were identified influencing the student's performance in Sint Maarten in Dutch and mathematics. For policy makers, the results of the thesis may have important implications: Based on the findings, for example, a stimulation of protective factors can be achieved by incentivizing the teachers to use more differentiation-strategies and more culturally sensitive learning materials as well as communicate and exchange more information with other institutes.

Keywords: mathematics, Dutch, low performance, school system

Abstract

Volgens de Begeleidingscommissie (2014), zijn de prestaties van leerlingen in het Nederlands en wiskunde in het basis- en voortgezet onderwijs in Sint Maarten onder het gemiddelde. De mogelijke factoren gerelateerd aan dit fenomeen zijn nog niet duidelijk. Het doel van dit onderzoek is om te begrijpen wat de beschermende en bedreigende factoren zijn die volgens schoolhoofden en leerkrachten invloed hebben op de lage scores van de leerlingen in wiskunde en Nederlands. Deze kennis zou de Dienst Onderwijs kunnen gebruiken om een nieuwe beleid te introduceren. Op basis van de theorie van Bronfenbrenner (1977), analyseert deze thesis de potentiële beschermende en bedreigende factoren die tot deze lage testresultaten leiden. De gegevens werden verzameld met behulp van twee methoden: een analyse van 240 vragenlijsten die zijn verstuurd naar basisschooldocenten wiskunde (173 docenten) en Nederlands (67 docenten) op 17 scholen. Vervolgens zijn er diepte-interviews gehouden met schoolhoofden en docenten wiskunde en Nederlands van het basis- (11 interviews) en middelbare schoolniveau (7 interviews). In lijn met de theoretische argumenten die in deze thesis zijn gepresenteerd, zijn specifieke omgevingsfactoren te onderscheiden - i.n., communicatie-, leerkracht, examen en schoolfactoren - die de prestaties van leerlingen in Sint Maarten in het Nederlands en wiskunde beïnvloeden. Zo kunnen de resultaten van deze thesis belangrijke gevolgen hebben voor beleidsmakers. Op basis van de bevindingen kunnen beleidsmakers bijvoorbeeld leerkrachten stimuleren om gebruik te maken van beschermende factoren, zoals het inzetten van meer differentiatie strategieën, het gebruik maken van cultureel sensitieve leermiddelen en het stimuleren van een betere communicatie en informatie-uitwisseling met andere instituten.

Trefwoorden: wiskunde, Nederlands, lage prestaties, schoolprestaties

Why do Pupils in Primary and Secondary Education in Sint Maarten have low Test Results in Dutch and Mathematics?

Research background

This research took place in Sint Maarten. Sint Maarten is, since October 10, 2010, a separate country within the Kingdom of the Netherlands. Between 1983 and 2010, the Dutch part of the island of Sint Maarten was an island territory of the Netherlands Antilles. Between 1951 and 1983, it was part of the island territory of the Windward Islands. Sint Maarten consists of the southern part of the Caribbean island of Sint Maarten and some very small and uninhabited islands and rocks. Sint Maarten has an area of 34 km². The capital is Philipsburg. The northern part of the island is called Saint-Martin and is part of France. Sint Maarten is the smallest landmass in the world to be shared by two sovereign nations. The Dutch quarter is part of the Kingdom of the Netherlands but not part of the European Union, while the French quarter is a member of the European Union. Sint Maarten shows high migration movements from the Caribbean (Ministry of Labour and Economic Affairs, 2006; United Nations Children's Fund, 2013). Moreover, in Sint Maarten there are many illegal migrants (United Nations Children's Fund, 2013). Thus, in Sint Maarten there is also a high number of unregistered students (Hodge- Lacorbinere, 2012). The official languages on the Dutch side are Dutch and English. The official language on the French side is French. However, English is the predominant language on the Dutch part of the island. Spanish, Dutch, French and Papiamentu are also spoken. This language plurality, as will be discussed below, strongly influences the way how the children learn new languages in school.

The education system on Sint Maarten is based on the Dutch education model which, as will be argued below, is possibly not perfectly adjusted to the local needs. Consequently, there are different models of education used in Sint Maarten (Unicef, 2013). For example, it depends on the school's system history and/or specific background factors as to whether the teaching language is English or Dutch. Not every school in Sint Maarten has a Dutch language policy (Begeleidingscommissie, 2014; Unicef, 2013). Thus, it is reasonable to assume that the differences in the teachers' backgrounds, the students' backgrounds and the school system affect the language quality and school results. In Sint Maarten there are eighteen subsidized primary schools and eight government subsidized secondary schools. On secondary level there is a mix of Dutch, Caribbean English and International exam programs. Most secondary schools use English as language of instruction, but the largest secondary school on the island, Milton Peters College, uses Dutch as language of instruction in their theoretisch kadergerichte leerweg (TKL), hoger algemeen voortgezet onderwijs (HAVO) and

voorbereidend wetenschappelijk onderwijs (VWO) departments. The eighteen subsidized primary schools consist of eleven schools run by religious based school boards and seven public schools. One of these seven public schools is a school for special education. The reports from the Inspectorate of Education, Culture, Youth & Sports (2012; 2015) contain an elaborate description of the different schools and their school boards. The reports also describe which schools offer CXC education and which the Dutch school system.

Since 2013 the placement of primary school students into secondary schools has been arranged in a different way (Inspectorate of Education, Culture, Youth & Sports, 2015). Eighth grade students from primary school have to participate in the national FBE Exit Exam. The FBE Exit Exam is composed of four subjects: English, Dutch (as a foreign language), Mathematics and General Knowledge. The results of this FBE exam, together with the Educational Report of each student, determine placement. The Educational Report is a student portfolio with information of the students' career at primary level, socio-emotional development, the advice of the school and the wish of the parents for secondary education.

The results from the first two years of the FBE exam has shown that the national performance was low in the subjects General Knowledge, Dutch and mathematics. The students only show good results in the subject English. It is argued that the low performance is problematic since it can have a negative impact on the student's personal development and their future educational and vocational career (Eldering, 2011). Accordingly, the Inspection of Education is carrying out research on why the performance especially in Dutch and mathematics at primary and secondary schools is below average.

Following this line of thought, the thesis at hand focusses on the understanding of the driving forces behind the phenomenon of the below average performance of the Sint Maarten students. Literature shows that environmental, teacher related factors, exam and learning methods as well as school factors may play an important role; these findings are tested during the research in Sint Maarten. The aim of this research was to identify the experienced risk and protective factors by teachers and principals that influence low performance of students in mathematics and Dutch in primary and secondary schools, so that the Inspection can introduce a new policy based on identified factors. By doing so, the thesis is structured as follows. In the next section, a theoretical framework will be discussed and a set of propositions derived. These propositions will then be tested in the subsequent empirical section. Last but not least, the thesis will conclude with a discussion of the main results, point to some limitations of the study and recommendations for future research.

Theoretical framework

A variety of factors can be identified from literature that generally affect test scores of students. Examples include school specific factors, e.g. personal problems of the pupils, and problems with specific teachers (Skukla-Acevedo, 2009); specific classroom situations, teachers' expectations and other factors related to the classroom environment (Hughes, Gleason & Zhang, 2005; Mc Know & Weinstein, 2008; Sweet, Guthrie & Ng, 1998; Wentzel, 1998); teacher quality, training and experience as well as different teaching approaches (Darling-Hammond, 2000; Rockoff, 2004); parental influences (Levy 1996; Wentzel, 1998); different living conditions of the pupils as well as the family structure and family support (Entwisle & Alexander, 1996) and institutional factors that relate to the school system directly (Wentzel, 1998). Up to date, however, little is known about how these different factors can explain the low test score results of students in Sint Maarten. Thus, in order to advise policy makers how to raise the performance of the Sint Maarten students in Dutch and mathematics it is essential to identify and analyze the driving factors that influence the low test results taking this specific environment into account i.e., relating them to the environment and differentiating them on primary and secondary education level. It should be noted, however, that the thesis at hand mainly focuses on teachers and school related factors, as it is easier and more feasible for the schools and other professionals to modify the conditions in these areas in the short run.

For this reason, answers to the following research questions will be given in this thesis:

- What do professionals experience to be the biggest problem areas in mathematics and Dutch on primary and secondary school level in Sint Maarten?
- Do professionals experience that environmental factors have an influence on the performance of students in Sint Maarten?
- Which specific teacher related qualities have a positive influence on student performance, according to professionals? Which qualities do teachers need to improve on? (teacher related factors)?
- What are the opinions and experiences from professionals regarding the quality of curriculum, exams and learning methods in mathematics and Dutch?
- Which differences between schools have been experienced by professionals that influence the learning environment for learning Dutch or mathematics at these schools (school factors)?

Environmental factors

Bronfenbrenner (1977) developed a (bio-)ecological model which explains how external factors like students' living conditions, parents' involvement and other factors related to the environment and society affect the behavior of students. In this model, the environmental structure is similar to an onion, with each layer being a specific environmental factor influencing learning behavior. Specifically, the theory distinguishes between four different layers: microsystem, mesosystem, exosystem and macrosystem.

The microsystem comprises the environment that the student experiences directly such as family relationships. This layer extends over time with friends, school etc. These factors can influence each other. The second layer is the mesosystem which is defined as the connections between different microsystems. An example is the contact of the child's parents with teachers. Evidently, it is important that these connections support each other. The exosystem is the setting that has no direct influence on the child but may have indirect influence on their development (e.g. the job of the parents). The macrosystem is the outer layer, which includes values, laws and (religious) beliefs. Moreover, a temporal dimension of the system - labeled as the chronosystem - is also included which accounts for historical changes that may affect the other elements of the system, e.g. the requirements that are placed on the child by the digital age. Drawing on Bronfenbrenner's (bio-)ecological model, the thesis at hand will analyze how these different layers and their interdependencies can explain the lower student's performance in Dutch and mathematics. For example, in the empirical analysis focusses on the professionals and how this group evaluates influential factors from students' living conditions, parents' involvement and factors related to the environment and society.

Especially the parents' involvement is an important component influencing the students' success and achievement (Al-Matalka, 2014; Hill & Taylor, 2004). The involvement of parents with their children at home is found to be associated with the socioeconomic status of the parents (Al-Matalka, 2014). Parental educational background and having study facilities at home have great influence on academic performance (Alokan, Osakinle & Onijingin, 2013). Thus, a positive association between a good parent-teacher relationship and a child's academic achievement and behavioral adjustment can be assumed (Hauser-Cram, Sirin & Stipek, 2003; Hughes, Gleason & Zhang, 2005; Hughes & Kwok, 2007). In contrast, children from a minority and/or low socioeconomic status often enter school with lower academic competencies as well as lower social and emotional readiness (Janus & Duku, 2007). The vocabulary of a child at the beginning of his school education has a great influence on his school performance (Eldering, 2011; Snow, 1999).

Consequently, the surveys and interviews conducted in this thesis concentrates on identifying factors that play a role in schools in Sint Maarten and which are described in literature as *protective* factors and ones as *risk* factors. Risk factors are conditions or variables associated with a lower likelihood of positive outcomes and a higher likelihood of negative or socially undesirable outcomes. Protective factors enhance the likelihood of positive outcomes and lessen the likelihood of negative consequences from exposure to risk (Eldering 2011).

Teacher related factors

A considerable body of evidence supports the notion that the skill level and competencies of teachers will strongly influence student's performance (e.g. Darling-Hammond, 2000; Hill, Rowan & Ball, 2005; Rockoff, 2004). Moreover, what teachers expect from their students can have an impact on their performance (Rubie-Davies, Hattie & Hamilton, 2006). In a related vein, research literature has identified a self-fulfilling prophecy effect resulting from the teacher's expectations of the student's performance (Jussim, 1989; Tsiplakides, Keramida, Street & Greece, 2010). This self-fulfilling prophecy effect leads to negative as well as positive consequences on student's performance and is constitutes an important variable affecting especially second and foreign language learning (Tsiplakides et al 2010). Thus, it is expected that such teacher related factors could also play an important role in Sint Maarten. In the next section, it will be analyzed how these factors influence the performance of the students in Sint Maarten.

Student-teacher relationships are another important factor. The quality of these relationships is associated with current and future adjustment to schools. Children who experience supportive and positive relationships with their teachers have more positive attitudes toward school and are more academically engaged and achieve more (Hughes & Kwok, 2007; Ryan, Stiller, & Lynch, 1994; Midgley, Feldlaufer, & Eccles, 1989). Conversely, students whose relationships with teachers are characterized by conflict are more likely to drop out of school and to experience peer rejection (Hughes, Gleason, & Zhang, 2005). Such teacher's related factors should be prevalent on Sint Maarten as well.

The capacity of teachers to use different teaching strategies and learning materials based on the needs of individual students is important as well. In this context, Gardner (1983) developed a theory of multiple intelligences. This theory formulates a list of seven intelligences: linguistic intelligence, logical-mathematical intelligence, musical intelligence, bodily-kinesthetic intelligence, spatial intelligence, interpersonal intelligence and intrapersonal intelligence. The theory implicates that individuals think and learn in multiple ways. Moreover, seven kinds of intelligence would implicate the need of seven different

approaches to teach, rather than only one way. Gardner's theory (1983) thus stimulates the idea of differentiation in teaching strategies which will be adopted in this research work.

Last but not least, the interest of the teacher in the subject being taught is an important indicator to encourage the students' motivation for the subject. Teachers who like to teach the subject have more passion to motivate the students and support them by learning (Day, 2004). This factor is expected to be prevalent on Sint Maarten as well. In primary school's teachers have to teach nearly every subject (Hodge-Lacorbinere, 2012). Consequently, it is reasonable to assume that most of these teachers have different abilities and different interest in teaching a specific subject.

Quality of curriculum, exams and learning methods (Exam and learning method quality)

It is worth considering as to whether the quality and validity of the exams and learning methods used are suitable for the students to learn what they should (Abubakar, 2015). For example, if the tests do not measure what they intend to measure there is a validity problem. Moreover, it is important to clarify what an exam aims to measure. For example, in the subject of mathematics it is often a problem when questions contain a lot of text. When questions are too long, the test will not only measure the mathematic skills, but also language skills. Sint Maarten however has a large immigrant population and a lot of students have different mother languages. Thus, it is essential that the exams measure the knowledge relevant to the subject and do not, as it seems to be the case, reflect language problems. To make a long story short, it is important to ensure that the exams and learning methods that are used are culturally sensitive. Furthermore, it is necessary to verify if the exams are representative for the whole curriculum, so that the different abilities of each student are tested.

School factors

Last but not least, it is expected that factors which play a role in schools regarding the learning environment such as the student population and teacher population can have an influence on learning situations and, consequently, on the performance of students (Hodge-Lacorbinere, 2012). Especially the atmosphere at schools, which refers to the relationships and the level of collaboration, has an impact on the student's grades. Another factor to take into account is that schools may have different learning materials for mathematics and Dutch and differences in the quality of their facilities.

The ecological perspective by Bronfenbrenner (1977) points out the necessity to research different layers that surround children; this forms the framework for this research.

Hence different research questions are formulated based on the four factors (environment, teacher, exam and school factors), to get a broad and ecological idea of the phenomena. Based on Bronfenbrenner, the environmental factors affect the child, hereby specifically zooms in on the micro system: immediate learning environment of the child and the qualities of the teacher. Secondly the wider system of the curriculum, examination system and learning method and the school system get attention. Furthermore, as illustrated by the ecological perspective the different layers are connected. The same connection is expected between the different research questions and the related results. Some results show connections across different research questions, consequently these results could be mentioned at different points in the results and discussion section. In order to avoid repetitions such results are not mentioned in every section.

Method

Type of Research

As mentioned above, this study is a pilot study. Therefore, it has a strong exploratory character. The main purpose is to clarify how the teachers, principals and other professionals think about potential problem areas and the possibilities to change the low score of the pupils. Thus, the methods used were held as broad as possible. Put differently, in order to describe and explore the phenomenon in detail, a mixed method approach was applied (Boeije, 2008; Silverman, 2011). The surveys are used to get a first impression of the situation in Sint Maarten. The choice of schools for the interviews was made based on the basis of the final exam scores; i.e., high and lower scored schools were interviewed. Moreover, in the cases where the teachers made specific comments in the survey which were evaluated as extremely relevant to the research in this study, a follow up interview was conducted in which the schools were asked to explain this comments. Note, that the results presented in this section is predominantly based on the information derived from the face-to-face-Interviews.

Sample

Primary education. The sample consists of Dutch and mathematic teachers and principals from primary and secondary schools and other professionals of the school field. Mathematics and Dutch teachers from all seventeen regular primary schools filled out the survey. The private schools and the school for special education did not participate. In total, 67 Dutch teachers from all seventeen different primary schools filled out the survey. The group consisted of group teachers of the five primary schools with Dutch as language of instruction and subject teachers Dutch of the twelve primary schools with English as language of instruction. 173 group teachers from all seventeen primary schools participated in filling

out the mathematic surveys. The sample is a good representation of the teacher population in Sint Maarten: there were 341 primary school teachers in 2013-2014 and all regular primary schools participated in this research.

After the data preparation and data analysis of the surveys, follow up interviews with the principals from a few primary schools were held. The selection was based on the FBE results (Division of Examinations, 2013; Division of Examinations, 2014). Schools with higher and lower results in the final exam were interviewed to obtain the possible reasons for the difference in results. Risk factors and protective factors for the development of Dutch and mathematics skills were carved out. Furthermore, if interesting ideas or unclear statements arose in the surveys, schools were contacted and asked to provide more elaborate information. In total, eleven interviews were carried out at the primary education level with eighteen professionals. Ten interviews were conducted with principals and other professionals, such as acting principal, student care coordinators and mathematic or Dutch coordinators. In sum, professionals from the following schools were interviewed: Sister Magda, Hillside Christian school/Helmich Snyder Campus, MLK, CLB, Sister Regina, Sint Dominic Primary, Mac Browlia, Sister Borgia, Ruby Labega and De Weever. One interview is executed with the Dutch coordinator of all public schools.

Secondary education. After analyzing exam results of the secondary schools, seven interviews were held with Dutch and mathematic teachers or principals from secondary schools. Five of these interviews were group interviews with the whole mathematics (three interviews) or Dutch department (two interviews) from a school. One interview was held with a principal and one with a Dutch Language Coordinator. The participating schools were MPC, St. Maarten Academy-PSVE, the Mac Comprehensive Secondary and the Sint Dominic High School. In total fifteen mathematics teachers, eight Dutch teachers or principals were involved in this research. The sample used for secondary schools is smaller, but it is representative for the eight high schools, because both higher scoring and lower scoring schools are involved and the sample includes schools with English and schools with Dutch as language of instruction.

Research instruments

Surveys. The survey was designed to leave optional space for additional relevant information and explanations. For some questions, the answer options are based on multiple choice but all questions provide space for extra explanation or comments. Most questions are open-ended so that the professionals have to fill in their own answer. At the end of the survey there is the possibility to add some comments (Appendix, A). As mentioned earlier the

surveys are mainly used to outline problems that professionals experience. Only statistical analysis is not appropriate to answer the research questions. For this reason, additional interviews were necessary to answer the research questions. Only the first and the fourth research question is mainly answered by surveys, which is checked on reliability. The information to answer the other three research questions are mostly generated during qualitative interviews. The surveys help to obtain an overview of possible aspects that are further answered more concretely during in-depth-questioning.

Interviews. Usually, structured questionnaires are used with quantitative methods. These questionnaires ask only established solid answers and leave no place for additional explanation, which means that important information can go unnoticed. The researcher therefore chose a qualitative method for semi-structured interviews which, according to Silverman (2011), provides space for interesting new areas that show up during an interview. By doing so, the researcher is able to track the interests and wishes of the professionals, too. The advantage of group interviews is that professionals can argue with each other, which often has the result that even more information is provided as is the case with individual interviews. In addition, the interviewer has the ability to follow the findings of the professionals without feeling inclined to intervene. In order to gain a deeper understanding of the professionals' experiences semi-structured interviews were conducted with principals and teachers. During these interviews, the topics were fixed, but the questions asked varied per person. In the appendix, table 1, the topic list, the interview questions and the survey can be found.

Procedure

The surveys were sent to the schools and received before January. Consequently, the development of the instruments is no longer necessary. However, during the elaboration of the data, unclear aspects of the answers in the survey may occur. In the case of ambiguous data, there was a follow-up interview with the principals. The questions are almost the same for all professionals. Depending on the course of the conversation and information that came up during the research process (other interviews and literature search, survey analysis), follow-up questions were asked. After each interview, the interview was analyzed to use the ideas and data to develop further questions for the next interview. This helped to gain a clear understanding of this complex research subject. The analysis of the questionnaire and open interviews is related because almost the same labels appear during both analyses of the instruments. If some results are only mentioned during one instrument it is mentioned in the result section. The results support each other and build on each other. The results of the

research instruments be taken together and are not discussed by each instrument. Furthermore, the Ministry has different documents and reports which are used for this research, such as reports, lesson observation, qualification of teachers and documents where the feedback and critique of the FBE exams is explained. The lesson observation that the Inspection did last year was used to get a better understanding from the lesson setting. The lesson observation was needed to prepare the research questions and get an idea of the problems and positive aspects from the lesson setting. So as mentioned earlier first surveys were analysed. The results are used to build interview questions to get a deeper understanding of the phenomenon and also to check reliability and validity of answers are evaluated during interviews. Professionals were asked to approve the recording of the interview. Most professionals agreed with this process. The interviews took around one hour depending on the time that was needed to get the information. The interview took place in the schools or other places, depending on what the professionals wanted. The interviews and surveys were provided on a voluntary basis and was anonymously analyzed. Because the Inspection need the information to help the teachers, the surveys were not completely anonymous. Socially desirable responses are prevented by seriously questioning the professionals, i.e. asking for specific examples. Reliability is ensured by checking the answers through informants and other sources of information (Boeije, 2008). Informants were asked for examples in order to support the validity of their answers. This approach also makes sure that the subjective judgments are reflected in the sense that the information is displayed exactly as the informant intended. Additionally, the Final exams are used to make a decision of high and low scoring schools that are used for interviews. Information from the Inspection; so as teachers' qualification and teachers' methods are compared to get a better understanding of the complex field and to controlled the information from the surveys. Information from the Division for Educational Innovation and the Examen Dienst was also used. Upcoming questions during the interview period about the curriculum are illustrated by the Division for Educational Innovation. The Examen Dienst is debriefed about the FBE exam. The researcher had the opportunity to take a look into the FBE exam. The teachers of the eighth grade and principals from primary schools had the opportunity to review the FBE exams, too; the feedback they gave was also used for this research. For the primary schools, a review of the curriculum and the methods that were used have taken place.

Analysis

After the data collection, some links between the lesson observation and the answers from the professionals attracted attention. Teachers' qualification has been used to get an idea

of the teacher bias from schools and to get a better idea of the school and lesson setting. Teachers and principals from primary schools had the opportunity to provide feedback on the FBE exams. This feedback also receives attention in this research. During the data analysis different critical aspects arose about the FBE exams. Consequently, the FBE exams were also analysed; i.e., two researchers analysed the FBE exams to compare the findings from the professionals with the exams. This helped to get a better understanding of the FBE findings.

Strategy of Qualitative Analysis. To analyze the emerging material, a code-based analysis was conducted, beginning with applying open codes to fragments of the transcribed interviews (Baar, 2002). In semi-structured interviews, answers often do not follow a logical or theoretical line, but themes usually arise in different parts of the interview. Therefore, segmenting the data into meaningful parts and labeling them with codes helped to organize the material and discover connections between different parts. Dominant and less important elements were determined. Dividing the existing codes into sub-categories helped to reduce and reorganize the data and gain a list of categories. Finally, the most representative codes were selected and regularities or patterns that appeared were recognized. The final phase of analyzing the data and selective coding, included reassembling the data by looking for relationships between categories and establishing a core category or main concepts. The codes that are often mentioned from professionals, so seems to be important for this research, are marked cursive in the results section.

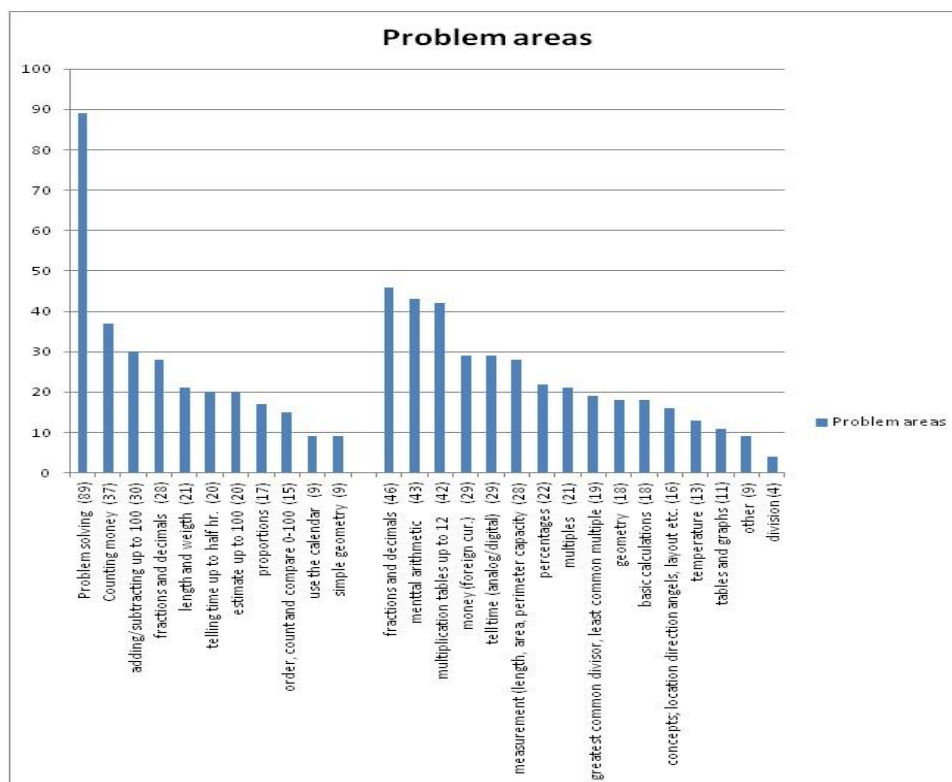
Saturation. After reading the reactions of the professionals in the survey, the researcher noticed that the answers that were given were mostly coherent. The teachers seemed to have almost the same opinion about certain topics. Then, after conducting the interviews, the researcher found that the majority of these reactions were coherent with the answers of the teachers. At one point, the answers were repeated and there was no new information. Therefore, a saturation effect was reached and the search for more data was ceased.

Results

The summary of all results can be found in Appendix table 2. In the following the most outstanding/practicable results are discussed. First of all, the individual problem areas of the two subjects were described and then the four factors: environmental, exams, teacher and school factors are described.

Problem areas in mathematics

Graphic 1 shows mathematics problem areas that are mentioned by the survey sent out to primary schools. Numbers between parentheses show how many teachers mentioned this area as a problem area, in total 173 mathematics teachers participated in the survey. Based on the primary school level from the teacher survey `problem solving` is the area with the biggest challenge in cycle one and cycle two in relationship to teaching mathematics. Cycle one includes group one to four and cycle two covers groups five until eight. The expected outcome by preparing the survey was that problem solving could be a problem that is coming up in cycle two. This does not seem to be the case. More cycle one teachers mentioned that problem solving is a problem that already exists in cycle one. Therefore, teachers from both cycle one and two see this area as a problem. In the survey, some teachers mentioned one to three areas as problem areas, others marked more problem areas. Due to professionals potentially interpreting the surveys differently, it is difficult to analyse whether in schools where teachers mentioned one to three problem areas only have these three problems or if



Graphic 1 *Problem areas mathematics primary school on Sint Maarten (Surveys)*

they only mentioned the biggest problems. Conversely, for schools where teachers mentioned a lot of problem areas, that teacher may understand the question differently, it makes it difficult to analyse this and compare the schools. For mathematics at primary school level,

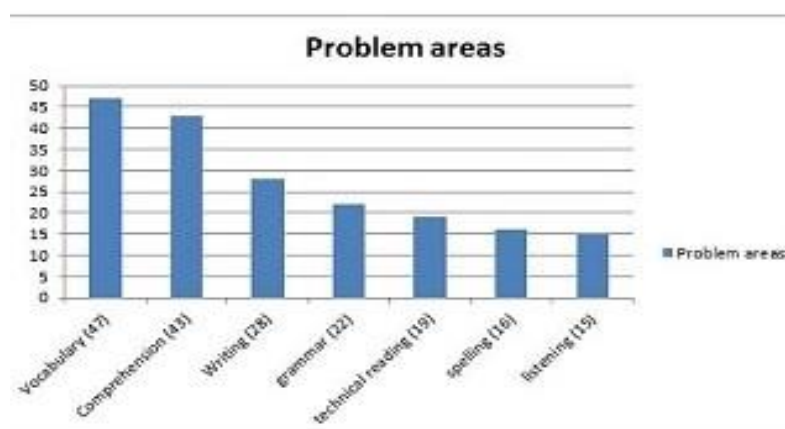
problem solving, reading problems and the level of comprehension seem to be the main problem areas. Problem solving is a problem because of reading problems, the level of comprehension and a problem using strategies to solve the problem. At secondary school level the basic skills in mathematics still seem to be the problem. When students enter the secondary school level, there seems to be various differences in knowledge.

Furthermore, the research showed that there are organizational problems. Nearly every response during the interviews said that the step from concrete to abstract goes too fast. This seems to be a reason why students do not understand the concept and cannot make the knowledge their own. Furthermore, it is a challenge for the school how to effectively use the mathematical learning book Houghton Mifflin. The reason is that it is a broad mathematics book based on the American curriculum. This book contains a lot of chapters without a lot of repetition. Most of the time the year plan will not be completed successfully simply because of a time management problem. The teacher is *working from the front to the back of the book* but, by the end of the year, chapters have not been taught or are incomplete. The answers of the professionals reveal that if the Houghton Mifflin is used, a selection has to be made which chapters are important and necessary in order to realize the year goals and the national curriculum. Thus, a cooperation started between the schools devise a guideline on how to use the Houghton Mifflin.

Problem areas Dutch language

The Survey confirmed that students struggled most with the vocabulary and comprehension.

Graphic 2 *Problem areas Dutch primary school on Sint Maarten (Surveys)*



Graphic two outlines problem areas of the subject Dutch that are mentioned in the surveys by primary teachers; numbers between parentheses shows how many teachers mentioned this area as a problem area, in total 67 subject teachers participated in the survey. Furthermore,

principals also experience the fact that the students do not try and do not want to speak Dutch. This is assessed as the main problem. Based on this finding, it can be concluded that one of the main reasons for the low performance seems to be that in the environment the Dutch language is not used. Even in the school, on the playground, the focus is on English.

The professionals state that at secondary school level, each area seems to be a problem. The biggest problems that teachers mentioned are speaking capabilities and the vocabulary. Teachers explained that the students know the vocabulary for their academic year but by the start of the next year they have already forgotten it. Teachers mentioned that most of the time students can listen to and understand Dutch. However, it depends who is speaking: the voice of their teacher is easy to understand, but students seem to have problems when other people speak Dutch.

Environmental factors

Often mentioned factors from professionals that they see as key problems are *student's motivation* and *language background*, support from *parents*, *learning materials* and *technical equipment* that is not available. Another interesting result is that principals and teachers have very diverse and sometimes contradictory opinion about the need for *parents' involvement* and the parents' role in addressing the performance problem. Nearly all professionals agreed that parental involvement is generally not particularly high. Some professionals see low parent involvement as the main reason for the low scores. Others say that this is a factor that can be influenced by the school and therefore those schools choose not to focus on enhancing parental involvement. The schools mentioned that some professionals feel that the parents are not willing and interested in the education of their children. Others disagree with this opinion and make it clear that most of the parents are willing to support and help their children but they simply do not have the time nor knowledge. Moreover, a lack of knowledge in the subject's areas, for instance because they had learned different mathematical methods/strategies and time pressure are often mentioned as possible reasons for less involvement from parents. Lack of time can be caused by different reasons, such as complicated family situations with single mothers having more than one workplace. However, everybody agrees that greater involvement from parents will have a positive impact on the student's school development. On a more positive note, some interesting new interventions have been initiated to help parents to understand the teaching methods and to try to improve parents' involvement. They are listed in table 3 in the appendix.

Another often mentioned problem hampering the performance of students in Dutch is that the Dutch language is not commonly used in daily life. The language is only needed for

some workplaces or to study in the Netherlands. Therefore, there is a general lack of motivation amongst students to learn Dutch. The professionals often mention that the importance of learning the Dutch language needs to be stressed and more opportunities need to be created for students to practice the language. Professionals mentioned that even parents with Dutch as their mother tongue do not use the language. Other factors that influence performance in Dutch seem to be that the students seem to be *unwilling* to learn, practice and try to speak Dutch. For this reason, teachers often mentioned that they often accept incorrect answers, because they are happy that a student says something at all.

Teacher related factors

There are different actions and interventions that teachers and their schools use to improve the performance in the subjects of Dutch and mathematics. An overview of all actions are shown in table 3. Further plans for intervention to improve the performance from the students are described in table 4. A successful intervention to improve the Dutch language called “Taaldorp” was developed in cooperation with the Sint Dominc High and MPC. Taaldorp is an action that takes place once a year. The purpose of Taaldorp is that students use Dutch in daily situations. Daily situations such as shopping are simulated on this day. Moreover, students from the first year level of St. Dominic High write Dutch letters to St. Dominic Primary school and the other way around to improve their knowledge. This is another example where primary and secondary school cooperate with each other. Another teaching method that teachers from Sundail use to teach children Dutch words is that children learn vocabulary during the making of a theater show. By doing so the students have an more active way of learning the vocabulary. Differentiation based on the time of instruction needed by students seems to be a successful strategy the teachers use. Different catholic schools for example have started a system to differentiate students based on the time that they need for instruction. The Sister Regina School seems to move along at this point. The teacher creates different weekly plans for the individual students based on their knowledge/ level. The principal sees the need to check if this is mastered by the teachers and help them with new ideas and feedback. Furthermore, an interesting strategy is to make the students know their strengths and know at which learning arears the individual student need to have more time. *Team teaching* and making use of *different practical learning strategies* seem to be successful as well. For both subjects, Dutch and mathematics, all secondary and some primary school teachers mentioned that students come to their class with different levels of knowledge. The professionals mentioned for Dutch and mathematics that the *diverse difference* between students and their level seems to cause the teachers problems when moving on in the lessons

and preparing the lessons whilst facing these different levels. Following a *differentiation* strategy seems difficult for the teachers because of the different levels of the students in class. At secondary school level, some teachers have had the idea to tackle that problem by organizing the students in groups based on their level.

It is noticeable that a lot of primary school teachers mentioned in the surveys that students have little *support* from home and that the students do not complete their homework. At the action area of the survey, some of these teachers mentioned that more homework and exercises for home are an action that they use to improve the performance. Another result of the survey is that some professionals mentioned that students have a fear of mathematics and, furthermore, that some teachers have a *fear of mathematics*, too. For this reason, some professionals mentioned that there is a strong difference in the approach and motivation for each teacher and that a lot of teachers have low expectations of their students' performance capabilities.

Nearly all professionals mentioned that repetition and practical experience from basic skills need to receive more attention in the mathematics lessons. Good *observation skills*; i.e., the ability of teachers to observe where and why the students stop understanding (a part of) the topic are seen as important abilities of teachers that have an important influence on the student's performance.

Another interesting aspect is that - both within the same school as well as between the different schools - it differs how experience and knowledge is *transferred* between the teachers, especially when a change of teacher takes place. Professionals see good communication between the teachers as an important factor for preparing good lessons. The importance for students to learn Dutch seems to be unclear. However, some teachers at secondary school level from a school with Dutch as language of instruction mentioned that their knowledge of the Dutch language is not sufficient to use it as a language of instruction.

Quality from exams and leer methods

The answer from the primary and secondary school mathematics teachers shows that the majority are satisfied with the mathematics curriculum and with the methods that their school is using. As mentioned before regarding the primary school level, the schools that use *Houghton Mifflin* experience some difficulties in making good choices in the curriculum to match the knowledge that is needed for the FBE exams. For Dutch, the majority are satisfied with the methods that the schools are using. However, they take a critical stand concerning the methods, learning materials and literature which are not created for Caribbean students. Some concepts of words are unfamiliar to the students; i.e., they are not based on the local

context in Sint Maarten. Thus, much of the materials does not seem to meet the needs of the students based on the specific cultural situation. Consequently, nearly all the teachers say that they make use of extra learning materials which they obtain from the internet. Nevertheless, many teachers find it difficult to provide their students with appropriate learning material; i.e., it seems difficult to find suitable material where the students can identify with the specific learning situations. A comparison of the materials used by the teachers of the survey reveals, for example, that different materials are used by the different teachers. Even though some teachers say that they only use one set of material, there seem to be various useful materials available. Thus, more culturally sensitive material seems to be available and more communication and access to relevant materials could be an option to handle this problem and make the work easier for the teachers themselves.

Although most professionals seem to be satisfied with the curriculum and the methods used, the notes from the teachers in the survey and the explanation from the principals show that at primary school level there is confusion about the terminology: method and curriculum. Some teachers seem to mean “methods” when they are actually talking about the curriculum. At the secondary and primary school level, it seems to be confusing for some professionals that the methods have to be focused on the curriculum and on the final exams. The checklist that is in the mathematics curriculum seems to be a good tool for teachers to indicate and note the problems for their students. However, many professionals did not know that this checklist exists. The FBE exams are developed for the primary school level students of Sint Maarten. Even though the exams are made based on the national curriculum and only for students in Sint Maarten, the Dutch FBE exams do not seem to have been focused enough on the population of the island. There is a criticism that some situations and words are not familiar to the students of Sint Maarten. At the secondary school level the professionals mentioned that the learning materials suffer the same problems as is the case at the primary school level.

School factors

Differences that are mentioned between the primary schools are English or Dutch as language of instruction, possibilities for technical equipment such as digiboards, computers and Wi-Fi and games for computers to improve the performance. Other differences that are mentioned are whether the school has an afternoon program and an own Dutch classroom. In this regard, teachers also mentioned that the schools that have their own Dutch classrooms are better able to stimulate the curiosity of the students. Other teachers mentioned that a difference between their school and other primary schools in Sint Maarten are that the parents of their students are involved and highly motivated to master the Dutch language; i.e., many

parents send their child to receive Dutch tutoring. Professionals also refer to the different population of children and their language background.

Others mentioned that at their school, with Dutch as the language of instruction, every teacher is able to speak Dutch. Hence, professionals in these schools request that all staff is able to speak Dutch. In turn, at schools with English as the language of instruction, it is mostly, but not solely Dutch teachers that are able to speak the language. The same problem occurred in afternoon schools; evidently, it cannot be taken for granted that there are professionals who are able to speak and help students with the Dutch language.

Some teachers mentioned that there are schools that have methods that are quite up to date and that these schools have access to a lot of programs which they can use in their classrooms. However, in other schools this does not seem to be the case. Thus, the adoption of new teaching methods seems to be quite slow. Another aspect of the school situation is that in public schools some teachers have more than one workplace. Consequently, some principals worry that this double pressure has a negative impact on their time for preparing the lesson and on their capacity to withstand stress. This factor seems to show that the teachers are overloaded with work stress. The need for remedial teachers seems to be high in schools where the students have lower test results. This may also be the reason why some schools are dealing with very high teacher turnover and change of management. But this is not only characteristic for schools where students score low on the test. Another point that the professionals point out is that in such schools there are less remedial teachers in the schools. In contrast, one school with high test results mentioned that the culture of the school is to always do more than expected from the principal. The principal stressed that the students are willing to learn, the parents are willing to support and the teachers do much more than the principal order. It seems that teachers receive support and motivation from others, which is the reason why they are motivated to work harder themselves.

As pointed out in the theory section, the background of the children needs to receive more attention as well. The schools have problems dealing and integrating children with behavioral problems. There is a need for a more developed system. Often the schools realize the individual problems of students but the reaction is too late. This is often the case when the FBE exams are close to come. However, some schools start to give more attention to screening students with special needs in the first group so that those students can receive effective help earlier. Professionals also mentioned that a problem for the public schools is that the other schools choose to screen the students on ability and problems before they allow them to attend their school. Consequently, this means that public schools - where all students

are allowed - have relatively more students with special needs. This situation may possibly effect the school climate in different ways, such as the quantity and quality of individuals support (for students). To sum up the results, differences in the language of instruction, motivation and support from parents, communication, teachers' abilities and background, methods, technical equipment, language background and behavior of the students impact the learning process and performance in Dutch and mathematics of students in the schools of Sint Maarten.

Discussion

The goal of this research was to identify risk and protective factors that influence the low performance of students in mathematics and Dutch in primary and secondary schools.

Problem areas

The sub-research question was to indicate what professionals experience to be the biggest problem areas in mathematics and Dutch on primary and secondary school level in Sint Maarten. For the subject mathematics the focus has to be on learning and controlling the students' basic mathematical skills. According to professionals the basic skills of students are not developed enough. This makes it impossible for them to move on to more difficult mathematical areas. Furthermore, problem solving is the biggest problem that needs to receive attention. For the Dutch language, almost all areas seem to be a problem for the students of Sint Maarten. However, vocabulary and comprehension are the main problems that need attention. These areas are fundamental to develop knowledge. So in both subjects the basic skills need to be improved.

Environmental factors

The second sub-research question focused on, whether professionals experience that environmental factors have an influence on the performance of students in Sint Maarten. Based on research it was expected that factors different factors, such as parents involvement plays a role.

Nearly all professionals say it would be positive if the parents' involvement was higher. Thus, parental involvement is seen by professionals as a protective factor which needs further stimulation. Earlier mentioned literature such as Al-Matalka (2014) and Hill & Taylor (2004) that the involvement is an important component in students' success and achievement finds support in this research work. Policy interventions that have just started or are planned in the near future should be prosecuted. Focusing on the Dutch language, a factor often mentioned is that the language is not popular and widely spread on the island. A change is not possible in a short period, so if the schools want to improve the situation they should develop

or use a project such as Taaldorp to offer students the opportunity to receive practical experience. In order to let students participate and show them the need to learn the language Taaldorp should be made more widely available on the island. An attempt should also be made to involve the government to establish the language in diverse institutions. In conclusion, it can be said that the expected environmental factors play a role which is supported by findings of this study.

Teacher related factors

To indicate teacher related factors that may play a role it is researched; which specific teacher related qualities professionals see to have a positive influence on student performance and which qualities teachers need to improve.

One interesting observation is that when professionals talk about differentiation, it is always about how the difference between the groups is solely based on the different time periods that different students need to understand the introduction. Some schools, such as the catholic schools, make use of a system where the students are divided in groups based on their need of time for instruction and their ability of working independently. Less attention is given on differentiation in material and strategies or differences based on the intelligence (Gardner, 1983). As explained earlier, Gardners theory shows that humans think and learn in many different ways. Seven kinds of intelligence of students allow seven ways to teach, rather than only one. Teachers should give more attention to different materials and strategies based on multiple intelligences. To make this point more prudent, further research is needed. For example, the next step would be to go into the details of helping teachers to work on the different levels of intelligence with the individual students.

Furthermore, primary school level teachers mentioned that some teachers themselves have *fear* of teaching their less favorable subject, such as mathematics. Research shows that the teacher's attitudes will influence students' performance (Wayne & Youngs, 2003; Wentzel, 2002). Teachers who are interested, motivated and have the knowledge for the subject can have positively influence the students' motivation. Conversely, fearful and demotivated teachers are said to have a negative impact on their students' performance. In this case, fear and a lack of motivation seem to have an above average impact on students and teachers.

Another aspect of bad influence for the students' motivation and grade is a lack of parental support. At the action area of the survey, some teachers mentioned that they increasingly give homework and exercise for home as a means to improve performance. However, it is rather questionable if this is an effective instrument to increase performance

because many students do not seem to do their homework. There are different possibilities as to why the students do not complete their homework. Some are not motivated maybe because their homework is too difficult, some have no support at home, no possibilities to do the homework at home or a lack of time. A solution could be found in a mandatory after school homework care. A discussion on the role of the school and what roles parents have to play could help to give a clear strategy in this area. For both, mathematics and Dutch, nearly all professionals see that the class needs to be focused on real life situations.

This research identified aspects that seem to support the improvement of the students' performance and furthermore revealed aspects that could lead to future improvement. For example, there are different actions that schools use to improve the students' performance in mathematics and Dutch. However, it can be observed that a lot of schools see the need for more practical experience, but few examples were given that this has taken place. More practical interventions have to be initiated and more schools have to use these. Despite organizational actions that produce guidelines and overviews about teaching methods have taken place, teachers have difficulties to differentiate between the curriculum and the relevant teaching methods. Thus, it has to be communicated to every teacher and other professionals working in the school system that the methods have to be based on the curriculum and not the other way around.

It was expected that professionals would mentioned teachers relate factors such as capacity of teachers to use different teaching strategies and learning materials, interest in the subject being taught. Professionals see the need of improvement at the mentioned factors.

Quality from exams and learning methods

In order to find out more about the quality of the curriculum, exams and learning methods in mathematics and Dutch it is asked for the opinions and experiences from the professionals. For the subject of mathematics, specific learning methods and the search of materials seems to be a main problem. Only some professionals mentioned critique with respect to the mathematics exams. More than the half of the professionals are not satisfied with the Dutch learning methods or materials. Almost all professionals are critical about the Dutch FBE exams and about the exams that are used for the secondary school level for testing the Dutch language. The main criticism is that these Dutch exams are not useful to teach or measure the knowledge of the students and that the exams are not culturally sensitive. Thus, the thesis at hand recommend to focus on this aspect in the near future. The importance of the quality and the validity of culturally sensitive exams and learning methods is also documented by earlier research (Abubakar, 2015; Gay, 2002).

School factors

The last goal of this research was to indicate differences between schools in terms of influential factors for the learning environment that professionals experience. There are various differences between the schools that professionals indicated to have an influence on the learning situation and the performance. By comparing schools that score high and those that score lower, differences can be worked out. However sometimes although low scoring schools make use of protective factors of high scoring schools seems to have risk factors available. This shows that it is a complex phenomenon where different factors need to be taken into account. However, the situations of the students seems to be different. All teachers in Sint Maarten have to handle and deal with different situations and factors because they have different student populations. It seems that lower scoring schools have more students with problematic behavior and students tend to be screened at a later point in the school career. Consequently, action to support these students and to create a positive learning atmosphere for the class is complicated. There is more attention needed on how to support the different schools. For example, the availability of technical equipment can be seen as a protective factor. It seems that teachers from schools with technical equipment can differentiate better and make the lesson more interesting for the students. Thus, there is a need to introduce more protective school and teacher factors in all schools. Various people and institutions are responsible for the school system in Sint Maarten. However, these people do not communicate with each other enough. Thus, they miss on the possibilities to learn from each other or work together. Fortunately, the thesis at hand found evidence that the schools started or are planning to start to improve their communication. This is strongly recommended to progress with this process of cooperation and communication. To conclude, nearly all professionals are aware of the problems and possible factors that influence this dismal performance. To achieve successful development it is necessary for every school to work on different layers and levels such as exam and learning material and teacher and school related factors, as mentioned by the (bio-)ecological model developed by Bronfenbrenner (1977). The different factors that are mentioned by the professionals seems to have connections between each other and influence together the learning environment of the child. It is expected that not one factor causes students' low performance but more a stacking of risk factors. The problems mentioned in this thesis will not be solved by using only one intervention or action. Supporting each other could be a factor to save time and achieve success more easily and faster. However, to solve the problem other professionals have to pay closer attention to the factors mentioned regarding the sector quality of exams and learning

Limitations

During the data collection, different factors that may have had an influence on performance could be identified. As said by Bronfenbrenner (1977) there are different layers that have an influence on children in different ways. However, the factors that have a direct influence on students' performance are difficult to describe. The direct influence of the factors and all the connections between the factors may be researched in a follow-up study. There are different variables that have an influence at the same time and influence each other as well. At the secondary school level, not all schools had the opportunity to participate in this research. In future research more attention could be given to those four schools. Furthermore, different perspectives such as those from students and parents could be integrated. The goal for the Inspection of Education was to start research in this field in Sint Maarten. Thus, the results presented here build the fundament for further research of the mathematics and Dutch performance on Sint Maartens. A lot of different aspects were identified that can give further research the right direction.

It should be kept in mind that some professionals gave socially desirable answers. In undertaken surveys some teachers mentioned a lot of different actions used to improve the performance. Through a follow-up interview with the principals it became apparent that not all of the mentioned actions took place. Further research should take a deeper look at the practical situation in order to find similarities for common interventions. The analyses and the questions of the interviews are controlled and discussed with colleges to make sure that results are analysed faithfully and without additional interpretation.

Implications

In general, lessons need to be designed more practically for students, with focus on their level and experience. Both, experienced and new teachers need a training in differentiation, time management, class management and in practical elements like hands-on teaching, working with centers and portfolio development. I.e. Found by the Inspectorate of Education, Culture, Youth and Sports in 2015. Those findings support the results from early research such as Rockoff (2004) that the level of teacher quality, training and experience influence the process of students achievements. At the primary school level there are some teachers that do not seem to be particularly strong in teaching mathematics. The interest of the teachers in the subject is important to make the students enthusiastic (Keller, Neumann & Fischer, 2013). It is recommended to try to appoint those teachers that like to teach mathematics in more classes. These changes ask for good planning and organization from the

principals. It is also recommended to use more practical and realistic teaching elements. For example, the approach of “Taaldorp” could be introduced in the normal Dutch lessons. Next to the Dutch language elements in this environment, students can receive practical experience with mathematical aspects as well. It is recommended to support the two schools that organized this event to make it more prominent on the island so that other students will participate and all students can benefit from this approach. It is recommended to discuss the curriculum. As mentioned before, there is a discussion going on about what the focus has to be. Looking at the national mathematics curriculum at the primary school level, the following aspects have to receive more attention. The basic qualification attained by the children at the primary schools seems to be low. It is clear that these abilities are necessary for further development. Moreover, a lot of repetition from basic skills and practicing mathematics in a real life situation is needed. There is criticism that the curriculum is too broadly based. The need for an early education with certain areas included, such as square roots, should be discussed. In comparison with the Dutch system, these areas are not part of the primary education level but are to be taught at the secondary education level. In America these areas are part of primary school education. However, a discussion and clear definition is needed to determine on what the Sint Maarten education system has to be based. This is recommended in order to have a clear agenda in the system. Another recommendation is to discuss the goal or the aspired goal of the FBE exam in the subject of Dutch again. The principals and the teachers mentioned in their feedback of the FBE exams that the standard is too high.

Moreover, the government’s proposal for creating a position to emphasize the importance of Dutch education is needed. The reason for this advice is that research shows that children, parents and some teachers do not see the need to learn Dutch. It is expected that an (active) position from the government could help to combat the problem. It also has to be thought about how to handle the gap of knowledge that appears when children move from primary school to secondary school where Dutch is the language of instruction. While at primary school level, Dutch is the second language, evidently children experience difficulties at the beginning of attending secondary school with Dutch as the instructive language. It has not yet been answered how students can cope adequately with this transition, performing Dutch on a native speaker level. Such high requirements can have an influence on students’ motivation and self-esteem (Harlen & Crick, 2003), which could result in negative association with the subjects. It is recommended to discuss this process and gap to have a clear approach to handle that problem.

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Appendix

Table 1. *Topic List and Interview Questions*

Topics	Interview Questions
Problem areas	What do you think are the biggest problem areas from students? Why you think the students struggle with this area? When did the problem start? (which age, group?) why?
Environment factors	<u>Which factors contribute to a good performance in math/Dutch?</u> Do you have the idea that a lot of students use (private) extra lessons after school?
Teacher related factors	Which action and strategies do you used to improve the performance from your students? <u>Which general factors impact the poor performance of students in math/Dutch?</u> <u>How</u> teachers handle if they realize that concepts have not been grasped? Are you satisfied with the ability of your teachers to

	<p>use different strategies to learn Math/Dutch? School X scores are on the lower end for Dutch and math: what are the differences between your school and schools that show high(er) performance in math and Dutch, such as the Mac Browlia, St. Dominic?-what is the language background from the teachers (do you think this influences the performance? Are you satisfied with the self-reflection from teachers in (math and Dutch)? Do teachers work together? Is there a lot of communication between teachers? Are you satisfied about the cooperation between teachers?</p>
<p>Quality and validity from exams and learning methods</p>	<p>What is your opinion of the curriculum? What is your opinion about the method? What is your opinion of the FBE exam for math and Dutch? Different FBE exam and final report card, do the students scored higher on their final report card than on the FBE exam? Why?</p> <p>Some teacher mentioned that there is a problem with the parental involvement is a main problem, what do you think about it? How you try to handle this problem? / Do you know possible actions to involve parents more? Some teacher mentioned that children don't like Dutch, do you think this is a main problem? How you try to handle this problem? / Do you know possible actions to motivate the children more? Some teacher mentioned that a main factor for the poor performance is that the lack of visual hands on opportunities and making the process fun. Do you think this is a main problem? How you try to handle this problem? Do you see results? What equipment is available? (Internet, digiboards...)Does your school use other actions to improve the performance from students?</p>
<p>School factors</p>	<p>What is your opinion about the inflow from students during the school year? (are there specific characteristics of your student</p>

population that influence the performance)
 Do you have a high teacher turnover rate?
 Are there other characteristics in your teacher base that is specific for your school and that may influence performance in Dutch and math? What is your opinion about the rotation of teachers during school time from students?

*The underlined questions are examples that belong to the last four topics because there are different answers possible.

Table 2 *Main results in Primary and secondary education on Sint Maarten*

Dutch	Common aspects	Primary school	Secondary school
Question 1: biggest problem areas	-Basic skills -willing students/interest - environment and at home the Dutch language is not used.	Have a look on Graphic 2 <i>Problem areas Dutch primary school</i>	-All areas - speaking and vocabulary
Question <u>environmental factors</u>	2: -language background -support from parents -even parents with Dutch as their mother tongue do not use the language -the Dutch language is not used on the island/daily life		
Question 3: teacher related qualities	-Team teaching -use of different practical learning strategies Need to improve: differentiation -repetition and	-Differentiation based on the time of instruction needed by students -The Sister Regina School seems to move along at this pace. The teacher	-“Taaldorp” - teachers from Sint Dominic High have had the idea to tackle that problem by organizing the students in groups based on their level.

practical experience creates different weekly plans for the individual students based on their knowledge/ level.

-Good observation skills and the ability of the teachers to find the aspect of why and where the student stops understanding a part of the topic

-good communication between the teachers

This do not find place jet because of organization problems.

- Some teachers from a school with Dutch as language of instruction mentioned that their knowledge of the Dutch language is not sufficient to use it as a language of instruction.

Question 4: quality of the curriculum, exams and learning methods

-majority are satisfied with the methods that the schools are using

-no good Caribbean method available/ no good culturally sensitive learning materials

- difficulties in the search for *additional learning materials*

-confusion about the terminology: method and curriculum.

-the Dutch FBE exams do not seem to have been focused enough on the population

Question 5: Differences exist between schools

- students population

-ability of teachers and other workers to speak Dutch

- afternoon schools (no Dutch speaking teachers)

- there are schools that have methods

- teacher population (motivation) that are quite up to date and have access to a lot of programs which they can use in their classrooms.
- afternoon schools
- which interventions takes place

Mathematics

Question 1: biggest problem areas

basic skills

Have a look on Graphic 1 *Problem areas mathematics primary school*

-organizational problems

- the step from concrete to abstract goes too fast

Question 2: environmental factors

-support from *parents*

Question 3: teacher related qualities

Team teaching

-Differentiation based on the time of instruction needed by students

-use of different practical learning strategies

-The Sister Regina School seems to move along at this pace. The teacher creates different weekly plans for the individual students based on their knowledge/ level.

Need to improve:

-differentiation

- strategy is to make the students know their strengths and know where the individual student need to have more

-repetition and practical experience

-Good observation skills and the ability of the teachers to find the aspect of why and where the student stops understanding a part of the topic

	-good communication between the teachers	time.
Question 4: <u>quality of the curriculum, exams and learning methods</u>	-satisfied with the mathematics curriculum and with the methods -difficulties finding <i>additional learning materials</i> -confusion about the terminology: method and curriculum	- <i>Houghton Mifflin</i> some difficulties in making good choices - The checklist that is in the mathematics curriculum seems to be a good tool for teachers to indicate and note the problems for their students. However, a lot of the professionals did not know about this checklist.
Question 5: Differences exist between schools	- students population -teacher population (motivation) -afternoon schools -communication -which interventions takes place	

Table 3 *Actions that schools takes to improve the performance.*

Common actions	Math- actions	Dutch- actions
-Guest speakers	-Workshop teaching parents' math on child level	-Own library
-Open nights for parents-each term	-Math-methods replenish with the math methods from another school	-use of public library
-Team- teaching	-Project outside: measure, experience, feel, discuss the results	-Book reports and/or book presentations
-Afternoon program	-review basic skills	- program to practice the listening Dutch
-1-hour longer lesson	-use of strong math teachers, try to let them teach in more class mathematics	- more attention to vocabulary, and testing on different ways
-Extra lesson (weekend)		- "Leesmoeders"
-Formula for transfer		
-Parents- day		
-class assistants		

- Individual existence in the free lesson from teachers for students from other groups
- Enabling early help 'solving
- behavior problem
- Sharing with other schools about difficulties.
- Send teachers to other schools to observe : what they do and what could be useful for their own school
- with attention to the home situation - as much work as possible at school
- Many Actions to motivate parents / teachers engage in creative devise projects
- Differentiation System in instruction differentiates exercise get checked by the principal- Make students known of their own strength, and at which subjects of parts they need to practice more
- Attention to students that a really good (do not forget)
- Self-reflection from teachers every day- based on own abilities and not on the child
- cleaning Staffroom that everybody see what materials we have
- use of re-teaching of concepts that have not been grasped
- individual assistance
- Peer tutoring (matching good students to weaker students)
- integrate Dutch skills in other subjects
- extra lessons
- Commission for mathematics
- more realistic
- team teaching
- hands on, interaction/ involving children in lessons, enforce with homework, extra class, home and class activity
- group work where students can use math manipulatives and share ideas with each other
- Use of the internet, digi-board, software, videos, games, real life situations, concept materials, make a corner in the classes with the subject, give extra practice, use drawing small numbers to solve problems-
- math center, colleague that reteach the concept, use of classes assistants, use of small group teaching and encourage parents to reinforce concepts at home
- workshops
- resource personnel, -prepare practice papers for the students
- math day, time table competitions
- daily drills of basic facts, quizzes, encourage teachers to use math materials (manipulatives math kit, manuals) in the classroom), after school program (1-2 hour), use of class assistant. Switching between parallel classroom based on teachers strength, some teachers come to observe other math classes, encourage teachers to provide work on the student's level provide activities other than only pen and paper.
- workshop for primary teachers from the MPC- -Instaptoets op MPC to measure the knowledge
- team teaching, hands on, interaction/ involving children in lessons, enforce with homework, extra class, home and class activity.
- Avi test
- Spelling bee
- tempotoets
- readingbreaks
- allow only the use of the Dutch language
- more attention at meaningful reading-teaching different strategies to use
- using new method "spelling in beeld"
- Classroom for Dutch
- "proeftesten" test to get to know where the problems are.
- more realistic learning situation
- Dutch commission
- searching for "leesmoeders", -creating a Dutch classroom, books and stimulate to go to the library
- smart and digiboard
- class assistants
- afternoon school
- reading parents instructions in Dutch
- Language Committee.
- Taaldorp
- listen to Dutch songs, go one sites with news and speaking Dutch and give assignments on certain topics in the curriculum, movies, digiboard, class assistants, Dutch corner in the class, send students to the library or Dutch room where the students can read simple Dutch books.
- use Dutch as language of instruction, searching for "leesmoeders" and stimulate students to speak Dutch with each other. The concept of leesmoeders means that people on voluntary base come to school to read books with individual students. This happened

-Discuss possibilities for improvements with the staff

-research different methods and materials

-meetings with parents

- discuss possibilities for improvements with other schools

-arrange coaching/training by successful math/Dutch teachers

- discuss possibilities for improvements with the staff

most of the times one fixed day in the week.

- Partnerships with school. For example here is the st Dominic primary school than children of group I write letters to children in group 8 of primary school ; exchange

- vocabulary if they have to learn words, they can also, for example, theater, then they are in any other way working on it

- Extra Dutch, students who scored below 60. Inadequate at 1-2 class but also sometimes in the third grade, the official may not in group 3 but we do it when they are still very weak. Once a week for 45 minutes.

-mouse work program

-new exams-clear according ERK

-several training / workshops to teachers given in didactics of zebra / mouse work

Module communication skills Nt2 grammar developed grade 1 + 2

-schakelklas class 1 + 2 5

Method + extra vocabulary, communicative function

No luistertoetsen- materials they develop together

-Student teaching

-encourage students to read Dutch books and watch Dutch programs and movies.

Table 4 *Further plans from the different school.*

Common actions	Math- actions	Dutch- actions
-All public schools work together on an overview about what, when students	-Math- Olympiad -subject teachers- such as on secondary level	-Spelling Bee -Parents workshops :

learn what	-More realistic and concert	-to involve parents
-Making a checklist to assess if all is covered- look at mastery + how often it is taught.		-to teach parents Dutch
		-More realistic
		-Taaldorp use as learning methods & make it bigger on the island
		-gast speakers
		-In other subjects – use listen strategies from the Netherlands

Appendix A



INSPECTION SURVEY Dutch 2014-2015

School:	Number of teacher that filled out the survey:
<p><i>National curriculum:</i></p> <p>1. Do you have access to a copy of the national curriculum of Dutch?</p>	<p><u>Dutch:</u></p> <p><input type="checkbox"/> yes</p> <p><input type="checkbox"/> no</p> <p>.....</p> <p>.....</p>
<p>2. Do you plan your lessons based on the national curriculum of Dutch?</p>	<p><input type="checkbox"/> yes</p>
<p>3. Did your school break down the goals per year based on the learning goals of Cycle 1 and 2 of the curriculum?</p>	<p><input type="checkbox"/> no, because.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
<p>4. What is your opinion of the curriculum?</p>	<p><input type="checkbox"/> yes</p> <p>.....</p> <p><input type="checkbox"/> no</p> <p>.....</p> <p>.....</p>

5. Did you attend the training by Petra van Gent/DEI on how to use the curriculum?

- adequate
- not adequate

Please explain:

.....

.....

.....

.....

- yes, and I still make use of this information
- yes, but I do not use the information actively in my classes, because
- no, but my colleague/principal passed this information on to me and I still make use of this information
- no

Methods:

6. Which method(s) do you use for Dutch?

- Cycle 1 teachers:
- Cycle 1, year 1/group1:
- Cycle 1, year 2/group2:
- Cycle 1, year 3/group 3/grade 1:
- Cycle 1, year 4/group4/grade 2:

7. Which other materials and sources do you use?

- Cycle 2 teachers:
- Cycle 2, year 1/group 5/grade 3:
- Cycle 2, year 2/group 6/grade 4:
- Cycle 2, year 3/group7/grade 5:
- Cycle2. Year 4/group8/grade 6:

8. What is your opinion of the methods/materials that you use?

Cycle 1 teachers:

Cycle 1, year 1/group1:

Cycle 1, year 2/group2:

Cycle 1, year 3/group 3/grade 1:

Cycle 1, year 4/group4/grade 2:

Cycle 2 teachers:

Cycle 2, year 1/group 5/grade 3:

Cycle 2, year 2/group 6/grade 4:

Cycle 2, year 3/group7/grade 5:

Cycle2. Year 4/group8/grade 6:

Dutch results in your class:

9. How many of your students scored higher than a 6 on their final report card in the past two years

2013: students out of the total group ofstudents

2014: students out of the total group ofstudents

For group 8 teachers:

2012-2013: Students out of the total group of students scored higher than a 6 on the report card of December

2013-2014: Students out of the total group of students scored higher than a 6 on the report card of December

Students:

10. What are the biggest problem areas?

Indicate the fields that students have **most** difficulties with by placing a score in the circles

listening

technical reading

grammar

writing

comprehension

spelling

vocabulary

Please indicate why you think the students struggle with this area/these

11. Which general factors impact the poor performance of students in Dutch according to you?

areas:.....

.....

.....

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.....

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.....

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.....

.....

12. Which factors contribute to a good performance in Dutch?

Actions:

13. What do you do in your classroom to improve the performance in Dutch of students?

individual assistance

peer tutoring (matching good students to weaker students)

extra lessons

integrate Dutch in other subjects

re-teaching of concepts that have not been grasped

encourage students to read Dutch books and watch Dutch programs/movies

other,.....

.....

14. What does your school do to improve the performance of the students in Dutch?

extra lessons

research different methods/materials

meetings with parents to.....

discuss possibilities for improvements with the staff

arrange coaching/training by successful Dutch teachers

discuss possibilities for improvements with other schools

other,.....

.....

.....

.....

15. Does your school differ from other schools on SXM when it pertains to Dutch? If so, how and why.

.....

.....

.....

.....

Group 8 teachers:

16. Did you take the opportunity to review the FBE exit exams by the Division of exams in 2013 and 2014?

yes, and I gave my feedback on the exams to the Division of Exams

no,.....

.....

17. What is your opinion of the FBE exit exams Dutch of the past two

Is it based on the national curriculum and learning goals for Dutch?

yes

no,

years?

.....

Other comments on the FBE exit exam:

.....

18. Which actions should be taken by the Ministry of Education to improve the performance of students in Dutch?

.....

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19. Please feel free to add any other comments

.....

.....

Thank you for filling out the survey!!!