

**Using Self-Regulated Learning Theory to Investigate the Effectiveness of
Inclusion for Students with Visual Impairments in a Secondary School in Saudi
Arabia**

by

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Abstract

Self-regulated learning (SRL) is a practice being used in general education classrooms to help students, including struggling students to acquire the skills to become life-long learners and to take control of their learning situations. SRL has three decades of research supporting its efficacy (Perry, VandeKamp, Mercer, & Nordby, 2002), and a direct connection with self-determination (Grolnick & Raftery-Helmer, 2015), an important area of the expanded core curriculum for students with visual impairments. However, it has never been directly researched with students with visual impairments or employed as a framework to include them in general education, despite its relevance to their needs. To address this gap, this study's goal was to investigate the extent to which general classroom teachers were implementing practices to promote the inclusion of students with visual impairments in line with SRL theory. The context of a secondary school in the Kingdom of Saudi Arabia (KSA) that includes learners with visual impairments was employed.

Four general classroom teachers and four students with visual impairments (n = 8) participated in this study. Data was collected using observations as a direct measure of inclusion and SRL strategies used and the use of teacher and student self-report questionnaires as an indirect measure to obtain triangulation of data and fully understand the research problem. The researcher coded the observations based on SRL promoting practices. Descriptive statistics were performed to analyze the data generated from the self-report questionnaires. The results of the study highlighted both opportunities and missing pieces in classroom interactions that affected the inclusion

and the learning experience of the students with visual impairments who participated in this study. Overall, the teachers provided limited opportunities with practices that are believed to promote inclusion in SRL research or that support the students' development of SRL. They were found to offered choices in classroom activities and projects but did not provide a context for the students to receive support or to engage in a process that required strategic actions. Lack of self-assessment practices was both observed in the general classrooms and reported by the students with visual impairments for all four teachers.

Lay Summary

Research in SRL theory describes classroom practices that promote a rich, engaging, and comprehensive form of learning that have the potential to enhance the learning outcomes of students with and without special needs. This study drew on these practices to explore general classroom teachers' practices in term of its likelihood to promote the inclusion of students with visual impairments. The study was conducted in a public secondary school in the Kingdom of Saudi Arabia that includes students with visual impairments. Four general classroom teachers and four students with visual impairments (n = 8) were sampled for this study. A descriptive research approach was adopted. Observations and self-report questionnaires were used to collect the data. The results of the study identify areas of strength and weakness in classroom interactions related to the successful inclusion and the learning experiences of students with visual impairments.

Preface

This master's thesis is an original work by the author, Maram Alraddadi. The research procedures were conducted under the supervision and guidance of Dr. Kim Zebehazy and Dr. Nancy Perry in the faculty of Educational and Counselling Psychology, and Special Education. This research has been reviewed and approved by the UBC Research Ethics Board (BREB) as a minimal risk study on October 23, 2018. The BREB research approval number is H18-01963.

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Chapter 1: Introduction

Over the last several decades, understanding the nature of learning has received considerable attention within educational, psychological, and sociological disciplines (Cassidy, 2010; Boekaerts & Corno, 2005). Consequently, knowledge regarding the learning process has evolved, representing a notable shift in the interpretation of students' achievement. In the past, learning capability was perceived as a fixed and innate trait and the teaching process had limited or no effect on the learning outcomes (Zimmerman, 1990). A new vision that focuses on the role of the learning environment and the way students respond to education has emerged, replacing the previous belief and its applications (Zimmerman, 1990). This model of learning has been circulated for almost thirty years among researchers and practitioners as self-regulated learning (SRL) (Perry, VandeKamp, Mercer, & Nordby, 2002).

Zimmerman (2008) defined self-regulation as an individuals' capacity to control thoughts and behaviours to achieve personal goals and respond to environmental demands. Self-regulation theory and applications of the theory, as described in Butler, Schnellert and Perry (2017), is a process that involves taking deliberate control of one's behaviour and thought to engage successfully in all kinds of activities. In order to achieve this goal, learners need to be "metacognitively, motivationally, and behaviourally active participants in their own learning process" (Zimmerman, 2008, p.167). These elements have a profound influence on the attainment of skills that are necessary to succeed in school as well as during different stages of life (Butler, Perry & Schnellert, 2017; Zimmerman, 2002).

Theorists in SRL have identified several components that contribute to meaningful engagement in the learning process (Boekaerts & Corno, 2005; Butler et al., 2017). These components are cognition and metacognitive awareness, emotional and motivational aspects, and participation in a cycle of strategic actions (Butler et al., 2017). The term 'metacognition' is defined as "the awareness of and knowledge about one's own thinking" (Zimmerman, 2002, p. 65). The concept of 'cognition' refers to identifying the task requirements and using cognitive and flexible strategies to accomplish the task (Butler & Cartier, 2005; Butler et al., 2017). 'Motivation' refers to inner perceptions and beliefs that either encourage or hinder learners from participating in the learning process such as thoughts that are related to the nature of learning or the protection of self-image. 'Emotion', in the context of SRL, refers to "individual affective responses when presented with or engaged in an activity" (Butler et al., 2017, p. 6), such as feeling anxious or, alternatively, curious, when tasks are challenging. Emotion regulation involves taking control of one's feelings that may interfere with or support productive engagement in classroom activities (e.g., stress, anxiety, frustration, enjoyment, or interest). Lastly, participating in a cycle of 'strategic actions' requires overlap among all the mentioned dimensions so that the learners will be capable of "(1) interpreting tasks and setting goals, (2) planning, (3) enacting strategies, (4) monitoring and (5) adjusting ..." (Butler et al., 2017, p. 6).

SRL: A Framework for Several Applications in Education

SRL as a measurement method to assess learning capacity. In their attempt to transform theory into practice, researchers in educational psychology interested in SRL have applied and investigated this theory through various approaches

(Paris & Paris, 2001). In the literature, SRL has been used to inform and develop school practices through the use of assessment tools, intervention programs, and the incorporation of appropriate educational strategies or guiding practices to include diverse learners in classrooms. For example, some researchers designed different instruments to measure the qualities of SRL in students' behaviours and beliefs when, or while, engaging in the learning process (e.g., see Perry 1998; Zimmerman & Pons, 1986; Whitebread et al., 2009). This can be exemplified in the work of Whitebread et al. (2009) who developed an observational tool to evaluate the metacognition and self-regulation capabilities in young children using verbal and non-verbal indicators. Identifying students' self-regulatory abilities is advantageous in predicting later attainments, educational barriers, or identifying students who are at risk of academic failure (Blair & Diamond, 2008; Butler et al., 2017; Whitebread et al., 2009).

Additional reasons behind the interest in SRL come from research showing that self-regulation capacity is a powerful indicator of future academic success, and crucial to more efficiently preventing potential academic failure than solely focusing on teaching the academic skills (Blair & Diamond, 2008). Also, the use of SRL strategies is considered a source of performance variations between students. In a study aimed to evaluate high school students use of SRL strategies, Zimmerman and Pons (1986) found a significant correlation between using a wide range of SRL strategies and getting high grades in high school. Evidence to date suggests that an individual's ability to learn a new skill, engage successfully in an activity, navigate particular environments or accomplish a desirable goal rely heavily on developing an effective form of self-regulation (Zimmerman & Schunk, 2011 as cited in Butler et al., 2017). The positive

impact of self-directed learning on academic outcomes may justify the global trend in education towards student-centered learning, and the emergence of several related theories that focused on various aspects of students' development such as self-determination theory (e.g., see Deci & Ryan, 1985), social-emotional learning (e.g., see Zins, 2004) and executive functioning (e.g., see Meltzer, 2010).

SRL as an intervention program. Students with special needs typically have the highest need to receive support in SRL (Butler et al., 2017). Boekaerts and Corno (2005) present several examples of SRL intervention practices that aimed to confront challenges that may be faced by specific groups in the fields of special education. For instance, some interventions in SRL target assisting students with emotional, behavioural or attention disorders. This type of practice places central attention on SRL strategies that support students in controlling their metacognition, cognition, motivation, and strategic actions to stimulate adaptive behaviour and emotions (Boekaerts & Corno, 2005). Others aimed to provide educational instructions directed by SRL guiding principles and suggested practices to support students with learning disabilities in the acquisition of essential academic and learning skills (e.g., see Butler & Schnellert 2015; Montague, 2008; Sawyer, Graham, & Harris, 1992). The unique challenges of students with learning disabilities and its relationship to insufficient engagement in the SRL process made addressing those needs through SRL practices crucial and extremely recommended for successful intervention (Butler & Schnellert, 2015). However, despite the significance of SRL for the academic success of all students with special needs, research in special education, to date, has mainly applied the knowledge of SRL to students with learning disabilities (Perry, 2004) which may limit the benefits of SRL to

this specific population.

SRL: Powerful Educational Strategies For all learners

As mentioned earlier, the knowledge regarding SRL has been applied in educational and psychological research. Thus, a variety of theoretical models have been generated based on researchers' specialties and the philosophical approaches that are adopted (Boekaerts & Corno, 2005; Butler et al., 2017; Paris & Paris, 2001). In general, the main difference between these conceptual frameworks comes from the distinct focus that is placed on specific dimensions of SRL (Boekaerts & Corno, 2005). However, most models in SRL posit that SRL is not a state, cognitive ability or a skill that individuals either have or not; instead, it is a process that can be developed and regulated by individuals who aim to accomplish daily activities in and out of the academic context (Boekaerts & Corno, 2005; Butler et al., 2017; Zimmerman, 2002).

It is evident that developing an effective form of SRL is not solely determined by the individual level of control on SRL aspects, but it is also significantly influenced by specific circumstances present within the environment (Butler, 2002a; Zimmerman, 1989). In the educational system, the dominant form of classroom discourse unfolds during various types of social interactions. Considering this factor, several researchers emphasize investigating and identifying features of classroom interactions that shape and enhance SRL, building from a social constructivist perspective (Boekaerts & Corno, 2005; Butler, 2002a; Zimmerman, 1989). The results of these studies have contributed to the documentation of a set of practices that enhance academic outcomes and support learners in their approach towards SRL. Examples of such promising practices can be found in the work of Perry et al. (2002), Perry and VandeKamp (2000), Perry

(2004), Butler et al. (2017), and Butler (2015). For these researchers, SRL is a dynamic process that benefits *all* learners and promotes an effective form of SRL while working towards academic objectives. This process typically involves broad categories of educational instruction that build on SRL guiding principles, including : (a) creating opportunities for learners to encounter challenges and react adaptively, (b) fostering autonomy through providing choices and evaluating ones' behaviour and techniques, (c) designing activities that support the students' engagement in a full cycle of strategic actions that extend over time, (d) creating supportive non-threatening environments and evaluations, (e) providing feedback and support, and, (f) promoting positive motivational beliefs (Butler, 2015; Butler et al., 2017; Perry, 2004; Perry et al., 2002; Perry & VandeKamp, 2000).

SRL as a Means to Inclusive Education

During the 1980s, the educational placement of students with special needs in integrated or segregated settings was the core concern for most of the global agenda (Vislie, 2003). However, the 1990s witnessed a remarkable move towards inclusive education practices and policies (Vislie, 2003). The Salamanca Statement and Framework for Action, represented in the World Conference on Special Needs Education in 1994, called for implementing inclusion principles to make education accessible for every individual (UNESCO, 2009). The primary focus at that time was given to the inclusion of learners with significant disabilities. Nevertheless, the concept of inclusion has since expanded and become more pronounced in the World Education Forum held in Dakar, Senegal in April 2000. The forum reasserted that education must take into account all learners' needs, including those who may experience limited

access to education due to disadvantaged conditions (e.g., poverty problems), accessibility issues (e.g. remote rural dwellers and nomads), differences from the social majority (e.g., ethnic and linguistic minorities), crisis (e.g., individuals affected by conflict), health conditions (e.g., HIV and AIDS), and disabilities or specific learning difficulties (UNESCO, 2009).

Despite the effort of international organizations and national legalization moves toward inclusion, mainstream education still faces several challenges to address adequately the diverse needs of learners. Teacher preparation, experience, and the knowledge of inclusive teaching strategies have been found to significantly influence teacher capability to navigate the diversity in the learning environment (Fuchs, 2010). Therefore, the UNESCO (2009) “Guidelines on Inclusion in Education” point to the need for educators to be completely aware of the term of inclusion, starting from the concept to the practices. The report also mentioned that inflexible curriculum and the use of standardized methods of teaching that assume every student will learn the same amount of knowledge in the same amount of time and by the same means are among key issues that inhibit the success of inclusive education (UNESCO, 2009).

The importance of this topic and its close relevance to SRL practices made addressing challenges related to inclusion viewed through an SRL lens warranted. SRL with its emphasis on learning how to learn and its practices that accommodate individual differences in learners’ interests and abilities, can support inclusion. In fact, strategies that promote self-regulation have been found "effective for improving achievement in students who struggle academically, including students with exceptional learning needs, such as learning and developmental disabilities" (Perry, 2015, p.47).

Several examples that attempted to investigate methods to include students with special needs in mainstream education using SRL practices currently exist in the research. This is can be exemplified in the work of Perry (2004) who described several instructional strategies and classroom practices that support an effective form of teaching and learning in the general classroom context through SRL. The author also presented an example of practices that promote SRL in a first-grade classroom that included diverse learners. Menzies and Lane (2011) suggested using SRL to support students with behavioural issues in schools that used a Response to Intervention model (RTI). They recommended providing additional support by using self-monitoring, self-instruction, and goal setting to support learners who are in need of secondary and tertiary levels of intervention. Also, Butler (2002b) aimed to explain how a model of learning designed to promote SRL, namely the Strategic Content Learning Model, can support teachers in using individualized instruction in three different learning contexts: one-on-one support, small-group instruction, and general classroom teaching. There is evidence to suggest that this model has been effective in high school and beyond in addressing the needs of students with learning disabilities who receive one-on-one support, small-groups intervention, and instructions in English writing in the general classroom (Butler, 2002b). Other researchers suggested applying SRL to a classroom context that integrates students from different backgrounds such as culturally and linguistically diverse learners (Perry et al., 2017) and students from specific minority groups (e.g., Canadian First Nations students in the work of Yee, 2015).

Areas of Similarities Among Inclusive Pedagogy and SRL Promoting Practices

Understanding the philosophy underpinning the design of inclusive pedagogy. Typically, the purpose of creating an inclusive environment in schools is tied to meeting the demands of students with special needs. However, the misunderstanding of the term 'special needs' may interfere with the efficacy of education for all students. It is often believed that this concept is limited to a small number of students whose challenges arise from deficits instead of learning differences (Lindsay, 2007; Daniels & Hedegaard, 2011). In most classrooms, the individual differences that exist among all the students are the major source of students' needs, not the disability. This includes many students, who may be classified as 'average' or 'normal' learners despite having moderate needs that could develop into more critical demands if not addressed early enough and adequately. Another example of learners who need a context that accommodates their individual differences are students with linguistic and cultural differences. Thus, creating a universally designed environment that enables all students to reach their potential and fully benefit from the educational system is not temporary or linked to the presence of a student with a sensory, cognitive, or social emotional disability in a classroom. Instead, ensuring equal access to education for all students should become a school culture that is manifested in the everyday practices of school personnel and policymakers.

Characteristics of inclusive pedagogy. Loreman (2017) reviewed several inclusive pedagogical approaches to identify common principles that assist in developing and implementing this pedagogy. One of the shared characteristics of this pedagogy is reducing the stigma of special needs and discrimination of students with differences.

The design of inclusive pedagogy reviewed by Loreman (2017) is intended to engage all students in a rich, meaningful form of learning that is flexible enough to allow them to modify their learning situation to their needs and maximize their learning. It does not ignore individual differences, but it accommodates individual differences and advocates for personalizing means of learning without singling out individual students. At the same time, it does not 'sacrifice' the quality of education. Instead, it promotes teachers' use of high-quality instruction that supports "constructivist and social constructivist models of instruction that involve peer collaboration, goal-directed learning, communication, and teacher guidance." (Loreman, 2017, p.14).

Since diversity occurs in general classrooms whether or not it includes students with a disability, the inclusive pedagogical approaches advocate the use of 'multiple means' of learning and engagement for all students (Loreman, 2017). This principle is crucial for inclusion as it allows all students to draw on their unique strengths and expertise and control their learning by making choices that are consistent with their needs and preferences.

Loreman (2017) also noticed the use of practices that promote social-emotional intelligence in one inclusive pedagogy approach (UDL model suggested by Katz 2012). Similarly, Corbett (2001) identified supporting the students' social-emotional intelligence and engagement in effective learning as key elements that are necessary to celebrate individual differences in general classrooms.

Practices in SRL that overlap with inclusive pedagogy principles. Several teaching practices in SRL overlap with the inclusive pedagogical characteristics

mentioned in Loreman (2017). Table 1 shows practices that support inclusion and effective learning in SRL that overlap with inclusive pedagogy principles.

Table 1

Practices in SRL that Overlap with Inclusive Pedagogy Principles

Inclusive practices	SRL promoting practices	Inclusive pedagogy principles
Support all learners.	√	√
Draw on social emotional learning frameworks to create a safe, supportive environment.	√	√
Engage the students in meaningful and effective forms of learning	√	√
Support constructivist and social constructivist models of instruction.	√	√
Promote both social and individual forms of learning	√	√
Flexibility in the engagement and representations of learning.	√	√
Provide support and guidance	√	√

SRL and the Inclusion of Students with Visual Impairments

In general, the literature reveals a lack of SRL research that focuses specifically on individuals with visual impairments (Argyropoulos, Sideridis, Botsas & Padelia, 2012). Current research on self-regulation, in regard to this population, is mainly related to enhancing the driving skills of older drivers (Argyropoulos et al., 2012). However, it is noted in the literature the efforts of some researchers to employ the theory of SRL in the education of students with visual impairments. For example, Van Reusen and Head

(1994) presented a case study of a student with visual impairment to explain how teaching metacognitive strategies can enhance the academic performance of students with visual impairments. Argyropoulos et al. (2012) conducted a study to assess and compare the self-regulation strategies that students with visual impairments use in two academic subjects: language arts and math. They found that the students with visual impairments used the same strategies regardless of content area and did not adjust their strategies to the task requirements. Also, in a paper presented at the Council for Exceptional Children (CEC) Annual Convention, Zebehazy and Butler (2015) sought to demonstrate how SRL teaching strategies could be integrated into the instruction of the expanded core curriculum (ECC) to promote higher order thinking and problem solving skills of students with visual impairments. They focused on strategies that teachers can use when interacting with the students to foster their development of SRL which include providing instrumental support, strategic questioning, and feedback.

Furthermore, while many researchers have employed SRL as a framework to include students with exceptional needs in general education, none of these studies attempted to apply SRL to classroom contexts that include students with visual impairments specifically, despite the relevance to their needs. Students with visual impairments are more likely to experience challenges with fundamental skills that are necessary to navigate daily activities due to vision loss (Allman & Lewis, 2014). In an ideal learning process, students can increase their motivation to learn, develop, adapt, or even assess the strategies that are necessary to accomplish a task by observing and learning from others. This kind of interaction is extra difficult and unlikely to occur incidentally for students with visual impairments unless opportunities for social

interaction, receiving and giving feedback, and engaging in self-assessment of their techniques are intentionally provided through classroom activities. Allman and Lewis (2014) stated that children with visual impairments have limited access to “casual observation” and “incidental learning” that typically facilitate the acquisition of necessary skills and knowledge in sighted children (p. 81).

Accordingly, students with visual impairments need to be supported in developing alternative and personalized strategies that reduce the impact of vision loss on learning and quality of life (Allman, Lewis, & Spungin, 2014). However, in an inclusion setting creating meaningful opportunities for learning and personal growth can be challenging. Some educators feel uncomfortable having diverse learners in their classrooms, which may create an atmosphere full of pressure and conflict. For this reason, SRL can be enormously helpful in alleviating this ambiguity by identifying the role of educators in an inclusive classroom. SRL can be used as a practical guide to producing high-quality instruction that enables teachers to address multiple needs, including the needs of students with visual impairments. The next chapter will provide a detailed explanation of approaches that teachers can use to promote inclusion using SRL theory with a specific focus on the inclusion of students with visual impairments.

Chapter 2: Literature Review

Setting the Stage for SRL: Understanding the Nature of Visual Impairment

In the educational and medical sector, a range of terms is commonly used to describe individuals with visual impairment. Visual impairment is an umbrella term that refers to all individuals with a significant loss of their ability to see that cannot be corrected by any means (Huebner, 2007). According to the International Classification of Diseases (ICD), visual impairments can be divided into three classifications that include moderate vision impairment, severe vision impairment and blindness (The World Health Organization [WHO], 2017). The first two categories, moderate and severe vision impairment, represent the low vision group (WHO, 2017). Low vision is a term that describes “a person who has measurable vision but has difficulty accomplishing or cannot accomplish visual tasks even with prescribed corrective lenses but who can enhance his or her ability to accomplish these tasks with the use of compensatory visual strategies, low vision devices, and environmental modifications” (Corn & Lusk, 2010, p. 4-5). The concept of blindness refers to a person with no or limited vision that may solely enable him/her to perceive light (Huebner, 2007). The latest global estimated data on visual impairment indicates that 253 million individuals have visual disabilities. Individuals with low vision make up most of this population with approximately 217 million, while individuals who are blind number only around 36 million (WHO, 2017).

Other terminologies and measurements are commonly encountered in medical eye reports when describing a decreased ability in the use of vision such as ‘legally blind’, ‘visual acuity’ and ‘peripheral field.’ However, solely using clinical definitions and

designations of visual impairments to determine important decisions in the educational and rehabilitation context is problematic (Corn & Lusk, 2010; Huebner, 2007). For example, a person with multiple disabilities or communication difficulties might be labeled as blind despite having an amount of usable vision to accomplish daily activities (Huebner, 2007). In general, using numbers to describe visual ability does not provide much information about visual functioning or efficacy in everyday environments. Functional vision might change during the same day or from day to day for some individuals with visual impairments due to environmental circumstances (e.g., cloudy and sunny weather (Corn & Lusk, 2010), day and night time for people with night blindness (Huebner, 2007)). Therefore, teachers of students with visual impairments are advised not to rely solely on the medical eye report but also observe each student and functionally assess his\ her potential (Huebner, 2007).

Furthermore, while people with disability, in general, are “the world's largest minority” (The United Nation [UN], n. d.), people with visual impairment are considered under the low incidence disability group (Holbrook, 2006). In other words, they represent a minority within a minority. Thus, many beliefs about the nature of visual impairment and its impact on the individual represent either misconception or lack of knowledge due to the absence of direct experience with this population (Huebner, 2007). When working with individuals in this group, it is important to consider that they do not form a homogenous group. The needs of each person with visual impairments vary from one another based on individual characteristics, the degree and the onset of vision loss, and the ability to use the remaining sight efficiently (Huebner, 2007). They also differ in the way they employ their senses to explore the world, and learn and

access information in line with their capabilities and preferences. Some students with visual impairments learn mainly via auditory and tactile senses, while others use vision as the primary sensory channel to gather information (Holbrook & Koenig, 2010). Also, some learners use a combination of both methods, “two or more senses equally” (Holbrook & Koenig, 2010, P. 448). Understanding all these factors is fundamental to designing learning environments that meet the needs of students with visual impairment and promotes their strength.

This chapter subsection begins by examining the learning needs of students with visual impairments. Then, to identify how SRL and self-determination fit together, areas of connection between them is highlighted. In the third section, addressing the needs of students with visual impairments in general classrooms through SRL promoting practices is examined. The final section presents the study problem, purpose of the study and the research questions.

The Needs of Students with Visual Impairments

The expand core curriculum. Like all school-age children, students with visual impairments should receive education on a general body of knowledge, known as the core academic curriculum (Allman & Lewis 2014). In order to access the core subjects of general education, students with visual impairments need to master a set of skills and knowledge known as the expand core curriculum (ECC) (Allman & Lewis, 2014). The ECC encompasses nine instructional areas that children and youth with visual impairments need to succeed in school and beyond (Sapp & Hatlen, 2010). These nine areas are: compensatory access, sensory efficiency, assistive technology, orientation

and mobility, independent living, social interaction, recreation and leisure, career education, and self-determination (Allman & Lewis, 2014; Sapp & Hatlen, 2010).

Essentially, a teacher who is certified to teach students with visual impairments (i.e., teacher of students with visual impairments) and a certified orientation and mobility (O&M) specialist should be responsible for teaching the ECC (Sapp & Hatlen, 2010). However, to guarantee better outcomes the teacher of students with visual impairments should try as much as possible to link the ECC areas to relevant content in the general education curriculum (Sapp & Hatlen, 2010). The interactions in the general classroom offer enormous opportunities for students with visual impairments to learn and exercise the ECC areas in a meaningful and authentic way. For example, students can learn some social skills while working in groups, practice orientation and mobility skills through exploring the classroom and school environment, and develop daily living skills through managing their time and work during classroom activities.

Self-Determination and the Education of Students with Visual Impairments

The theory of self-determination as described by Field, Martin, Miller, Ward, and Whemeyer (1998) refers to:

A combination of skills, knowledge, and beliefs that enable a person to engage in goal-directed, self-regulated, autonomous behavior. An understanding of one's strengths and limitations, together with a belief of oneself as capable and effective are essential to self-determination. When acting on the basis of these skills and attitudes, individuals have greater ability to take control of their lives and assume the role of successful adults in our society (p. 2).

Research in self-determination has identified several skills that are necessary to develop this capacity. These skills include the ability to make decisions and solve problems, develop one's beliefs, strategies, and knowledge necessary to regulate one's own performance, know oneself, engage in self- advocacy, and believe in one's individual ability to succeed (Butler, Perry & Schnellert, 2017).

In the area of education of students with visual impairments, a great deal of attention has been given to teaching and assessing self-determination skills. In fact, it was deemed important enough to add it as the ninth area of the ECC in 2003 (Allman & Lewis, 2014). Given the unique needs of individuals with visual impairment and the way adults around them sometimes deal with it, many students are involved less frequently in autonomous actions (Allman & Lewis, 2014; Sacks, Wolffe, and Tierney 1998). Sacks, Wolffe, and Tierney (1998) report that the participants with visual impairments in their study spent most of their time engaging in passive activities such as talking on the telephone and other sedentary activities. As a result, they had limited experience, compared with their sighted peers with situations that required decision making (e.g., spending money, deciding where to go), and with risk-taking behaviours (e.g., traveling alone) (Sacks, et al., 1998).

Moreover, parents and professionals engaging with students with visual impairments sometimes seem excessively directive in their attempts to provide sufficient verbal information that helps students with visual impairments to navigate their world and activities (Allman & Lewis 2014). Accordingly, students with visual impairment sometimes experience fewer opportunities during home and school activities to make decisions or explore their own interests (Allman & Lewis 2014). Robinson and

Lieberman (2004) stated that the participants with visual impairments in their study received limited opportunities to engage in self-determination actions either at home, in school, with friends, or even when receiving healthcare. According to the authors, most of the time, they had “someone else”—their parents, teachers, guardians, or school administrators” — make their decisions (Robinson & Lieberman, 2004, p. 22).

Additionally, in school, for example, students with visual impairments may be given assignments that differ in quality and quantity from those given to students without vision loss. Sacks et al. (1998) mentioned, “... the amount and difficulty of homework assignments seem much less stringent for blind and low vision students when compared to their sighted counterparts” (Sacks et al, 1998, p. 477). To sum up, the needs of students with visual impairments make promoting self-determination skills and behaviours paramount for their lifelong success as it is closely related to career education and the development of other areas in the ECC (Allman & Lewis, 2014).

How SRL and Self-determination Fit Together

Those who are familiar with self-regulated learning (SRL) and self-determination may notice a vast number of similarities between these two theories. When comparing the definition and the component skills of self-determination to theories of SRL similarities exist in the overall goal and dimensions of each. Both theories aim to develop a lifelong learner that can succeed in and out of the school setting. They also both contain similar components within the make-up of the theory (i.e., SRL and self-determination). Butler et al. (2017) stated that there are significant connections between SRL dimensions and self-determination skills. For instance, both SRL and self-determination theory require the development of metacognitive knowledge about

individual strengths and challenges and positive motivational perceptions about one's ability to succeed and learn (Butler et al, 2017).

Grolnick and Raftery-Helmer (2015) suggest another area of connection between SRL and self-determination. According to these authors, self-determination highlights three psychological needs that are necessary for SRL to flourish. The three primary needs are competency, relatedness, and autonomy. In school contexts, 'competency' refers to students' perceptions about their ability to succeed and their knowledge about the way they can accomplish this success (Grolnick & Raftery-Helmer, 2015).

'Relatedness' occurs when a student develops a sense of belonging and feels treated with care and respect. 'Autonomy' is evident when the student feels a sense of volition regarding school activities (Grolnick & Raftery-Helmer, 2015). Autonomy explains why students engage in learning and school activities and can be represented on a continuum. On one end of the continuum, students engage due to external motivations (e.g., avoiding punishment or seeking rewards), or a sense of interjected motivation (e.g., avoiding negative feelings, guilt, and shame). On the other end of the continuum, students value the importance of an action or activity (e.g., learning for personal goals) and have a developed sense of intrinsic motivation (i.e., having a sense of joy and fun during learning) (Grolnick & Raftery-Helmer, 2015).

The three psychological needs identified in self-determination represent features of context that are necessary to develop SRL capacity. In order to establish a sense of competency, students need a predictable structure that supports success; in order to promote autonomy, students need choices and opportunities to participate in important decisions; and, in order develop relatedness, they need involvement and positive social

interactions (Grolnick & Raftery-Helmer, 2015). These are exactly the qualities that SRL promoting practices are built on, and it highlights the opportunity SRL has to support students with visual impairments in the classroom while they are similarly working on goals in the ECC area of self-determination.

Addressing the Needs of Students with Visual Impairments in General Classrooms through SRL Promoting Practices

Inclusive classrooms are complex settings that need to be planned carefully to support the developmental levels of all students, address their basic psychological needs, and respect their different methods of learning. The placement of students with visual impairments in general classrooms can be challenging, and perhaps even damaging, if the instructions and the interactions are not designed to promote both academic and social inclusion. However, in recent years, several theoretical models and pedagogical approaches have been introduced to guide teachers' practices toward inclusion in diverse classrooms (Loreman, 2017). One promising practice is SRL (see 'SRL as a Means to Inclusive Education' in chapter one). It is worth noting here, that SRL prompting practices were not introduced initially to support inclusion, however, there are a number of researchers (e.g., Parry, 2004; Butler, 2002b; Butler & Schnellert, 2015) who argue that it has powerful instructional strategies that enable educators to address the diverse needs in general classrooms. This is evident by attempts of other researchers to use SRL as a framework to support the demands of specific groups in special education (e.g., Menzies and Lane, 2011; Perry, Yee, Mazabel, Lisaingo, & Määttä, 2017; Yee, 2015).

Using SRL practices in a classroom context that includes students with visual impairments is advantageous for the learning and the teaching process. A key factor in teaching students with visual impairments is “to create circumstances in which the equivalent of incidental learning—learning from casual and natural (but carefully planned) experiences—can occur for children who cannot easily obtain information through visual observation” (Grolnick & Raftery-Helmer, 2015, p.64). In this regard, SRL suggests comprehensive practices that aim to promote students’ autonomy, incidental learning and gradual development of targeted skills. For example, the design of SRL activities require exposing the students to extensive situations in which they need to share their strategies (e.g., to learn, gather information, organize information, manage time), assess each other's strategies, receive feedback, adapt, and ultimately, generalize the learning experience to similar contexts. This process of SRL lends itself well to providing direct, experiential opportunities for students with visual impairments and can offset a tendency for educators and paraeducators to “overdo” for students with visual impairments (Forster & Holbrook, 2005).

There are many opportunities in the classroom in which SRL guiding principles can be integrated to include students with visual impairments socially and academically in an engaging manner. This includes (a) arranging the physical environment and classroom seating in a way that supports students’ autonomy and social interactions; (b) building a classroom climate that supports SRL and the inclusion of students with visual impairments; (c) providing opportunities to exercise autonomy and experience challenges; (d) providing opportunities to control challenges; (e) promoting SRL in teacher assessment and feedback; (f) designing activities that require engaging in a rich

form of SRL; (g) reflecting positive motivational beliefs about learning and students' capacity to learn through teacher language and interactions with the students.

First: Supporting SRL through the arrangement of the physical environment. It has been well established in the literature that the arrangement of classroom furniture significantly affects students' behaviours (Marx, Fuhrer & Hartig, 1999; Van den Berg, Segers & Cillessen, 2012; Wannarka & Ruhl, 2008), and there is evidence to suggest an impact on achievement as well (Wannarka & Ruhl, 2008; Suleman & Hussain, 2014). In fact, the arrangement in the classroom can send a positive or negative message to students about who is in power, and who should be the source of information and social interactions (Katz, 2012). Generally speaking, the decision about the seating arrangements should be made based on the nature of the task and the needs of the students (Wannarka & Ruhl, 2008).

The nature of SRL activities and tasks require collaborative learning, giving the students opportunities to experience challenges and take control of their learning. While on the other hand, the nature of visual impairments requires arranging the environment in a way that fosters independence (e.g., freedom of movement around the classroom, ability to access materials and assistive technology) and increases the interactions and the development of social skills. If this is well-planned the two needs can function well together, so it is critical for general education classroom teachers to consider these factors when arranging the physical environment in the classroom. For example, when the goal is to create opportunities for social interaction, collaborative learning, and student autonomy, seating arrangements that facilitate interactions by proximity and face to face positioning (e.g., clustered desks or semi-circles) and that encourage

students taking the lead and having conversations is suggested (Reeve & Jang, 2006; Wannarka & Ruhl, 2008). Also, when the learning process requires using teaching materials, the seating should encourage the students, not the teacher, to explore the learning materials. Katz (2012) highlights the importance of placing the material out in the open, within reach of the students. Reeve and Jang (2006) suggest that when teachers monopolize the learning materials students' autonomy is impacted as it “controls students’ behavior by establishing the teacher’s agenda” (Reeve & Jang, 2006, p.210). For students with visual impairments this may require placing the learning materials in consistent and accessible locations (Brown, n.d.), teaching the students strategies to explore tactile graphics independently or giving the students with visual impairments time to examine tactile materials freely before engaging them in a discussion about the characteristics of the given item and its possible use (Zebehazy & Wilton, 2014 a; Zebehazy & Wilton, 2014b).

Moreover, while the needs of students with visual impairments require applying some modifications to the classroom physical environment, it is not recommended to overly adapt the classroom furniture to the point of artificiality of the environment. The student with visual impairments needs to experience obstacles in order to learn how to navigate around them (Brown, n.d.). At the same time, it is necessary to support the students until they can overcome the obstacles safely and independently. For example, encouraging the student, at the beginning of the academic year, to explore the components of the environment to become familiar with it, or allowing the student to bump into objects, when safety is ensured, to learn their locations (see Brown, n.d.). Butler et al. (2017) stressed the importance of “bridging from guiding learning to

fostering independence” to help students take control of the challenges and exercise agency, which can be applied to the unique navigation needs of students with visual impairments in the environment (ideally in collaboration with the students’ O&M specialists). These techniques are especially helpful if it is coupled with engaging the student in a dialogue about the strategies they have developed from specific learning experiences (e.g., bumping into obstacles; Perry, 2015).

Second: building a classroom climate that supports SRL. As mentioned earlier, students are empowered to take control of their learning and practice being self-regulated learners when the classroom climate addresses their three psychological needs: competency, autonomy, and relatedness (Grolnick & Raftery-Helmer, 2015). It is crucial for all students to perceive the environment as safe and non-threatening to freely build their social-emotional skills and work productively with others (Butler et al., 2017). In order to achieve this, Butler and Schnellert (2015) suggested “positioning all members of a classroom (adults and children) as co-learners, celebrating and building from each learner’s unique strengths, accommodating diverse needs, and fostering peer co-learning” to create a learning context that supports SRL (Butler & Schnellert, 2015, p.132). Butler et al. (2017) recommend using non-threatening teaching and assessment practices to help students focus on learning such as using instructional language that promotes positive motivational beliefs (i.e., about the learning process and themselves as learners), and evaluating the students’ performance to identify both areas of strengths and areas for growth instead of ranking the students based on achievement. The authors also highlighted the benefit of discussing and co-creating

classroom norms and expectations with the students and considering modifying the participation structure according to individual needs (Butler, Schnellert, & Perry, 2017).

Students with visual impairments may require modifications to the participation structure or the teaching instructions that are commonly used in general education classrooms. This may include providing detailed descriptions or adapted materials into a different sensory format when presenting charts, graphs, schedules or other printed information on the board, or asking speakers to introduce themselves by name in group discussions while not allowing more than one person to speak at a time (Holbrook & Rosenblum, 2007). To foster inclusion, a sense of belonging, and to make modifications a natural part of the classroom climate, it is important that the general education teacher takes an active role in the students with visual impairments' participation in lieu of allowing the responsibility to fall solely on the teacher of students with visual impairments or a paraprofessional (Forster & Holbrook, 2005). Students, additionally, need voice and influence by engaging them in co-constructing classroom routines and norms. For example, the classroom teacher could ask the student with visual impairment to suggest some cues for transitions between activities that do not rely solely on visual information (e.g., hands up) and then have the class as a whole decide on the option they like best. This would support belonging, collaboration, and foster a sense of autonomy for students with visual impairments because they can recognize the cue and react independently.

Third: supporting SRL through fostering students' autonomy. The use of specific autonomy promoting practices by the teacher will address student interests and needs and reflect positively on student engagement and persistence (Perry, 2015).

Researchers in SRL suggest using three practices to promote student autonomy: providing choices, designing a learning experience that involves challenge and gives learners opportunities to control challenge, and giving opportunities for self-assessment (Butler et al., 2017; Butler & Schnellert, 2017; Perry, 2015). Choices are important not only to foster student autonomy but also to give the students control over challenges and create a context to accommodate individual differences (Perry, 2004). In fact, when the task requires the students to make choices, based on their abilities and interests, they can control the level of challenge with which they can deal (Perry, 2015). Students need to experience difficulties because, without them, they can complete the task even if they do not engage in a rich form of learning (Butler et al., 2017) or regulate their metacognition and strategic actions (Perry, 2004). However, that level of difficulty should be within the “zone of proximal development” of the students (Perry, 2004). The “zone of proximal development” is a concept identified by Vygotsky (1978) and as defined in Butler et al. (2017) is “the space between what students can accomplish on their own and what they can do with guidance or support” (Butler et al., 2017, p.80). Additionally, creating opportunities for self-assessment is a powerful practice because it requires the students to identify the task objectives (e.g., qualities of good performance and work) and then try to “align their behaviors with those good models” (Perry & Drummond, 2002, p. 303).

For students with visual impairments building learning tasks through these SRL principles supports better inclusion. By making choices, students can engage in the same task as all learners with a goal that suits their ability and interest. Through experiencing challenge, they build their capacity to regulate their emotion, (e.g., deal

with frustration and excitement), their metacognition (e.g., developing self-awareness and learning how to learn effectively), their strategic behaviour (e.g., select strategies based on the task requirement), and develop a sense of competency (i.e., when overcoming the challenges). By engaging in self-assessment, they learn how to generate goals and information necessary for “good” achievement and guide their performance according to these objectives. As mentioned earlier, these are expectations that students with visual impairments are often exempted from due to adults doing too much for the students within the learning environment. For example, Robinson and Lieberman (2004) mentioned that the students with visual impairments, in their study, were not expected to participate in important decisions related to their educational experience or to even attend their Individualized Education Program (IEP) meeting, which affected the level of opportunities they received to develop their self-determination. Therefore, switching to SRL practices within the classroom would foster these expectations as well as belonging, autonomy, and ultimately progression in ECC areas such as social skills and self-determination.

Fourth: integrating support to SRL through providing opportunities to control challenges. There are several practices teachers can use to support all students to control challenges and experience success and accomplishment. A key practice in this regard is to engage students in making important decisions related to their learning including “what they are learning, how they are learning, and how their learning is assessed” (Butler et al., 2017, p. 183). When the students have choices they can control the length, the learning resources, the topic, the pace of working, the place of working and the products. However, the teacher should still support the students in

making appropriate choices, for example, by generating criteria that define good choices (Perry, 2004) or asking strategic questions that lead the students to good choices (Butler et al., 2017; Perry, 2015). Also, receiving instrumental supports from peers provides additional opportunities for learning and increases the students' motivation (Perry, 2015). Educators can promote peer support by encouraging students to work in groups, and to share strategies and useful ideas to further their learning (Perry, 2015).

These practices are especially useful for students with visual impairment as they sometimes lack the ability to “observe what peers are doing and evaluate their own skills in comparison” (Zebehazy & Butler, 2015, p. 6). However, if they receive opportunities, like all the students, to share their ideas and strategies, evaluate them and adjust them, they will be more likely to succeed, expand their strategies and develop different skills (e.g., negotiation skills, expressing perspective and accepting another point of view, sharing and collaboration). Linked with self-determination, students with visual impairments may need to develop realistic views of their skills and challenge levels to initially make informed decisions that advance their learning (Wolffe, & Rosenblum, 2014). Peers may need to be supported in how to include the student with visual impairments as an equal peer contributing to the learning process versus a peer for whom things need to be done. In this regard, Kates (2012) suggests spending some time in the beginning of the year teaching the students why they should validate each others' strengths and how they can work collaboratively. Once this shift happens, the potential for students with visual impairments to feel a sense of control and

empowerment as a contributing member to the collective learning process is heightened through SRL practices.

Fifth: promoting SRL in teacher assessment and feedback. Assessment can productively support SRL when teachers use assessment, mainly, to guide their teaching and help students control their learning (Butler et al., 2017). Students should be evaluated not only based on their outcomes, level of achievements and the general quality of the products, but also on the way they approach learning and the progress they are making (Butler et al., 2017). Assessment should be viewed as a method that supports the learning and teaching process, instead of seeing them as an inevitable source of anxiety or a way to control students' behaviours. Perry and her colleagues describe evaluation practices that promote effective learning and engagement in SRL as (a) nonthreatening; (b) continuous; (c) describing the students' performance on specific activities; (d) evaluating both processes and products so that the students can notice how the approach they use to engage in the learning process leads to specific outcomes; (e) promoting positive beliefs about learning such as focusing on personal progress (i.e., instead of comparing their achievement to others) and viewing errors as opportunities to learn (i.e., encourage risk taking behaviours); and (f) Involving the students in co-constructing criteria so that they experience a sense of control over outcomes and promote autonomy (Perry & Drummond, 2002; VandeKamp , Mercer, & Nordby, 2002;)

For example, with a student with visual impairments in the classroom, the teacher might provide feedback that attributes their outcomes to the strategy they use or might give feedback during various episodes of learning that describe the students'

progress. These practices would help the students with visual impairments realize that they can control their learning outcomes and develop their capability if they invest some efforts and time on it. The mindset that the students may develop through such assessment practices can increase their level of engagement in educational and life activities. Alma, Van der Mei, Groothoff, and Suurmeijer (2012) reported that individuals with visual impairments who tend to perceive events and their outcomes as “uncontrollable, unpredictable, and unchangeable,” have limited participation in daily living activities (e.g., shopping, household chores) (p.94).

Sixth: designing activities that require engagement in a rich form of SRL. A practical approach to promote SRL in classrooms is to design activities that invite and require engagement in SRL (Butler et al., 2017). Perry (2004) describes SRL activities as complex by design. She illustrated the structure of SRL activities by saying “from a design point of view, tasks are complex when they address multiple goals, involve large chunks of meaning, extend over long periods of time, engage students in a variety of cognitive and metacognitive processes, and allow the production of a wide range of products” (Perry, 2004, p. 66). These qualities are fundamental to include the diverse needs in classrooms. For example, this design enables the teacher to work towards academic goals while at the same time helping students develop several skills such as cognitive, metacognitive, social-emotional and problem-solving skills (Butler et al., 2017). Furthermore, all students benefit from the opportunities provided to understand their learning strengths, challenges, the task requirements, and the strategies that can be used to accomplish the task (Butler et al., 2017). Table 1 includes a comparison

between SRL activities and simple structure activities and how the learning opportunities provided in each one may differ.

Table 2.

Differences Between Complex and Simple Structure Activities (Based on the work of Butler, Schnellert & Perry (2017) and Perry (2004, 2015))

Complex structure activities	Simple structure activities
<p>Work toward multiple goals (e.g., Curricular goals, cognitive goals, metacognitive goals, social-emotional skills, problem-solving skills)</p>	<p>Work towards limited numbers of goals (e.g., solely curricular goals, one or two skills such as writing and drawing, listening and memorizing)</p>
<p>Engage the students in a full cycle of strategic actions The actions sequence in SRL activities is activated: interpreting the task, defining goals, planning, deciding the product, sharing the product, enacting strategies, receiving feedback, adapting and applying modifications if it is required, generalizing the learning experience to similar contexts.</p>	<p>The task can be done without engaging in a rich form of learning The students may do the task requirements; however, they will not learn to the best of their ability—working without thinking</p>
<p>The activity focuses on a large chunk of meaning. (e.g., the essential understandings of a topic or subject, integration of relevant content and skills across the curriculum)</p>	<p>Less meaningful (e.g., unfocused—target secondary goals, are unconnected to real life experience, and/or are unconnected to similar content or skills across the curriculum)</p>
<p>The activity extends over time. Students can develop their learning gradually over an extended period (e.g., month or term)</p>	<p>Short-term activity Completing the activity takes 3-10 minutes and does not require the students to learn from their mistakes or to try another strategy —often they are stand-alone activities, and the connection to “real life” tasks is less clear.</p>
<p>Offer choices in the products</p>	<p>No or limited choices</p>

(e.g., Open-ended answer, allow different representations of the learning, allow the students to choose the learning resource and strategies that suit their ability and interests.

(e.g., only one answer is right, all the students should write a report about the unit, all the learning products are verbal linguistic as the teacher requires, the same resource is used —mainly the textbook (braille, auditory or large print)

For students with visual impairments, providing learning activities using column one's principles can be demonstrated in a well-planned inquiry project or problem-based learning activity in which the students with visual impairments are invited to practice using a variety of skills to meet the requirements. This may include: (a) finding resources to expand their knowledge (e.g., asking specialists (Perry 2004); searching for braille or electronic version books; attending an online lecture about the learning topic); (b) using technology to access the resources or express their knowledge such as print to speech software, braille notetakers or video magnifiers; (c) organizing the information and the resources and correspondingly improving their organizational skills; and (d) developing communication and social skills through engaging in discussions with peers about the project and the strategies they have employed.

Additionally, in SRL activities, the students can select a topic they feel motivated to explore and accordingly become more likely to persist in completing it, which may reflect positively on building their self-determination skills. They also may develop their self-efficacy when they are provided with opportunities to represent their learning in a method they consider within their strength areas (e.g., present the information orally, give a speech, create a piece of art about the learning topic). Moreover, through SRL activities, the students develop their learning gradually and have multiple opportunities to try new strategies until they gain the knowledge or understand the topic. Most

importantly, when general classroom teachers plan activities based on SRL principles, they create opportunities for students with visual impairments to practice essential skills in the expanded core curriculum (ECC) areas more authentically.

Seventh: teacher language and interactions with the students. The language that the teacher uses when interacting with students can impact students' beliefs about themselves, the learning process, and the safety of the environment positively or negatively (Butler et al., 2017). Reeve and Jang (2006) introduced twenty-one categories, mentioned in previous research, that described the instructional behaviours teachers with autonomy-supportive styles and teachers with controlling styles tended to use. Butler et al. (2017) identified six types of communication messages that teachers may use in classrooms and explained how the students might interpret it. Table 2 provides examples and descriptions of language and interactions that support SRL or undermine the development of SRL based on the work of Reeve and Jang (2006) and Butler et al. (2017).

Table 3.

Teacher Language and Interactions with Students (Adapted from Reeve and Jang (2006) and Butler et al. (2017))

Language and interactions that support SRL	Language and interactions that may undermine SRL
The teacher links success to factors the students can control (e.g., effort, using a strategy that works for them, studying hard)	The teacher links success to factors the students cannot control. (e.g., intelligence, hard test)
The teacher emphasizes that learning is a developmental process that takes time. (e.g., using a rubric that shows the students' progression when assessing	The teacher emphasizes that excellent achievement involves perfection, speed and freedom from mistakes. (e.g., "Wow, you finished so quickly, "Perfect! No mistakes")

performance, helping students to identify their mistakes and plan how to avoid them)

Making suggestions

(e.g., suggest resources, strategies: “How about starting with the questions you know first”)

Offering hints

(e.g., “How about asking Nora if she would like to work with you. She does not have a partner yet.”)

Offering encouragement

(e.g., “You can finish later if you like”; “You finished a great deal of it”; “You are close.”)

Acknowledging the students’ effort and engaging them in a dialogue about the reason that led them to the wrong conclusion.

(e.g., “Nice try! Why did you think this strategy would work?”)

Asking open-ended strategic questions (e.g., “What are some things you can do when you do not know the answer?”)

Believing in the students’ ability to learn and setting high expectations for their performance.

(e.g., “You can do it”)

Using Directives/command language

(e.g., “Start with these questions first”)

Making should and ought to statements

(e.g., “You should have a partner like everyone else.”)

Deadline statement

(e.g., “5 minutes left”)

Criticizing language

(e.g., “No, no, do not do it this way, that’s wrong!”)

Asking closed-ended controlling questions

(e.g., “Can you locate the answer in the textbook on page 4?”)

Communicating low expectations for the students’ performance

(e.g., “Do not worry about it, the test was hard”)

Methodologies Used in SRL Research

In order to research the implementation of SRL promoting strategies to include and enhance the learning experience in the classroom for students with visual impairments, understanding methodologies used for other populations to investigate

SRL is helpful. In the area of SRL, researchers have used several methodologies. In Perry (1998), an integration of quantitative and qualitative methods was undertaken to examine the effect of the classroom environment on promoting SRL in second and third-grade children. The author spent six months evaluating teachers' practices in three stages. First, a questionnaire was used with 19 teachers to determine the degree to which classroom activities (more precisely writing and portfolio activities) supported SRL. In this stage, only five classrooms were selected for observation, of which two of them were described as low SRL environments and 3 were high SRL environments. Second, the students in the selected classes were surveyed to explore their perceptions of various aspects of classroom activities. In this stage, five low and five high achieving students in writing activities were selected according to teachers' rankings. Third, the differences in classroom environments and student achievements were documented using observations and interviews. To assess teachers' practices, the researcher used an observational instrument in running record form that included five criteria: providing opportunities for choices, examining challenges and control of them, self-evaluation, and peer and teacher support.

Related to Perry's work, Adagideli Saraç and Ader (2017) conducted a quantitative study, using a self-report survey to evaluate teachers' practices at the preschool level in terms of its likelihood to promote SRL in young children. A total of 169 teachers in Turkey participated in this study. The researchers developed the instrument used in the study according to Whitbread, Coltman, Pasternak, Sangster, Grau, Bingham and Demetriou's (2009) model of self-regulated learning for young children (Adagideli Saraç & Ader, 2017). The Whitbread et al. model of SRL can be divided into

three primary categories that includes: metacognitive knowledge, metacognitive regulation, and emotional-motivational regulation. The survey contained 21 statements that reflect opportunities provided by teachers to support preschool age children in these three SRL dimensions. The participants were asked to respond to the given items by selecting the frequency of which they use practices that support the students' development of SRL using a Likert-scale. Since the scale focused on self-report, the researchers noted the importance of checking the validity of a self-report instrument because the response of the participants can be impacted deliberately or accidentally. They pointed out that “checking the consistency of data from teachers' self-reports and data from experts' observations of teachers' practices would provide further evidence for validity of the instrument.” (Adagideli Saraç & Ader, 2017, p. 433).

Likewise, Lombaerts, Engel, and Athanasou (2007) developed and validated a SRL inventory to measure primary school teachers in terms of their likelihood to promote SRL in primary education. Three hundred and thirty-nine teachers in elementary schools in Belgium participated. The researchers formulated a self-report Likert scale based on Zimmerman's cyclical model of self-regulation (Zimmerman, 1989, 2000). The results of the study support the validity of the instrument and its usefulness to examine how the educational environment promotes SRL practices in primary education.

Perry (2015, 2002) provided detailed descriptions of the research methodology that she undertook in her studies to investigate teacher practices that promote SRL and its effect on student developments of SRL. The author suggested the use of classroom observations as a direct measure of data collection and evidence from other measures

(e.g., semi-structured and retrospective interviews) as an indirect measure to provide triangulation to the data generated from the observations. Triangulation of data is crucial to investigate SRL in classrooms (Perry, 2015). This is because observations often reflect the researcher's point of view who may miss or misinterpret the information and indicators of SRL (Perry 2015).

The research methodology carried out in the present study was inspired by the work of the researchers mentioned above. In this study, the use of direct and indirect measures of data collections was followed, as suggested in Perry's research (e.g., 2015). Observation procedures and instruments were developed based on the method employed and described in Perry's studies as well. The instrument to investigate teachers' self-perceptions regarding the use of SRL promoting practices was designed based on examples from the work of Lombaerts, Engel, and Athanasou (2007) and Adagideli Saraç & Ader (2017).

The Research Problem, Context and Study and Questions

Statement of the problem. Like many countries, policymakers in the Kingdom of Saudi Arabia (KSA) have been influenced by the global directions concerning adopting inclusion principles and enabling education for all. Since the 1990s, the Kingdom has established many steps towards inclusion. The most important step was in 1996 when integrating students with special needs in public schools became the first theme in the educational strategy of the Ministry of Education (Al-Mousa, 2010). This coincided with various policies and legislation to assure the right of individuals with disabilities, such as the Legislation of Disability (1987), the Disability Code (2000) and the Regulations of Special Education Programs and Institutes (2001) (Alquraini, 2010; Al-Mousa, 2010).

Governmental efforts in implementing inclusive education have resulted in 3,657 institutions and mainstreaming programs that benefit 70,449 students with special needs based on the preliminary statistics of the ministry of education for the academic year 2008/2009 (Al-Mousa, 2010).

However, despite the promising progress in the disability regulations, the reality of special education services and the quality of inclusion in education represent a gap between policies and practices (Alquraini, 2010). In fact, little is known about the effectiveness of inclusion in the Kingdom. Most studies in this regard were conducted more than a decade ago, and none of them looked explicitly at the inclusion of students with visual disabilities (e.g., see Buksh, 2000; Haron, 1996; Kudar, 1991). Also, none of the research papers dealt with SRL and inclusion promoting practices. More specific investigation of the use of SRL in the Saudi Arabian classroom would provide information necessary to improve the quality of education for all the students in general and those with visual impairments in particular.

The context of the study (a brief overview of the inclusion of students with visual impairments in KSA). Individuals with visual impairments were the first group of students with exceptional needs to receive special services and education in KSA. In fact, the emergence of special education in the Kingdom was officially started by the efforts of a group of individuals with visual disabilities who successfully convinced some agencies in the ministry of education to open evening classes for teaching braille in schools named as 'The scientific institutes' (Battal, 2016; Alquraini, 2011). Most of the students who enrolled in these classes were also attending general education schools in the daytime before they started to receive their full education in specialized schools

(Battal, 2016). Al-Mousa (2010) explained the reason behind this trend by saying, “Education of children with disabilities in Saudi Arabia began in the form of regular education schools, but later it was transformed into separate schools, coinciding with other countries.” (p.14). This occurred when the first special education institute, called Al-Nour (The Light), was opened for male students with visual impairments in 1960 and female students in 1964 (Al-Mousa, 2010; Battal, 2016, The Department of Visual Impairments in the Ministry of Education of Saudi Arabia, n.d.).

The evolution of the rights of individuals with disabilities and the emergence of other beliefs that supported their placement in mainstream education resulted in the first trials for mainstreaming students with disabilities in general classrooms which, also, in the beginning, targeted students with visual impairments (Al-Mousa, 2010). By the 2003/2004 academic year, the number of inclusion programs for students with visual impairments in mainstream education reached 42 programs (The Department of Visual Impairments in the Ministry of Education of Saudi Arabia, n.d.).

The service delivery model. According to the document of 'The Working Mechanism in the Inclusion Programs of Students with Visual Impairments in Mainstream Education' that has been published by the Department of Visual Impairments in the Ministry of Education (n.d), the model employed to include students with visual impairments in mainstream education is a resource room model. In this model, the teacher(s) of students with visual impairment, mostly, do not travel between schools. Instead, they are placed in a school to which the students are assigned. The students in these schools receive most of their education in general classrooms. The general classroom teachers are the primary teachers for students with visual

impairments in most of the academic subjects which includes history, geography, social studies, psychology, physical education, arts, Arabic and Islamic studies. The teachers who have a specialty in teaching students with visual impairments are the primary teachers in English, science (i.e., physics, chemistry, biology), mathematics and computer science, taught in the resource room. However, it is recommended in the document to include the students with visual impairments in the mentioned subjects in the general classroom at least part of the time whenever it is appropriate.

Allman and Lewis (2007) mentioned several pros and cons for utilizing the resource room model in the inclusion of students with visual impairments. For instance, on the one hand, this model increases the familiarity between the teacher of students with visual impairments and the school staff, which means they may become more likely to collaborate smoothly and productively. Also, since the teacher of students with visual impairments is always in the school, she will have more opportunities to observe the students in different situations and, accordingly, analyze their strengths and challenges more accurately. Moreover, the students with visual impairments can meet with other students who share the same experience (i.e., the vision loss). They can discuss the challenges that face them and brainstorm possible solutions. Additionally, this model enables the teacher of students with visual impairments to provide immediate support for the general classroom teachers and the students such as information related to classroom instructions, adaptations for learning materials and implementation of some activities whenever it is needed. Furthermore, the resource room in this inclusion model includes equipment, learning materials, books (e.g., enlarged print, audio, braille) that can enhance the educational experience of the student with visual impairments if they

are made readily available for them. In this model, however, students with visual impairments in the resource room may not be able to attend their neighborhood school and meet the children in their home community. Parents may also find engaging with the school community challenging.

SRL in the KSA context. Even though most of the SRL research and theory building has taken place outside of the context of KSA, there are similarities in the resource room model to other resource room models in North America. In addition, given that general education classroom teachers are predominantly responsible for the inclusion of students with visual impairments in their classrooms in the KSA, having strategies that will effectively target the needs of students with visual impairments within this context to optimally support their engagement and learning is beneficial. SRL strategies offer a comprehensive way to support inclusion and thus are worth exploring within this context. In addition, in recent years, a switch to project-based learning has occurred in schools in the KSA where students with visual impairments are included. In fact, the students' performance on the projects constitutes 50% of the evaluation of secondary school courses (Ministry of Education of Saudi Arabia, 2018). This type of learning should also lend itself well to incorporating SRL in the classroom.

Additionally, the major elements of self-regulation theory seem to have had universal application. "Students across cultures who regulated their cognition, motivation, and behavior had higher academic achievement"(McInerney, 2011, p. 488). Since the educational application of SRL research places central attention on the importance of utilizing effective forms of social interactions and engagement to develop students 'acquisition of SRL skills (e.g., social guidance, feedback, collaboration),

McInerney (2011) pointed out the importance of considering the cultural factors and their effect when researching SRL in non-western cultures. This is crucial to avoid neglecting findings that do not conform with Western models and might still be significant to its context. On the other extreme, research that solely focused on cultural and indigenous aspects might fail to see the research problem in a holistic manner and risk being unrelated to the scientific approach (McInerney, 2011). Therefore, the author suggested using research approaches that incorporate the two perspectives through consideration of both cultural differences and similarities.

An example of research that used a comprehensive approach to study SRL while considering the cultural context used classroom observation and teacher and student interviews. McInerney (2011) explained the usefulness of this research methodology by saying, "While the theorizing was based on etic views of self-regulation, the use of classroom observation and the use of teacher-student interviews to interrogate the meaning and efficacy of instruction in self-regulation provided an emic platform for data generation." (McInerney, 2011, p. 494). The present research employed a similar approach that will be explained in the analysis section in the methodology chapter.

Purpose of the study. Aiming to address the gaps in the current research on SRL and inclusion of students with VI, the purpose of the proposed study was to explore the inclusion of students with visual impairments based on SRL theory in an inclusion school for students with visual impairments in the KSA. Recent research in SRL facilitated this mission and made it applicable. During the 1990s, researchers attempted to examine SRL related to specific skills or subjects such as writing and reading skills or science and mathematics subjects which limits the generalization of

SRL skills to these particular and temporary contexts (Boekaerts & Corno, 2005; Cleary, Callan & Zimmerman, 2012). Instead of viewing SRL as a horizontal line that leads to a definite end, some models view this process as a continual cycle that consists of several evolutionary phases (Cleary, Callan & Zimmerman, 2012). These efforts, as described in the previous section on SRL methodologies, resulted in describing more accurately classroom characteristics that promote a rich, engaging and comprehensive forms of learning. This research drew upon these practices to investigate classroom discourse regarding its likelihood to engage all learners, including students with visual impairments, and address the development of multiple forms of learning and skills. The rationale for using SRL was to provide a more comprehensive and meaningful way to investigate the efficacy of teachers' practices in inclusive schools given that SRL criteria have emerged from the results of three decades of research. This study will contribute to the body of knowledge and draw attention to promising practices in SRL that have a strong potential for addressing the needs of learners with visual impairments while creating an optimal educational environment for both them and their fully sighted peers. It is hoped that this research will support researchers and educators in identifying areas of strength and weakness in classroom discourse related to the successful inclusion and the learning experiences of students with visual impairments.

The Research Questions. This study was guided by the following research questions:

1. What practices aimed at creating an inclusive environment for students with visual impairments did the general classroom teachers use?

2. To what extent did classroom teachers use inclusive practices in the general classrooms that were compatible with those suggested in SRL research?

Chapter 3: Methodology

As mentioned in chapter 2, the purpose of this research was to investigate the inclusion experience of students with visual impairments in general classrooms by exploring teachers' practices and their effect on the students based on SRL theory. In order to achieve the study goals, a descriptive research approach was employed, using direct and indirect measures for data collection. The direct measures involved using and developing an observational running record instrument, while the indirect measures encompassed use of two self-report questionnaires.

Combining different procedures to collect the data was appropriate for several reasons. First, academic inclusion is a multifaceted experience that can be affected by several elements and using different methods when collecting the data can assist the researcher to draw more comprehensive conclusions (Tillman, Richards, & Frank, 2011). Second, the data generated from the observation can provide an in-depth understanding of the influence of teacher practices on the inclusion opportunities of students with visual impairments and their development of SRL. Third, the use of a survey style self-report (questionnaire) was necessary to provide information that may not be obtained solely through the observational running records.

Additionally, using different measures to address the research questions was essential in the current research to obtain triangulation of data and fully understand the research problem (Perry, 2002; 2015). The data obtained from direct observations of teacher and students' actions (which also reflected the researcher's interpretations) combined with student and teacher self-perceptions about practices in the classroom on a broader scale, provided a greater understanding of the current inclusion situation.

The following sections describe the sampling technique and recruitment of participants, the study location, the participants, the instruments, the research procedures, and the data analysis.

Sampling Technique and the Study Location

The data was collected in a public secondary school that includes students with visual impairments in the western region (Hejaz Province) of the Kingdom of Saudi Arabia (KSA). The participants were recruited based on criterion-based purposive sampling (Carter & Little, 2007). Secondary school general education classroom teachers and their students with visual impairments who were included in one class level at the secondary school met the criteria for participation. The study was conducted in the only school in the city that has a special education program to include students with visual impairment. The process of recruiting participants in school settings in the Kingdom of Saudi Arabia required filling out an application form to be submitted to the school district. After reviewing the study, the school district provided a letter that indicated that the study had been approved, which was then submitted to the targeted school.

Recruitment of Participants

The assistant principal of the school introduced the study to general classroom teachers who have students with visual impairments in their classrooms. The researcher provided the assistant principal with a recruitment flyer that included general information about the study and contact information for teachers to contact the researcher for further clarification and/or to volunteer.

Five teachers informed the assistant principal that they would like to meet the researcher to discuss some questions regarding the study. The researcher met with the five general classroom teachers, answered their questions, and provided the teachers with the consent forms which also include detailed information regarding the study methodology. Four of the five general classroom teachers agreed to receive the consent forms and were given a week to decide whether or not to participate. All four teachers consented, spending a day to three days to read, sign and return the forms.

The students with visual impairments in the classrooms of the consenting teachers were informed about the study by the resource room teacher outside of the general classroom in order to ensure confidentiality. This teacher provided the students with the information sheet (flyer) in the medium they preferred (print and braille), and the students were given the choice to inform their resource room teacher or the researcher directly if they were interested in participating. All four students with visual impairments expressed interest in participating to their resource room teacher. The researcher provided these students with the consent form in their preferred medium (print or braille) to take home, read and sign. An informational letter about the study was provided to their parents. The students with visual impairments were also given a week to decide. Three of the students returned the consent form within two days and one after four days.

Participants

Since KSA has a dual system of education that is divided by gender (separate schools for male and female students), the students with visual impairments participating (n = 4) and the general classroom teachers (n = 4) in this study were all

female. The general education classroom of the participating teachers included 21 students total (4 students with visual impairments and 17 general classroom students with no identified needs). The same four students with visual impairments were included in each of the teachers' classrooms. The students were in the second level of their secondary education, which is equivalent to Grade 11 in British Columbia's education system (i.e., age 17). By the end of the academic year, the students will have one year left to complete their high school education.

General Biographical Information

The visual needs of the students with visual impairments. The exact visual ability of the four students with visual impairments was unknown as their teachers expressed lack of knowledge due to limited information in the students' medical eye reports. However, the resource room teachers classified them as two with low vision (i.e., measurable vision but have difficulty accomplishing or cannot accomplish visual tasks) and two with blindness Table 4 summarizes the students' visual abilities and the skills and needs associated with vision loss, as well as the social emotional skills and needs of the students as described by the resource room teachers and observed in the general classrooms by the researcher. It is perhaps worth mentioning here, that the four students with visual impairments have never had specialized assessments such as the functional vision assessment, learning media assessment or assistive technology assessments by a qualified teacher of students with visual impairments or orientation and mobility specialist. Therefore, some of the information regarding their vision ability, the best learning medium, and the most suitable assistive technology may be not accurate.

Table 4.

A Summary of the Students' Visual Abilities, Skills and Needs Associated with Visual Impairment, and Social Emotional Skills and Needs.

Student	Visual Ability, Skills and Needs	Social-emotional skills and needs
R.	<ul style="list-style-type: none">• A student with low vision.• Has had a reduction in visual ability gradually over time.• Reads and writes using braille.• Can use her remaining sight to navigate the school environment independently without use of a cane.• Can take notes and participate in written activities using a Perkins brailier (braille typewriter).• Can use her mobile phone efficiently to interact with others using social media apps and can search for information using the web browser through the Voice Over tool (IOS screen reader).	<ul style="list-style-type: none">• Spends her time mostly with D.• Primarily engages with the students with visual impairments and rarely interacts with the other students.• Likes to talk about music, songs, poetry, fashion, movies, TV series and travels.• Likes talking with the teachers of students with visual impairments.• Expresses her feelings and opinions frequently.• Seems confident, friendly and has a sense of humor.• Engages in the general classroom work and activities when the teacher asks her.
D.	<ul style="list-style-type: none">• Has a tumor in the brain that causes pressure in the optic nerve which has resulted in a critical decrease in vision.• Sometimes has headaches that leads to absence from school.• Can see shadows.• Reads and writes using braille.• Can take notes and participate in written activities using a Perkins brailier.• Needs assistance to move from class to class (lack of orientation and mobility skills).• Can use her mobile phone efficiently to interact with others through social media apps and search for information using the web browser through the Voice Over tool (IOS screen reader).	<ul style="list-style-type: none">• Mostly engages with the students with visual impairments and rarely interacts with the other students.• High achiever.• Her favourite subject is Arabic literature.• Enjoys talking about topics related to the history of Arabic literature or psychology.• Received a regional school prize for participating in a competition on Arabic international day.

<p>H.</p> <ul style="list-style-type: none"> • Low vision student. • Prefers to read regular print. • Refuses to use visual aids except for eyeglasses. • Refuses to receive her curriculum in braille. • Three teachers of students with visual impairments in the school think that using her remaining sight may lead to a total loss of her sight (not supported with a medical opinion or report) • Can take her notes in handwriting, read print and draw lines under important parts in her printed book. • Her writing has many spelling mistakes. However, it is readable. • Can use her remaining sight to navigate the school environment independently. • Can use her mobile phone efficiently to interact with others thorough social media apps and search for information using the web browser. 	<ul style="list-style-type: none"> • Seems to not belong to the sighted group or group of students with visual impairments. • She leaves before the other students; does not wait for a classmate or a friend. • Changes the group that she sits with frequently. • Refuses opportunities to retake exams to enhance her achievement.
<p>G.</p> <ul style="list-style-type: none"> • A blind student • Reads and writes braille efficiently. • Can take notes and participate in written activities using a Perkins brailier. • Lacks the skills needed to travel safely and independently in the school and does not use a white cane. Usually, one student helps her move from one class to another. • Can use mobile phone efficiently to interact with others thorough social media apps and search for information using the web browser through the Voice Over tool (IOS screen reader). 	<ul style="list-style-type: none"> • Interacts with general classroom students more than her classmates with visual impairments. • Usually sits with one of the groups of sighted students unless the teacher tells her to sit with the students with visual impairments. • Participates frequently to answer teacher questions. • Attentive, motivated to learn and engages in the learning activities whenever she is given an opportunity.

Academic history. R., D. and H. have experienced being considered as sighted students and studied in mainstream education before they were transferred to special education at some stage in their elementary schooling. When they first transferred, they were excluded from general education and placed in the school for the visually impaired to continue their elementary school due to no integration programmes being available in an elementary school at that time. They returned to mainstream education when they finished elementary school in grade 6 (i.e., age 13). Unlike them, G. lost her sight in her early years, so, she does not remember the time when she could see. She started her education in a specialized school for the visually impaired at the elementary level. After that, she continued to receive her education in general schools. Currently, they are all integrated in a general classroom into all the subjects except English and computer science.

Attitude towards braille and use of assistive technology. The most common issue amongst the four students was their negative attitude towards using braille books and assistive technology in the general classroom. Both the general classroom teachers and teachers of students with visual impairments mentioned that they spent time, at the beginning of the year, trying to convince the students to bring their braille books with them to class since activities may require using them. When I started the observation, I noticed the students' low motivation towards bringing and using their braille books as well as the vision equipment that allows them to take notes and participate in the written activities in the general classrooms. This has remarkably affected the students' ability to participate and engage socially and academically, which will be further elaborated upon in the results and discussion chapter.

The service delivery model in the school. The school uses a resource room model, and has two resource rooms where students with visual impairments can receive services and some of their education. This school is the only secondary school in the city that has an integration programme for female students with visual impairments. The programme includes all the female students with visual impairments who are at the secondary level in the city. Five teachers of students with visual impairments are assigned to the school to support the students' learning. One of them is a teacher who has a visual impairment herself. Her responsibilities include teaching computer science, teaching braille (if needed) and reading the students' products produced in braille for the general classroom teachers. The other four teachers teach English, physics, chemistry, math, and biology since the students are not included in these subjects in the general classrooms. The teachers all collaborate in the material adaptations, provide support for the general classroom teachers, and contact the classroom teachers when the students have issues.

The teachers who teach physics, biology and chemistry are teaching only the students who are in the first year of secondary school (i.e., grade 10, age 16). During the first level, all students study general curriculum, but after that, they either continue their studies in the scientific or the literary stream. However, this does not apply to students with visual impairments. The students with visual impairments have solely one option which is the literary stream. This stream does not include physics, biology, math, and chemistry. Although this is not a written rule, it is generally what happens.

The teachers of students with visual impairments collaborate with general classroom teachers by suggesting teaching strategies that consider the needs of

students with visual impairments in the general classroom, by providing adaptation to learning materials, and by reading students' products produced in braille to the general classroom teachers. Typically in this model, they do not spend time in the general classroom during instruction supporting the students with visual impairments, modeling strategies, or co-teaching with the general classroom teachers.

Teachers' education related to inclusion and SRL. To understand the results of this study it is important to consider that the general classroom teachers had never received any workshops or courses within their professional development or initial education specifically on SRL practices. One teacher (i.e., Sara) out of the three had participated in a limited number of workshops in the area of education of students with visual impairments, while another teacher (Nora) participated in some workshops on effective teaching strategies (See Table 4; Teacher Information and Observation Times). Given the teachers have not received any professional development in SRL, the goal of this research was not to evaluate teachers' practices but to look at teacher practices through an SRL lens to identify opportunities in classroom interaction where further incorporation of SRL practices would be beneficial and to highlight areas for enhanced inclusion based on an SRL framework.

Data Collection Procedures

Data collection was carried out in 3 phases.

Phase 1. Each general education classroom teacher (n = 4) and their students with visual impairments (n = 4) were observed for one to two classes a week in their classrooms. All four teachers in the study taught the same four students a specific subject as is represented in figure 2. Table 3 shows teacher experience in inclusion and

the total number of observations accrued in their classrooms (all names are pseudonyms).

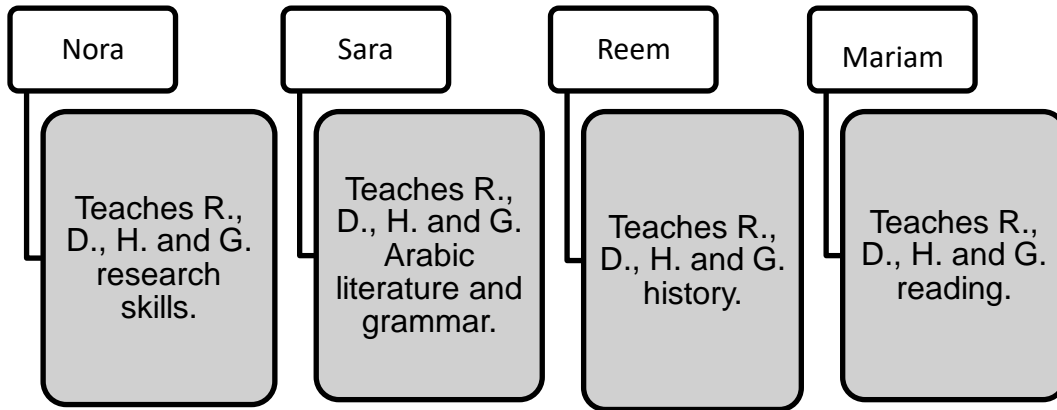


Figure 1. The Subject Areas that each Teacher Taught in the General Classroom that Includes the Students with Visual Impairments.

Table 5.

Teacher Information and Observation Times

Teacher	Experience in inclusion	Observations
Nora	5 years	5
Sara	3 years	7
Mariam	4 years	5
Reem	10 years	7

The purposes of the observations were (a) to observe and describe the practices of teachers in relation to practices known to promote inclusion and SRL development; (b) to investigate the student participants' response and interaction with teacher

practices and how the used practices affect the kind and amount of opportunities for inclusion and SRL development they experienced. For each observation, the researcher used a running record instrument based on the instrument described and used by Perry (1998) and (2015). The running record is a typed record (not audio or video recorded).

The running record instrument included two sections. The first section was a space to document teachers' practices and students' responses and interactions with the used practices as they occurred in the classroom. In other words, the first section was used to record "what was going on?" in each class. The second section included eight categories that provided a conceptual framework for the observations and subsequent coding. The eight categories were derived from research on SRL as well as research on visual impairments and inclusion (see Appendix A for the classroom observation instrument).

These categories reflected the physical environment and classroom climate, autonomy support, opportunities to control challenges, self-assessment, teacher assessment and feedback, accommodations for students with visual impairment, classroom tasks and activities, and teacher interactions with the students (Butler, Schnellert & Perry, 2017; Perry, 2015; 2004; Holbrook & Rosenblum, 2007; Katz, 2012; Reeve & Jang, 2006). Under each criteria, descriptions and examples of teacher practices, which support or do not support inclusion and SRL, were provided based on the mentioned resources (see Appendix A).

During the observation, the researcher tried to sit in a position that allowed her, as best as possible, to observe what was happening in the classroom without

interfering. The researcher documented the teacher's instructions, interactions with the students with visual impairments , as well as the students' with visual impairments interactions with each other, the general classroom students, the teacher, and the classroom activities.

After the observation, the researcher re-read the running record, elaborated information, and wrote questions beside the parts that needed clarification from the teachers or the students with visual impairments. For example, after class time, I asked the teachers about the design of the projects they required from the students. Also, I observed the students with visual impairments used specific routines of interaction to engage in the activities in "Sara's" class, so I asked them after class time, in the resource room about the routine, how and who decided it.

The general classroom teachers' actions and interactions that were found relevant to the eight categories were written into the second sections of the teacher observational instrument. For example, in the category of "autonomy" the researcher might document whether or not the teacher provided choices to the students in a given activity, project, task, or homework assignment and recorded the type of these choices (e.g., the time, the product, the learning resources, the partner(s), the working place). For the students with visual impairments, the aim was to investigate and document the practices used in the classroom and how they affected the learning experience of students with visual impairments.

Phase 2. In phase 2, self-report data was obtained from the students with visual impairments who were observed in the general classroom by having them answer a self-report questionnaire. The self-report instrument was designed based on the

mentioned eight categories in the teacher and student observation instrument (see Appendix B for the student questionnaire). This instrument generated additional data about practices mentioned in SRL theory and research (Butler et al, 2017; Perry, 2015; 2004; Reeve & Jang, 2006.) that had the potential to promote inclusion which may have been used by the teacher but not during the specific observation times. The questionnaire included 19-items in a multiple choice response format (See Appendix B). Some items included opportunities for students to explain or elaborate on their responses (e.g., why, when). Each question was asked verbally to ensure its accessibility to all students regardless of their braille or print reading abilities. The researcher wrote down the responses. The student self-report provided a means to produce more information about their interactions in the general classroom and their perceptions of teacher practices. It served as a comparison of the data generated by the researcher, during a set number of observations, to the data reported by the students who would be responding about their classroom experience in general. It also highlighted where student perceptions about classroom interaction differed from the perceptions of teachers (see Phase 3 below) and additional SRL opportunities that were present but did not happen to be observed during the observation sessions. Given that the four students had instructional experiences with each of the classroom teachers in the study, their input via the questionnaire provided additional strength for triangulation and more in-depth understanding.

Phase 3. Similar to the students, the general classroom teachers who were observed in their classrooms were also asked to fill out a self-report instrument. In this instrument, the teachers placed themselves on a continuum regarding their teaching

style. The continuum ranged from statements representing a high use of SRL practices, to a low use of SRL practices, to a lack of use of SRL practices. The instrument included 14 items. The items were derived from the eight general categories and the sub-categories under them (see Appendix C for the teacher self-report scale). This instrument obtained information about teacher practices that might not be acquired during the observation time, and checked the compatibility of data (triangulation) that was generated from the responses of the teachers, the responses of the students with visual impairments, and the observed interactions during the observations.

Data Analysis

The observation data. The data generated during the observation time for the students and teachers was analyzed using excel. For the teachers, the analysis of the observation running record transcripts focused on coding teachers' practices, behaviours, instructions, and language that met or did not meet the criteria in the observational instruments for SRL practices. In addition, the analyses investigated the consistency to which the teacher engaged in SRL practices, using the rating system developed and described by Perry (1998, 2015, 2002).

Perry generated a list of categories that represented practices believed to promote SRL which included choices, control over challenges, self-evaluation, peer support, teacher support, assessment, accommodations for individual differences, and tasks. For each category, she suggested assigning a rating from 0 to 2 to identify the absence, presence, and the quality of the used teachers' practices in terms of their likelihood to promote SRL. Zero represented the absence of the practices; one reflected the presence of the practices but not in a way that fosters SRL (e.g., some choices don't

require much metacognition or lead to strategic action); two represented the use of practices believed to support students' development of SRL. Then, based on the pattern of ratings for each category of SRL practices across all observations, the teacher was given an overall rating for consistency based on the following 5-point scale:

5 = Each time this category was observed, it was implemented in a way that supported SRL

4 = Most of the time this category was observed, it was implemented in a way that supported SRL

3 = About half the time this category was observed, it was implemented in a way that supported SRL

2 = When this category was observed, it was seldom implemented in a way that supported SRL

1 = When this category was observed, it was never implemented in a way that supported SRL.

For the students with visual impairments, their interactions were coded based on the eight general categories (mentioned above), but with particular attention to how students responded during the teaching practices used in their classroom. The purpose of this analysis was to explore how teacher practices impacted negatively or positively on the development of SRL and the students' academic and social inclusion.

Additionally, the coding provided insight into how consistently students with visual impairments and their peers were offered opportunities to practice and engage in a productive form of learning based on SRL theory.

In addition, this study attempted to be remain open to new findings that may emerge from the data but was not included in the theoretical framework used to guide this research. To ensure this, the researcher documented all teacher practices and student responses as they occurred in the classroom and then coded the data based on SRL categories identified in the observational running record instruments later. Emerging findings were added in the results section to each relevant category. For example, the category of teacher language and interaction with the students did not include 'using language that compares the students' achievements to each other'. This would typically not be considered an SRL promoting practice from the perspective of the Western model. However, across the four classrooms this comparison was observed, making it a noteworthy finding to consider within cultural context of the school and the KSA educational context.

The self-report data. The self-report questionnaires of the teachers and the students with visual impairments were analyzed using Excel. Presenting the data descriptively was appropriate considering the main purpose of this research was focused on investigating the qualities of instruction and opportunities for SRL rather than on the aggregated quantities of a whole group. The nuanced similarities and differences among the teachers promoted deeper understanding of how teachers were using inclusion and SRL practices to support students with visual impairments in the current context, and offered insights into what could be done in the future to further support development in inclusion through the use of SRL practices. The descriptive statistics included frequency and percentage statistics to provide a general overview of teachers' and students' perceptions regarding the amount of opportunities presented in

the general classroom, and reflect those believed to develop SRL and include students with visual impairments, including how consistently and in what aspects of instruction students felt included.

Reliability of the Data

The use of multiple sources of evidences. In this study, three sources of information were used to better analyze and explore the practices of teachers in the classroom and their effect on the inclusion of students with visual impairments: the investigator's observations, the students with visual impairments' perceptions via self-report, and their teachers' perceptions via self-report. The use of multiple sources (i.e., data triangulation) enabled a check of the constancy in the data that was obtained to compare results, confirm, or corroborate the interpretations of what's going on in the four classrooms in terms of opportunities for SRL (teachers) and engagement in SRL (students).

Member checking. Member checking is one of the validation techniques that is used to explore the reliability of the results in qualitative research (Carlson, 2010). This technique was used to confirm that the researcher had interpreted the observed data correctly. The researcher shared verbally some of the data with the participants, the teachers and students, and asked for clarifications to check if the information was perceived by the participants in the same manner as it was recorded in the observation instrument.

The researcher background and qualifications. As with all qualitative research, it is important to acknowledge the experience and lens of the researcher (Mays & Pope, 2000). I was a resource room teacher for students with visual

impairments five years ago in the secondary school where the study took place. This experience facilitated carrying out the research processes because of the familiarity with the school system, my knowledge regarding the inclusion issues of students with visual impairments, as well as my knowledge of the cultural context in general.

This study was conducted in the Kingdom of Saudi Arabia, where the participants speak Arabic. Therefore, the researcher translated the two self-report instruments into Arabic. The researcher was qualified for this mission as Arabic is her first language.

Chapter 4: Results

Data Analysis Results Overview

Phase 1: The observation data. Observation data is presented in two ways. First, I provide results of the data obtained from a total of 24 observations in the four teachers' classrooms (pseudonyms: Nora, Sara, Reem, Mariam) using running record transcripts analyzed based on the eight categories mentioned in the methodology (see Chapter 3 and Appendix A for the instrument). The focus of these sections was (a) to report and explore the four teachers' practices in terms of their likelihood to promote the development of SRL and inclusion of students with visual impairments or to highlight missing pieces in classroom interaction that do not support SRL developments and the inclusion of students with visual impairments, and (b) to address how the used practices affected the kind and amount of opportunities for inclusion and SRL development afforded to the students with visual impairments based on my observations of those students in the different classrooms. Second, I identify instances in which teachers engaged in practices that promote SRL across observations to provide a rating of consistency for each SRL category (See Chapter 3, Observation data), using the rating system developed by Perry (1998, 2015, 2002).

Phase 2 and 3: The self-report data. In this section two sources of self-report data were analyzed using Excel to report descriptive statistics, in particular, frequencies and percentages. First, I present the analysis of the data obtained from the students with visual impairments' answers to the student self-report questionnaire (see Appendix B for the instrument). Second, I provide the analysis of self-report data obtained from the general classroom teachers (see Appendix C for the instrument).

Phase 1: Observation Data Results

Category 1 and 2: The physical environment, classroom climate and accommodations for students with visual impairment. The educational approach adopted by the school in which this study was conducted requires general classroom students, including classrooms that include students with visual impairments to move between classes. Consequently, the participating students dealt with a variety of classroom environments that differed based on each teacher's style and the level and kind of professional development they received. For example, when looking at adaptations to the classroom environment that may support students' autonomy, such as freedom to use assistive technology and accessibility of learning materials and classroom seating, differences between the teachers' classes were noticed. In Nora's class, the students were provided with adapted worksheets that expected the student with a visual impairment to do the same quality and quantity of work as that required from their sighted peers. She was keen to provide the assistive technology needed to engage the students with visual impairments in the written activities on the students' tables in the general classroom before starting the class, which is typically located in the resource room. She also kept the table near the door for students with visual impairments as two students lacked orientation and mobility skills. The teacher made this arrangement to make sure that students could reach and leave their seats without requiring assistance from their teachers or sighted classmates. In the other three teachers' classrooms, this level of adaptation to learning materials or modifications to the classroom physical environment was not observed. Their classrooms were the

same whether they were teaching classes that included students with visual impairment or not.

Accordingly, the students' abilities to participate in classroom activities and interact socially were also different based on the level of support and expectations in each teacher's class. The students were observed to be highly reliant on the direction of the teacher, complying with teacher requests and using materials provided when asked. Therefore, The students with visual impairments were only observed engaging effectively in the learning process in Nora's class, who was deliberate in providing adapted materials and asking students to use them. They used their books (braille or printed) to read and find information as was also required of their sighted peers to answer worksheet questions. They engaged in conversations as required to discuss their answers to the questions before writing them on the worksheet. They also were involved in the written activities since she provided worksheets in a way that each student preferred as well as assistive technology to those who needed it to write. They used a web browser to search for books that suited their interest to complete their research project as well.

In contrast, the other three classes tended to set lower expectations. The students with visual impairments engaged in the learning process doing something less demanding than what their peers were doing. This was perhaps their way of trying to adapt for the students' needs. For instance, in Reem's and Sara's classes (History and Arabic classes) the students relied on their memory and understanding of teacher instructions to guess the answer to the teacher's questions, listened to the reading of a classmate instead of reading by themselves from their own book, and answered

verbally instead of writing like their sighted classmates. In Mariam's class (reading class) the students brought their books but rarely opened them. The students' reading ability may have been one reason why Mariam did not put pressure on the students with visual impairments, and why the students were not motivated to use their books effectively. G, for example, uses braille as her primary medium. Although she reads braille better than the other classmates with visual impairment, she is relatively slower than her sighted classmates, which is reasonable considering the nature of braille. When Mariam directed her to read or answer, Mariam seemed anxious and helped G, perhaps wanting to protect her feelings.

In general, the students with visual impairments avoided participating, but when they had to respond to Mariam's questions, they answered from their experience as her questions required simple answers (mainly yes and no). The overall structure of Mariam's questions fairly simple for all the students. Most of the time, the students were required to respond to her questions by finding and reading the answer from the book. She also was the one who provided evidence and justified the students' responses (instead of the students themselves), which was mostly prepared before the class as she read it from her book. This can be exemplified in the following incident:

After the students read silently a text, Mariam asked: "Was the text written based on the scientific approach?" The students answered, "No." The teacher responded, "So write in your books, this text lacks evidence to support its claims and is made based on speculation."

Another observed common trend related to classroom environment was the seating arrangements. The four teachers' seating within the classroom was arranged in

a way that would facilitate student interactions and collaborative learning; however, the teaching style and the activities were not always matched with this arrangement. The four classes were organized as clustered desks all the time even when the teacher did not plan to use activities that require group work and discussions. In some cases, the students worked individually while seated in groups (e.g., Reem's and Sara's class). In other classes, the students' desks were in a clustered configuration despite the teaching style being teacher-centered lectures (e.g., Mariam's class).

In regard to classroom climate and routines, the class organization and information delivery in all four teachers' classrooms did not naturally accommodate for the students with visual impairments (e.g. providing verbal descriptions). To deliver instructions, the teachers used two or three of the following tools: blackboard, smartboard, presentation slides, the curriculum book, and sometimes worksheets. Most of the time, the teacher moved from one tool to another without giving a verbal or nonverbal clue that would help the students with visual impairments follow up with information. In one observation in Sara's class, for example, she used presentation slides to present grammar information, the blackboard to write the students' answers, and the book to read model sentences and ask questions for the activity. It was hard for me, the observer, to tell from where she was reading as she moved back and forth between the three teaching tools with no verbal or nonverbal signal. It should be noted that it is typically challenging for classroom teachers without background in visual impairment or modeling from teachers of students with visual impairments to naturally recognize places where more non-visual information should be given.

The use of undescriptive verbs and short sentences when asking the students to engage in a learning task such as “the second group start!”, “student G. read!”, “answer!”, “complete!” was also observed. Sometimes the students (both general and students with visual impairments) asked for more clarification such as “ Can you repeat the question? I did not hear it.”, or they looked confused until the teacher restated her sentence again, providing more clarification.

Additionally, use of practices that might be perceived as controlling or threatening by students were observed in the four classrooms, which could impact the safety perceptions in the classroom and the students' development of SRL. Using assessment to reduce student mistakes, control their behaviours, or the level of participation in the class was the dominant form of threatening teaching practices observed (see Table 5). For instance, whenever a student answered while seated (standing was a requirement in the class) or without permission, Reem reminded the whole class that she was not going to consider it as an answer and the students would not receive a mark for participation. In her class, I noticed D. answered sometimes from her seat in a low voice, as she seemed uncomfortable to ask for permission and stand up to answer, which may imply that the participation routine did not meet her preferences and perhaps limited her participation. Table 5 provides a summary of the features of classroom climate and physical environments observed in the four teachers' classes. Given the attempts some teachers did make towards inclusion, it is possible that the teachers might have been unaware that their practices were “excluding” or that students could perceive them as intimidating. Lack of professional development and opportunities for

learning might be the reason why teachers' practices were out of sync with what we might expect in a context that has a goal of including all learners.

Table 6.*The Features of Classroom climate and Physical Environment in the Teachers' Classrooms*

Features	Nora	Sara	Reem	Mariam
Teaching Style	Balanced teaching style that encompasses the use of presentation and student group work and discussions	Balanced teaching style that encompasses the use of presentation and student group work and discussions	Teaching style that uses lectures and teacher- student discussions with few opportunities for group work	Lecture centric
Seating Arrangement	Clustered desks	Clustered desks	Clustered desks	Clustered desks
Physical Environment Adaptations	Minimum changes Example: Nearest table to the door reserved for students with visual impairments	No changes observed	No changes observed	No changes observed
Modifications to the Participation Structure or Teaching Instructions	some useful modifications Example: Provided assistive technology in an accessible location, provided adapted worksheet.	Some not useful modifications Example: Allowing the students with visual impairments to listen to the reading of a classmate instead of reading by themselves their own book, and answering verbally instead of writing their answer like their classmates.	Minimum modifications. Example: Use of verbal cues, provided descriptions for pictures, mind maps and tables, and Allowed the students with visual impairments to listen to the reading of a classmate instead of reading by themselves their own book and answering verbally instead of writing their answer like their classmates.	Some not useful modifications Example: Allowing the students with visual impairments to listen to the reading of a classmate instead of reading by themselves their own book and answering verbally instead of writing their answers like their classmates.
Grouping	Grouped the students with visual impairments together (based on disability) and let the other	No criteria for grouping (grouping based on preferences for all the students).	Paired the students with visual impairments with high achieving students	No criteria for grouping or number of members

	students decide their group members based on similar interest.		(i.e., buddy support system). The other students grouped based on who the teacher thought worked well together.	
Adaptations as a Natural Part of Classroom Routines and Interactions	Not natural Example: Only asking the students with visual impairments how they would complete the task. "How will you find and read a book? And how will you write?"; Explaining the task first for the students with visual impairments only and then to the whole class; Explaining the task for all the class and then looking at the students with visual impairments saying "this includes you as well".	No adaptations observed	Not natural Example: When providing descriptions the teacher asked students with visual impairments to focus because she was providing descriptions to the pictures, only students with visual impairments were paired with high achieving students in group work.	No adaptations observed
Balance of Power in the Classroom	The teacher was the 'expert' in the class. Students sought her approval of answers before writing them on the worksheets. The teacher asked the question, selected who would answer it, then approved or disapproved it.	The teacher engaged the students in creating the content that they would learn and shared some of the power with the students Example: she let them divide the learning material between their groups, each group decided who would write the information on the board, give examples, explain	The teacher was the source of information and interaction (limited time for student interactions), and the one who determined classroom routines and acceptable behaviours. Example: The students were not allowed to decide who would participate, how they would participate, or when they would	The teacher was the source of information and interactions. She was the person who had had the most opportunity to learn in this classroom. Example: She typically talked, drew (e.g., mental maps, tables), summarized the information in steps, and then asked yes and no questions. The

		the information, ask the students questions and select who would answer it.	participate, even when they were not ready to participate.	teacher provided the elaborations to give the students complete and perfect answers to write in their books.
Use of Threatening Practices	Using assessment to reduce student mistakes. Example: Threatening with loss of marks if the students made spelling mistakes.	Using assessment to control student behaviours. Example: when students are late to the class.	Using assessment to control student behaviours and engagement. Example: when answering while seated, answering without permission, making mistakes, or not enough students participating.	Using assessment to control student behaviours. Examples; when students are late to the class.
Use of unpredictable practices	Presenting the learning goals at the beginning of the unit only while starting the lessons with the topic. Example: The teacher thought that writing the topic on the board would be enough to support the students' understanding of what the day's lesson was about. She did not provide learning expectations, an overview of what they were going to learn that day or how their class would unfold. Use of surprising routines. Example: Starting the lesson with questions about	Presenting the learning goals at the beginning of the unit only while starting the lessons with the topic.	Presenting the learning goals at the beginning of the unit only while starting the lessons with the lesson topic only. Teacher selected the students who would answer her questions even when they were not ready Example: "Who is the reader this time? G. answer."	Presenting the learning goals at the beginning of the unit only while starting the lessons with the topic.

the previous class and not allowing the students to open their books while the teacher selected the students who would answer.

Category 3 and 4: Opportunities to exercise autonomy, experience

challenges and self-assessment. As mentioned earlier, developing the students' autonomy can be supported when teachers use three practices: providing choices, designing a learning experience that involves challenge and gives learners opportunities to control challenges, and offering opportunities for self-assessment (Perry, 2015; Butler et al., 2017; Butler & Schnellert, 2017) (see Chapter 2). The observations in the general classrooms revealed that all the students experienced some opportunities to exercise autonomy. However, there was a slight variation between the general students and students with visual impairments in terms of the number of opportunities provided by teachers. For example, the students with visual impairments in Nora's class (i.e., the research skills class) were expected to make choices when deciding their topics for the research project, the books for their resources, and the length of the project (i.e., not more than 50 pages). The general classroom students were allowed, in addition to that, to select their partners based on similar interest while the students with visual impairments were expected to work together as one group. The teacher made other decisions that included the organization of their work (i.e., route plan) the place to work (i.e., students were allowed only to work at their desks), the format of the product of a task or activity (i.e., filling in worksheet activities and submitting a research paper

project —written format) and the type and number of learning resources (i.e., five books and one article). Ideally the choices given would be the same for all learners and the teacher would consider how to make it possible for the students with visual impairments to work with sighted peers. Not having choices about where to work or what the final product would be might be reasonable, depending what the teachers' goals were.

The second important practice that supports students' development of autonomy is designing a learning experience that involves experiencing challenges within their zone of proximal development. The students in the other three teachers' classes (i.e., Sara, Reem, and Mariam) were generally presented with simple short-term tasks that required minimal effort to complete, offered minimal opportunity to make informed decisions based on the task and their abilities, and did not involve interacting with group members. In Sara's class, for example, the students were only required to select a role from the group task to work on individually (e.g., write the information on the board, give examples, explain the information, ask the student questions).

In contrast, in Nora's class, the students dealt with a task that seemed too complicated considering the time framework and the requirements. Nora required the students who had never seen a research paper and lacked paraphrasing and citing skills to master the research skills, write a research paper using six references (five books and one research paper) within the timeframe of one month. These requirements might seem somewhat exhausting to the students unless structured support was provided to help build SRL skills to accomplish the task. Table 6 provides a summary of how the four teachers dealt with the practices believed to support students' autonomy in SRL research.

Table 7.

Observations of Teacher's Attention to Practices Believed to Support Student Autonomy in SRL Research

Practices	Nora	Sara	Reem	Mariam
Choices	<p>A great deal of choices</p> <p>Example: The students were expected to decide their topic, the resources, and the length while the teacher controlled other choices such as the place of working, the format and the type and number of learning resources.</p>	<p>choices were fairly tight.</p> <p>Example: students selected their role in the learning task such as writing the information on the board, giving examples, or asking the students questions.</p>	<p>No opportunities for making choices were given except for the project.</p>	<p>No opportunities for making choices were given except for the project.</p>
Designing a Learning Experience that Involves Challenge	<p>Designing too complex of a learning experience.</p> <p>Example: Completing a research project similar to post graduate research in one month.</p>	<p>Designing short term simple learning experiences</p> <p>Example: Select a role in a learning task.</p>	<p>Designing short term simple learning experiences</p> <p>Example: Find answers to teacher questions in a text, answer the book questions as homework.</p>	<p>Designing too easy of learning experiences.</p> <p>Example: Answering yes and no questions in class.</p>
Giving Opportunities for Self-Assessment	<p>No opportunities were given during the observations.</p>	<p>No opportunities were given during the observations.</p>	<p>No opportunities were given during the observations.</p>	<p>No opportunities were given during the observations.</p>

Category 5: Opportunities to control challenges. A key practice that supports students' ability to control challenges is providing opportunities to make choices and receive teacher and students supports (Butler et al. 2017; Perry, 2015; Perry, 2004).

The following sections discuss the effect of the teachers' practices on the students with visual impairments' ability to control their learning situations.

Teacher support. Sara, Reem, and Mariam gave all the students including students with visual impairments opportunities to choose their projects. However, they did not provide instrumental support to help them make choices that guided them towards independence or matched with their needs. In these classes, options were too open, requirements were simple, and no criteria was given to help the students make informed decisions regarding their partners or project. For instance, Reem informed the students that they could choose any topic related to history and represent it in any format. The students with visual impairments selected to work together on this project, although they had no restriction, as in Nora's class, that prevented them from working with their non-visually impaired peers. They selected to print pictures of old currencies in Saudi Arabia and label the name of the king who was ruling the country in which the currency was used, using Microsoft Word. Their project depended on the use of visuals and print, a challenging area for all four of the students (i.e., three of them had no access to the visuals and used braille as their reading and writing medium), and the use of printing and computer skills, which none of the four students had mastered. This led to questions about how the students completed this project and why they were not encouraged to select something relevant to their needs.

It is likely that the students with visual impairments received support from a sighted family member to decide on the project and complete it. The students may also have been more familiar with and influenced by strategies that their sighted classmates

usually employ to complete the school work in place of being self-aware of strategies relevant to their unique needs and within their areas of strengths.

Unlike the other three teachers, Nora tried to engage the students in a discussion regarding good and bad choices and how to select their topics. However, the discussion did not include providing rationales or co-constructed criteria with the students that guided their decisions. She gave examples of 'good and bad topics' with little justification and was observed trying to influence a student's opinion. For example, one student wanted to choose women rights as a topic for the project. Nora engaged the student in a discussion until the student changed her opinion to meet the teacher's opinion that "women have no problem with their rights in this era."

In summary, one teacher who had some professional development around general teaching strategies demonstrated basic awareness of the need to help students make choices. However, room for further developing teacher support that promotes students developing SRL, and guide them towards independence, was noted. Incorporating additional support during the stages of a project will promote students making choices that meet their needs and help them to develop skills that could be generalized to other learning contexts.

Peer support. Essentially, the strategies and the practices that the teachers used to group the students need further development in order to promote productive forms of collaborative learning and create opportunities to give and receive peer support. In one class, the students with visual impairments were in a group that shared similar challenges (Nora's class), in the other two classes (Sara and Reem) the students with visual impairments mainly were paired or grouped with general students,

participating in the learning process unequally and receiving unnecessary support from peers. This was evident when Nora gave general classroom students a survey to explore their interest and find partners with similar interests while grouping the students with visual impairments together based on the disability. She thought that grouping them in this way would help their learning as they all used technology to read and write and shared the experience of lack of vision. However, this assumption was incorrect for two reasons. First, the group of students with visual impairments was not really homogeneous. Not all of them read and write using braille or lack access to the visuals. The student H., for example, could read printed books and write in handwriting. She also could use her phone with no adaptations which implied that she had a considerable degree of vision. Second, the group of students with visual impairments, unlike the other groups, included students who all faced difficulty in using the computer, finding resources, and reading and using the resources, which put an extra burden on their learning and achievement.

Unlike Nora, Sara grouped the students based on their preferences. This resulted in one of the students with visual impairments joining a diverse group, and the other three were together in a group with general students. Sara did not set or co-create criteria for grouping and engagement that ensured the diversity of the group or equal participation. The students in each group were required to select a role in the learning task (see Table 5; *The Balance of Power in the Classroom*). Since the students with visual impairments could not read the learning content as fast as their fully sighted peers and lacked the assistive technology to take notes, they did not have an opportunity to take initiative to participate and select roles in the learning task. As a

result, the general students in their groups did not pressure them, resulting in mainly the general students performing most of the learning roles alone.

The grouping strategy that Reem used in her class was to control the general students' behaviors and engagement and provide support for students with visual impairments (see Table 5, Grouping). The students with visual impairments were paired with one to two high achieving students that the teacher selected to support the students. I observed their peers read for them when they did not bring their books (which happened at least one time across the four classes during the observed session), or gave them the answers to the teacher's questions that were written on the board when the teacher assigned the whole class to find answers to the questions from a text. The students with visual impairments had no access to this task since they could not see the questions on the board, and, unrealistically, were expected to remember the questions when the teacher read them once while the classmate could refer back while finding answers by reading them. The result was that the students with visual impairments did not have sufficient opportunities to acquire essential learning skills that would encompass reading, understanding questions, finding answers or even feeling successful and developing a sense of competency.

Generally speaking, in the four classes, none of the students were engaged in an activity that required them to collaborate on strategies, assessment, or new ideas. More interestingly, however, some general students in one class with less teacher restriction over students' movement (Mariam's class), moved between the groups to look for interesting topics for their own group, without the teacher asking them to do so,

demonstrating some SRL efforts. In contrast, none of the students with visual impairments moved from their locations or seemed aware that others were doing so.

Category 6: Classroom activities or projects. Nora integrated the research project into the in-class activities and homework. The design of the project met some qualities of SRL activities identified in Table 1 and in the literature review. However, it missed some qualities as well. Nora designed a project that worked toward multiple goals, focused on a large chunk of meaning, and extended over time. However, she was not observed to engage the students in a full cycle of strategic actions. The students usually started working immediately after the teacher explained the step to them. They did not spend time on planning, return the work to the teacher to receive feedback, seek help from a classmate or adapt their project at any point. It seemed they would only receive feedback when the teacher graded their final product. She also did not offer choices to the students regarding the format of the project as she required all the students to submit a research paper project solely in a written format (see Table 7).

Sara gave the students ten options to complete their project in her classroom. Examples included participation in the Arabic international day, or the national day, summarizing a lesson in the book and writing it using Microsoft word. The students with visual impairments selected to summarize a lesson and typed it using computer technology. Similarly, Mariam asked all the students to submit anything in any format on any topic related to the Arabic language. Despite a range of options, the students with visual impairments informed their teacher that they would like to answer the questions from one of the chapters in their curriculum book. Reem asked the students to submit anything at any format on any topic related to history. Examples of student products

included two pages on a historical event, participating in the national day, and creating learning material that displayed consequences of a historical event. The students worked on these projects on their own and submitted their product within a week. Although the design of the activities did not require the students to engage in a cycle of strategic actions in Nora’s class, and requirements were simple in the other three classes, the students with visual impairments always selected to work on the easiest option. Moreover, the teachers were not observed, trying to influence the students with visual impairments choices. Table 7 shows the qualities of the activities and projects in the four teacher classrooms based on SRL Theory.

Table 8.

Qualities of The Activities or Projects in The Four Teacher Classrooms Based on SRL

Suggested Practices

<i>Qualities of SRL activities</i>	Nora	Sara	Reem	Mariam
Work toward multiple goals	Yes Curricular goals, cognitive goals, computer technology skills, research skills.	No Solely curricular goals, targeted limited number of skills such as reading and typing.	No Solely curricular goals, targeted limited number of skills such as reading and typing	No Solely curricular goals, targeted limited number of skills such as reading and typing.
Engage the students in a full cycle of strategic actions	No Students were not required to spend time on planning, return the work to the teacher to receive feedback, seek help from a classmate or adapt their work.	No Can be done without engaging in a rich form of learning.	No Can be done without engaging in a rich form of learning.	No Can be done without engaging in a rich form of learning
The activity focuses on a large chunk of meaning	Yes The essential understandings of the chapter, integration of relevant content and	No unfocused—target secondary goals, are unconnected to real life experience,	No unfocused—target secondary goals, are unconnected to real life experience,	No unfocused—target secondary goals, are unconnected to real life experience,

	skills across the curriculum.	and/or are unconnected to similar content or skills across the curriculum.	and/or are unconnected to similar content or skills across the curriculum.	and/or are unconnected to similar content or skills across the curriculum.
The activity extends over time.	Yes Students can develop their learning gradually over a month, and the project is connected to real life (research project to develop the research skills)	No stand-alone activities, and the connection to “real life” is not clear	No stand-alone activities, and the connection to “real life” is not clear	No stand-alone activities, and the connection to “real life” is not clear
Offer choices in the products	Yes Decide the topic, the resources, and the length	Yes Offered too open of choices—no restriction or guidance to make choices that maximize the learning.	Yes Offered too open of choices—no restriction or guidance to make choices that maximize the learning.	Yes Offered too open of choices —no restriction or guidance to make choices that maximize the learning.

Category 7: Teacher assessment and feedback.

Teacher feedback. The feedback that the teachers provided during the observations was primarily verbal, short statements, unconnected to the use of a specific strategy in a particular task, and did not provide a rationale, or help the students to monitor their learning or progress. The feedback that the teachers gave was mainly when the students answered their questions such as “excellent!” “wonderful!” “bravo!.” However, the most prominent problems related to teacher feedback that I noticed was related to the teachers’ reflections on students’ incorrect answers during participation in class activities and interactions. While some teachers just reflected on students’ mistakes with rejection (e.g., saying “No” or “Wrong answer” and then looking for another student to answer, or saying “No” followed by the correct answer), others used very criticizing language. One teacher dealt with the students' mistakes as a real issue.

Examples of her interactions included saying “unbelievable, we are in this time of the year, and you make this mistake.”, or making the student look weak in front of their friends, (e.g., when students pronounced a word wrong, the teacher repeated the wrong pronunciation and asked the other students to help her classmate by saying, “Tell your friend what the correct pronunciation is.”). Another teacher found a spelling mistake in a general student’s worksheet, so she told her that spelling is part of the assessment and then addressed all the students with her speech, telling them that they will lose marks if she found spelling mistakes in their papers. However, when she noticed a mistake in the writing of student H. with low vision, she looked at the teacher of students with visual impairments and told her to help the student fix her writing problems. The teacher of students with visual impairments only attended the class based on the teacher’s request because she thought she might need her during her presentation of the challenging project to the whole class (i.e., Nora’s class). The student with visual impairment after this incident stopped writing on her worksheet. When the teacher of students with visual impairments asked her to keep writing, she responded that she would write it at home.

Teacher assessment. Nora was the only teacher observed to use assessment criteria to guide students’ learning. She showed the students the assessment form by presenting it on a presentation slide. She read it quickly and then told the students that they should look at it carefully because this is how they will be assessed and it contained the criteria they should be meeting. However, Nora presented it only once in the beginning of their project and provided neither the general students nor the students

with visual impairments with the assessment form to review during the different stages of working on the project.

Reem was the only teacher who continuously (i.e., at the end of each class) assessed the students' learning progress (i.e., mainly their participation during the class). However, her assessment did not target their learning approach or development. It only concerned the level of students' participation in the classroom. The assessment criteria related to students' learning were not given to the students to assess themselves or monitor their learning. Reem also tried to remind the students in each class that their participation and interaction with the teacher would be assessed, which could be perceived as threatening to the students.

Category 8: Teacher language and interactions with the students. In all four teachers' classrooms, selection of language and interactions were different than those suggested by SRL promoting practices. Examples included the use of deadline statements (e.g., "5 minutes left!", "quickly second level students!"), criticizing language (e.g., no!, wrong!), directives or commands (e.g., "Student H. answer", "Second group answer", "write this question it is important", "change your topic"), asking closed-ended questions with the teacher elaborating the reason instead of the students by explaining or providing justification to the students' answers (e. g., the teacher: "Is the information correct?", some students answered: "yes" and some: "no", the teacher : "No, write next to the question: the information is not from reliable sources or based on statistics and evidence."), linking success to factors the students cannot control ("You are an excellent student", "G. is an intelligent student."), and using language that compared the students' achievement with the other students to comment positively or negatively on their

performance (e.g., telling the students with visual impairments that they had chosen a topic that is interesting and better than their classmates' topics, saying to the students who had not submitted their projects that they should do so soon while mentioning that the other students have already submitted wonderful projects). Based on SRL theory, no use of open-ended strategic questions, practices or language that emphasized that learning is a developmental process that takes time, or expressions of confidence in the students' ability to learn or accomplish a task were observed.

Phase 1: The Consistency of The Teachers' Use of SRL Promoting Practices

Tables 8-11 display the ratings of the teachers' use of practices that promote SRL in each category for each observation time, using the rating system developed by Perry (1998). The rating system was used to analyse the running record data that described teachers' practices. The aim of this analysis was to understand the consistency of the data. The rating is based on a list of categories that represents practices believed to promote SRL which include choices, control over challenges, self-evaluation, peer support, teacher support, assessment, accommodations for individual differences, and tasks. Based on the patterns of ratings received across the observations, Table 12 indicates the consistency score (on a scale of 1 to 5; See Methodology Section for the scale designations) assigned to each teacher under each category, and Figures 2-5 display these consistency ratings graphically.

Table 9.*Rating of Teacher Practices During Each Observation in Nora's Class*

Choices	Callenges	Self evaluation	Teacher support	Peer support	Assessment	Adaptation	Task
2	2	0	1	2	1	2	2
2	1	0	2	2	1	2	2
1	1	0	1	1	1	1	2
1	1	0	1	1	2	1	0
1	1	0	1	1	1	2	0

Table 10.*Rating of Teacher Practices During Each Observation in Mariam's Class*

Choices	Callenges	Self evaluation	Teacher support	Peer support	Assessment	Adaptation	Task
2	2	0	1	0	1	1	2
1	1	0	1	0	1	0	0
1	1	0	0	0	1	0	0
1	1	0	0	0	1	0	0
1	1	0	1	1	1	0	0

Table 11.*Rating of Teacher Practices During Each Observation in Sara's Class*

Choices	Callenges	Self evaluation	Teacher support	Peer support	Assessment	Adaptation	Task
1	1	0	1	1	1	1	2
2	2	0	1	1	1	0	0
1	1	0	2	1	1	0	0
1	1	0	1	1	2	0	0
1	1	0	2	1	2	0	0
1	1	0	2	1	1	0	0
1	1	0	1	1	1	0	0

Table 12.*Rating of Teacher Practices During Each Observation in Reem's class*

Choices	Callenges	Self evaluation	Teacher support	Peer support	Assessment	Adaptation	Task
1	1	0	1	1	1	1	0
1	1	0	1	1	1	2	0
1	1	0	0	1	1	2	0
2	2	0	0	1	1	1	2
1	1	0	1	1	1	1	0
1	1	0	0	1	1	2	0
1	1	0	1	1	1	0	0

Table 13.

Consistency Rating of Teacher Practices across Observations

Practices	Nora	Mariam	Reem	Sara
Choices	3	2	2	2
Control over challenge	2	2	2	2
Self-evaluation	1	1	1	1
Teacher support	2	1	1	3
Tasks	4	2	2	2
Peer support	3	1	1	1
Embedded assessment	2	1	1	2
Accommodations for individual differences	4	1	3	1

**note the number of the observations are (5) in nora and Mriam class, and (7) in Sara and Reem class.*

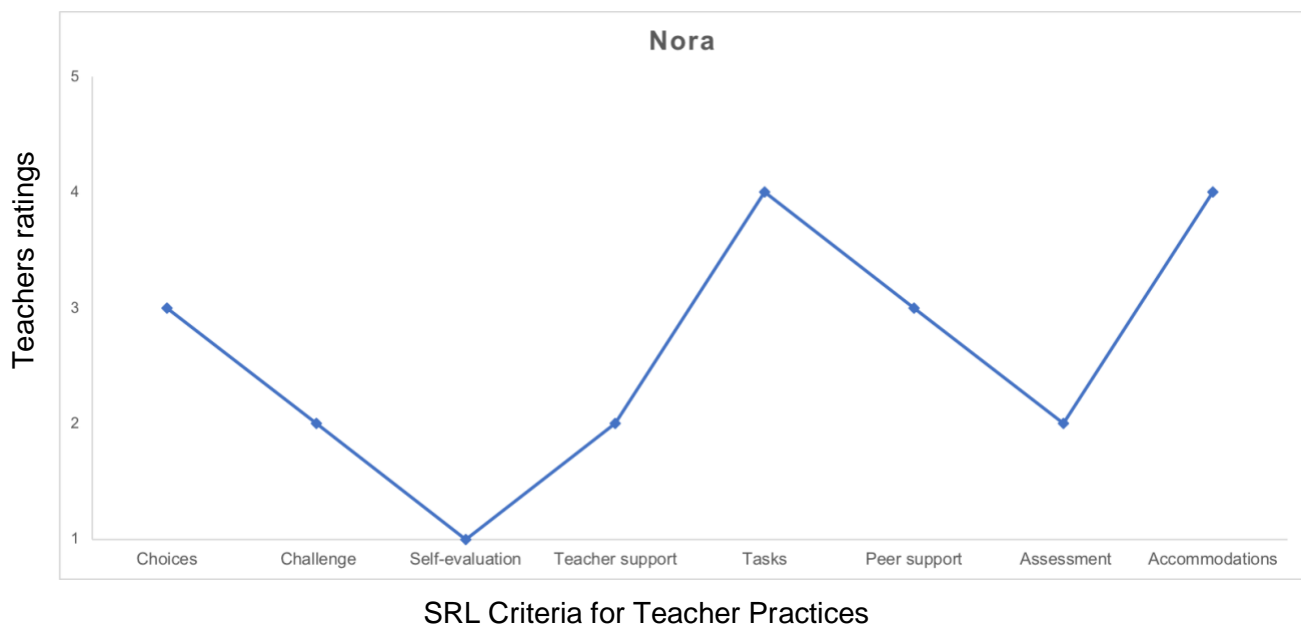


Figure 2. Consistency Ratings of Nora’s Practices Across the Observation

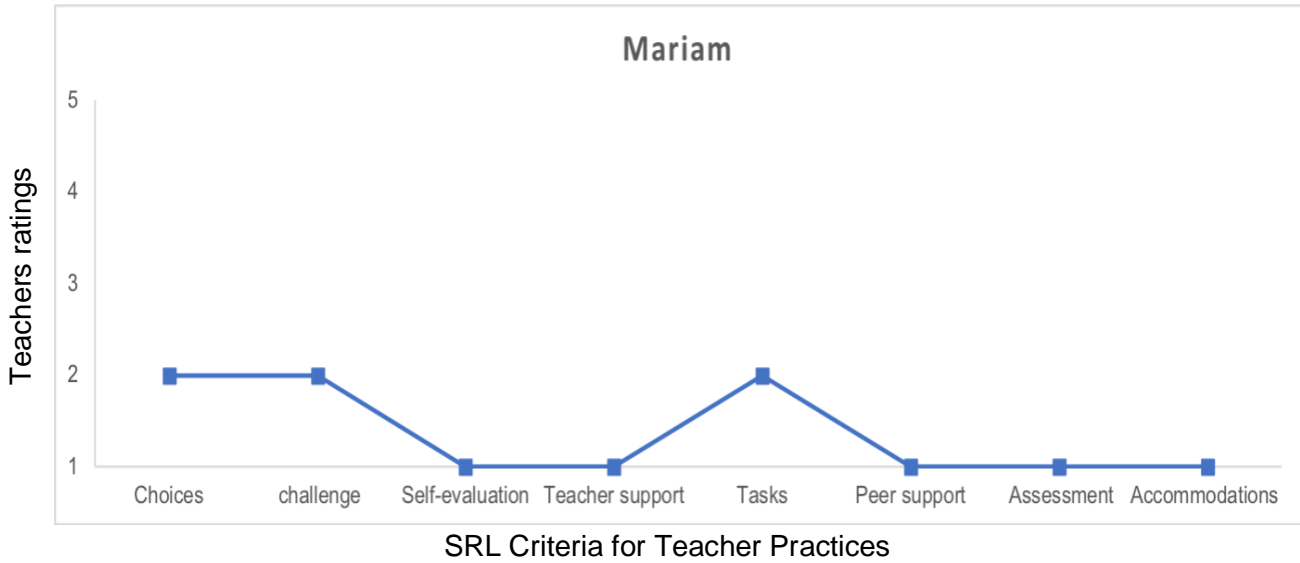


Figure 3. Consistency Ratings of Mariam’s Practices Across the Observations

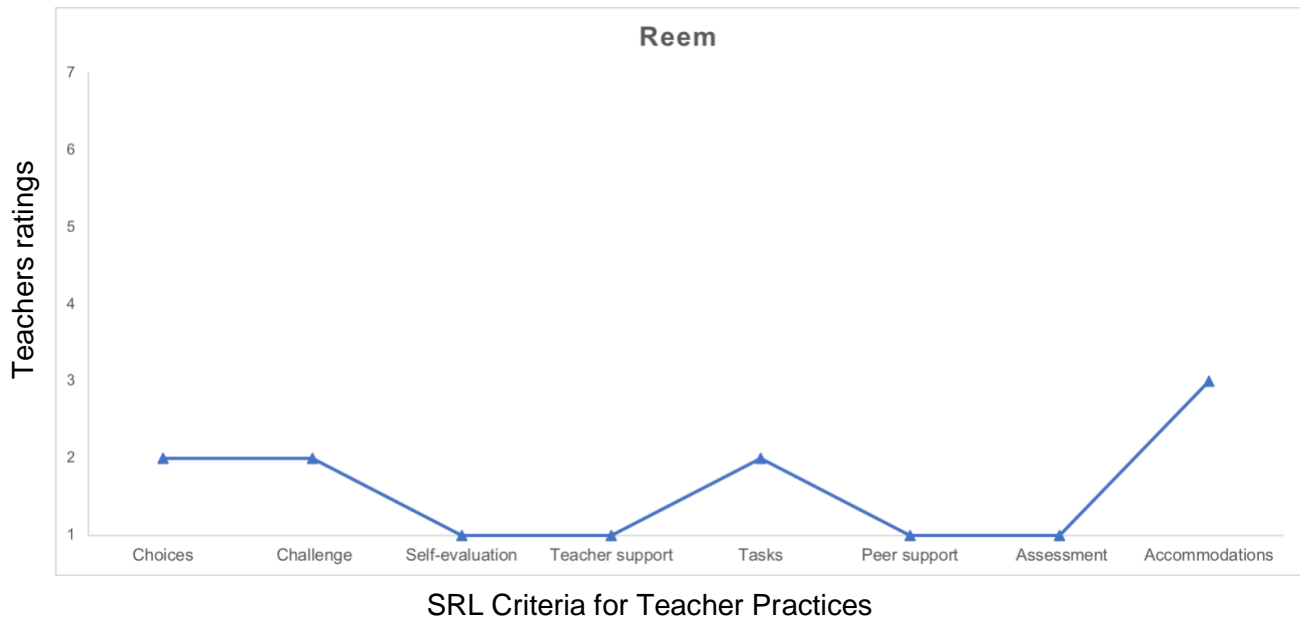


Figure 4. Consistency Ratings of Reem’s Practices Across the Observations

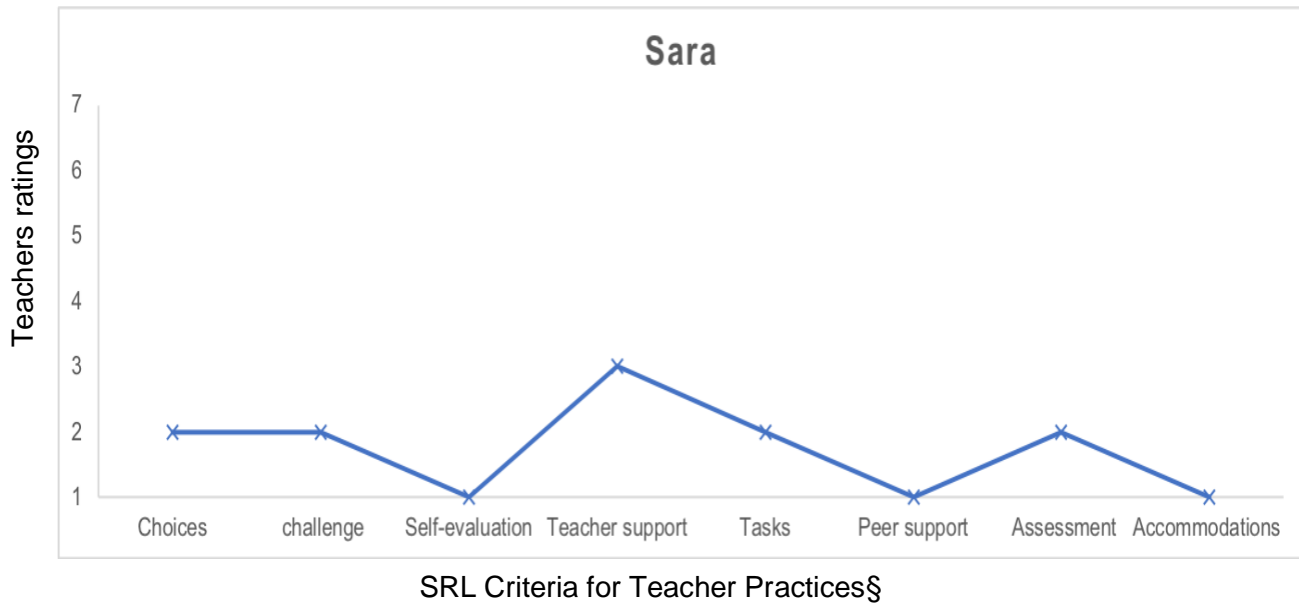


Figure 5. Consistency Ratings of Sara’s Practices Across the Observations

Phase 2 and 3: The Self-Report Data Analysis

Students self-report questionnaire. Table 13 shows the response of the four students with visual impairments who were included in the four teachers’ classes. The students were asked to confirm the absence or presence of practices that are believed to support the inclusion of students with visual impairments and support SRL development. The students' evaluation of the opportunities their teachers provided concerning inclusion and SRL development was compatible with those I observed in the general classroom and reported in Phase 1. The students expressed different opinions regarding opportunities for self-evaluation in the four teacher classrooms, however. When they were asked to comment on a given example about being asked to find their mistakes by their teachers, they almost all agreed that they rarely experienced this practice in the four teacher classrooms (see students’ responses for item 2 and 3 in Table 13). This indicated that the students experienced a lack of opportunities to

monitor and assess their performance which are essential qualities for SRL development.

Additionally, based on the students' evaluation, Nora was reported as the teacher who used SRL promoting practices more often than the other three teachers, while Mariam was indicated as the teacher using SRL promoting practices the least, which is consistent with the observations. The students agreed that in Nora's class they had opportunities to do the same work in a different way that they decided and that they were encouraged to find resources that met their interest and work on an activity that extended over time. While in Mariam's classroom, they agreed that they did not think the teacher tried to adapt the instruction to their needs and that she would give them the answer if they had a question. Also, three of the students with visual impairments reported that in Mariam's class they did not know what was expected of their learning by the end of the term (or unit) and that, usually, the teacher decided the different ways they would do their work (see Table 9).

The students' perceptions correspond to the overall ratings for SRL practices for Mariam and Nora. While Nora was rated the highest (see Figure 2), Mariam was rated the lowest, receiving one point on the categories of peer support, self-evaluations, accommodation of individual differences and the design of the task (see figure 3).

Table 14.

The Evaluation by the Four Students with Visual Impairments of the Opportunities Provided in the Four Teachers' Classrooms of Practices Supporting Inclusion and SRL Development

Questions	Nora	Sara	Reem	Mariam
1. I feel comfortable sharing my ideas in the classroom.				
a. Always	D R	DR	DR	GR
b. sometimes	H G	GH	GH	H
c. rarely				D
2. The teacher asks me to assess my work.				
a. Always	D			
b. sometimes	H	DH	DH	DH
c. rarely	GR	GR	GR	GR
3. The teacher asks me to find my mistakes.				
a. Always				
b. sometimes	D			
c. rarely	GRH	DGR H	DHGR	DGRH
4. The teacher tries to adapt the instructions to my needs.				
a. Always	DG		G	
b. sometimes	R	R	DR	
c. rarely	H	DGH	H	DGRH
5. I know where the learning materials we used last week are located.				
a. Yes	H	H	H	H
b. No	DGR	DGR	DGR	DGR
6. I know where the teacher's office is.				
a. Yes	H	DRH	DRH	
b. No	DGR	G	G	DGRH
7. I know what is expected of my learning by the end of the term (or unit) in (the teacher subject).				
a. Yes	DGR	DGR	DGR	G
b. No	H	H	H	DRH
8. We have discussed the learning goals in the beginning of the units.				
a. Yes	DG	D		
b. No	RH	GRH	DGRH	DGRH
9. The teacher mentioned the learning goals at the beginning of the unit.				

- | | | | | |
|--------|----------|----------|----------|----------|
| a. Yes | DGR
H | DGR
H | DGR
H | DGR
H |
| b. No | | | | |

10. All the students are required to do the same task in the same way.

- | | | | | |
|--|----------|----------|----------|----------|
| a. Yes | | | | |
| b. No, usually the teacher gives me different task. | | | | |
| c. No usually I do the same work but in a different way that I decide. | DGR
H | DGR
H | DGR
H | G
DRH |
| d. No, usually I do the same work but in a different way that the teacher decides. | | | | |

11. Classroom activities require all the students to finish at the same time.

- | | | | | |
|---|-----------|-----------|----------|-----------|
| a. Yes, we all finish at the same time. | D GR
H | GR
D H | DGR
H | GR
D H |
| b. No, every student works at his/her own pace. | | | | |
| c. No, usually the teacher gives only me more time. | | | | |

12. I feel free in selecting any resource to advance my learning (e.g., books, audio books, documentary, articles)

- | | | | | |
|--|-----|-----------|-----------|-----------|
| a. No, only the textbook is required. | | G
D RH | HG
D R | HG
D R |
| b. The teacher never mentioned that I could use other resources. | | | | |
| c. The teacher encourages and supports me in finding interesting resources related to the subject. | DGR | | | |

13. I can use the learning materials whenever I like.

- | | | | | |
|---|----------|----------|------|------|
| a. No, only teachers can use them. | | | | |
| b. I can use them with permission. | DGR
H | DGR
H | DGRH | DGRH |
| c. I can use them whenever I want, and they are useful. | | | | |
| d. I can use them whenever I want, but they are not useful. | | | | |

14. Which of the following statements represent the group you typically work with:

- | | | | | |
|--|----------|----------|------|-----|
| a. My group is diverse and includes members with a mix of abilities. | | DGR
H | DGRH | GRH |
| b. My group mostly includes only students with visual impairments. | DGR
H | | | |
| c. My group mostly includes one or two students who are knowledgeable about the subject. | | | | |

d. All the group members have difficulty in understanding the subject. D

15. Usually when I tell the teacher that I do not know the answer:

a. She discusses with me what some things are that I can do when I do not know an answer	D	D		
b. She gives me the answer.	RH	RH	RH	DGRH
c. She tells me where I can find the answer in resource or a textbook	G		DG	
d. She tells me to ask a classmate.		G		

16. Usually the teacher lets me decide:

a. Where I want to work.	D	DH	D	DGH
b. My partners in the group.	RD	DR	D	DGR
c. The topic of my project.	DGR H	DGR H	DGRH	DGR
d. The format of my project.		DGR	DGR	DGR
e. The length of the task.	DRH	DGR	DGRH	DRH
f. None.		H		

17. Everyone in the classroom knows:

a. The classroom's appropriate behaviours	DH	DH	DH	DH
b. How to comment on teacher or classmate opinion.				
c. When to submit homework assignments.	DGR H	DGR H	DGRH	DGRH

18. Classroom activities usually can be completed in

a. 5 minutes		DGR H	DGRH	DGRH
b. one class				
c. week				
d. month	DGR H			

19. The teacher gives us time to discuss with a partner or in a group the following:

a. The meaning of a question.	DRG H	DRG H	DGRH	DGRH
b. The task requirements.	DRH	DRH	DRH	DRH
c. The strategies we can use to complete a task, learn a concept or solve a problem				
d. None				

**note students responses regarding the presence of the practices in teachers' classrooms are represented in the following letters (student pseudonyms): H, G, D and R.*

The number of letters represents how many times the students report the presence of the practices in each teacher classroom.

Teacher self-report questionnaire. Table 14 displays the teachers' self-evaluation of their practices. The four teachers were asked to place themselves on a continuum to identify their teaching style so that the researcher could check the compatibility of the data and obtain information that might not have been observed during the observation times. All the teachers reported that they told the students at the beginning of the academic year the norms and routines, instead of co-creating classroom norms and routines with the students, which is considered a more powerful practice and recommended in SRL research. They also expressed that they gave the students direct instructions in how to respect each other and learn together instead of engaging them in discussion or asking the students to describe the features of effective collaborative learning and respectful behaviours. Moreover, three of the teachers said that they provided feedback to the students 'only after exams and mainly included scores, grades and the general quality of their work,' while one stated that she gave feedback that 'described the general quality of their performance (e.g., excellent, good job, right, not there yet) on different occasions (during activities, classroom discussions, after submitting assignments, homework, test).'

Nevertheless, unlike the students' responses to the self-report questionnaire, the teachers' self-evaluation of their practices were not all compatible with those observed in their classrooms or reported by their students. For example, when asked to characterize the extent to which tasks in their classrooms were complex and

meaningful, the teachers reported that they had used activities in their classrooms that work toward multiple goals (e.g., curricular goals, social-emotional skills, problem-solving skills, research skills) and integrate relevant content and skills across the curriculum (see item 7 in Appendix C). However, one teacher had solely used one activity during the five observations, and she expressed that she was using it because she did not have much information for that day's lesson. Another teacher used activities that did not require student interactions or discussions. They worked in their groups individually, and each student participated alone to answer questions related to the content.

Other responses that represented an inconsistency between the observations, students' responses, and teachers' responses, were teacher responses to items 3 and 4. The answers to these two questions were related to each other. In item 3, the teachers were asked if the design of the classroom activities supported students' control of challenges. Two teachers selected that they typically 'create opportunities where all students, including students with visual impairments, can increase or decrease the level of challenge'. While in item 4, they were asked about examples of methods that promote students' control of challenges (i.e., encouraging different representations of learning). For this item, the teachers selected that 'only the students with visual impairments can represent their learning in a different format due to their needs.' This implies that not all the students were allowed to control their learning in a way that suited their needs and preferences and that the teachers tended to believe that students with visual impairments were the only students who could control their learning product in their classrooms. This also conflicted with the observations as the students with

visual impairments experienced relatively fewer choices compared with their sighted classmates such as options related to their group members or partner. For example, in Nora's class, the general students were encouraged to use a survey to find partners with similar interest, while the students with visual impairments were directed to form a group together.

The same conflict in data sources occurred in the teacher response for item 13. The teachers were asked if they usually provided opportunities for self-assessment. They selected that they let the students 'assess simple aspects of their work (e.g., find their mistakes, give themselves a grade, evaluate their work.' However, no use of self-evaluation practices was observed in the classroom, and the students had mostly agreed in their self-report questionnaire that they had rarely been asked 'to find their mistakes' in the four teacher classrooms. The differences between the observations, student report, and the teachers' self-perceptions might indicate a current difference in intention versus implementation in the classroom, which highlights an area for future development or, perhaps the teacher used these practices but not during the observations.

Table 15.

Teachers' Evaluation of Their Practices

Teachers	High SRL emphasis		Low SRL emphasis		Lack of use of SRL practices	
		%		%		%
Nora	8*	57%	5	35%	1	7%
Sara	5	35%	8	57%	1	7%
Reem	8	57%	5	35%	1	7%
Mariam	6	42%	7	50%	1	7%

** Note. Numbers represent number of times the teachers' responded to the high, moderate or lack of SRL levels on the questionnaire.*

Total number of items =14

Chapter 5: Discussion

This study evaluated the likelihood of general classroom teachers' practices to promote the inclusion of students with visual impairments based on self-regulated learning theory (SRL). The context of a secondary school in the Kingdom of Saudi Arabia (KSA) that includes learners with visual impairments was used to address the research questions. The results in Chapter 4 reported data for the two research questions, both of which are synthesized in this chapter. In addition, this chapter provides recommendations, based on the results of this study, aimed at enhancing the learning and teaching experience in a classroom that includes students with visual impairments.

1. What practices aimed at creating an inclusive environment for students with visual impairments did the general classroom teachers use?
2. To what extent did classroom teachers use inclusive practices in the general classrooms that were compatible with those suggested in SRL research?

Classroom observations were carried out to document teachers' practices and students' responses and interactions to the practices using running records.

Conceptual categories derived from SRL research were used to provide a framework for the observations and coding of the transcripts. Teacher and student self-perception measures were conducted to obtain triangulation of data and fully understand the research problem beyond limited direct observation points. The results of the study highlighted both opportunities and missing pieces in classroom interactions that affected the inclusion and the learning experience of the students with visual impairments who participated in this study.

Question # 1. What practices aimed at creating an inclusive environment for students with visual impairments did the general classroom teachers use?

In general, the results of the study suggested that the four general classroom teachers used practices that support full inclusion of students with visual impairments in a limited scope. It is important to note here that full inclusion and optimal use of SRL practices would not be expected to be observed based on current levels of teacher professional development opportunities. The level of inclusion experienced by students with visual impairments varied in each classroom. For example, in Reem's and Nora's classes, the two teachers who had some additional professional development, the students with visual impairments were provided with adaptations to learning materials, modifications to the physical environment and the teaching instructions. In the other two teachers' classes, who had never received any workshops or courses on the inclusion of students with visual impairments or effective teaching strategies, minimum adjustments were observed.

The teaching practices that Nora used seemed to be influenced by the workshops that she took in the area of effective teaching practices. This could explain her use of practices that reflected those mentioned in SRL research (e.g., using a project that extends over time and focuses on a large chunk of meaning, encouraging all the students to make choices regarding their topics, learning resources and the length of their work), as well as practices that included the students with visual impairments, (e.g., requiring the students with visual impairments to do the same project required from their sighted classmates in a way they decided worked for them (e.g., using their mobile phone to search for information or computer technology, audio books

or printed books), providing adapted worksheets and assistive technology needed to participate in the activities in the general classroom).

In contrast to Nora, Reem's educational practices reflected the training that she received on teaching strategies that solely supported students with visual impairments. She stated that she had learned braille letters, general information about the braille system, and some teaching strategies specific to visual impairment (e.g., describing pictures, providing descriptive verbal information, including the students with visual impairments socially with their classmates, extending the time of written tests, reducing the number of test items). As a result, she was observed in the classroom using some of these practices. For instance, she described pictures, read the written information on the board, and did not allow the students with visual impairments to work together during classroom activities in order to include them socially.

During the observations, especially in Nora and Reem's classes, there were 'moments or snapshots' that indicated beginning efforts for inclusion and SRL development that could be further developed. These 'moments' can be exemplified in one teacher's attempts to socially include the students with visual impairments by asking them to change their seats whenever she found them sitting beside each other, by modifying the instructions by describing pictures to the students with visual impairments who had no access to them, by directly calling them by their names to ask them to concentrate because she was describing images related to the lesson, and by providing support for the students with visual impairment by directing them to join a high achieving classmate(s) that she decided.

These beginning ‘moments’ or efforts offer the starting point to further shape practices towards fully inclusive practices that are a more natural part of the whole classroom community. For example, to socially include the students with visual impairment, the teacher could teach all the students how to choose their group members or seating criteria to assist them in selecting their partners. To avoid singling out students’ challenges, the teacher could describe pictures to all the students or have students describe images to their group members. To provide peer support to students with visual impairments (as well as their sighted peers), the teacher could create opportunities during classroom activities that explicitly require all the students to receive and provide support. It is crucial to make the instructional strategies, especially those related to vision loss, inclusive and a natural part of classroom routines, and interactions. Integrating inclusive practices in classroom norms and routines in a natural way develops a climate that does not involve the students being demeaned or singled out among their classmates and creates a predictable structure that allows the students to interact autonomously and willingly (Butler et al., 2017; Katz, 2012).

The feeling of inclusion by the students with visual impairments varied as well. In the self-report questionnaire, the students were asked if they received adaptations that met their needs in each teachers’ classroom. Their responses varied between always, sometimes and rarely. This is an indication that additional consistent efforts are still needed to reach a situation of full inclusion and opportunities for SRL. This will involve working with the students to understand ‘inclusion’ as well as modeling how inclusion and SRL look different from offering situational modifications or changes geared only to

the students with visual impairments that sets them apart from their peers rather than helps them feel connected as a classroom community.

Another 'moment' that displayed beginning efforts that could be further developed with professional development opportunities, modeling and other intervention were the practices aimed at integrating the students with visual impairments in the learning process through doing something less demanding than what their peers were doing. This included listening to the reading of a classmate instead of reading their own book by themselves, answering verbally instead of writing, and answering some questions in the book instead of participating in the Arabic international day like their classmates. This result is compatible with those mentioned in Sacks, Wolffe and Tierney (1998) who stated that the students with visual impairments in their study were given assignments that were 'much less stringent' than those given to students without visual impairment. The intention of the teacher was to accommodate and support the students with visual impairments by modifying the complexity, but it currently resulted in students with visual impairments sometimes not being included in the same tasks as their peers or being given the opportunity to practice making meaningful decisions about which tools to use when based on the task (braille book, computer screen reader, peer, etc.).

Along with the need for professional development, there are also other factors that influenced the practices of teachers in the general classes and could have limited their efforts to include the students with visual impairments which need to be addressed. These factors include characteristics that learners bring to the general classroom

context (e.g., missing some prerequisite skills) and the role of teachers of students of visual impairments in the success of inclusion.

Zebehazy and Butler (2015) suggested taking into account some considerations that the students with visual impairments may bring to the task which influences their engagement in learning and level of development of SRL. In the present study, the students brought to the general classroom some ineffective beliefs (e.g., negative attitude towards braille and using assistive technology in general classroom) and missing skills (e.g., using inefficient assistive technology to access information and complete tasks). The ineffective beliefs and skills affected all areas of the students with visual impairments academic and social engagements in the general classes. The students were unable to efficiently use assistive technology in order to access information, read and interpret the task requirements, and create a finished product. This led the students and their teachers to come up with ineffective strategies and to select choices that involved engagement in less meaningful tasks.

In fact, some practices observed in the school may have contributed to the formation of the students' negative attitudes towards the use of braille and technological aids. One of these practices was the lack of specialized assessments related to vision loss and subsequently an inaccurate assumption about one student's visual ability. Holbrook and Rosenblum (2007) emphasized the significance of conducting the functional vision assessment (FVA), learning media assessment (LMA) and assistive technology assessment (ATA) to decide the appropriate modifications to materials and teaching methodologies. "All areas of students' educations are affected by the students' need for instructional modifications," which cannot be met unless their visual potential,

the best learning medium, and the most helpful assistive technology are determined (Holbrook & Rosenblum, 2007, p. 259). They also recommended that the assessments should be updated consistently to anticipate changes in vision or educational requirements (Holbrook & Rosenblum, 2007).

In the study, the four students with visual impairments have never been given specialized assessments, other than the clinical eye exam. In other words, it is possible that the learning medium that some of the students were using did not suit their needs. This is evident in H.'s condition. The student refused to use braille as her primary learning medium or to rely solely on sensory approaches to explore learning concepts. Meanwhile, she showed many signs that indicated that she had a considerable amount of vision (e.g., efficient orientation and mobility skills with no training, taking notes in handwriting and reading the printed text in standard font size).

Likewise, student R. avoided using braille books and relied mainly on the auditory medium to access the written information. She justified her position by saying that braille would not be useful for her needs at the undergraduate level as there would be limited books in braille available to gain information. While R.'s perception that information typed in braille in a paper format would be limited and not easily obtained is perhaps accurate, the use of a technological device that provides refreshable braille (translation of text into electronic braille) such as with a braille notetaker would increase the availability and be an additional tool with which to work. But, due to the lack of exposure or practice with devices such as a notetaker, H. could not make a fully informed decision about the tools she could and would use post-secondary.

This leads again to the issue of lack of assessment, in particular, an assistive technology assessment. The students' needs, capacities, preferences, and academic requirements need to be evaluated to identify the most beneficial devices for each one of them. They were introduced to technological tools that were less efficient to assist them with completing their school tasks or accessing information. They need to be introduced to other technological devices, offered in the school, that have more potential to address their needs at graduate level, in a career, and in daily life such as the Braille Sense notetaker, the Pocket Reader, the Talking Color Detector, voice recorders designed especially individuals with visual impairments, and electronic magnifiers. Perhaps the reason behind this issue is that offering these technological devices in the school was not coupled with providing workshops, training and professional development opportunities to the teachers of students with visual impairments. Learning these tools could be incorporated as part of SRL development where students come with a repertoire of skills and tools and learn to select and use the ones best fitting of the task.

Furthermore, although the general classroom teachers tried to encourage the students to use their braille books and to emphasize that braille is only a different method not a substandard system, they used, unintentionally, practices that sent an inconsistent message. Classroom activities relied on verbal-linguistic forms of participation, reading and writing formats; however, among the four teachers, only one expected the students with visual impairments to use a braille typewriter during classroom activities. In the other classes, they needed to visit the resource room to take notes or exams, while in the general classroom they relied on listening and participated

verbally. The students may have felt that the Perkins Brailler, the only braille typewriter they learned how to use, was not welcomed in the general classroom, as they rarely used it outside the resource room. These expectations may have built incorrect assumptions regarding braille in general which led the students to question its efficiency of use in the general classroom to address their academic needs.

In regard to the role of teacher of students with visual impairments, it is important to consider that Inclusion is a multifaced experience in which several professionals with different expertise contribute to its success. Among the most important of them in the context of including students with visual impairments, is the teachers of students with visual impairments. Holbrook and Rosenblum (2007) stated that one of the best approaches for teachers of students with visual impairments to support inclusion is by supporting suitable teaching approaches and providing appropriate materials. In order to play this integral role, they need to obtain adequate training and seek professional development opportunities that allow them to conduct assessments related to visual impairments, introduce a variety of assistive technologies based on each student's need and develop knowledge regarding inclusive practices that can be used to support students with and without visual impairments in the general classroom in a natural and engaging way. Katz (2013) suggests that resource room teachers invest some time in developing the capacity of general classroom teachers to use inclusive educational practices that address the needs of all the students, including struggling students. General classroom teachers can assist then in the prevention of barriers and challenges (e.g., developing inefficient beliefs and learning strategies) and the reinforcement of desired beliefs, behaviours and strategies.

Questions # 2. To what extent did classroom teachers use inclusive practices in the general classrooms that were compatible with those suggested in SRL research?

While the consistency and level of inclusion and SRL opportunities offered to the students has yet to reach optimal expectations, in one teacher's classroom the students had a number of meaningful choices that could invite a great deal of SRL. The other three teachers provided limited opportunities to practices that are believed to promote inclusion in SRL research or that support the students' development of SRL. Overall, the four teachers offered choices in classroom activities and projects but did not provide a context for the students to receive support or to engage in a process that required strategic actions. Lack of self-assessment practices was both observed in the general classrooms and reported by the students with visual impairments for all four teachers.

Designing a learning experience that involves some use of SRL supportive practices, while at the same time lacking others, may provide some opportunities to the students' development of SRL. However, in order to provide optimal learning conditions to develop SRL, teachers will need to work towards providing more opportunities, more consistently. Perry (2013) described the qualities of SRL as "not mutually exclusive" (Perry, 2013, p. 50). She illustrated by stating that "tasks provide a context for embedding opportunities and support for SRL (Hutchinson & Perry, 2012) and opportunities for autonomy without instrumental support can result in academically ineffective forms of self-regulation, even chaos (Reeve & Halusic, 2009)" (Perry, 2013, p. 50).

Among the four teachers, evaluating Nora's teaching practices was the most complex due to the use of some SRL practices. On one hand she provided opportunities that would be assumed to support the development of SRL and to create an effective form of learning. On the other hand, she violated some of the SRL principles. The learning experience with the other three teachers could be readily described as comprised of simple and short-term tasks, in which options were too open, requirements were too simple, and no criteria were given to guide the students' choices regarding their partners or project. In contrast, Nora tried to create a learning context that worked towards multiple goals, focused on a large chunk of meaning and extended over time through the use of a research project. However, her interactions with the students and the design of the project did not engage the students in a full cycle of strategic actions that involved interpreting the task, defining goals, planning, deciding the product, sharing the product, receiving feedback, applying modification or generalizing the learning experience to similar contexts (Butler et al., 2017, Perry, 2004). The feedback was directive, could be perceived as controlling, and did not serve to guide the students toward independence. Her support was procedural in which she answered the students' questions, corrected or accepted their answers with little justifications or rationale. For Nora, providing professional development around methods for effective support and feedback to students, and how to design tasks that naturally require students to engage in the strategic action cycle would help move Nora's current practices towards more consistent opportunities to develop SRL and ultimately support a greater level of inclusion for students with visual impairments.

Despite the lack of some SRL qualities and consistency in the learning experiences that Nora designed, the students, sighted and visually impaired, were observed to participate in the learning process in her classroom more than in the other three teachers' classes due to the integration of a challenging project in classroom activities. This is an indication that while there is still much to improve to support SRL development and inclusion, the steps taken by Nora did partially support student engagement.

Enhancing the learning and teaching process in classrooms that include students with visual impairments

Based on the results to research questions 1 and 2, opportunities exist to improve the inclusion of students with visual impairments in the school and the KSA by helping teachers develop more systematic and scaffolded opportunities for students to develop autonomy and self-regulated learning. It is important to consider that inclusion is a relatively new practice in this context and SRL is not yet a construct with a label. The teachers in this study have had relatively few opportunities to learn about inclusion practices or to practice implementing them in their classrooms. The teaching instructions used in the general classroom revealed teachers' attempts to use some strategies to include the students with visual impairments, provide some opportunities that may support students' development of SRL, and promote the students' engagement in the learning process. The general classroom teachers showed a great deal of use of the teaching strategies that they learned from professional development workshops in the area of education of students with visual impairments and effective teaching strategies (i.e., Reem and Nora). Both Reem's and Nora's consistency ratings indicated

their ability to incorporate learning from workshops, opening up the opportunity to further develop the SRL and inclusion knowledge of all the teachers.

The teachers' responses to the self-report questionnaire demonstrated some level of understanding of practices that support SRL. For instance, when asked to characterize the extent to which tasks in their classrooms were complex and meaningful, they all reported that they had used activities in their classrooms that worked towards multiple goals (e.g., curricular goals, social-emotional skills, problem-solving skills, research skills) and integrated relevant content and skills across the curriculum. However, their perceptions were not always consistent with the actions observed in the general classrooms. Perhaps their response reflected their intentions while they missed the mark in implementation. This would be an area to further explore when developing interventions to help teachers increase their use of SRL practices. It is important to consider also the possibility that teachers actually used the practices they reported during the time in which the researcher was not observing in their classroom. However, a mismatch between intention and implementation is suspected due to the consistency of student self-report about each teachers' classroom practices in general with the researcher's observations.

Taking into consideration the context of the school, the school's goal for project-based learning, and the current teaching styles and training of the teachers, interventions can be posed to support teacher knowledge and development to heighten inclusion and support SRL development for all learners. In addition, given the complex inter-relationship between the classroom teachers' instructional styles, the level of knowledge of teachers of students with visual impairments, and the motivational needs

of the students with visual impairments themselves, interventions or supports to enhance SRL and ultimately inclusion will need to target different stakeholders: policy makers, teacher of students with visual impairments, and classroom teachers. The following list of recommendations are intended to further enhance the learning and teaching process in classrooms that include students with visual impairments.

1. Recommendations to policy makers:

- Provide different forms of professional development that help general classroom teachers use and implement effective inclusion practices that address the needs of all students in general classes.
- Provide general classroom teachers with opportunities for mentorships and co-teaching, as well as the knowledge needed to implement these forms of coaching and collaborations to optimally benefit from them.
- Provide training that offers modeling and time for teachers to implement and then reflect and receive additional support in order to avoid the misconceptions that may result in a mismatch between intention and implementation.
- Provide professional development opportunities to the teacher of students with visual impairments that enable them to conduct the functional vision assessment (FVA), learning media assessment (LMA) and assistive technology assessment (ATA).
- Provide teachers of students with visual impairments time within their job duties to be present in the classroom.

- Offer assistive technologies in the school in conjunction with training to teachers of students with visual impairment on ways to use them and introduce them to the students.
- Maximize the usefulness of professional development courses, workshops, and recommendations in the area of inclusion of students with visual impairments, by addressing practices both specific to the disability and those that have the potential to enhance the quality of education for all the students, such as how to effectively support SRL in the classroom.

2. Recommendations to teachers of students with visual impairments:

- Discusses with the general classroom teachers the appropriate way and time to produce adapted learning materials.
- Help the general classroom teachers to understand the need of each student with visual impairments and discuss how it can be addressed in terms of instructional modifications, adaptations to the task, materials and appropriate selection of assistive technology for the task.
- Involve the students with visual impairments in every important decision related to their learning and seek their feedback to apply changes if needed (e.g., modifications to learning materials, the learning medium, adaptation to the environment).
- Collaborate with the general classroom teachers to empower students with visual impairments and build their capacity to select the most useful learning tools through knowledge of their strengths, challenges and their

visual ability. Engage the students in considering the task requirements and evaluating the pros and cons of each type of tool.

- Collaborate with the general classroom teacher to arrange the environment in a way that fosters independence, supports freedom of movement around the classroom, and the ability to access materials and assistive technology.
- Provide an opportunity for students to familiarize themselves with their classroom environment by allowing the students with visual impairments to explore their classroom at the beginning of the year. This is important to encourage the students with visual impairments to take risks and move around the class when interacting with their classmates.

3. Recommendations to general classroom teachers:

- Provide task requirements, descriptions of activities, questions or information provided to the sighted students in an accessible written format for students with visual impairments (e.g., braille, large print version) so that they will be able, as their sighted classmates, to refer back to the information, monitor their learning, make sure that they have addressed all the requirements or questions, organize their work and use suitable strategies (e.g., finding answers to questions they know first, starting with easiest or hardest question or requirements). Reading information on the board is not always an alternative to having the written information in adapted formats, especially when the information is crucial to participation or necessary to understand the lesson or to self-evaluate.

- Provide the teaching instructions in an organized manner that helps the students to understand how many topics and points they will explore in that lesson. This is especially important for students with visual impairments as they may not see the information on the whiteboard or presentation slides and cannot decide when to focus their attention or take notes (Holbrook & Rosenblum, 2007).
- Facilitate student interactions and collaborative learning not only in the seating arrangement but also in the design of classroom activities, and provide opportunities for peer support, interactions and student development of social skills.
- Invest time at the beginning of the year to co-create classroom routines, interactions, and expectations with the students (e.g., ask the students to describe the features of effective collaborative learning and respectful behaviours).
- Consider the needs of students with visual impairments when building classroom routines.
- Aim at creating an environment that supports students' competence, autonomy, and relatedness. To establish a sense of competency for the students, construct a predictable structure that supports success; to promote autonomy, provide the students with choices and opportunities to participate in important decisions; and, to develop their relatedness, the students need involvement and positive social interactions (Grolnick & Raftery-Helmer, 2015).

- Give verbal descriptions as much as possible, making it, over time, a natural part of the instruction (e.g., describe the level of students' participation: "I see many of you are raising your hand," describe classroom attendance and state the names of absent students, if any).
- Avoid singling out the individual differences in the classroom and make strategies that are related to vision loss inclusive and a natural part of classroom routines and interactions (e.g., when intending to describe visuals for students with visual impairments describe it for all the students instead of directly talking to them alone in front of the class).
- Provide choices that require the students to regulate their metacognition and use strategic actions. (e.g., managing the time, the format of the product, the strategies they can use to accomplish the task, the learning resources, the partner/s, the working place).
- Provide tasks that are challenging while at the same time are not too complicated (i.e., between what the students can achieve by themselves and what they can achieve with support). The goal is success in learning, ideally through learning to self-regulate.
- Provide opportunities for self-assessment that involve the students reflecting on their work, generate criteria that identify characteristics of "good" work and mentor their achievement based on the criteria.
- Provide instrumental support to help students make choices that guide them towards independence matched with their needs. The instrumental support is evident when the teacher helps the students to solve a problem

or answer a question by teaching them the strategy, so that next time the student(s) may be able to solve the problem alone or use the same strategy with similar issues (e.g., giving hints, asking strategic questions, generating or co-constructing criteria that describe features of high-quality work with the students).

- Promote peer supports, assessment, and collaborative learning not only in the seating arrangement but also in the design of classroom activities.
- Provide or co-create criteria to help the student make informed decisions regarding their partners or project in a way that improves learning and inclusion.
- Teach students how to provide instrumental support and help each other (e.g., share their learning approaches, discuss the learning process, interpret the task together, suggest strategies). Encourage all students, including the students with visual impairments, to develop this skill.
- Encourage students to work in groups, and to share strategies and useful ideas to further their learning.
- Require the students with visual impairments to engage in the same task that their classmates are doing in a method that works for them as much as possible. Maintain high expectations.
- Design learning activities in a way that engages the students in a full cycle of strategic action.

- Consider that the reaction to students' errors during classroom discussions is important as it may affect the students' engagement in the learning process (Wuttke & Seifried, 2011)
- Respond with compassion and acknowledgment of the students' initiative to engage in learning during classroom discussion.
- Help students to view errors as part of the learning process and necessary to knowledge acquisition.
- Engage the students in a dialogue about the reason that led them to the wrong answer to help them locate the root of the error (Wuttke & Seifried, 2011; Butler et al, 2017).
- Avoid using directive commands; instead; make suggestions so the students perceive a sense of control over following the teacher's directions, which will reflect positively in addressing their sense of autonomy and engagement in learning.

Limitations of the study

Due to the small sample size, the research findings cannot be generalized to the whole population of students with visual impairments in KSA. In fact, it cannot be generalized to the experience of all the students with visual impairments in the school researched in this study. For example, there were two students with low vision in the first level of the secondary education who efficiently used assistive technology, more specifically the electronic magnifier, to read books and complete their academic tasks (see figure 6). However, they received their training outside the school from a non-profit

organization run by experienced teachers of students with visual impairments and individuals with visual impairments. The number of observations conducted is another limitation. A longer study over a full term might reveal additional developing practices related to inclusion and SRL. The study interpretation would also be enhanced with having a second observer and by obtaining teacher reflections after each observation in order to more deeply incorporate their perceptions and interpretation of the same event that the researcher observed compared to what they indicated on the questionnaire. Interviewing teachers about their SRL practices instead of using a written questionnaire may also have provided additional depth into how the teachers were interpreting each SRL promoting practice category.

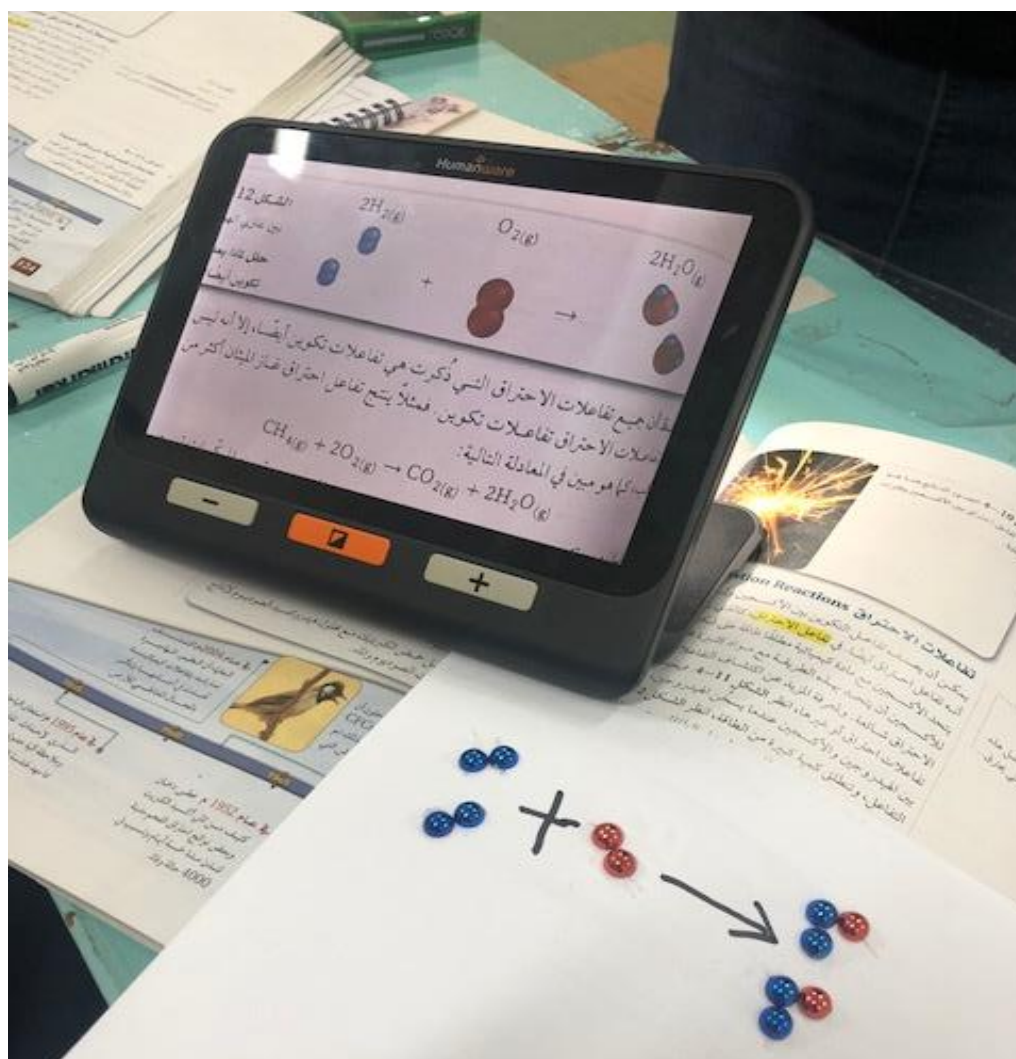


Figure 6. A photo shows the use of a handheld electronic magnifier in the resource room to read and model chemical equation and reaction symbols and formulae in a chemistry lesson activity using a felt-tip black pen and peel and stick tactile dots.

Final Thoughts

This research aimed to explore the educational practices that general teachers tend to use in classrooms that involve students with visual impairments and their effect on the quality of inclusion they experience and their opportunities for social

engagement. The use of SRL theory was advantageous for the present study in several respects. SRL theory suggests a guideline which can assist educators to design a learning experience that provides context for “individual differences in classrooms by creating multiple zones of proximal development and customizing support for individual students” (Perry 2004, p.67). SRL theory also has a direct connection to self-determination theory (Grolnick & Raftery-Helmer, 2015), an important area of the expanded core curriculum for students with visual impairments. Thus, employing SRL theory as a theoretical framework to guide this research, facilitated documenting and analyzing the educational practices and its impact on the students. SRL guiding principles provided a base and scale to understand the inclusion experience of students with visual impairments. It enabled me to highlight both opportunities and missing pieces in classroom interactions that affected the inclusion and the learning experience of the students with visual impairments. Future research could focus on implementing a teaching intervention based on SRL guiding principles and suggested practices in general classrooms that include students with visual impairments.

The results of the present study emphasize the importance of providing general and special educators with the necessary training and education that allows them to design and evaluate inclusive educational practices. Their training and education should

address both areas specific to the disability itself and areas related to inclusive instructional practices. When educators use strategies that genuinely promote inclusion, they not only enhance the quality of education for all the students, but also, address three basic, sociological needs through a meaningful approach: competency, relatedness, and autonomy.

This study is not trying to claim that SRL is the only useful approach that can facilitate the inclusion of students with visual impairments and provide them with the necessary skills to succeed in school and beyond. The primary intention is to draw attention to promising practices in SRL that can contribute to inclusive practices that address the need of all the students, including struggling students such as students with visual impairments.

Finally, it is perhaps worth mentioning that I was a resource room teacher for students with visual impairments in the same secondary school in which this study was conducted. My observations and interpretations are influenced by this experience including my familiarity with the school system, the cultural context, and my knowledge of inclusion issues of students with visual impairments.

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Appendix A: Classroom Observation Instrument

Date:

Teacher code:

Subject:

Student (1) code:

Student (2) code:

Student (3) code:

Student (4) code:

Descriptions of classroom interactions:

(Description of the lesson; the learning goals; the topic or concept(s) that the teacher is trying to teach)

(Does the nature of the lesson require direct instructions more than SRL supportive practice?)

Teacher Practices Instrument

The physical environment and classroom climate		
Autonomy:		Opportunities to Control Challenges:
Self-assessment	Teacher Assessment and Feedback	Accommodations for Students with Visual Impairment
Classroom Activities:		Teacher Interaction with The Students

A. The Physical Environment:

1. The seating arrangement:

(Does the seating arrangement encourage social interactions and collaborative learning or not? Does the seating arrangement encourage the students to explore the learning materials? What does the physical environment say about the balance of power in the classroom (e.g., teacher's desk position: center or background, the setup of students' desks)?

2. Classroom accessibility for students with visual impairment:

(Do students with visual impairments have equal access to the physical environment?)

3. The Learning Materials:

(Can the students freely use or examine the learning materials? Are there any restrictions? Do they need permission to use them? Why?)

B. Classroom Climate:

(Does the teacher attempt to build a positive learning environment at the beginning of the academic year (e.g., open a discussion or use activities for this purpose)? Do classroom interactions promote engagement, caring behaviours, and co-learning? Does the teacher use non-threatening teaching and assessment practices? Does the teacher discuss or co-construct classroom norms, routines, and expectations? Does the teacher adapt classroom routines and norms to consider the needs of students with visual impairments (e.g., call on students name instead of using gestures, asking the speaker to introduce themselves by name, so the students with visual impairment can link the name to the speaker's voice)?

Classroom Instruction and Practices

C. Autonomy

1. Choices

(Does the teacher provide choices? Do Choices include some or all the following: managing the time, the format of the product of a task or activity, the personal preferences, the strategies used to accomplish the task or activity, the learning resources, the partner/s, the working place)

2. Experience Challenges

Does the teacher provide an activity or a task that is challenging (between what the students can achieve by themselves and what they can achieve with support)? Is the level of difficulty the same for all students? Who decides the adaptations of the task or

activity (e.g., the length, the references, the topic, the pace of working, the place of working)? Is it the teacher, the students, or everyone together?

D. Opportunities to control challenges:

1. control over selecting the resources and learning materials:

(Does the teacher encourage and allow the students to use a variety of resources to learn (e.g., books, web browsers, videos, asking experts)?

2. Teacher support:

- **Procedural support** is directive, controlling, and focuses on the product, not the learning process (e.g., telling the students the answer in outlines or steps, answering without providing a rationale or giving the students a model for what the teacher considers an ideal answer and asking them to follow that model).
- **Instrumental support:** In this type of support, the teacher helps the students to solve a problem or answer a question by teaching them the strategy, so that next time the student(s) may become able to solve the problem alone or use the same strategy with similar issues. (e.g., giving hints, asking strategic questions, generating or co-constructing criteria that describe features of high-quality work with the students)

3. Peers' Support:

Does the teacher create opportunities for the students to support one another? Which kinds of support: Instrumental support (e.g., share their learning approaches, discuss the learning process, interpret the task together, suggest strategies), or procedural (e.g., asking the students to generally help each other, when a student has a question does a classmate answer without explanation)?

E. Self-assessment

Does the teacher provide opportunities for the students to reflect on their learning and work? Do the opportunities provided by the teacher solely assess shallow aspects of the learning (e.g., asking the students to read their essay and grade their own work, asking the students to find grammatical and spelling mistakes in their work)? Or does the teacher engage them in evaluating their learning progress and strategies (e.g., compare their learning at the beginning of the unit and at the end of the unit, asking the students to reflect on the actions that lead to their current level of achievement and how they can avoid the mistakes in the future, asking the students to provide a rationale for their choices)?

F. Classroom Activities:

Which of the following columns represent the activities or projects used in the classroom? Do they represent a complex structure or simple structure? Put a checkmark next to the task characteristics that represent the structure of the activities that the teacher uses.

Complex structure activities	Simple structure activities
<input type="checkbox"/> Work toward multiple goals (e.g., curricular goals, cognitive goals, metacognitive goals, social-emotional skills, problem-solving skills)	<input type="checkbox"/> Work towards limited numbers of goals (e.g., solely curricular goals, one or two skills such as writing and drawing, listening and memorizing)
<input type="checkbox"/> Engage the students in a full cycle of strategic actions The action sequence of SRL activities: interpreting the task, defining goals, planning, deciding the product, enacting strategies, sharing the product, receive feedback, “adapt” apply modification if it is required, generalize the learning experience to similar contexts.	<input type="checkbox"/> The task can be done without engaging in a rich form of learning The students may do the task requirements; however, they will not learn to the best of their ability—working without thinking
<input type="checkbox"/> The activity focuses on a large chunk of meaning. (e.g., the essential understandings of a topic or subject, integrate relevant content and skills across the curriculum)	<input type="checkbox"/> Less meaningful (e.g., unfocused—target secondary goals, unconnected to real life experience, unconnected to similar content or skills across the curriculum)
<input type="checkbox"/> The activity extends over time. The students can develop their learning gradually over an extended period (e.g., month or term)	<input type="checkbox"/> Short-term activity Completing the activity takes 3-10 minutes and does not require the students to learn from their mistakes or try another strategy.
<input type="checkbox"/> Offer choices in the products (e.g., Open-ended answer, allows different representations of the learning, allows the students to choose the learning resource, strategies that suit their ability and interests.	<input type="checkbox"/> No or limited choices (e.g., only one answer is right, all the students should write a report about the unit, all the learning products are verbal linguistic as the teacher required, the same resource —mainly the textbook)

Based on Butler, Schnellert & Perry (2017) and Perry (2015; 2004)

G. Teacher Assessment and Feedback:

Does the teacher provide verbal or written feedback for the students? Does the teacher assess the students' performance regularly? Does the teacher reflect on the students' engagement in the activity? Does the assessment target the students' learning progress or solely the product?

H. Accommodations for students with visual impairment:

- **Assessment:** Are there any modifications of the evaluation criteria? Does the teacher have the same expectations for the performance of the students with visual impairment? If not, why?
- **The instructions:** Does the teacher adapt her teaching practices to the need of students with visual impairments (e.g., providing descriptive information for a picture a chart or a schedule presented on the board)?
- **Activities and task:** Do/can all the students participate in the same activity but with different goals that suit their abilities and interests? Are students with visual impairments excluded from participating in some activities and tasks?

I. Teacher interaction with the students:

Put a checkmark next to the behaviours that represent the teacher's interaction with the students.

<input type="checkbox"/> The teacher links success to factors the students can control (effort, using a strategy that works for them, studying hard)	<input type="checkbox"/> The teacher links success to factors the students cannot control. (intelligence, hard test)
<input type="checkbox"/> The teacher emphasizes that learning is a developmental process that takes time. (Uses rubric that shows the students progression when assessing the students' performance, helping the students to identify their mistakes and plan how to avoid them)	<input type="checkbox"/> The teacher emphasizes that excellent achievement involves perfection, speed and free mistakes. "Wow, you finish so quickly or perfectly! No mistakes."
<input type="checkbox"/> Making suggestions (suggests resources, strategies... e.g., "How about starting with the questions you know first?")	<input type="checkbox"/> Using Directives or command language (e.g., "Start with these questions first!")
<input type="checkbox"/> Offering hints	<input type="checkbox"/> Making should and ought to statement

(e.g., “How about asking Nora if she would like to work with you? She does not have a partner yet.”)	(e.g., “You should have a partner like everyone else.”)
<input type="checkbox"/> Offering encouragement (e.g., “You can finish later if you like; you finished a great deal of it; you are close”)	<input type="checkbox"/> Deadline statement (“5 minutes left”)
<input type="checkbox"/> Acknowledging the students’ effort and engaging them in a dialogue about the reason that led them to the wrong conclusion. (“Nice try! But why you think this strategy would work?”)	<input type="checkbox"/> Criticizing language (“no, no, do not do it this way, that’s wrong!”)
<input type="checkbox"/> Asking open-ended strategic questions (“What some things you can do when you do not know the answer?”)	<input type="checkbox"/> Asking closed-ended controlling questions (“Can you locate the answer in the textbook on page 4?”)
<input type="checkbox"/> Believing in the students’ ability to learn and setting high expectations for their performance. (“You can do it.”)	<input type="checkbox"/> Communicating low expectation of students’ performance (“Do not worry about it, the test was hard.”)

Based on Butler, Perry & Schnellert (2017) and Reeve & Jang (2006)

Appendix B: Student Self-Report Instrument

SELF-REPORT INSTRUMENT

Student perceptions about the classroom environment

Which the following statements represent your opinion about your experience in the general classroom:

1. I feel comfortable sharing my ideas in the classroom.

- a) Always
- b) sometimes
- c) Rarely

2. The teacher asks me to assess my work.

- a) Always
- b) sometimes
- c) Rarely

3. The teacher asks me to find my mistakes.

- a) Always
- b) sometimes
- c) Rarely

4. The teacher tries to adapt the instructions to my needs.

- a) Always
- b) sometimes
- c) Rarely

Give an example:

5. I know where the learning materials we used last week are located.

- a) Yes
- b) No

6. I know where the teacher's office is.

- a) Yes
- b) No

7. I know what is expected of my learning by the end of the term (or unit) in (specific subject).

- a) Yes
- b) No

8. We have discussed the learning goals in the beginning of the units.

- a) Yes
- b) No

9. The teacher mentioned the learning goals at the beginning of the unit.

- a) Yes
- b) No

10. All the students are required to do the same task in the same way.

- a) Yes
- b) No, usually the teacher gives me different task.
- c) No usually I do the same work but in a different way that I decide.
- d) No, usually I do the same work but in a different way that the teacher decides.

11. Classroom activities require all the students to finish at the same time.

- a) Yes, we all finish at the same time.
- b) No, every student works at his/her own pace.
- c) No, usually the teacher gives only me more time.

12. I feel free in selecting any resource to advance my learning (e.g., books, audio books, documentary, articles)

- a) No, only the textbook is required.
- b) The teacher never mentioned that I could use other resources.
- c) The teacher encourages and supports me in finding interesting resources related to the subject.

13. I can use the learning materials whenever I like.

- a) No, only teachers can use them.
- b) I can use them with permission.
- c) I can use them whenever I want, and they are useful. **Why?**
- d) I can use them whenever I want, but they are not useful. **Why?**

14. Which of the following statements represent the group you typically work with:

- a) My group is diverse and includes members with a mix of abilities.
- b) My group mostly includes only students with visual impairments.
- c) My group mostly includes one or two students who are knowledgeable about the subject.
- d) All the group members have difficulty in understanding the subject.

15. Usually when I tell the teacher that I do not know the answer:

- a) She discusses with me what some things are that I can do when I do not know an answer.
- b) She gives me the answer.
- c) She tells me where I can find the answer in resource or a textbook.
- d) She tells me to ask a classmate.

(You can choose more than one answer for the following segments)

16. Usually the teacher lets me decide:

- a) Where I want to work.
- b) My partners in the group.
- c) The topic of my project.
- d) The format of my project.
- e) The length of the task.
- f) None

17. Everyone in the classroom knows:

- a) The classroom's appropriate behaviours.
- b) How to comment on teacher or classmate opinion.
- c) When to submit homework assignments.

18. Classroom activities usually can be completed in

- a) 5 minutes
- b) one class
- c) week
- d) month

19. The teacher gives us time to discuss with a partner or in a group the following:

- a) The meaning of a question.
- b) The task requirements.
- c) The strategies we can use to complete a task, learn a concept or solve a problem.
- d) None

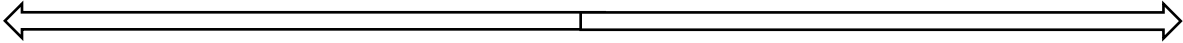
Appendix C: Teacher Self- Report Instrument

SELF-REPORT INSTRUMENT

TEACHER PRACTICES

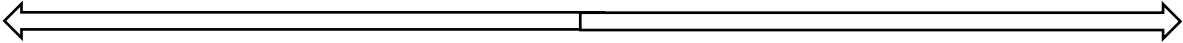
Which one of the following statements represent your typical interaction in the classroom (teaching style)?

1- In the beginning of the academic year:



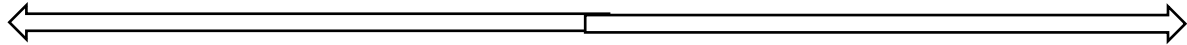
I tell the students the norms and routines in the classroom.	I do not discuss the norms and routines because students at this age already know it.	I co-create classroom norms and routines with the students.
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2- In the beginning of the academic year



I teach the students how to respect each other and learn together.	Usually, the students know how to work collaboratively and respect each other.	I ask the students to describe the features of effective collaborative learning and respectful behaviours.
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3- When I design classroom activities and tasks:

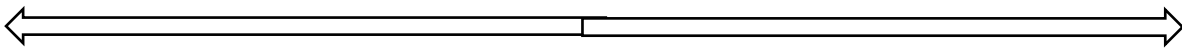


All the students deal with the same level of difficulty except the students with visual impairments.

Classroom activities and tasks usually are created at the same level of difficulty for all the students including students with visual impairments.

I create opportunities where all students, including students with visual impairments can increase or decrease the level of challenge.

4- When students are assigned to a task or activity:

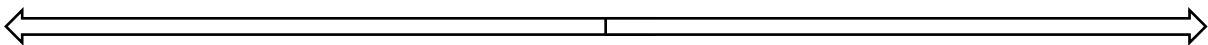


Only the students with visual impairments can represent their learning in a different format due to their needs.

All the students are expected to represent their learning in the same way.

All students can represent their learning in any way they prefer (e.g., writing, oral presentation, drawing a picture, voice record).

5- When students work in an activity:

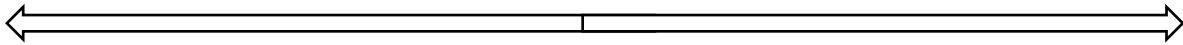


I tell them where I want them to work.

I do not allow them to leave their seat.

I let them work where they like.

6- When the task or activity require group working:

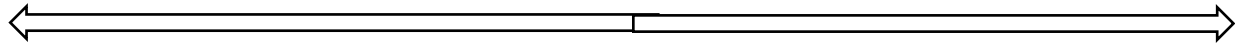


I decide the group members arbitrarily or based on who I think works well together.

I let the students decide their group members.

I tell the students their group should be diverse and include various strengths, then I let them decide their group members based on these criteria.

7- I use activities that:

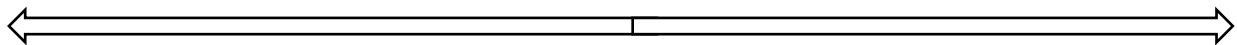


I rarely use activities. I prefer spending the class time explaining the lessons instead of wasting time on activities.

Work towards one or two goals (mostly curricular goals) and integrate one or two skills (e.g., reading and writing, listening and remembering).

Work toward multiple goals (e.g., curricular goals, social-emotional skills, problem-solving skills, research skills) and integrate relevant content and skills across the curriculum.

8- When a student does not know the answer:

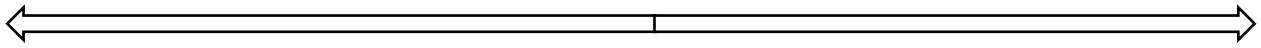


I tell the student to ask a classmate.

I tell the students where they can find the answer in the textbook.

I discuss with the students the strategies that they can use to find the answer.

9- When using a picture is necessary to understand a topic, a lesson or a concept:

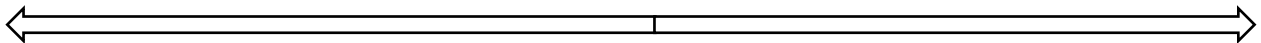


I describe orally the picture to the whole class.

At the end of the class, I give specific instructions to the students with visual impairments.

I discuss with the teacher of students with visual impairments what possible adaptations can be done for the picture, besides the instructions.

10- I provide the students feedback:

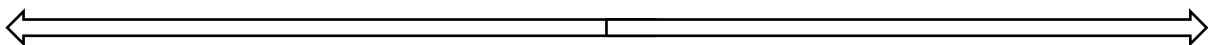


That focuses on the approaches they use to learn (e.g., their interpreting of the task, the strategies they use to learn) on different occasions (during activities, classroom discussions, after submitting assignments, homework, test).

That describes the general quality of their performance (e.g., excellent, good job, right, not there yet) on different occasions (during activities, classroom discussions, after submitting assignments, homework, test).

Only after exams and I mainly include scores, grades and the general quality of their work.

11- I assess the students' learning:

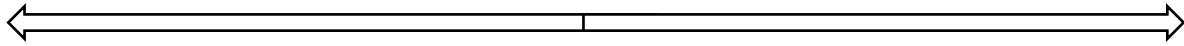


By comparing their performance to each other (e.g., using the highest educational attainment in the class as a key criterion or the average achievement as a standard).

By averaging the scores, they have been collecting throughout the year (e.g., test, homework, class participation)

Based on each student's learning progress (comparing where the student was at the beginning of the learning experience with where she is now)

12- when I introduce a task or activity to the students:

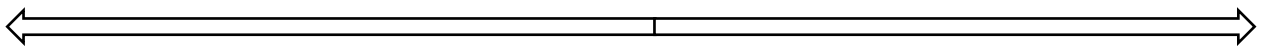


I open a discussion, asking what the task requires and what some strategies are they can use to complete it.

I make sure they interpret the task correctly by telling them the task requirements in steps or outline format.

I ask them to start working on the task to measure the level of understanding and achievement of each student without external influence.

13-Which one of the following statements represent what you typically do?

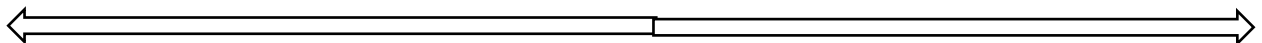


I ask the student to assess simple aspects of their work (e.g., find their mistakes, give themselves a grade, evaluate their work).

I ask the students to assess their learning approach (provide a rationale for their choices in a learning task, identify what they learn from a discussion, reading or activity).

I do not ask the students to reflect on their work or their learning approaches.

14-I think providing the students with opportunities for self-assessment is:



Powerful because the students can identify the strength and weakness in their work and set goals for development based on that.

Not useful because the students are not capable to see their mistakes or analyze their learning approaches.

Useful only when used with the high achievers and students without disabilities.