

What teaching methods do teachers use to support learning in gender-segregated classrooms?

Cheyenne Fernandez Cano



452114

Bachelor of Education Thesis

Marcel Haagsma and Vanessa Armstrong

9 June 2019



Bachelor Thesis

Cheyenne Fernandez Cano

Stenden University of Applied Sciences

Meppel, The Netherlands

What teaching methods do teachers use to support learning in gender-segregated classrooms?

This thesis was sent to the Department of Education to fulfill the requirements of the International Teaching Education for Primary Schools (ITEps) B.A.



Table of Contents

Abstract	4
Chapter 1: Rationale	5
1.1 Objectives	5
1.2 Motivation	5
1.3 Research Questions and Terms	6
1.4 Significance	8
Chapter 2: Knowledge Base and Literature Review	9
2.1 Introduction	10
2.2.1 What teaching methods are being used?	10
2.2.2 How do male students learn differently than female students, and vice versa?	13
2.2.3 What can teachers do to positively use the innate differences in the physical and social attributes of male and female students to ease the learning process?	17
2.2.4 Create a list for upcoming educators.	19
2.3 Quality of Sources Used	20
Chapter 3: Research Design	21
3.1 Participants and Context	21
3.2 Research Methodology and Methods	22
3.3 Research Tools	24
Chapter 4: Results	25
4.1 Description of Data	25
4.2 Analysis	27
4.3 Presentation of Results	37
4.4 Validity and Reliability	39
4.5 Ethics	40
Chapter 5: Conclusion	41
5.1 Research Conclusion	41
5.2 Discussion and Recommendations	45
5.3 Limitations	46
References	48
Appendix	52
A.	52
B.	53
C.	54

Abstract

This research thesis investigates the ways in which learning differs between female and male students in the form of a case study. Various teaching methods that are used in co-ed classroom environments have been further analyzed in gender-segregated classrooms to beneficially discover teaching methods that work best with female or male students.

This study was conducted to ease the learning process of students. Using students' psychosocial and psychological factors to differentiate between the two genders. Throughout the theoretical framework different methodology has been investigated, and ultimately used to discover different cognitive abilities in the context of nature versus nature, this includes the neuroscientific differences in the brain between both genders. Furthermore, the laterization of learning, spatial abilities, kinetic needs, and physical and social attributes have been analyzed to uncover the most beneficial pedagogical approaches that were used to create a repertoire of teaching methods for teachers to use to beneficially enhance learning in their gender-segregated classrooms.

The case study was conducted at a gender-segregated school based in the Middle East. Observations of teachers were held throughout a 10-week period in both female and male classrooms. Moreover, empirical quantitative and qualitative data were collected through a survey. A total of 27 teachers accepted to participate in the research, wherein 22 out of 27 teachers completed the survey. Notably, 21 out of these 22 respondents answered every question on the survey. The empirical data analysis was based on the data from the survey ($N=22$), and then further studied with the first-hand observations conducted in four grade 6 classrooms. This data was analyzed to find trends of beneficial learning for both genders by differentiating between the two groups based on the research described within the theoretical framework. These results support the idea that male and female students learn differently would benefit from being taught using different teaching methods. Some of these methods do work towards both genders but need to be modified to fit into the classroom dynamic, which differs between every class. The results of this case study came to create a repertoire for teachers to employ when instructing gender-segregated classrooms are shown in Chapter 5.1, *Figure 8*.

Chapter 1: Rationale

1.1 Objectives

Throughout this thesis paper, the different teaching methods that teachers use in gender-segregated classrooms have been examined. Within this context, the psychological factors that cause a difference in learning between both sexes such as, their physical and social behavioral attributes, have been further analyzed. It is essential to analyze these factors due to the differences in physical attributes in the female and male body. This leads to the idea that learning can be distinct between the two genders. Moreover, social-behavioral attributes are formed through individual characteristics and can be measured through effective and ineffective performances, one of them being nature versus nurture. In this thesis, educators teaching at an international school have been observed and investigated. Teachers were observed to see what pedagogical methods they used in gender-segregated classrooms, and then further analyzed through empirical data to ensure that they actually used the methods they mention in the survey within their classrooms. The purpose of this research is to form a repertoire of teaching methods that work beneficially in favor of female and/or male students. This repertoire will model different teaching methods that have worked firsthand for teachers, and should result as a resource for new teachers working in gender-segregated classrooms. Consequently, it should become an aid for teachers working in co-ed classrooms, if used beneficially, to serve its purpose in supporting female and male students separately, to the best of their abilities.

1.2 Motivation

The incentive for focusing on different teaching methods in gender-segregated classrooms derived from personal learning experiences. Having completed my education in a

segregated setting, I have always wondered if my learning was being manipulated to accommodate for female and male learning methods, respectively, or whether teachers used the same methods to teach both genders. As I am approaching the time of becoming a teacher myself, I am curious to know what teaching methods and differentiation skills I will need to apply in order to ease the learning process for female and male students in a gender-segregated setting. Sarah Keller's (2010) research conducted at Trinity College in Hartford is another inspiration for this research. In her influential study, Keller (2010) explained that there are many different effective teaching methods that work to benefit both female and male students in a segregated educational context. Keller's (2010) research was conducted by analyzing male and female biological and socio-cultural differences. Once confirmation from the gender-segregated school in the Middle East was obtained, my passion for this topic blossomed into full bloom.

1.3 Research Questions and Terms

To gain a deeper understanding of this thesis, important key concepts have been defined. The following words are imperative for this thesis and were defined using the knowledge acquired through the literature review and the *Concise Oxford English Dictionary* (Soanes & Stevenson, 2004):

Co-ed	Mixed gender institution.
Cognitive abilities	Brain-based skills that we need in order to carry out any task, from the simplest to the most complex. These skills include how we learn,

remember, problem-solve, and pay attention, rather than any actual rote knowledge.

Corpus callosum	“A dense tract of nerve fibers that enable two hemispheres of the brain to communicate” (Siegler et al., 2017, p. 104).
Delegator	A person designated to act for or represent another or others.
Facilitator	A person who helps somebody do something more easily by discussing problems, giving advice, etc., rather than telling them what to do. As described by Fenstermacher, Sanger & Soltis (2009), “The facilitative teacher is typically an empathetic person who believes in helping individuals grow personally and reach a high level of self-actualization and self-understanding” (p. 5).
Lateralization	Verbal processes on one side of the brain in preference to the other.
Perceptual speed	The ability to quickly and accurately compare letters, numbers, objects, pictures, or patterns.
Segregated	Gender separated.

Spatial abilities The capacity to understand, reason and remember the spatial relations between objects and space. Visual-spatial abilities are used daily, such as when navigating, understanding or fixing equipment, understanding or estimating distance and measurement, and performing.

To answer the posed thesis question, “What teaching methods do teachers use to support learning in gender-segregated classrooms?” and the sub-questions listed below, first-hand observations of teachers have been conducted in four 6th grade classrooms—two boys’ and two girls’ classrooms, located in an international school in the Middle East. This is a gender-segregated school, which, in the context of this thesis, means that the classroom was split into two groups by gender. A survey was created and has resulted in a visual overview of the frequency of beneficial pedagogical methods that teachers use in both female and male classrooms.

In order to effectively answer the scope of this study, the following sub-questions have been analyzed through the theoretical framework as seen in Chapter 2:

1. What teaching methods are being used in co-ed classrooms?
2. How do male students learn differently than female students, and vice versa?
3. What can teachers do to positively use the innate differences in the physical and social attributes of male and female students to ease the learning process?

1.4 Significance

The following points portray the importance of this study in relation to the theoretical framework:

Firstly, the theoretical framework aspires to clarify the definition and prevalence of various teaching methods, and which ones are typically being used in co-ed classrooms. It further elaborates on two types of pedagogical approaches: teacher-centered and student-centered. These teaching methods include other strategies that teachers use to reinforce learning throughout their lessons. Additionally, it justifies how the female brain is structured differently to the male brain, and how this affects their learning in two distinct ways: biologically and socio-culturally. Furthermore, physical and social differences that derive from the two sexes play an important role in student's learning. Secondly, the empirical part of this study, specifically the data collected from the survey and first-hand observations, have been used to compare the results to the theoretical framework ideologies based on Keller (2010), Yilmaz (2009), Kimura (1999) and other sources. Thirdly, the conclusions of this research have been used to create a repertoire of different teaching methods that teachers can use when preparing lessons for gender-segregated classrooms. The hope would be that they can pick and test out research-supported methods that would work beneficially for male or female students due to their differences in learning.

Blaxter, Hughes, & Tight (2010), BERA (2011) and Cohen, Manion, & Morrison (2018) have been used to back up the research design, validity, reliability and ethical justifications that are further explained in Chapter 3.3 to thoroughly scrutinize all sectors of this thesis and correctly write up the findings.

Chapter 2: Knowledge Base and Literature Review

2.1 Introduction

Throughout the theoretical framework, the objectives set in Chapter 1.1 have been systematically divided and investigated. The first objective is to answer the research question with the help of the sub-questions. Teaching methods that teachers use in gender-segregated classrooms, and the physiological factors that play a difference in learning between both sexes, have been discovered. The second objective has been met with the empirical data collected through observations and surveys. The data was analyzed to create a repertoire for teachers to use. The purpose of this theoretical framework is to provide the audience with an overview of the most important factors that play in gender-segregated education in order to facilitate an understanding of segregated learning, for teachers and educators. The following sections of this chapter will answer each sub-question in relation to resolving the thesis question as a whole.

2.2.1 What teaching methods are being used?

Skutil, Havlíčková, & Matějčková (2016) describe the term ‘teaching method’ as a reference to the general principles, management strategies, and pedagogy used for classroom instruction (Skutil et al., 2016, p. 2). As previously stated in Chapter 1.4, teaching theories are organized into two categories: teacher-centered and student-centered approaches. Teacher-centered methods can be principally classified as direct instruction, followed by: kinetic learning, differentiated instructions, formal lectures, and personal models, meaning by example or as a demonstrator. This is closely connected to one of the three approaches of teaching, as described by Fenstermacher et al. (2009), “A teacher as executive, views the teacher as the manager of complex classroom processes, a person charged with bringing about certain outcomes with students through using the best skills and techniques available” (p. 5). Teachers are the main

authority figure in a teacher-centered instructional model as they actively pass knowledge to students through lectures and direct instruction. Teachers also play a big part in facilitating student learning and overall comprehension of the material. As stated by Fenstermacher et al. (2009), “Educators are a facilitator in the sense that they encourage and nurture the growth of students” (p. 25). They do so by measuring student learning through both formal and informal forms of assessment, such as group work, portfolios and class participation. On the other hand, in student-centered learning, teaching and assessment are closely connected, as the student’s learning is continuously measured. Teachers can use differentiation methods in multiple ways, such as self-assessment and creating activities with a significant goal for the teacher to assess students informally. This allows the teacher to be a facilitator in the classroom. Furthermore, when using student-centered methods, teachers and students play an active role in the learning process. This means that students are their own facilitator and delegator, as they represent their own personal model. Thereby, the student plays an active and participatory role in their own learning.

There are four types of learners: visual, auditory, kinesthetic and verbal. As stated by Pritchard (2013), “Visual learners prefer to learn by seeing. They have visual recall and prefer information to be presented visually, in the form of diagrams, graphs, maps, posters, and displays, while auditory learners prefer to learn by listening. They have good auditory memory and benefit from discussion, lectures, interviewing, hearing stories and audio tapes, while kinesthetic learners prefer to learn by doing. They are good at recalling events and associating feelings or physical experiences with memory. They enjoy physical activity, field trips, manipulating objects, and other practical, first-hand experience. They often find it difficult to

keep still and need regular breaks in classroom activities finally, verbal learners prefer to learn by using words both in speech and in writing” (p. 50). Using these four types of learners, teachers are able to come up with different teaching methods that are beneficial to each type of learner.

To conclude, in order to fully answer the first sub-question, theories and ideas from Skutil et al. (2016), Fenstermacher et al. (2009) and Pritchard (2013) have been proven to be closely connected when describing which teaching methods are being used in actuality. Furthermore, these methods, once deeply analyzed, are discovered to be nearly identical, and that these methods are used in their classrooms’ daily. They use teacher-centered approaches and student-centered approaches to benefit the learning of their students. Teachers differentiate by using different learning type methods to ease the learning process. This promotes the idea that teachers are very resourceful with their teaching methods, and that they can vary between these methods depending on the topic, lesson, and gender that is being taught. In consideration of the location of the international school where the research took place, teachers should be cautious with cultural appropriateness, as parents of students who attend this school have specific expectations derived from many factors, such as culture, social status, and religion. Cultural sensitivity is mandatory in the 21st-century classroom. The school's website does not enthusiastically promote that they are a gender-segregated school, but they do subtly mention once that boys and girls receive instruction in separate classrooms. There are a few restrictions due to local regulations which may not allow teachers to have as much freedom in teaching different studies. This may be difficult for international teachers who have never worked in this kind of setting. Teachers may want to reinforce gender differences or challenge stereotypical,

role-related thinking within their teaching, but this could be a tricky topic in this particular school's context.

2.2.2 How do male students learn differently than female students, and vice versa?

As mentioned previously in Chapter 1.2, the study conducted by Keller (2010) was an inspiration to digging deeper into this topic. Keller (2010) suggests, that many researchers have tried to understand gender differences using psychology and neuroscience. These sex differences can be separated into two groups: biological and socio-cultural. Biological accounts strengthen the importance of differences in abilities and brain structure. As stated by Yilmaz (2009), “Biological factors focus on two main areas: hormones and brain maturation” (p. 91). These accounts are investigated through differences based on socialization, gender roles, and stereotypes (Anselmi & Law, 1998). Biological and socio-cultural factors are closely connected to nature versus nurture.

Diving further into socio-cultural gender differences, a clear connection can be made to the approach in psychology of nature vs nurture. As explained by Siegler et al. (2017), “Nature refers to our biological endowment, the genes we receive from our parents while nurture refers to the wide range of environments, both physical and social, that influence development” (p. 11). Socio-cultural accounts come mainly from formal and informal experiences. As described by VanPatten & Williams (2007), sociocultural theorists believe that human cognition arises from the material, social, cultural, and traditional contexts in which human experience is embedded (VanPatten & Williams, 2007, p. 81) This further establishes the influence of nurture, as culture plays a huge part in the experience. Furthermore, teachers, parents and social life play a crucial

role in the perspective of socio-cultural gender differences, as a child's cognitive abilities strengthen greatly through experience. For instance, males tend to learn how things work by building and taking things apart. Yilmaz (2009) describes this as spatial manipulations. As a result, nature versus nurture plays a big part in the development of a child, depending on gender. Due to the differences in the cognitive abilities of each gender, teachers are vital to the correct development of a child. For education to be effective, the teacher must be able to provide equal but distinct opportunities for both genders, while adjusting to factors that directly affect student classroom behavior. This does not imply that all male and female students fit in gender stereotypes but in most cases, they do fit the type of gender-specific learning.

Additionally, tasks such as problem-solving can fluctuate due to gender-specific differences in the brain. Kimura (1999) depicts that males tend to perform better than females on certain spatial tasks, while females perform better on tests of perceptual speed. This was investigated through multiple studies. Yilmaz (2009) also investigated the development of spatial ability and found that females use fewer effective strategies than males, which result in a better male performance on spatial tasks. Also, females find spatial tasks more difficult than males do. Kimura (1999) explains that males usually tend to do well on tests that involve mentally rotating objects or manipulating them in some way, such as imagining turning a three-dimensional object. Additionally, Kimura (1999) also clarifies that males are very accurate when it comes to target-directed motor skills.

Within the biological accounts, researchers have highlighted the effects of hormones as they directly influence cognitive and spatial abilities. Research has found that female hormones

play a role in language aptitude, while male hormones usually promote agile and kinetic movement. As described by Gurian & Stevens (2005), this is closely connected to the kinetic nature of males compared to females, which leads to an increase in competition in the classroom. Males tend to struggle to keep their attention for long periods of time, therefore short-term targets are beneficial as they are an aspect of competition. This could be contradicted through the idea of nature versus nurture. The nature aspect entails that males are seen stereotypically as more active and in need of competition, and the nurture aspect would be completely different, as it could purely depend on how females are raised differently to males within their households. Similarly, Arends (2016) describes that there are many differences in ability which applies when explaining gender differences and gender role identities. The best evidence for the nature side of things is that biological hormones can impact the kinds of play and activities pursued by young children, with boys preferring more aggressive and active play (Arends, 2016, p. 77).

Despite the aforementioned idea, this may vary depending on cultural perspectives and is closely connected to the nature versus nurture approach. Other studies have been conducted and have uncovered many behavioral differences between the two genders. This includes motor and spatial skills in males and social cognition and memory skills in females. Tunç et al. (2016) explain that the many differences may be attributed to the complementary roles that genders play in the social structure. This leads to believe that there is a huge connection between behavior due to nurture and brain structure between both genders. Culture plays a huge part in how males and females act towards one another. Depending on how these individuals are raised, they perceive behaviors and ideologies differently.

Consequently, studies have been done to understand brain organization, as it is another specific key to biological gender differences. According to Baron (2003), females communicate more with both hemispheres simultaneously. This is due to an increased corpus callosum and an increase in lateralization (refer to Chapter 1.3 for definitions of important keywords). This allows females to use both hemispheres for language tasks, resulting in less space for visual tasks but more space for multi-tasking. This is the exact opposite for males, as the male brain has a decrease in lateralization, meaning they do better on spatial tasks by using the right hemisphere for problem-solving. However, this study does not fully explain why females use both hemispheres for language tasks while males don't. Moreover, Kimura (1999) explains that spatial mechanical stimulation is an important aspect for male educational success as it can be achieved in numerous ways, such as images, diagrams, and visual media (Kimura, 1999, p. 27). This reinforces the idea that females and males should be instructed differently. Additionally, the male brain has a smaller frontal lobe which usually increases the male competence for impulsiveness. This is closely connected to Arends's (2016) point on aggression and active play.

Studies show that due to the smaller frontal lobe in the male brain, the brain's sensory receptors are much more sensitized, which makes males less sensitive to light and sounds. This means that men are typically less responsive to dim lights and soft noises and would benefit more from learning actively with louder voices and brighter lights in order to hold their attention for longer. While females are much more sensitive to light and noise, they work better in dimmed lights and with soft sounds. A recent study shows that 25% of student learning was accounted through controlling lights, sounds, temperature and air quality (Yurtoğlu, 2018). In addition, the female brain tends to use the hippocampus more than male brains; therefore,

females may perform better on memorization tasks, while males may do better at thinking tasks (Baron, 2003). This can be backed up through recent investigations that show that men have a higher brain mass in comparison to females, including the hippocampus, which places a big role in memory and spatial awareness (Price et al., 2017, para. 4). Furthermore, as described previously, females perform better on memorization tasks, such as remembering the location of objects or a series of objects. Females tend to have fine-motor skills which give them an advantage when working with precision manual tasks (Baron, 2003).

In conclusion, Yilmaz (2009) and Anselmi & Law (1998) were analyzed to investigate the ideas on biological differences that cause variations in learning abilities. Likewise, theories combined through Baron (2003) and Kimura (1999) further explained to what extent the male and female brain differ from one another. This reinforces the idea that females and males learn differently, and evidently should be instructed and taught in different ways. This can only be done if the teacher or educator acknowledges the fact that females and males have differences in cognitive and spatial abilities, resulting in learning differently due to their distinct neurologies. Together with the fundamental factors that nature and nurture play in the cultural and stereotypical aspects within the development of an individual, it becomes obvious that students need to be taught in gender-segregated classrooms.

2.2.3 What can teachers do to positively use the innate differences in the physical and social attributes of male and female students to ease the learning process?

As stated in Chapter 2.2.1, females and males have biological differences in their learning abilities. Teachers who acknowledge this fact can differentiate within their classroom to facilitate

learning for both genders. As described by Seifert & Sutton (2007), males and females differ in ways that affect their behavior in school and classroom settings. These differences are usually caused by physical and social interactions.

Digging deeper into the factor of physical differences, both genders develop motor skills at the same time, but females tend to slow down their active nature near the end of elementary school. Also, males usually tend to have trouble sitting for a long time, which may lead to teachers using more kinetic learning activities to engage male students. Activities such as coloring and reading may be more effective with female students, as they are more patient and willing to sit for longer periods of time.

Many social differences between male and female students exist. Males are usually pulled into large groups of males, while females tend to seek one or two close friends (Social differences in gender roles section, para. 1). This affects their social skills in different ways. Additionally, Seifert & Sutton (2007) claim that when males are working in a small co-ed group project, they tend to ignore females' comments and contribute less to the group, while females like to work on their own or in pairs (Social differences in gender roles section, para. 2). By virtue of these social differences, teachers tend to act differently towards students. This view is supported as stated by Sadker (2011), "Boys receive more teacher attention than females, including more negative attention. They are disciplined more harshly, more publicly, and more frequently than females even when they violate the same rules" (p. 5). For instance, when a male student shouts out an answer, he will probably be reminded to raise his hand while if a female

student shouts out an answer the teacher may just move on. This shows that their social differences are being manipulated due to their gender.

Consequently, teachers can put these theories discovered through Sadker (2011) and Seifert & Sutton (2007) into practice by working along the lines to their students' needs, specifically in their differences in gender attributes. Teachers may use more kinetic learning activities with male students and more tranquil activities with female students. Teachers can also group their students into adequate learning groups for collaborative group work. In sum, this again reinforces the idea that female students and male students learn differently, leading to the fact that these two genders should be instructed in different ways. This can be done positively if the teacher acknowledges this fact.

2.2.4 Create a list for upcoming educators.

As stated previously in Chapter 1.2, Keller's (2010) research was used as an inspiration and ground base to conducting this thesis research. Using Keller's (2010) case study, a repertoire of different teaching methods that teachers use daily in their classrooms was designed. Teachers can use to their benefit when working in segregated settings in order to make it easier to educate male and female students in separate classrooms. This repertoire could also be beneficial for co-ed classrooms.

The following teaching techniques have been analyzed throughout this research: volume of voice, visual aids such as images and diagrams, visual media, language and comprehension-based instruction, classroom setting, such as lights and room temperature, handouts, audio

media, verbal discussions, problem solving, kinetic learning, experimental learning, collaboration, one-on-one, peer instruction, competition, peer grading, association with the real world, and memorization.

2.3 Quality of Sources Used

The multiple sources used throughout this research are not all up to date but are foremost relevant to this thesis. Arends (2016), Skutil et al. (2016) and Pritchard (2013) are closely linked to describing teaching methods and learner's theory; these sources were used to back up Keller's (2010) list of teaching methods as listed in Chapter 2.2.4. This allowed for more extensive research on differentiated learning, as after reading Keller's (2010) research, many intriguing ideas came to mind which were further examined and portrayed throughout the theoretical framework. Keller's (2010) research on socio-cultural accounts and the differences in brain abilities between female and males has been widely investigated by many other researchers. Yilmaz (2009) and Anselmi & Law (1998) backed up Keller's (2010) ideas on biological differences that cause differences in learning abilities. Furthermore, Chapter 4 of Seifert & Sutton (2007), VanPatten & Williams (2007) and Yurtoğlu (2018) depicts interesting insights on socio-cultural theories which again backed up Keller's (2010) statements. This was further proven by Yilmaz's (2009) research on the development and measurement of spatial ability. Additionally, the theories of Baron (2003), Kimura (1999) and Price et al. (2017), combined together, explained to what extent the male brain can differ from the female brain, which leads to behavioral attributes to differ between the two. The theories of Sadker (2011), Tunç et al. (2016) and Gurian & Stevens (2005) elaborated on behavioral concepts that are related to the socio-cultural and behavioral differences in the female and male brain. These sources support this

research and back up Keller's (2010) investigation. Soanes & Stevenson's *Concise Oxford English Dictionary* (2004), Siegler et al. (2017) and Fenstermacher et al. (2009) were used to clarifying key terms as defined in Chapter 1.3.

Chapter 3: Research Design

3.1 Participants and Context

This research has been conducted in an international school that is based in a capital city in the Middle East. The participants of this study are teachers who attend and work at this school.

First-hand observations were held in four grade 6 classrooms that have been segregated by gender; two boys' classes and two girls' classes. These observations were held using a naturalistic observation approach, meaning that no intervention from the observer occurred throughout the investigation. A survey was created through Google Forms and was sent out to all teachers who were willing to participate in this study and signed the permission form (Appendix A). There were 22 active participants in this survey study. Three teachers have been observed over a ten-week period to see whether what they claim they do is, in fact, their pedagogical approach, and whether the teaching methods mentioned in Chapter 2.2.4 beneficially worked on female and male students separately. Once all the empirical data was collected, it was stored and analyzed to benefit this research.

3.2 Research Methodology and Methods

The research question has been formulated and used in both descriptive and design research methodology. In order to build a foundation for a research strategy, both qualitative and quantitative methods have been used to investigate this research question. This thesis uses methodological triangulation as noted in *The Good Research Guide* by Denscombe (2017), since the data collected are direct number results from participants who completed the survey, classroom observations on teachers and students, and existing research. As previously mentioned, the method chosen for data collection is a survey in the form of a questionnaire. This survey aims to analyze which teaching methods are being used more frequently with female students than with male students, and vice versa. The benefit of this research tool is that it creates more generalized results (Blaxter et al., 2010). The impetus for this empirical research instrument was Denscombe's (2017) meaning of "to survey," as he explains that it carries the

meaning of “to look” as it involves the idea of purposefully seeking the necessary information from relevant people and relevant sites. Likewise, as described by Cohen et al. (2018), a survey aims to ask several questions to a set group of people (Cohen et al., 2018, p. 205). . In relation to this topic, the teachers working in these targeted segregated classrooms have been asked to complete the survey. Additionally, other teachers who work in segregated classrooms within the same school have been asked to participate. This survey allows for many responses without disrupting teachers teaching time. The online survey enables participants to answer at their own time, instead of scheduling times to meet. The empirical data collected from the survey has been compared to the theoretical framework and first-hand observations to assess whether research previously conducted matches the findings, and beneficially enhances segregated learning.

In addition, the naturalistic approach has been used, as this research question was investigated in four grade 6 gender-segregated classrooms. As stated by Blaxter et al. (2010), “The naturalistic approach to research emphasizes the importance of the subjective experience of individuals, with a focus on qualitative analysis” (p. 64). The results have been used to design a repertoire of teaching methods that work beneficially in favor of female and/or male students. The list models different teaching methods that have worked firsthand for teachers. The repertoire may result as a resource for new teachers working in segregated classrooms, and/or could become an aid for teachers working in co-ed classrooms, if used beneficially to serve its purpose in supporting female and male students separately.

3.3 Research Tools

This thesis was conducted using desk research backed up by small-scale field research during a ten-week teaching practice period abroad in the Middle East. The setting was kept as natural as possible, meaning that the setting was in no way manipulated, changed or adapted for this research. As described in Chapter 3.2, conducting a survey with appropriate questions was the most suitable educational research tool for data collection in order to investigate the whole of the research question. A survey was relatively easy to administer and allowed for generalized results. Chapter 7 of Blaxter et al. (2010) was used to create a rough draft of the survey. At first, a survey was created using Survey Monkey but, as it only allowed for ten free questions, another survey method had to be used. Through advice from a critical friend, the survey was then created using Google Forms, which was a lot simpler, as all participants were familiar with the program. To adequately review the results and analyze them on time, reminders of completing the survey were sent to participants via email. The results from the survey were then reviewed and categorized into two groups: female-/male-dominated teaching methods. Categorizing the results into groups allowed aptitude in designing the repertoire for teachers to use specific teaching methods beneficially within their gender-segregated classrooms.

Chapter 4: Results

4.1 Description of Data

In this chapter, the results of the study are presented. This research concentrated on one group of respondents. The respondents were teachers who teach in gender-segregated classrooms in an international school based in the Middle East. A survey in the form of a questionnaire and first-hand observations were the two methods of data collection that have been used to approach this research. These methods of data collection were analyzed to compare a previous research study conducted by Keller (2010), alongside research on male and female learning differences. These methods of data collection were used to fulfill the third objective: creating a repertoire of teaching methods that work beneficially for male/female students in correlation to what research states.

As stated in Chapter 3.1, Google Forms was used to create a survey where the participants, in this case, teachers have answered whether they use a specific teaching method mostly with girls, boys, both or neither. These specific teaching methods can be found in Chapter 2.2.4. The researched target group consists of 27 middle and high school teachers who were asked to participate through a permission form. Enough permission forms were handed out in each department. The participants, meaning the teachers, were given a week to read over and sign the permission form if they were willing to participate. At the end of the week, all signed permission forms were collected. The participants who signed the permission form were then sent the survey via email using the school's domain. The participants were asked to complete the survey by the end of the following two weeks. 22 out of the 27 participants responded (81% response rate). Findings from the survey are based on this number of 22 ($N=22$) completed

surveys. 21 out of 22 completed the entire questionnaire (95% completion rate). The biographic information was obtained from the participants when they completed the survey. Oliver (2011) states “Whether or not gender is treated as a specific causal variable, it remains a significant determinant of the way in which respondents provide data, and in which researchers interpret data” (p. 97). 45.45% of the participants were female ($n=10$), 50% were male ($n=11$) and 4.55% ($n=1$) were undefined. These variables conclude that approximately half the respondents were male and the other half female, giving a balanced result. All participants are teachers who are teaching at the mentioned gender-segregated school and have been working there for a minimum of 8 months to eighteen years. Participants were asked to answer 33 questions throughout the survey. The survey consisted of yes or no, multiple choice, rating, and open-ended questions. The survey questions have been added to this thesis as Appendix B.

Findings from the survey were analyzed and coded through descriptive statistics and then compared with the codes from the theoretical framework as shown in Chapter 2. These codes were further analyzed through the codes created from the data collected through the first-hand classroom observations that were conducted throughout a ten-week teaching practicum period at this gender-segregated international school. As previously described the survey consisted of 33 questions. The first question being a yes or no question. Questions 2-29 were multiple choice questions stating whether the participant uses a specific teaching method mostly with girls, boys, both or neither. Questions 30-32 were open-ended questions to allow participants to describe other teaching methods that they may use to differentiate between female and male students. These questions were specifically asked to answer this thesis’s sub-questions 2 and 3 as mentioned in Chapter 1.3. Following with one final rating question portraying their opinion on

whether they strongly agree or disagree on whether teaching boys and girls separately is beneficial for the students. This question was not necessary to attain the objectives of this thesis, but knowing the predisposition teachers have on teaching genders separately, this may have manipulated their responses throughout the entire survey. The last question on the survey was labeled as ‘additional comments,’ which allowed the participants to mention anything else that was not included in the survey that the participants might have come up with. Findings from the data collected have been presented in a pie chart format. Only Questions 3, 12, 18 19, 22 and 26 have been presented in 4.2, as these results most collided with findings from the theoretical framework shown in Chapter 2. The findings from the open-ended questions are shown utilizing word clouds, they are presented in Chapter 4.3. Words that were used more often are set in a larger size, which shows consistency of what teachers have stated.

Apart from the survey, first-hand observations of teachers were conducted within lessons in four gender-segregated classrooms. First-hand observations support the results by comparing what teachers say they do with what they do; this also allows for more results to be analyzed. These outcomes have further been explored by observing two boys’ and two girls’ classrooms to illustrate the surveys’ findings in order to identify other possible directions for further qualitative research.

4.2 Analysis

As described by Blaxter et al. (2010), the researcher can manipulate and substantially reduce the size of the data set by drawing particular attention to pieces or aspects of data that are felt to be of ‘significance.’ This is done by using different techniques such as coding, annotating,

labeling, selection, and summary (Blaxter et al., 2010, p. 229). Throughout this research, quantitative and qualitative data collection and analysis have been successively organized in order to clearly identify what different teaching methods are being used in segregated classrooms, and which of them are beneficial for learning to both genders separately. This process was done by first coding and labeling the theoretical framework into three categories: female-orientated, male-orientated and general. This made the process of coding through the survey and observations user-friendly. Once all surveys were complete, the same process was done using the already-created pie charts that Google Forms automatically generates after a survey is completed, and Excel was used to color code the findings. This was followed with the observations, which were written out by hand using the form in Appendix C. Coding was also used to analyze the findings from the observations. The method of triangulation has entirely been used through the comparisons between the survey, first-hand observations and the theoretical framework as described in Chapter 2. Triangulation means that more than one method of data collection is used when collecting data for the same topic. This is the case for this thesis. These three major factors have been closely analyzed in order to effectively triangulate throughout the process of analysis. It has been broken down into three parts: observations in relation to the survey, the survey in relation to the theoretical framework, and the theoretical framework in relation to the observations. These three parts were then looked upon from above to find recurring data. As stated before, once all raw data had been collected, coding and Chapter 9 of Blaxter et al. (2010) were used to scrutinize the results from all three sections (see Table 1). The entire theoretical framework was color-coded, using both genders as categories to find a clear connection to objectives set in Chapter 1.1. All the coded work was then analyzed based on the codes made through the survey and first-hand observations results.

This process was done with great care. Taking into consideration the rather conservative location in which this research was received, many ideas were perhaps stated differently. As mentioned previously, the school where this research was conducted is an international school located in the Middle East. The majority of its staff is expatriates who deal with many cultural integrations due to the unique international nature this country holds. Many students who attend this school are from privileged and politically important families. This could have perhaps led the participants to state their opinions differently, as they were aware that there are some restrictions on freedom, especially when addressing the topic of gender.

Codes used to analyze data through triangulation between the Survey, Observations, and Theoretical Framework			
Female-dominated methods	Male-dominated methods	Both gender-dominated methods	Other methods

Table 1. Color Codes Used in the Analysis of the Entire Data Collected, The methods analyzed in this study served the codes.

By analyzing the results, a comparison between the survey and the theoretical framework rose. The following results are considered of the most importance, as they develop from the central thesis of this research:

1. Research has shown that females perform better on memorization tasks. When memorization strategies are used with female students, it is beneficial for their learning. Question 22 (Figure 1) of the survey asked whether teachers used memorization mostly with girls, boys, both or neither. 11 respondents (52.4%) responded as 'both'. This is not

necessarily incorrect, as male students may also benefit from memorization strategies.

Teachers are using what research states correctly as they are using the memorization teaching method to benefit both male and female students. Nevertheless, teachers may need to consider this fact and allow for more memorization tasks with female students.

2. Research states that male hormones usually promote active and kinetic movement. This tends to lead to an increase in competition within classrooms. Question 19 (Figure 2) of the survey asked whether teachers used competition-based learning mostly with girls, boys, both or neither. 9 respondents (40.9%) responded 'both' and 6 respondents (23.7%) responded 'mostly boys'. This promotes the idea that competition-based learning is already incorporated within both male and female classes, but is sometimes only used by teachers in male classrooms. As one respondent answered Question 31 of the survey, "The boys enjoy more competition-based instruction, so I have a tendency to play more games with the boys." Teachers seem to use this teaching method habitually with male students only, in order to get them excited and work hard as a means of external motivation, such as getting a prize or a piece of candy.
3. Boys tend to need to move around a lot throughout the class as previously described by Arends (2016), "Nature can affect the kinds of play and activities pursued by young children, with boys preferring more aggressive and active play" (p. 77). On Question 31, one respondent explains how differentiation takes place in his classroom due to kinetic learning: "My current boys class is more active than my girls class; therefore, I get the boys to move around the room more during instruction, even though they are learning the same material." This is one way to differentiate between female and male students in a segregated context. This suggests that male students need more movement time. Teachers

need to adapt their lessons in order to accommodate male students due to their learning differences. As previously described by Gurian & Stevens (2005), males tend to struggle to keep their attention for long periods of time, thus short-term targets are beneficial for male students. This is also mentioned by a respondent in Question 30 of the survey: “Boys need to have frequent brain-breaks. This means you need to chunk your learning between instruction, activity, pair work, independent time, etc.” Therefore, the idea behind beneficial learning strategies for male students is being able to break down lessons in order for students to take a break, move around and then start fresh once again.

Memorization

21 responses

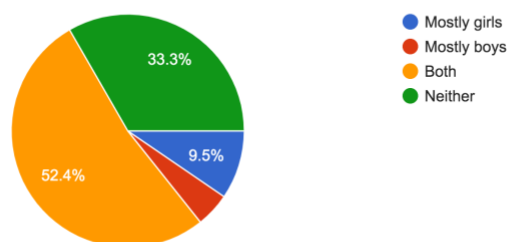


Figure 1. Question 22.

Competition-based learning

22 responses

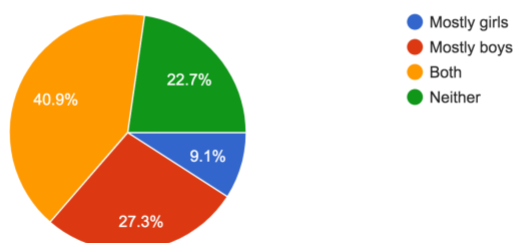


Figure 2. Question 19.

Throughout the 10-week teaching practice period, four grade 6 classrooms have been observed. These classrooms consisted of 2 boys' and 2 girls' classrooms. Three teachers were observed to analyze whether what teachers do within their classroom positively connects to what research states. Through an analytical comparison between the first-hand observations and the theoretical framework. The following results are considered of the most importance, as they develop from the central thesis of this research:

1. As previously stated in Chapter 2.2.2, a study shows that 25% of students learning was accounted through controlling lights, sounds, temperature and air quality (Yurtoğlu, 2018), this was further analyzed through Questions 2, 3 and 7 to 10 of the survey. Question 3 (Figure 3) being, whether teachers used their volume of voice at a quiet tone with mostly boys, girls, both or neither. 14 respondents (63.3%) responded 'mostly girls' this was noticeable daily. Through observation, it was clearly noticeable that teachers raised their tone of voice in male classrooms as suggested in Question 2 of the survey, 11 respondents (50%) responded 'mostly boys'. Since male students have much more sensitized sensory receptors, they are less sensitive to sounds leading to them following and engaging more when directed with loud voices. This was clearly noticeable through the observations as boys seemed to get in-active once lights were turned off and did not pay attention when being addressed to softly.
2. Furthermore, the temperature of the classroom was noted. Male students turned on the air conditioning at the beginning of class and never complained of being cold. Female students were much pickier and got cold easily. Additionally, male students seemed to work better when all lights were on and blinds were open while female students worked

fine without natural light making the room a little dimmer. As described previously by Yurtoğlu (2018), males are less responsive to dim lights and soft noises and would benefit more from learning actively with louder voices and brighter lights in order to hold their attention for longer. While female students work better in warmer and dimmer classrooms. This comes to the conclusion that students learning process can be altered to beneficially aid their learning.

3. In addition, a common observation that was noticed was the actions teachers took when addressing behavior related issues within the classroom. As previously mentioned in Chapter 2.2.3, Sadker (2011) states that “Boys receive more teacher attention than females, including more negative attention. They are disciplined more harshly, more publicly, and more frequently than females even when they violate the same rules” (p. 5). This was very noticeable within the four classrooms. Consequences for the same actions were never identical. The culture in which these situations happened can play a big part in this factor. In relation to the cultural context, turning boys into men is a big deal in this particular environment. Female students were treated much more delicately compared to male students. This again connects to the idea that female and male students are disciplined and communicated differently which plays a big role when addressing students in co-ed and segregated classrooms as it adds to the classroom dynamics and the way a teacher acts or addresses students within these classrooms.
4. Moreover, as shown through the results of the survey male students are given more kinetic learning activities, while female students received more tranquil activities. This was very noticeable when it came to coloring tasks. Male students refused to color and instead preferred working on technology-based worksheets while female students

enjoyed educational coloring worksheets. This relates to Seifert & Sutton's (2007) idea that activities such as coloring, and reading may be more effective with female students as they are more patient and are willing to sit for longer periods of time (Physical differences in gender roles section, para. 1). Again, this promotes the idea that since male students tend to have trouble sitting for a long time. Teachers need to implement kinetic and hands-on learning activities in order to keep them engaged and focused.

Volume of voice: Quiet

22 responses

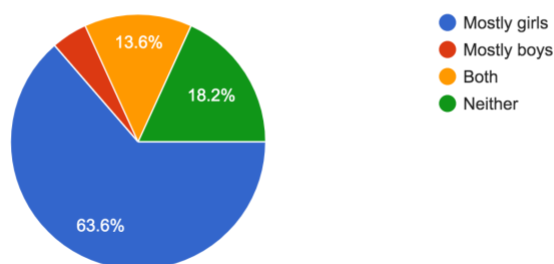


Figure 3. Question 3.

Through an analytical comparison between the survey and the first-hand observations conducted throughout a 10-week teaching practice period, the following results are considered of most importance. Results derived from what teachers said they do in their classrooms in relation to what had been observed:

1. Observations were held in different lessons conducted by three different teachers in three different subject areas: Math, Humanities, and English. Many different teaching methods were noticeable. One important teaching method was one-on-one teaching. It was

noticeable that teachers were able to assist students individually best in female classrooms. Once instructions were delivered the teacher would move around the classroom assisting students who struggled while keeping a close eye on ELL and ESL students. Results from Question 18 (Figure 4) of the survey showed that 14 respondents (63.6%) responded as 'both'. As these results are collected from 22 teachers ranging from middle and high school it cannot be certain whether what all these teachers say they do, is actually what they do. As through the first-hand observations rarely or never was it noted that a teacher taught male individuals through one-on-one instruction.

2. A reward or point system was not a teaching method that was considered while creating the survey but was then discovered to be very effective during the observations. It appeared to be a very effective tool for students struggling with behavior management to enhance learning.
3. Question 12 (Figure 5) of the survey depicted interesting results. This question was centered on audio media specifically in music. The survey results presented that 9 respondents (40.9%) responded as 'both' meaning they use music as a teaching tool in both their female and male classrooms. While 7 respondents (31.8%) responded as 'neither' meaning they never use music as a teaching tool within their classroom whether with male nor female classes. This was interesting as two out of the three teachers observed used music in every lesson for most activities. The music differed between both classrooms. One teacher played classical instrumental music when students entered the classroom and started to work on a warm up. While the other teacher played funky, upbeat music while students completed a speed test. Both genres of music seemed beneficial to students learning. The one teacher who doesn't use music in his classrooms

rarely had a warm-up activity during lessons but instead had exit slips. It may have been beneficial for music to be playing while students completed the exit slip as through observation, it was clearly noticeable that both male and female students work better with music.

4. This school required all students to bring their laptops, results from the survey answering Question 26 (Figure 6) were inevitable. The results derived from Question 26 suggest that, 21 respondents (95.5%) use technology-based learning with all students. This was very clear to see while observing the four classrooms. Students used their laptops in every lesson and many resources, such as textbooks were only available to them online. Students looked very capable when working on their laptops, they were organized in the sense of charging their laptops before coming to school or bringing their chargers to charge during break or lunchtime. Overall this was a great teaching tool that the majority of teachers at the school used. As the 21st-century is evolving and the new coming generation are preparing themselves by learning how to correctly use technology. Teachers are advancing education through technology.

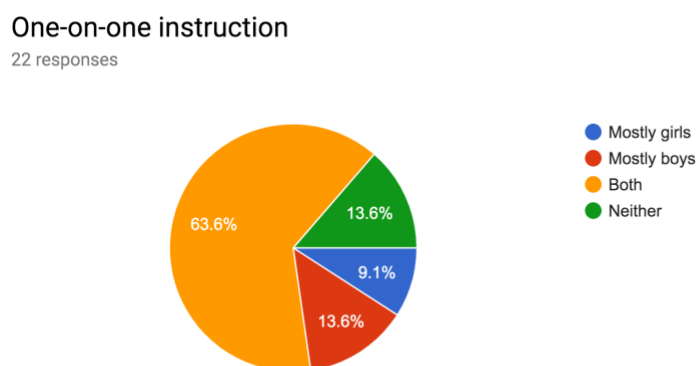


Figure 4. Question 18.

Audio media: music

22 responses

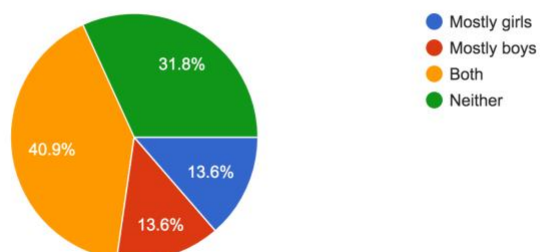


Figure 5. Question 12.

Technology-based learning

22 responses

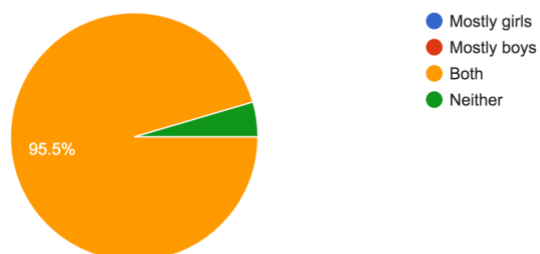


Figure 6. Question 26.

4.3 Presentation of Results

The results from Questions 30-32 have been presented below as word clouds (Figure 7.1 & 7.2). Words that were used more often are set in a larger size which shows the consistency of what teachers have said. These results demonstrate huge differences between how male students

are taught compared to female students. These words demonstrate huge differences between what boys need to beneficially learn compared to what girls need.

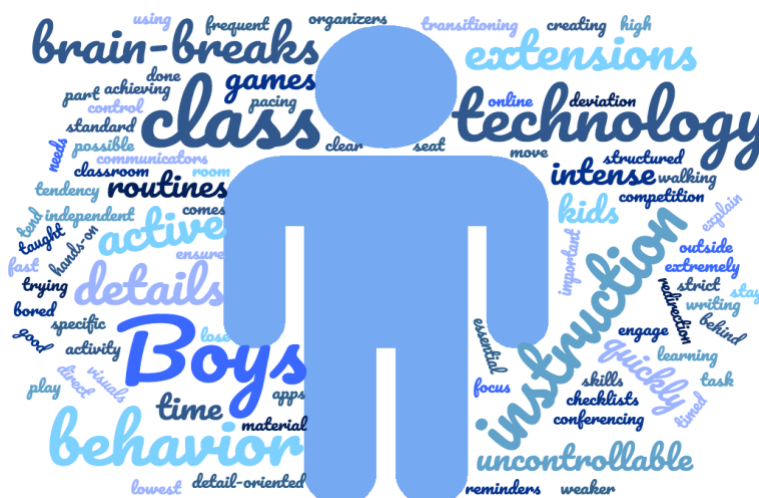


Figure 7.1. Word cloud based on male-dominated responses from Questions 30-32.



Figure 7.2. Word cloud based on female-dominated responses from Questions 30-32.

The words that struck out in the male student's word cloud are: brain-breaks, technology, extensions, routines, games, active, instruction, and behavior.

The words that struck out in the female student's word cloud are: comprehension, reading, beneficial, activities, perseverance, focused.

The findings of this case study using both the first-hand observations and survey only draws a small picture as this case study only research one group of participants. The results show that sometimes the best teaching methods can only be found by testing out what works with a specific class. This case study may be conducted elsewhere using the exact same survey and observe grade 6 classrooms and still may result in different findings. Furthermore, once the data process and analysis was completed the thesis was sent to critical friends, Eßlinger and Scollin to make sure all parts of the results has been disjointed in order to fully answer the thesis question.

4.4 Validity and Reliability

The sources used throughout this thesis are reliable. As previously stated some sources are not up to date but have been justified in Chapter 2.3. The reliability of this research was attained as I, the researcher was physically present in the mentioned segregated school to observe and interact with teachers and students. Moreover, this research was carried out in a way as stated by Blaxter et al. (2010) "That if it were to be repeated by another researcher using the same questions in the same setting, they would ultimately come up with the same results though not necessarily an identical interpretation" (p. 245). Additionally, the validity of this paper was established by triangulating between the theory mentioned in the theoretical framework, the survey, and first-hand observations; since the methods and approaches used are related to the issue being explored. As previously described in Chapter 3.3, a natural setting, where the environment was not manipulated in any way was maintained to benefit this research.

The study clearly aims to aid upcoming teachers who may teach in segregated classrooms, to allow them to beneficially teach both genders adequately to ease the learning process. This may eventually lead to knowledge on how to accommodate male and female students and provide teachers with methods that beneficially help both genders learn.

4.5 Ethics

The goal of all social researchers is to conduct ethically informed research, this research was conducted ethically as all the participants have been clearly informed of the study and its purpose. Before completing the survey, signed permission forms have been acquired from the participants to ensure confidentiality. As stated by Oliver (2011), “A cornerstone of research ethics is that respondents should be offered the opportunity to have their identity hidden in a research report” (p. 77). The participants have received a permission form (Appendix A) to grasp an overview of what is being asked from the participants and what the results will be used for. Due to factors such as culture, values, social customs, religious beliefs, ethnicity, language, and education considerations have been made within the results collected. Some ethical issues that rose were confidentiality, anonymity, and professionalism (Blaxter et al., 2010) This was due to the fact that the participants who were observed knew of the research, which may have led the participants to change their ways as they knew observations were being held specifically on them. Likewise, the guidelines of BERA (2011) have been used to cross-check that this research is reliable and valid. The participants have been informed that several copies of this research paper have been printed and are available to them if they wish to follow up with the final study to enhance reliability.

Chapter 5: Conclusion

5.1 Research Conclusion

This research intended to answer the following question: What teaching methods do teachers use to support learning in gender-segregated classrooms?

In order to answer the thesis question, this research intended to meet the following objectives:

1. Discover the different teaching methods that teachers use in gender-segregated classrooms.
2. Analyze the psychological factors that play in the difference in learning between both genders, such as their physical and social behavioral attributes
3. Form a repertoire of teaching methods that work beneficially in favor of female and/or male students.

The study was ultimately conducted to find beneficial ways to ease the learning process of students. Using the theoretical framework different methodology has been investigated, and was used to discover different cognitive abilities in the context of nature versus nature, this includes the neuroscientific differences in the brain between both genders. Additionally, the laterization of learning, spatial abilities, kinetic needs, and physical and social attributes have been analyzed to uncover the most beneficial pedagogical approaches. Using students' psychosocial and psychological factors to differentiate between the two genders. A repertoire of teaching methods was created for teachers to use to beneficially enhance learning in their gender-segregated classrooms.

The following sub-questions have been investigated through the theoretical framework in order to scrutinize this research:

1. What are the teaching methods that are being used in co-ed classrooms?
2. What learning differences play a part in the contrast between male and female students?

Main teaching methods used in co-ed classrooms have been written out and then identified within gender-segregated classrooms. Through extensive research portrayed in Chapter 2, the different learning differences that play a huge part in the learning between both genders have been discovered and used as a backbone for this research analysis. Based on Baron (2003) and Gurian & Stevens (2005), findings on neurological brain differences between both genders have been one of the main concepts throughout this research. In Kimura 's (1999) article on sex differences in the brain, one of the leading ideas was hormones and intellect (Kimura, 1999, p. 27). This was further looked upon throughout the case study when conducting first-hand observations.

In order to determine which methods can be positively used with female and male students separately the following sub-question was investigated through empirical data:

3. What can teachers do to positively use the innate differences in the physical and social attributes of male and female students to ease the learning process?

The most important results have been described in Chapter 4.2. The results show that teachers can use different teaching methods in a positive manner to enhance learning in female and male classrooms. These results only play a small part to this case study as it has only been conducted in one segregated school, though it was used to describe and design a repertoire of teaching methods that work beneficially for students in gender-segregated classrooms. The results of this

research came to create a repertoire for teachers to employ when instructing segregated classrooms are shown in Figure 8. These include, but are not limited to, the following:

- Females perform better on memorization tasks but male students can also benefit from these memorization strategies.
- Competition-based learning is incorporated within both male and female classes but is more common within male cohorts.
- Boys tend to need to move around a lot throughout the class. Teachers need to chunk their lessons to give male students a brain-break.
- The volume of voice impacts the student's learning.
- Temperature and amount of light in a classroom impacts student's learning.
- Female and male students are treated differently when regarding the same behavioral matters.
- Male students enjoy more kinetic activities while female students enjoy more tranquil activities with less movement.
- Audio media is beneficial for both genders. Different genres of music need to be implemented and tested out to find which type of music positively aids.
- Technology-based learning is beneficial for both genders. As times are changing different skills need to be acquired. Using technology is one of them.

The following repertoire of teaching methods was created using the findings from the theoretical framework and the empirical investigation. Overall, the repertoire shows that many teaching methods can be used with both genders but differently, as classroom dynamics may

differ from classroom to classroom. Thus, differentiation between female and male students needs to be involved within both segregated and co-ed classrooms, in order to positively use this tool to benefit the learning of both genders separately. The following teaching methods can be implemented in co-ed and gender-segregated classrooms to reinforce the idea that male and female students learn differently:

Figure 8. Repertoire of teaching methods created to purposefully fulfill the third objective:

Teaching method	Female students	Male students
Audio media	•	•
Classroom setting	Bright lights Warm	Bright lights Colder
Collaborative learning	•	
Competition		•
Daily Activity	•	•
Experimental learning	•	•

Handouts	•	
Hands-on activities	•	•
Intercultural-based learning	•	•
Kinetic learning		•
Language and comprehension-	•	
Memorization	•	
Note taking	•	
One-on-one	•	
Peer evaluation	•	
Peer grading	•	
Peer instruction	•	

Problem-solving	•
Real world application	• •
Technology-based learning	•
Verbal discussions	•

Visual Aids	•	•
Visual media	•	•
Volume of voice	Low at times, Loud sometimes	Loud

5.2 Discussion and Recommendations

Based on the theoretical framework and empirical data, this thesis aims to clarify the implications of an analysis of the findings of this research for further development in gender-segregated education. Based on the conclusions, the following recommendations for researchers and teachers have been stated below:

Recommendations for researchers:

- This research needs a lot more quantitative and qualitative data in order to find out whether it would benefit all gender-segregated schools around the world. It would work in favor of all students and teachers, attending and working in gender-segregated schools. Considering that this research was only conducted in one school out of many worldwide, the results are presented here are minuscule and could be much more meaningful if the research was redone in other parts of the world.

Recommendations for teachers:

- Teachers can evaluate the usefulness of this case study by testing out the results, by applying the teaching methods categorized for a specific gender listed in the repertoire, on students in their gender-segregated classrooms. It may be a challenge for teachers who work in gender-segregated classrooms at first, as they may need to alternate their classrooms and teaching styles but it is recommended that the teachers who are willing to adapt and change their lessons use the designed repertoire in their classrooms. Lesson plans need to be differentiated between the two genders completely. This will be a lot of extra work for new teachers coming into gender-segregated classrooms and, teachers working in co-ed classrooms but rewriting lesson plans and creating new material is essential in providing beneficial learning for both genders.
- In regard to going deeper into this case study, more students and classrooms would need to be observed. To create a more generalized result, teachers will have to investigate this on their own; whether in gender-segregated classrooms or in co-ed classrooms. This can be done at a teacher's own will if she/he wants to beneficially support students in gender-segregated classrooms and co-ed classrooms. Research can be done by the teacher on the differences between female and male social and physical attributes needs to be able to fully understand these differences and make them part of differentiated learning within their classrooms.

5.3 Limitations

This research focused on a small selection of international middle and high school teachers. The main question was how they perceive different teaching methods in order to

differentiate between female and male students due to their physical and social differences. This topic was researched in the past as there has been an ongoing debate on whether segregated education is beneficial or whether it messes with student's social attributes. Unfortunately, there have been several limitations while conducting this research:

Firstly, not all participants who agreed and signed the permission form completed the survey after numerous reminders. Some participants completed the survey on the email itself; which was not instructed. The participants were asked to open the Google Forms first and then complete the survey. Considering that the participants did not read the instructions set on the email, Google Forms did not record these results in the response section. Due to time restrictions, it was not possible for participants who completed the survey incorrectly to redo it before the arranged due date. Furthermore, the participants were drawn only from middle and high school teachers who were working at the international school. Permission forms could have been sent to other teachers who have worked at the school previously, this may have benefited the research by broadening the scope of the results. Secondly, only four classrooms have been observed over the 10-week practice period due to time and other obligations. This research would have greatly benefited insights from other classrooms ranging in all grade levels.

References

Anselmi, D. L., & Law, A. L. (1998). *Questions of Gender: Perspectives and Paradoxes*.

Boston, MA: McGraw Hill.

Arends, R. (2016). *Learning to teach*. Singapore: McGraw-Hill Education.

Baron, C. S. (2003). *The essential difference: The truth about the Male and Female Brain*. New

York: Basic Books.

BERA, (2011). Ethical Guidelines for Educational Research. In: B.E.R. Association, ed. London:

British Educational Research Association.

Blaxter, L., Hughes, C., & Tight, M. (2010). *How to research*. Maidenhead: Open University

Press.

Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education*. Abingdon,

Oxon: Routledge

Denscombe, M. (2017). *The Good Research Guide for small-scale social research projects*.

London: Open University Press.

Fenstermacher, G. D., Sanger, M. N., & Soltis, J. F. (2009). *Approaches to teaching*. New York: Teachers College.

Gurian, M., & Stevens, K. (2005). *The Minds of Boys: Saving our sons from falling behind in school and life*. San Francisco: Jossey-Bass.

Keller, S. (2010). *Teaching Methods at Single-Sex High Schools: An analysis of the implementation of biological differences and learning styles*. Senior Theses, Trinity College, Hartford, CT 2011.

Kimura, D. (1999). *Sex Differences in the Brain*. Scientific American Inc.

Lauren. Gender Segregation in Classrooms. (2013). Cover page image of common differentiated characteristics in females and males] Retrieved from <https://wspucla.wordpress.com/2013/08/14/current-events-gender-segregation-in-classrooms/>

Oliver, P. (2011) *The Student's Guide to Research Ethics* (2nd ed.). Maidenhead: Open University Press.

Price, M., Normile, D., Brainard, J., Rochmyaningsih, D., Mervis, J., & Voosen, P. (2017). December 08. Study finds some significant differences in the brains of men and women.

Retrieved on October 12, 2018, from <https://www.sciencemag.org/news/2017/04/study-finds-some-significant-differences-brains-men-and-women>

Pritchard, A. (2013). *Ways of learning: Learning theories and learning styles in the classroom*. Abingdon: Routledge.

Sadker, D. (2011). An Educators Primer on the Gender War. *Phi Delta Kappan*, 92(5), 81-88.

Seifert, K., & Sutton, R. (2007). Educational Psychology. Retrieved from <https://courses.lumenlearning.com/suny-educationalpsychology/chapter/gender-differences-in-the-classroom/>

Siegler, R. S., Saffran, J., Eisenberg, N., DeLoache, J. S., Gershoff, E. T., & Leaper, C. (2017). *How children develop*. New York: Worth.

Skutil, M., Havlíčková, K., & Matějčková, R. (2016). Teaching methods in primary education from the teacher's point of view. *SHS Web of Conferences*, 26, 01001. doi:10.1051/shsconf/20162601001

Soanes, C., & Stevenson, A. (2004). *Concise Oxford English dictionary*. New York: Oxford University Press.

- Tunç, B., Solmaz, B., Parker, D., Satterthwaite, T. D., Elliott, M. A., Calkins, M. E., Verma, R. (2016). Establishing a link between sex-related differences in the structural connectome and behavior. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 371(1688), 20150111. doi:10.1098/rstb.2015.0111
- VanPatten, B., & Williams, J. (2007). *Theories in second language acquisition: An introduction*. Mahwah, NJ: Lawrence Erlbaum Associates Inc, US.
- Yilmaz, H. B. (2009). On the development and measurement of spatial ability. *International Electronic Journal of Elementary Education*, 1(2), 83-96
- Yurtoğlu, N. (2018). *History Studies International Journal of History*, 10(7), 241-264. doi:10.9737/hist.2018.658

Appendix

A.

Permission form:

STENDEN UNIVERSITY OF APPLIED SCIENCES PERMISSION FORM FOR THESIS PARTICIPATION

Study Title: What teaching methods do teachers use to support gender-segregated classrooms?

Student Researcher: Cheyenne Fernandez Cano

You are being asked to take part in a research study. The purpose of this research project is to analyze the different teaching methods that are being used in single-sex classrooms. This is a research project being conducted by a fourth-year student completing her Bachelor of Education at Stenden University of applied sciences. You are invited to participate in this research project because you are an educator working in the field of single-sex education.

Your participation in this research study is voluntary. You may choose not to participate. If you decide to participate in this research survey, you may withdraw at any time. If you decide not to participate in this study or if you withdraw from participating at any time, you will not be penalized.

The procedure involves filling out a survey that will take approximately 10 minutes. Your responses will be confidential. The survey questions will be about whether you use specific teaching methods in boys' classes, girls' classes, both or neither. You will have a chance to write out any extra comments or experiences you have had working in single-sex classrooms.

All information will be kept confidential. All data will be stored in a password protected electronic format. To help protect your confidentiality, the surveys will not contain information that will personally identify you. The results of this study will be used for scholarly purposes only and will be shared with Stenden University of applied sciences representatives.

If you have any questions about the research study, please contact Marcel Haagsma.
marcel.haagsma@stenden.com

_____ I agree to participate in this research

_____ I do not agree to participate in this research

School email

Name (printed) and Signature

Date

B.

Survey questions:

Questions 1 was a yes or no question:

1. Do you teach both gender classrooms?

Questions 2 – 29 were multiple choice questions answers followed as, Mostly girls, Mostly boys, Both or Neither. The posed question was “For the following questions, please specify in which classrooms you tend to use these more?”:

2. Volume of voice: Loud
3. Volume of voice: Quiet
4. Visual aids e.g. images, diagrams
5. Visual media e.g. YouTube videos, documentaries
6. Language and Comprehension based instruction
7. Classroom setting: Dim lights
8. Classroom setting: Bright lights
9. Room temperature: Warm
10. Room temperature: Cold
11. Handouts
12. Audio media: music
13. Verbal discussions
14. Problem-solving
15. Kinetic learning
16. Collaborative learning
17. Experimental learning
18. One-on-one instruction
19. Competition-based learning
20. Peer instruction
21. Real world application
22. Memorization
23. Note taking
24. Daily activity e.g. Do Now, Speed test
25. Turn-and-talk
26. Technology-based learning
27. Peer evaluation
28. Intercultural-based learning
29. Hands-on activities

Questions 30-32 were opened questions:

30. Are there any other teaching strategies that you use in single-sex classrooms? Please specify.
31. How do you differentiate between girls and boys?
32. Additional comments:

Question 33 was a rating question answers followed as, Strongly agree, Agree, Neutral, Disagree and Strongly disagree:

33. Do you believe that teaching boys and girls separately is beneficial for the students?

C.

Observation form:

Teacher observed:	Date:
Grade level:	Class: Girls 1, Girls 2, Boys 1, Boys 2
Subject area:	Temperature: ____ ____ ____ ____
Lesson/activity:	Classroom setting: ____ ____ ____ ____

Summary of observation:
Girls 1: Girls 2: Boys 1: Boys 2:
Observation of teacher:
Girls 1: Girls 2: Boys 1: Boys 2:
Observation of learners:
Girls 1: Girls 2: Boys 1: Boys 2:
Evaluation of lesson
Girls 1: Girls 2: Boys 1: Boys 2:
Teaching methods used:
Girls 1: Girls 2: Boys 1: Boys 2: