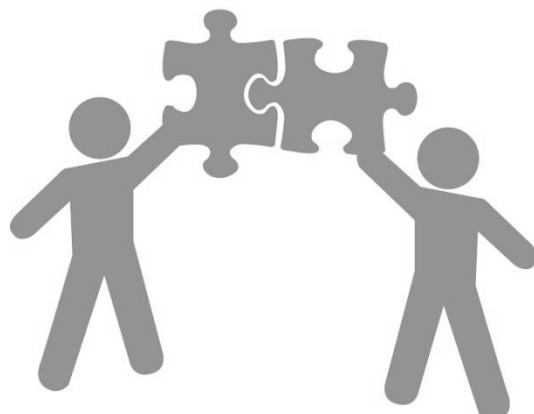Curs 2015-2016

CO-TEACHING
The power of two

Marta Villanueva Sert

Grau d'Educació Primària en Alternança

Treball de Fi de Grau

Robert Izquierdo i Santaularia

Facultat de Ciències de l'Educació

Universitat de Lleida

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"Coming together is a beginning. Keeping together is progress.

Working together is success." Henry Ford

Universitat de Lleida
Facultat de Ciències
de l'Educació

AUTOR / AUTORA	– **Marta Villanueva Sert**
TÍTOL DEL TREBALL (català i anglès)	Co-ensenyament: el poder de dos Co-teaching: the power of two

PARAULES CLAU (català i anglès)

- – Co-ensenyament, planificació conjunta, treball en equip, educació, comunicació, coordinació, col·laboració i inclusió.
- – Co-teaching, co-planning, teamwork, education, communication, coordination, collaboration and inclusion.

RESUM (100-150 paraules, català i anglès)

Fa uns anys, quan els estudiants amb dificultats es van introduir a les aules ordinàries, es va adoptar la filosofia d'inclusió. Per aquest motiu, per tal de respondre a les necessitats dels diversos estudiants, els educadors van voler implementar estratègies que els afavorissin de la millor manera.

Per aconseguir que tots els estudiants arribessin a un objectiu central, es van plantejar i proposar diversos camins. Consegüentment, els educadors es preguntaven sobre les possibilitats i beneficis que tindria treballar dos mestres junts en una mateixa aula. Va ser llavors quan va aparèixer la metodologia del co-ensenyament.

Aquest projecte presenta un enfocament al co-ensenyament, definint de què tracta aquesta metodologia, els beneficis més importants que aporta i com implementar-la. Finalment, presenta el procés i resultats obtinguts després de la implementació d'una experiència de co-ensenyament en una aula ordinària d'educació primària.

Some years ago, when students with difficulties were introduced in general classroom settings, the philosophy of inclusion was adopted. For this reason, to help to meet the needs of diverse learners, educators wanted to implement strategies that will best benefit their students.

With expectations for all learners to reach a central goal, diverse paths were taken to achieve it. According to this, educators were wondering about the possibilities that working two teachers together in one classroom had. In this point, the co-teaching methodology appeared.

This project presents an approach to co-teaching, defining what this methodology is about, the most important benefits that it has and how to implement it. Finally, it presents the process and the results obtained after the implementation of a co-teaching experience in an ordinary primary school classroom.

TUTORIA	– Robert Izquierdo Santaularia
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1. INTRODUCTION

Education is not an easy job and neither is being a teacher. The school is a diverse environment with individual pupils, all with varying needs. These live, cohabite, play, work, laugh, cry, but above all, learn. But not all of them learn in the same way.

When I was in Finland doing an Erasmus Studies in the University of Turku, I had the opportunity to visit some Finnish schools. In one of these schools, they were using the co-teaching approach in order to help children learn in the best way, providing them support with two teachers in the same classroom.

As the school presented, since many years ago it has been commented the isolation of the teaching profession (Barth, 1990; Lortie, 1975). However, it was not until 1997 when students with disabilities were included in general classroom settings (Murawski, Weichel and Lee Swanson, 2001). At that point, the philosophy of "inclusion" was adopted.

For this reason, to help to meet the needs of diverse learners, educators wanted to implement strategies that will best benefit their students. With expectations for all learners to reach a central goal, diverse paths were taken to achieve it. According to this, educators were wondering about the possibilities that working two teachers together in one classroom had. One path that was introduced in various school systems is co-teaching.

Hearing about this methodology, new for me until then, made me feel interested and I wanted to know more about it. For this reason, I started investigating and delving into this issue.

Furthermore, as I was going to do my last Internship in the Open Future International School of Krakow (Poland) I thought about implementing some lessons of co-teaching to see and experience how it really worked.

In order to structure these ideas, in the first part of the report I present the theoretical part of the work, trying to attain a basic understanding of the co-teaching methodology. I include what this approach is and is not about and its characteristics and origins. I also present the benefits that co-teaching has and the results of some researches that have been done. It also includes the way to implement this methodology, with the different

strategies that can be used and the different steps that co-teachers must follow to become a co-teaching team.

In the second part of the report I present the practical part of the work, based on an implementation experience of co-teaching in the Open Future International School. It includes the previous planning, process development and results obtained during the experience.

Finally, in the last part of the report I present the final conclusions that I came to and impressions that I had during my learning process according to this methodology.

2. THEORETICAL PART

2.1. WHAT IS CO-TEACHING?

There are many definitions of co-teaching. The first one was provided by Bauwens, Hourcade, and Friend in 1989. They stated saying that co-teaching is *"an educational approach in which two teachers work in a coactive and coordinated fashion to jointly teach academically and behaviourally heterogeneous groups of students in an integrated setting"*.

However, it is important that when it is time to co-teach, people involved have a similar understanding of the co-teaching concept (Cook & Friend, 1995). For this reason, looking for a complete definition of co-teaching requires comparing different definitions, authors' ideas and researches about the topic and building step by step the complete one.

Who is involved in co-teaching?

First of all, some authors say that co-teaching is done between two teachers (Bacharach, Heck & Dank, 2004) or two educational professionals (Dieker, 2016) meanwhile others say that it is done between two or more people (Villa, Thousand & Nevin, 2004; Snell and Janney, 2000), educators (Murawski, 2003; Beninghof, 2012; Cook, 2004), certified teachers (Conderman, Bresnahan, & Pedersen, 2009; Roth & Tobin, 2005) or two or more professionals (Dieker & Barnett, 1996; Friend & Cook, 2007; Cook & Friend, 1995; Friend, 2008).

From my point of view, the best way to summarize which people are involved in the co-teaching approach is by saying that co-teaching involves two educational professionals and occasionally, more (Cook & Friend, 1995).

Nonetheless, it is useful to know which kind of educational professionals can participate in co-teaching. Dieker (2016) provides the wider co-teaching relationships by saying that the most common teams of educators found are:

- Special and general educators
- Paraprofessional and a special or general educator
- Two general education teachers
- Speech/language pathologists and a special educator or general educator
- A social worker and a special educator or general educator

- Other support personnel (volunteers) and a special educator or general educator
- Elective teachers (P.E., music, art, computers, foreign languages, etc.) and a special educator or general educator

According to Cook & Friend (1995) it can also be two teachers of different subjects (for example English and Social Studies). Bacharach, Heck & Dank (2004) reported that co-teaching method is sometimes done by a teacher candidate (TC) and a cooperating teacher (CT).

However, the majority of the authors understand co-teaching between a special education teacher and a general education teacher (Wilson & Blednick, 2011; Snell & Janney, 2000; Cook & Friend, 1995; Towson University, 2012; Zigmond & Magiera, 2001).

All in all, I consider that the best way of understanding which professionals can participate in co-teaching is by figuring out the following definition. Conderman, Bresnahan & Pedersen (2009) say *"usually we think as co-teaching as involving a general and special educator, but co-teaching can occur between or among two or more special educators, two or more general educators or even two or more other professionals"*.

What do co-teachers do?

Co-teachers have the responsibility for teaching all the students assigned to a classroom (Villa, Thousand & Nevin, 2004).

This involves the distribution of responsibility for planning (Villa, Thousand & Nevin, 2004; Bacharach, Heck & Dank, 2004; Murawski, 2002-2003), providing differentiated, qualitative and substantive instruction (Villa, Thousand & Nevin, 2004; Heck, Bacharach & Mann, 2005; Murawski, 2002-2003; Dieker & Barnett, 1996; Friend & Cook, 2007; Cook & Friend, 1995), monitoring progress (Villa, Thousand & Nevin, 2004), assessing together (Bacharach, Heck & Dank, 2004; Murawski, 2002-2003) and reflecting on the progress and process (Murawski, 2002).

Co-teaching is also about meeting academic needs of students with disabilities in the general education (Murawski, 2010), which means bringing people with diverse

backgrounds and interests together to share knowledge and skills as they individualize learning for students (Thousand, Villa & Nevin, 2006a).

By this way, co-teaching is about working together to meet the requirements of a wide range of learners more effectively (Dieker, 2016).

Co-teachers share a common belief that each partner has a unique expertise and perspective that enriches the learning experience; together they provide opportunities for students to learn from two or more people who may have different ways of thinking or teaching (Villa, Thousand & Nevin, 2004). They work together to achieve common, agreed-upon goals (Texas Education Agency, n.d.).

While doing this, they share the physical space of the classroom (Backarach, Heck & Dank, 2004; Murawski, 2002; Beninghof, 2012). The classroom space and students are shared in a way that makes it difficult for an observer to distinguish who is the teacher of record for the classroom (Backarach, Heck & Dank, 2004). This does not preclude the possibility of occasionally separating groups of students for instruction that involve difficulties due to high levels of noise and distraction (Cook & Friend, 1995).

All in all, co-teaching is an attitude of sharing the classroom and students. Co-teachers must always be thinking "We are both teaching!" (Bacharach & Heck, 2011). It means teaching at another teacher's elbow and taking shared responsibility for all part of lessons (Roth & Tobin, 2005).

Who should co-teachers attend to?

This approach attends all the students assigned to a classroom (Villa, Thousand & Nevin, 2004). These students are a group of children with diverse needs in the same general education classroom (Murawski, 2003). It is delivered to students with and without disabilities in a classroom (Dieker & Barnett, 1996; Friend & Cook, 2007).

According to Beninghof (2012), co-teaching is done to work with a heterogeneous group of students.

Other terms used to co-teaching

Co-teaching is also called collaborative teaching, team teaching or cooperative teaching (Dieker & Barnett, 1996; Friend & Cook, 2007). Although on the surface co-teaching may merely appear to be two teachers in the same classroom, it is more than that.

In the *Annex 1* a summary of the co-teaching definition is presented.

2.1.1. What is not co-teaching?

In order to understand well what co-teaching is, it is important to avoid some confusion with the concept.

First of all, co-teaching is not just a way of going about the everyday work of accomplishing a teacher's task but equally important, it is a way of changing the way one teaches (Roth & Tobin, 2005).

In addition, although sometimes teachers can think it, co-teaching is not about two teachers being in the classroom together to make their job easier but about developing as teachers while teaching, that is, continuously participating in a process of becoming (a better teacher) in the classroom (Roth, 2002).

By this way, co-teaching is not one person teaching one subject followed by another who teaches a different subject. In this case, teachers often do not have time to plan or evaluate instruction so they are not considered co-teachers. Neither it is one person teaching one subject while another person prepares instructional materials at the photocopier in the teachers' workroom or corrects papers in the teachers' lounge (Texas Education Agency, n.d.). Finally, co-teaching is also not done when one teacher conducts a lesson and others stand or sit by and watch without function or assignment (Villa, Thousand, and Nevin, 2004; Texas Education Agency, n.d.).

On the other hand, co-teaching is not happening when the ideas of one person prevail for what is to be taught or how it will be taught. They have to agree and arrive at a consensus together, so it is not about one person acting as a tutor (Villa, Thousand, and Nevin, 2004).

In brief, co-teaching is not team teaching, the practice of two general education teachers combining their classes and teaching some or many lessons. Nor should it be confused

with the practice of adding a paraprofessional to a general education teacher's inclusive classroom (Wilson & Blednick, 2011).

A summary of what co-teaching is not can be found in *Annex 2*.

2.1.2. Co-teaching components

In order to make the concept clearer, according to Towson University (2012) and Murawski (2010), these are the different components that define co-teaching:

Service Delivery

Students who receive special education and/or related services are instructed in the general education classroom.

Two Educators

Two or more adults are physically in the same room at the same time working with a group of students to collaborate to facilitate students' access to the general education curriculum. In this case, both the adults are considered "professionals".

Shared Responsibilities

Both educators are responsible for the following:

- Planning
- Delivering instruction
- Adapting materials
- Parental communication
- Accommodations
- Providing feedback
- Grading
- Both educators have to be engaged in shared decision making and problem solving.

All Students

Both teachers are responsible for delivering instruction to all students. This approach benefits a broad spectrum of students from gifted and talented to at-risk learners.

A class with students with different learning styles, preferences, genders, ethnicities, cultures, languages, or interest is a heterogeneous class. It is not necessary to wait to have a student with an IEP to consider it heterogeneous or inclusive; the typical class also requires differentiation.

One Work Space

Both educators are responsible for implementing instruction in the same classroom. It is not about taking turns in the room (e.g., "during the 20 minutes you are teaching them, I'll go make copies"). Splitting the week may be job sharing. Taking "your kids" to "your other room means resorting to "pull out".

2.1.3. What are the origins of co-teaching?

During the 1950s educators in the United States and other developed countries were questioning traditional school structures and actions and their efficiency and effectiveness (Hanslovsky, Moyer, & Wagner, 1969). One response to those questions was the development of alternative models, including what is called team teaching. It was implemented in some elementary schools and some educators started to work together closely and divide teaching responsibility. While team teaching models were being explored in general education, the field of special education was rapidly developing (Friend, Cook, Hurley-Chamberlain, & Shamberger, 2010).

During the 1960s, leaders in the education field were voicing questions about the efficacy of traditional separate special education (e.g., Dunn, 1968) and parents were challenging the barriers their children with disabilities faced in receiving an appropriate education (Leafstedt et al., 2007). By this way, instead of implementing co-teaching, a variation of this methodology called team teaching (in which teachers shared planning responsibilities for instruction while they continued to teach separately) was popularly adopted in many open-concept schools (Easterby-Smith & Olive, 1984).

From these questions, the co-teaching approach appeared in U.S. schools around the 1960s (e.eg., Trump, 1996) as well as in England (Warwick, 1971), when it was popularized as an example of progressive education. It was not until the 1970s that co-teaching was advanced by legislated school reforms and the need to modify instruction for a more diverse student population (Villa, Thousand, and Nevin, 2004).

During the late 1980s and 1990s it became increasingly apparent that the attention towards many students with disabilities was not satisfactory, and over the past decade significant steps have been taken in federal and state law and policy to remedy this situation (McLaughlin & Rhim, 2007). So by the late 1980s, co-teaching was used for special education teachers to attend students' needs in general education settings.

By the 1990s, in studies of the effectiveness of school-based collaborative activities, co-teaching appeared in the research and practice literature. For this reason, school personnel began to trust on co-teaching when some research results showed the benefits of co-teaching (Villa, Thousand, and Nevin, 2004).

The co-teachers members (general and special educator teaching teams) reported professional growth, personal support, and perceived a higher sense of community within the general education classrooms (Friend, Cook, Hurley-Chamberlain, & Shamberger, 2010).

During the last years, there has appeared an interest in co-teaching as a part of the middle school movement and other school reform efforts (MacIver, 1990).

As might be expected, there has been a marked increase in the number of co-teaching programs, a multitude of state and local district initiatives to prepare teachers for and implement co-teaching (e.g., Cook & Friend, 1995; Friend, 2007; Scruggs, Mastropieri, & McDuffie, 2007).

Nowadays, some schools are planning to include co-teaching as part of their inclusive practices, setting up co-teaching programs.

2.2. WHY TO CO-TEACH?

Co-teaching is becoming a popular educational model for addressing inclusion (Wilson & Blednick, 2011). Despite the increasing popularity of this service delivery model, there is a lack of strong empirical database on the effectiveness of this approach (Dieker, 2016; Beninghof, 2012). It means that the empirical research on the effectiveness of co-teaching is limited. Indeed, very few large-scale studies on co-teaching have been conducted to date, and small studies have showed clear results (Hanover, 2012).

According to this situation, an educator said that *"Co-teaching is not a phenomenon that lends itself to precise investigation" (*Beninghof, 2012).

Research has been limited to case studies, observations, survey research, and reports from teachers involved in the process (Dieker, 2016) including many administrators, teachers, parents and students involved in co-teaching (Wilson & Blednick, 2011).

However, although research specifically investigating student outcomes of co-teaching is scarce and somewhat conflicting, from the work currently completed, a number of benefits have been detected (Wilson & Blednick, 2011; Dieker, 2016).

The positive outcomes that have been found both benefit teachers and students.

2.2.1. Benefits for students

More inclusion

Co-teaching promotes the acceptance of diversity among the students and of the students with disabilities by their peers (Dieker, 2016). These children who grow up in spaces where diversity is cherished are able to easily embrace diversity in the world around them.

In addition, it supports the sense of belonging of all the students in the class. This means that co-teaching avoids the negative feelings that some pupils have when they are taken out from the general classroom by communicating the message that all students comprise the learning community, all students have strengths and weaknesses, and all students are worthwhile (Beninghof, 2012). By this way, the stigma often attached to

students attending segregated special education classes is reduced (Wilson& Blednick, 2011).

On the other hand, co-teaching promotes the access to the general curriculum for students with disabilities (Bauwens & Hourcade, 1997; Cook & Friend, 1995; Murawski, 2005a).

All in all, co-teaching furthers a philosophy of inclusion by reducing the stigma (as well as increasing understanding and respect) of students with special needs and creating a heterogeneous classroom community (Cook, 2004).

More support from teachers

Co-teaching reduces student-teacher ratio (CEHD, 2016) and enhances classroom management (St. Cloud University, 2012).

Furthermore, it also provides more direct support to students (Friedman Narr et al., 2007) so pupils receive more individual attention (SCSU, 2012) and more interaction with teachers (Murawski, 2006; Zigmond, Magiera, & Matta, 2003). By this way, pupils get questions answered faster (SCSU, 2012).

Besides, students also consistently report a preference for a co-taught classroom. They say: *"if one teacher was busy, the other could help me"* (Pittsford Central School District, 2006). Students are able to continue learning with the class, rather than mentally dropping out due to poor comprehension and frustration.

According to the disabled students, it has been demonstrated that in co-taught arrangements they have received an increased time and attention from teachers (Walther-Thomas, 1997; Weichel, 2001). They have been delivered services and modifications without requiring those students to be labelled as needing special education (Bauwens & Hourcade, 1 997; Salend, et al., 1997).

However, teachers can also provide support for unidentified students. When specialists co-teach, they can use their expertise to have an impact on learning for all students in a class, not just on those with labels (Beninghof, 2012).

More instructional options

Co-teaching approach creates more instructional support and options for all students (CEHD, 2016; St. Cloud University, 2012; Towson University, 2012).

This means that every student in the class, both typically achieving and those with difficulties, are provided with different educational options, from smaller groups and more individualized attention to materials and instruction that take into consideration a wide range of interests and abilities (Wilson& Blednick, 2011).

The possibility to have two teachers in the room is a key benefit for students with mild disabilities (Murawski & Dieker, 2004; Walsh & Snyder, 1993).

Better academic performance

It has been demonstrated that co-teaching increases the academic achievement of the students (CEHD, 2016; St. Cloud University, 2012; Walther-Thomas, 1997; Weichel, 2001). For this reason, it has a positive effect on student learning (CEHD, 2016).

Focusing on the students with disabilities, it has been reported that they were exposed to higher level concepts and discussions than was typically found in a segregated special education setting (Dieker, 1998; Murawski, 2006). However, the achievement gap between typically achieving students and students with disabilities was diminished (Wilson& Blednick, 2011).

Development of social skills

Co-teaching improves students' social skills and self-concept through the reduction of pull-out situations that are in many cases stigmatizing for students (Jones & Carlier, 1995; Salend et al., 1997; Walther-Thomas, 1997).

This promotes positive social outcomes for students with and without disabilities (Hunt, Alwell, Farron-Davis, & Goetz, 1996; Pugach & Wesson, 1995). For example, there are stronger peer relations (Walther-Thomas, 1997; Weichel, 2001; Bahamonde & Friend, 1999) and, as a consequence, learning from peers (Towson University, 2012). By this way, children develop collaboration skills (CEHD, 2016) and are more engaged in smaller group activities (SCSU, 2012).

As a result, students increase respect and understanding of tolerance for all students (Towson University, 2012; Wilson & Blednick, 2011). Social gaps between typically achieving students and students with disabilities are diminished (Wilson& Blednick, 2011). In addition, students in inclusive classrooms have higher self-concept in the

areas of social skills and academic self-esteem than those students in resource classrooms (Murawski, 2006).

Focusing on the students with multiple disabilities, it has been demonstrated that in co-taught classes they interacted more with their nondisabled peers (Dieker, 1998; Murawski, 2006; Jones and Carlier, 1995). They also exhibited a decrease of aggressive or noncompliant acts (Jones and Carlier, 1995).

On the other hand, students without disabilities who participated in co-taught arrangements increased emphasis on social skills, and improved classroom communities (Walther-Thomas, 1997; Weichel, 2001). They also interacted "more naturally" with students with disabilities over time.

Development of personal skills

It has been demonstrated that co-teaching has benefits for students with disabilities, which include increased self-confidence and self-esteem (Walther-Thomas, 1997; Weichel, 2001; Bahamonde & Friend, 1999; Jones & Carlier, 1995).

Moreover, it has also benefits to students without disabilities, like improved cognitive strategies and study skills (Walther-Thomas, 1997; Weichel, 2001).

Higher participation

Co-teaching also increases student participation and engagement (CEHD, 2016; St. Cloud University, 2012). The four major components of engagement are emotion, student interest, and understanding of importance and sense of efficacy (Marzano et al. 2011). With two teachers in the same class, all this becomes easier.

Higher motivation

Through co-teaching, behavioural and academic expectations remain high for students with and without disabilities (Dieker, 2001; Murawski, 2006; Wilson & Blednick, 2011). In addition, co-teachers broaden their sense of what students need to do, and are capable of doing (Beninghof, 2012).

Students with disabilities, that are usually the most vulnerable, have a more positive attitude and better behaviour and learning using this approach (Dieker, 1998; Murawski, 2006). In addition, they prefer to have co-teachers in content classes they considered

"difficult" and to have their needs met in general education classes rather than to receive services outside the main class (Murawski, 2006).

Make the most of the time

With co-teaching, students' time on task is maximized because they do not leave the classroom to receive specialized support in another classroom (Beninghof, 2012).

2.2.2. Benefits for teachers

Improvement of intelligence quotients

Teachers' IQ (intelligence quotients) improves exponentially with a co-teaching partner's knowledge added to the experience, whereas the CQs (creativity quotients) increase because of problem solving with another person. In addition, the EQs (emotional quotients) increase because of the interpersonal interactions that there are between two co-teaching partners (Villa, Thousand, and Nevin, 2004).

Easier classroom management

It has been demonstrated that in co-taught classes students behave better (SCSU, 2012). For this reason, it can be said that co-teaching enhances classroom management skills (CEHD, 2016¸ SCSU, 2012). Fewer classroom disruptions appear (SCSU, 2012) and it becomes easier to monitor students' behaviour (Towson University, 2012). As there are two teachers for monitoring the students, it is not necessary to stop all the instruction due to a bad behaviour (Beninghof, 2012) and they will spend significantly less time having to conduct direct behaviour management than teachers instructing alone (Weichel, 2001).

By this way, as teachers are able to manage behaviour, co-teaching provides more on-task student behaviour (Cross & Walker-Knight, 1997; Gerber & Popp, 1999; Murawski, 2006; Zigmond et al., 2003).

Improved instruction

According to researches, teachers who collaborate with colleagues develop instructional ideas that are more effective for students of all abilities (Beninghof, 2012; Cook, 2004).

Moreover, it enables whole group instruction to be provided while still meeting individual needs (Adams & Cessna, 1993; Murawski & Dieker, 2004). However, it also provides the opportunity to have more flexible grouping (Towson University, 2012).

This makes it easier to conduct hands-on activities in many situations (Cross & Walker-Knight, 1997) because students have more support during instructional activities (Towson University, 2012).

By this way, the intensity of instruction is achieved through an understanding of students´ needs, attention to curriculum challenges, use of a variety of effective teaching and learning strategies, adaptation of materials, and continual assessment (Wilson& Blednick, 2011).

Provide differentiation

Co-teaching makes differentiated instruction so much easier. Two heads and four hands make planning and implementing differentiation possible on a daily basis (Beninghof, 2012). This means to provide an increased understanding of all students' needs (Dieker, 2016) and provide them the correct accommodations (Towson University, 2012) including those with high needs (SCSU, 2012). Teachers have more support to provide students' accommodations.

By this way, co-teaching can be a very effective method for meeting students´ needs (Magiera, Smith, Zigmond, & Gebauer, 2005; Murawski, 2006; Rea, McLaughlin, & Walther-Thomas, 2002).

Sense of support

Co-teaching means collaborating with other adults (SCSU, 2012). This fosters a sense of support among teachers (Cook, 2004).

Teachers working together leads to increased friendships, which can consequently increase both morale and student performance (Salend et al., 1997; Weiss & Brigham, 2000). Furthermore, co-teaching encourages teachers to share expertise, providing one another with valuable feedback (Cross & Walker-Knight, 1997; Hughes & Murawski, 2001; Towson University, 2012).

Using this method, educators who had experienced co-teaching found that they were able to trust one another (Adams & Cessna, 1993; Murawski, 2003) what allows them to assist one another in addressing issues related to content, accountability, and structure (Dieker & Murawski, 2003). They positively support each other's efforts by jointly

planning and executing lessons, solving problems, and combining strengths (Wilson& Blednick, 2011).

All in all, as Gately and Gately (2001) stated, when co-teachers move into the collaborative stage of interaction *"communication, humour, and a high degree of comfort punctuate the co-teaching, collaborative classroom"*.

Become more tolerant

Villa, Thousand, and Nevin (2004) noticed that co-teachers increase appreciation and valuing of people who have different cultural heritages, knowledge bases, opinions, practices and beliefs. This may be because of the awareness and acceptation of the other co-teacher features.

More motivation

In a survey of teachers engaged in co-teaching, teachers reported increased job satisfaction and teaching and learning potential (Bauwens et al., 1989). In addition, co-teachers also reported that they had more energy for teaching (SCSU, 2012).

Increase of student participation

Teachers benefit with co-teaching because classroom participation of students with and without disabilities is increased through the reduction of student-to-teacher ratios and the use of groupings (Wilson& Blednick, 2011).

Professional growth

It has been reported that many co-teachers experienced professional growth while using this approach (SCSU, 2012) as well as professional satisfaction, personal support and opportunities for collaboration (Walther-Thomas, 1997; Weiss & Brigham, 2000).

Educators who co-teach have the opportunity to learn daily interaction and observation of a colleague with a very different background (Beninghof, 2012). This provides greater collegial exchanges of strategies between professionals (Dieker, 2016) and more opportunities for self-reflection (SCSU, 2012).

They were more energized and creative and had more fun teaching (Adams & Cessna, 1993; Murawski, 2003). According to this, having two teachers in one room allows for experimentation with new teaching methodologies (Giangreco, Baumgart, & Doyle, 1995; Murawski, 2006; Hohenbrink, Johnston, and Westhoven, 1997).

Finally, educators have a deeper understanding of the curriculum (SCSU, 2012) and cover content more effectively to support mastery learning (Towson University, 2012).

2.2.3. Specific researches

In addition to the many benefits that have been demonstrated that co-teaching has, there have been done specific researches about co-teaching. Here I present some examples of researches of co-taught classrooms and the main important results.

Research 1

For example, some experts compared the achievement scores in reading and maths of students in co-taught classrooms, students in a classroom with a single teacher, and classrooms where a non-co-teaching model of student teaching was undertaken. Researchers reported that students in co-taught classrooms statistically outperformed students in either of the other settings (Bacharach, Heck & Dahlberg, 2010).

Research 2

On the other hand, St. Cloud State University (2012) studied student achievement and engagement in learning in both co-taught and not co-taught classrooms over a five year period. Using quantitative measures (MAPS and MCA data) and qualitative data (surveys, focus groups, observations), St. Cloud State University was able to draw comparisons and conclusions for math and reading achievement in three different types of classrooms:

- With a school district teacher - teacher candidate,

- with a traditional student-teaching model (a student teacher was working in the room but not using the co-teaching model), and

- with the cooperating teacher and teacher candidate of co-teaching.

Researchers found out that for both math and reading, children learning in classrooms where a teacher candidate was placed using the co-teaching model made significantly higher gains than both classrooms without a teacher candidate and classrooms with a traditional student-teacher.

In the *Annex 3* these results can be seen in two different graphs.

Research 3

In a study of vocabulary acquisition in primary grades, researchers found out that children with speech-language impairments made stronger gains in a co-taught setting (between a classroom teacher and an SLP) than in pull-out or in-class support (Throneburg et al, 2000).

Research 4

A study centred on the infusion of language skills (vocabulary, phonemic awareness) in urban kindergarten settings found out that ELL students and native English speakers in a co-taught classroom (classroom teacher and an SLP) showed significantly greater language gains than those in a traditional classroom (Hadley, Simmerman, Long and Luna, 2000).

Research 5

A New York elementary school found out literacy achievement increased for students with disabilities, from 20 percent at or above grade level to 42 percent in just two years, as a result of co-teaching intervention (Theoharis and CAuston-Theoharis, 2010).

Research 6

A Georgia middle school found out that students with and without disabilities showed significant increases on standardized tests in mathematics and language arts after two years of co-teaching. In addition, there was a significant decrease in the numbers of students with chronic attendance problems (Burns, 2010).

Research 7

Meta-analyses of the research on co-teaching with special educators found out only a handful of well-designed studies to include in the review. The results of these studies indicated that co-teaching may be moderately effective in language arts and mathematics (Murawski and Swanson, 2001; Scruggs, Mastropieri and McDuffe, 2007).

2.3. HOW TO CO-TEACH?

2.3.1. Co-teaching strategies

Before starting to co-teach, it is necessary to think carefully about your co-teaching needs to make sure you select a strategy that would be right for your co-taught classroom (CEHD, 2016).

For this reason, one of the benefits of co-teaching is that both teachers create together teaching approaches and instructional strategies that would not happen if just one teacher was present (Friend, Reising & Cook, 1993).

The most popular approaches or most frequently used models of co-teaching include one teach, one support; parallel teaching; station teaching; alternative teaching; and teaming (Wilson & Blednick, 2011; Dieker, 2016; Friend, Reising, and Cook, 1993). These 5 models were introduced in the literature in 1993 and continue to be refined and further developed by researchers in the field (Dieker, 2016).

However, other specialists of the field talk also about three other approaches: one teach, one observe; supplemental teaching and complementary teaching (Friend & Cook, 2010).

To use one approach or another depends on the subject being taught, age and maturity of the students, and creativity of teachers. No single approach is best or worst; each has a place in a co-taught class (Friend, Reising & Cook, 1993; Cook & Friend, 1995). For this reason, co-teaching can look different from classroom to classroom. As co-teachers compare student needs and abilities to the instructional objective for a particular lesson, they must decide the best way to structure both teaching and learning (Texas Education Agency, n.d.).

However, they must know that as they move down the continuum of models, more and more planning time together is needed (Dieker, 2016). In addition, as they progress in the models, teachers need an equal level of content knowledge to make the model work effectively (Dieker, 2016). Finally, as they move down the continuum, teachers must share the same philosophy of inclusion and have a level of trust and respect. Typically this level of trust and respect has to be built over time (Dieker, 2016).

On the other hand, teachers must follow the three keys to co-Instruction to work effectively (Murawski, 2010):

1. Demonstrate parity between teachers

Both teachers are equal in the shared class. One teacher does not have always to work with small groups or take the support role.

2. Ensure parity between students

Heterogeneous groups are a key to inclusive education. They do not have to put always together slower students in one group and bright or gifted students in another.

3. Use a variety of the approaches

Although some teachers might feel more comfortable with one or two of the approaches at first, they have to be sure not to overly rely on the same approaches over and again. They have to look at their content, their comfort levels with the content and their students to determine which approach would best work for instruction. Mix it up to keep motivation and increase learning.

All the co-teaching models that different authors have talked about are described below. They are arranged from low to high level of coordination between both teachers.

a) *One teach, one observe*

In this approach, one co-teacher has primary instructional responsibility while the other co-teacher gathers specific observational information (academic, behavioural or social skills) on students or the (instructing) teacher (Texas Education Agency, n.d.).

The key to this strategy is to have a focus for the observation (CEHD, 2016) in order to collect data about the class (Towson University, 2012) that can be used to inform instruction and document student progress and analyse in determining future lessons and teaching strategies (Texas Education Agency, n.d.).
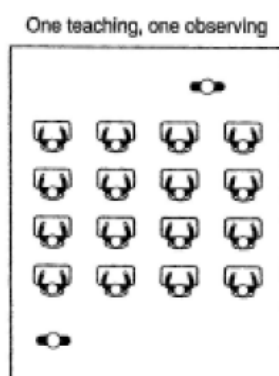

Image 1: Friend, M. & Cook, L. (2010). *Interactions: Collaboration skills for school professionals* (6th ed.). Boston: Pearson.

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b) *One teach, one support / one teach, one assist / supportive co-teaching*

This approach is called in different ways. It is when one co-teacher has primary instructional responsibility while the other co-teacher assists students with their work, monitors behaviours, corrects assignments (CEHD, 2016), answers questions (Towson University, 2012) or rotates among the students to provide support (Towson University, 2012).

In this type of co-teaching, both educators are present but one takes clear lead of the class while the other observes students or moves around the room, assisting them when is needed (Friend, Reising & Cook, 1993).The co-teacher that takes the supportive role watches or listens as students work together, stepping in to provide one-to-one tutorial assistance when necessary, while the other co-teacher continues to direct the lesson (Devecchi and Nevin 2010, Hehir and Katzman 2012, National Center for Educational Restructuring and Inclusion, 1995).

This is often used by teachers who are new to co-teaching.

What it Should Look like (Murawski, 2010)

One Teach, One Support is the most frequently used approach in co-teaching. In this approach, one of the teachers may take the majority of the responsibility for planning and content instruction. The other teacher may take the primary responsibility for adaptations to individual learning or behavioral needs (Dieker, 2016) classroom management, communications, charting, paperwork management, and other support as needed.

These roles should change often so that one teacher is not always relegated to the support position.

As one teacher takes the lead in content instruction with students, the other teacher is actively engaged in the support role.

Students remain as a large group, which means this is considered a "whole class" approach.

<u>What it Should not Look like</u> (Murawski, 2010)

Weiss and Lloyd (2002) found that many teachers who said they were co-teaching they were in fact merely having the general educator leading the class while the special educator circulated around it. By this way, teachers must use caution when using this approach to avoid a learning environment in which the general educator provides all instruction and the special educator serves as an assistant (Texas Education Agency, n.d.).

It is equally important that the individual in the support role is actively engaged in order to show why co-teaching is needed in the class.

For this reason, it is certainly the most comfortable approach to teachers who are used to having sole control of the classroom. It is also the approach that takes the least amount of time to co-plan.

The pros and cons of the "one teach, one support" approach are presented in *Annex 4.*

By this way, according to the disadvantages presented, the most challenging aspects of this model are (Wilson & Blednick, 2011):

- Parity can be severely compromised when one teacher assumes a dominant position and students perceive teachers as unequal.
- The supporting teacher may be perceived as an aide and not a teacher.
- The supporting teacher may feel that he or she is not sufficiently contributing to the instruction of students.
- Students do not get the intensity of instruction needed.

All in all, the best time to use the One Teach, One Support model (Wilson & Blednick, 2011) is:

- When planning time is very limited.
- When whole group instruction seems most appropriate.
- When co-teachers are beginning to become adjusted to each other's styles.
- When the special educator is learning the content.

At the moment, One Teach, One Support is the most frequently used model in co-taught classes.

One Teach, One Support

Teacher A instructs whole class

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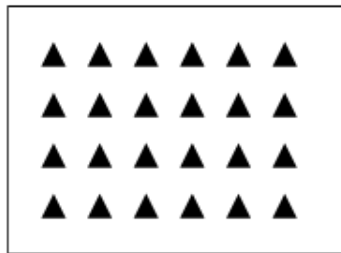
Teacher B supports

One teaching, one assisting
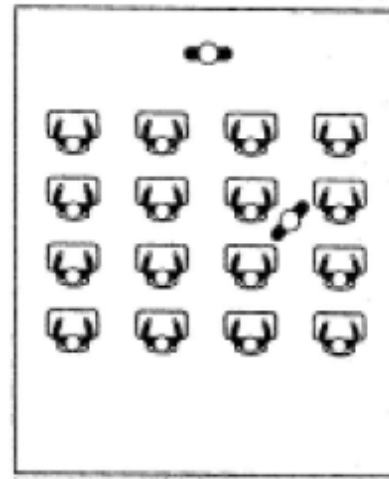
Image 2: Wilson, G., & Blednick, J. (2011). *Teaching in tandem*. Alexandria, Va.: ASCD.	Image 3: Friend, M. & Cook, L. (2010). *Interactions: Collaboration skills for school professionals* (6th ed.). Boston: Pearson.

c) Supplemental teaching

This strategy allows one co-teacher to work with students at their expected grade level, while the other co-teacher works with those students who need the information and/or materials extended or remediated (CEHD, 2016). By this way, this second teacher works as a special education teacher.

However, their roles have to change frequently because if not students will not see teachers in the same level. In addition, they have to plan together what to do and which students need help and how they are going to provide them.

Children need to see that both teachers work together but they have different roles depending on the lesson.

All in all, this strategy is closely related to One Teach, One Support approach. However, the supportive teacher only provides help to those students labelled with special education needs (slow learners or fast finishers).

d) Station teaching

This co-teaching approach is when teachers divide the instructional content into two, three or more parts and the students into groups. Heterogeneous groups spend a designated amount of time at each station, where teachers present the content in separate locations (Friend, Reising & Cook, 1993).

To explain how it works, each teacher is in one station and teaches half of the material in that station or monitors some stations at the same time. Then, the group of students that are in one station move to the other one, in the middle of the period or the next day (Dieker, 2016). By this way, the teacher just repeats the same instruction with the other group of students (Friend, Reising & Cook, 1993).

If students are able to work independently, a third station sometimes is created in which students work alone or with a partner on a related project or assignment (Friend, Reising & Cook, 1993; CEHD, 2016).

In this approach teachers share responsibilities for planning in a correct way to divide the instructional content, but each one has separate responsibilities for delivering instruction. This separation of instruction can increase the comfort level of inexperienced co-teachers. Students benefit from the lower teacher-pupil ratio, and students with disabilities can be integrated into all the groups instead of being left aside (Friend, Reising & Cook, 1993). Furthermore, both teachers have active teaching roles, so they have equal status.

The purpose of station teaching is to decrease student teacher ratio, present targeted instructional content or cooperative learning (Towson University, 2012).

<u>What it Should Look like</u> (Murawski, 2010)

In order to put into practice a good station teaching approach, teachers should divide their responsibility for planning and content instruction.

Students should rotate between three or more stations, also known as centres, which are either manned by a teacher or assistant or are independent stations. Teachers repeat instruction to each group that comes through the station, though content or delivery can vary based on differentiated needs. Co-teachers can structure stations so that students are able to focus on one aspect of a topic per station. Another use of station teaching is when each station focuses on a different topic altogether.

Before it, teachers can work together to determine how many stations are appropriate for a given activity.

What it Should not Look like (Murawski, 2010)

Stations should not be activities that are linear in nature or dependent on one another, because if not, some students would be lost or would not be able to develop the activities of their station.

In addition, Station Teaching sometimes allows teachers to think that they can divide students into groups by their abilities. These groups segregate the students who are struggling by putting them in one group. This does the opposite of what inclusion intends; it stigmatizes and creates homogeneous grouping from which students do not benefit from one another.

By this way, groups should never remain static so that students never change, or be based on ability level; they should be mixed-up groups where kids could benefit from each other.

The pros and cons of station teaching are presented in *Annex 5.*

Nonetheless, there are some challenging aspects of using this model (Wilson & Blednick, 2011):

- Precise planning of content and groupings are necessary.
- Students must be able to work cooperatively or independently if there are three or more groups.
- Noise level in the classroom may increase.

All in all, Station Teaching is useful when particular skills need to be developed in small, concentrated, and focused lessons (Wilson & Blednick, 2011). However, as with all approaches, this approach should be used in conjunction with other approaches as well and the students should change groups occasionally (Murawski, 2010).

Image 4: Wilson, G., & Blednick, J. (2011). *Teaching in tandem*. Alexandria, Va.: ASCD.

Image 5: Friend, M. & Cook, L. (2010). *Interactions: Collaboration skills for school professionals* (6th ed.). Boston: Pearson.
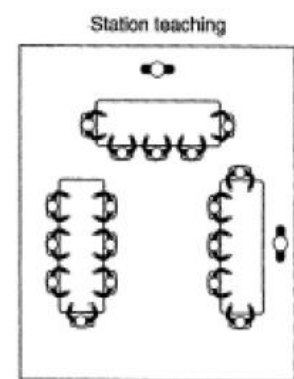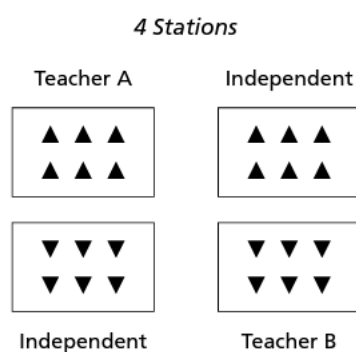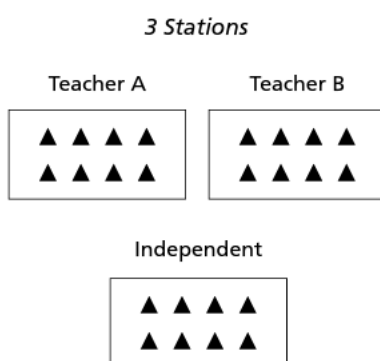
e) *Parallel teaching*

It is when two or more people work with different groups of students in different sections of the classroom. In parallel co-teaching teachers teach, monitor or facilitate the learning of different groups of students, usually in the same room at the same time (Devecchi & Nevin, 2010; Hehir & Katzman, 2012; National Centre for Educational Restructuring and Inclusion, 1995), addressing the same instructional material and presenting the lesson using the same teaching strategy (CEHD, 2016).

Usually the class is divided into two heterogeneous groups. Each teacher directly instructs the same content to half of the group after planning the instruction together (Friend, Reising & Cook, 1993). According to Towson University (2012), although each group receives the same content, they get differentiated instruction (Towson University, 2012).

For this approach, teachers should be very coordinated so as to make students receive essentially the same instruction in approximately the same amount of time (Friend, Reising & Cook, 1993; Dieker, 2016).

This approach provides opportunities for teachers to maximize participation and minimize behaviour problems. In addition, the aim to form groups in this approach is to maximize learning. Student grouping should be flexible and based on students' needs in relation to expectations being taught.

On the whole, the main purpose of parallel teaching is to decrease student teacher ratio and target students' instructional needs (Towson University, 2012).

<u>What it Should Look like</u> (Murawski, 2010)

In a Parallel Teaching approach, teachers share responsibility for planning and content instruction. Teachers break the class into two heterogeneous groups and each instructs half of the class. If it is carried out in the same room, it is suggested that co-teachers have the groups facing away from one another while the teachers face one another. This cuts down on noise issues and other nonverbal distractions.

There are three ways to use Parallel Teaching:

- Teach the same content in the same way

This is the main way Parallel Teaching has been taught in the past (e.g., Friend & Cook, 2007). In this example, teachers are dividing the class in order to benefit from a smaller student-teacher ratio. They are covering the same content in the same style but may move to different parts of the room or even to different rooms, if space allows.

- Teach the same content in a different way

In this case, teachers may introduce the same material to students utilizing different teaching styles to match the students' varied learning styles. Students may then change groups so that they are able to have the skill reinforced in the other method.

- Teach different content

It is done when both contents are connected and complementary between them. One teacher explains one content meanwhile the other presents a different one. Again, after teachers have worked with one group, they may choose to switch groups and repeat instruction so that everyone receives the same, parallel instruction.

<u>What it Should not Look like</u> (Murawski, 2010)

Teachers should not plan and teach on their own "island." As with all approaches, teachers should discuss what they will be doing with their individual groups and collaborate on the best approaches.

Students should be clustered heterogeneously, rather than having one teacher have all the "strong" kids, while the other has the "weak" ones.

Also, when presenting new content, the Parallel Teaching approach should only be used if both teachers feel similarly comfortable with the content.

The pros and cons of parallel teaching are presented in *Annex 6.*

By this way, the most challenging aspects of this model are (Wilson & Blednick, 2011):

- Thorough planning is necessary.
- Both teachers must have mastery of content.
- The teachers must carefully synchronize time.

- Some teachers and students have difficulty adjusting to multiple people speaking at the same time (although many report that, with practice, this is not a detracting factor).
- Some classrooms are not physically conducive to this model.

All in all, parallel teaching is a particularly effective model to use when teachers are equally confident with the content. It may be used to introduce new content but can also be used to create a more intensive environment for test review, a review of test answers, homework review, and guided practice. Another particular interest to use this approach is to teach students different perspectives on a topic and then give them time to share it with one another.

Nonetheless, this approach should be used in conjunction with other approaches as well and the students should change groups occasionally (Murawski, 2010).
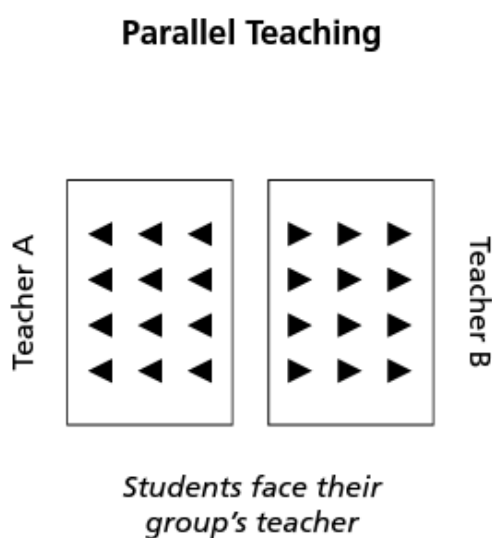
Image 6: Wilson, G., & Blednick, J. (2011). *Teaching in tandem*. Alexandria, Va.: ASCD.
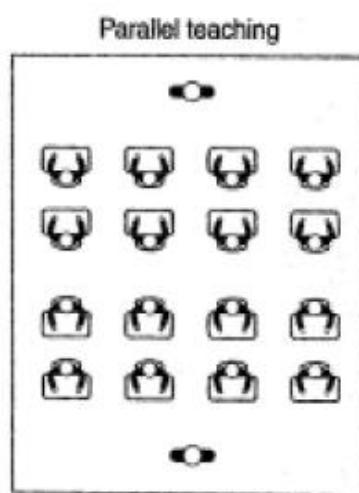
Image 7: Friend, M. & Cook, L. (2010). *Interactions: Collaboration skills for school professionals* (6th ed.). Boston: Pearson.

f) *Alternative/differentiated teaching*

In the Alternative Teaching model, one teacher is responsible for the large group of students while the other teacher instructs a small group of students (Wilson & Blednick, 2011; Friend, Reising & Cook, 1993). This small group is done for students that need extra review of the contents (Friend, Reising & Cook, 1993) or at-risk students (Towson University, 2012).

A teacher pre-teaches, re-teaches, supplements, or enriches instruction with these students while the other continues to provide accelerated instruction (Towson

University, 2012; Dieker, 2016). By this way, it either can be that the teacher providing alternative teaching delivers an alternate lesson or the same lesson with alternate materials or approaches (Texas Education Agency, n.d.). In addition, this small group can stay inside or go outside the classroom (Liberty University, 2010).

Alternative Teaching allows teachers to target the unique needs of a specific group of students by using student data to create an alternative lesson (Texas Education Agency, n.d.). This means that, based on previous assessments, both teachers can decide which students are at-risk.

With this approach, all the students receive opportunities to interact with a teacher in a small group (Friend, Reising & Cook, 1993). Moreover, more planning time is needed to ensure that the logistics of pre-teaching or re-teaching can be completed; also, the teachers must have similar content knowledge for one teacher to take a group and re-teach or pre-teach (Dieker, 2016).

However, the risk is that the students that are in the small group could be stigmatized as students with disabilities, by grouping them for re-teaching repeatedly. This risk can be avoided by varying groupings and ensuring that all students are periodically included in a group (Friend, Reising & Cook, 1993).

<u>What it Should Look like </u>(Murawski, 2010)

Teachers can divide the responsibility for planning and content instruction. The majority of students remain in a large-group setting, while some students work in a small group.

One of the keys to using the Alternative Teaching approach effectively is to make sure that the large group is not receiving new direct instruction while the small group is pulled out. If that occurs, the small group is missing out on and thereby falling further behind again.

<u>What it Should not Look like </u>(Murawski, 2010)

This approach is often misused, as many teachers resort to using the small group to pull out some students. Too often, the same pupils are asked to go to the small group merely because they are in special education or have an IEP that states that the student would benefit from small groups. This serves only to further stigmatize these students.

For this reason, the groups should be based on the needs and should be changed regularly.

Co-teachers may find that Alternative Teaching is used most often when the large group is doing a warm-up, review, group activity, or guided or independent practice. In this way, students in the small group are not missing out on new content instruction.

All in all, this approach is not about having the students with special needs, such as disabilities, ELL, at-risk, gifted, always clustered together.

The pros and cons of alternative teaching are presented in *Annex 7*.

Nonetheless, there are some challenging aspects of using this model (Wilson & Blednick, 2011):

- Overuse of this approach can lead to segregated practices within the class.
- If teachers occasionally take the smaller group to another room because of noise or space considerations, it must be taken care to avoid any negative consequences and potential stigma attributed to those students.

All in all, Alternative Teaching can be used any time there is a need for small group instruction (Wilson& Blednick, 2011).This approach provides the opportunity to work in a small intensive setting. However, this co-teaching model can also be used to create an enrichment group for those students that learn faster than the others (Friend, Reising & Cook, 1993).
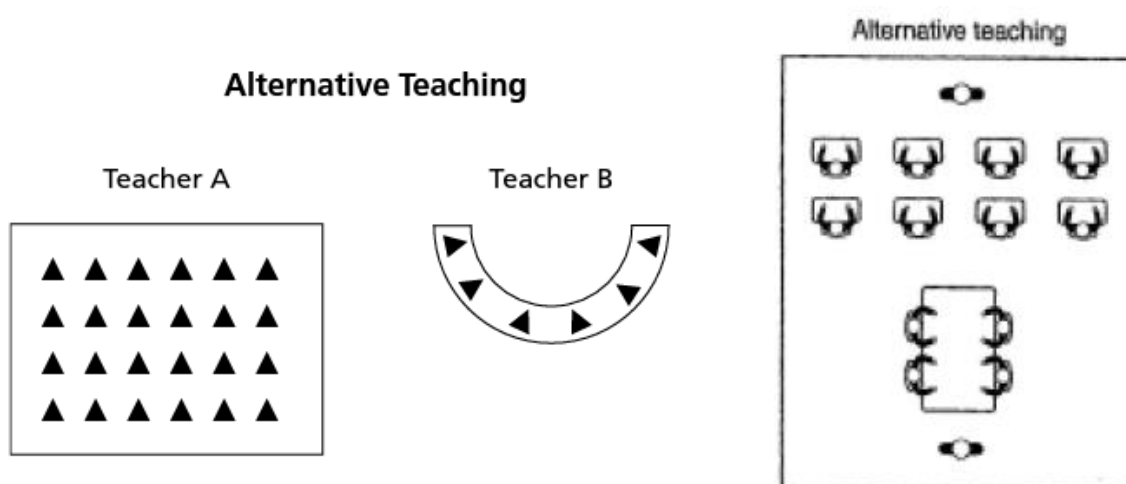

Image 8: Wilson, G., & Blednick, J. (2011). *Teaching in tandem*. Alexandria, Va.: ASCD.

Image 9: Friend, M. & Cook, L. (2010). *Interactions: Collaboration skills for school professionals* (6th ed.). Boston: Pearson.

g) *Team teaching*

Team co-teaching is when both teachers share the instruction of students (Friend, Reising & Cook, 1993).They plan, teach, assess and assume responsibility together for all the students in the classroom.

Co-teachers divide the lessons in ways that allow the students to experience each teacher's strengths and expertise. Co-teachers simultaneously deliver the lessons. The student must view each teacher as knowledgeable and credible (Devecchi & Nevin, 2010; Hehir and Katzman, 2012; National Centre for Educational Restructuring and Inclusion, 1995).

By this way, teachers using Teaming share the responsibility of leading instruction. While their roles may shift throughout the lesson, the key characteristic is that "both teachers are fully engaged in the delivery of the core instruction" (Friend, 2008). Both teachers are actively involved in the management of the lesson and discipline (Liberty University, 2010), are free to interject information, and available to assist students and answer their questions (CEHD, 2016).

The teachers might take turns leading a discussion, or one may speak while the other demonstrates a concept, or one might speak while the other takes part on a projection system (Friend, Reising & Cook, 1993).

In order to put into practice Team Co-teaching, equal knowledge of the content, a shared philosophy, and commitment to all students in the class are critical (Dieker, 2016). In addition, it also requires a high level of mutual trust (Friend, Reising & Cook, 1993).

All in all, the purpose of teaming is to share the role of lead teacher in delivering instruction and providing student support (Towson University, 2012).

What it Should Look like (Murawski, 2010)

Teachers share the responsibility for planning and content instruction. The students remain in a large-group setting while teachers work as a team to introduce new content instruction, work on building skills, clarifying information, and facilitating learning and classroom management.

By this way, this approach typically takes the most trust and respect between teachers because it is the only approach in which co-teachers are *"sharing the stage."*

Team Teaching is useful because co-teachers can role-play, model appropriate behaviours, or debate one another. They can show with their actions how adults can disagree without fighting. They can provide different viewpoints for the same information" and to realize that multiple responses to some answers are entirely appropriate.

<u>What it Should not Look like</u> (Murawski, 2010)

If both teachers are in the front of the rom continuously, they will not be able to provide differentiated instruction. Indeed, it may complicate matters for students if each concept is explained in different ways.

For this reason, the more prepared co-teachers are, the more likely they will be able to use Team Teaching effectively.

The pros and cons of team teaching are presented in *Annex 8.*

By this way, according to the disadvantages presented, the most challenging aspects of this model are (Wilson & Blednick, 2011):

- Co-teachers must avoid the situation where one supports while the other teacher simply offers comments or perspectives during a class. Teaming must be interactive and intensive.
- This approach requires a high degree of expertise in both content and process from both teachers, because if not one will always be seen as the leading teacher.

All in all, in this co-teaching model both teachers teach and support each other and the students at the same time. They both attend to the learning needs of the students and are able to adjust and adapt their teaching as the need arises (Wilson& Blednick, 2011).

Accordingly, the best time to use this model is when the presentation of differing views and perspective is appropriate (Wilson& Blednick, 2011). However, many times teams may not start with this type of format, but over time they can effectively move to this type of co-teaching, if they have continuity in working together (Dieker, 2016). It must be said that many veteran co-teachers report that they find it rewarding (Friend, Reising & Cook, 1993).

Teaming

Option 1

Teacher A

Teacher B

Teaming

Option 2

Teacher A   Teacher B
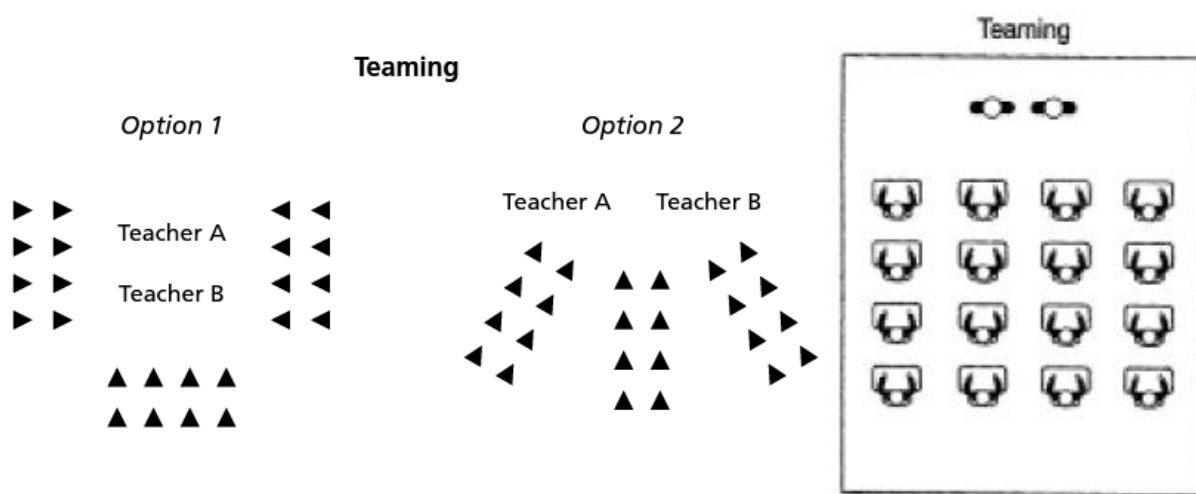
Image 10: Wilson, G., & Blednick, J. (2011). *Teaching in tandem*. Alexandria, Va.: ASCD.	Image 11: Friend, M. & Cook, L. (2010). *Interactions: Collaboration skills for school professionals* (6th ed.). Boston: Pearson.

h) Complementary teaching

Complementary co-teaching approach is done when co-teachers do something to enhance the instruction provided by the other co-teacher (Devecchi & Nevin, 2010; Hehir and Katzman, 2012; National Centre for Educational Restructuring and Inclusion, 1995).

For example, one co-teacher might paraphrase the other's statements or model notetaking skills with a document projector.

This approach can also be considered as team teaching, but in this case, the second teacher has a specific role during the entire lesson.

When to use each of the approaches?

In the following table is described when is the best time to use each of the most important approaches. It not only depends on the typology of the classroom, but also on the learning situation, teachers and their relation with co-teaching methodology.

CO-TEACHING METHOD	WHEN TO USE
One Teach, One Observe	• In new co-teaching situations. • When questions arise about students. • To monitor student progress. • To compare target students to others in class.
One Teach, One Support / One Teach, One Assist	• When the lesson lends itself to delivery by one teacher. • When one teacher has particular expertise for the lesson. • In new co-teaching situations.

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/ Supportive Co-Teaching	• In lessons emphasizing a process in which student work needs close monitoring.
Station Teaching	• When content is complex but not hierarchical. • In lessons in which part of planned instruction is review. • When several topics comprise instruction.
Parallel teaching	• When teachers want to provide differentiated instruction (Towson University, 2012). • To reduce student-teacher ratio for more individualized instruction (Liberty University, 2010). • When teachers want to maximize participation and minimize behaviour problems. • To do more kinaesthetic, hands-on activities.
Alternative Teaching	• When students' mastery of concepts taught or about to be taught varies tremendously. • When extremely high levels of mastery are expected for all students. • When enrichment is desired. • When some students are working in a parallel curriculum.
Team Teaching	• When teacher experience is comparable. • During a lesson in which instructional conversation is appropriate. • In situations in which the teachers have considerable experience and a high sense of comfort. • When a goal of instruction is to demonstrate some type of interaction to students.

Table 1: Cook, Lynne. (2004). "Co-Teaching: Principles, Practices, and Pragmatics."

Conclusion of the approaches

Usually, teachers might wonder which the best of all the previous Co-Teaching approaches is in order to use it in their classroom. However, there is no one approach better than another (Devecchi & Nevin, 2010; Hehir & Katzman, 2012; National Centre for Educational Restructuring and Inclusion, 1995).

Approaches to co-teaching should be selected according to the student characteristics and needs, teacher preferences, curricular demands and practical issues such as the teaching space (Friend, Reising & Cook, 1993).

Nowadays, many people who are beginning to co-teach start with Supportive and Parallel Co-teaching because these approaches involve less structured coordination with members of the co-teaching team. Gradually, as co-teaching skills and relationships strengthen, co-teachers add Complementary and Team Teaching Co-teaching, which

require more time, coordination and trust (Devecchi & Nevin, 2010; Hehir & Katzman, 2012; National Centre for Educational Restructuring and Inclusion, 1995).

However, most experienced co-teachers use many approaches (they do not only stay using one all over again). By this way, what is most crucial is to experiment with the approaches, adapting them to specific situations to produce a variety and appropriate use of teacher skills in the delivery of instruction (Friend, Reising & Cook, 1993).

All in all, the main objective of these strategies is to make children learn more and better. Nonetheless, for learning to occur, it is needed to plan what to do, put it into practice with the students and then evaluate whether or not they learned and if it is possible to move on (Murawski, 2010).

2.3.2. Becoming a co-teaching team

Co-teaching is a model that emphasizes collaboration and communication among all members of a team to meet the needs of all students (Dieker, 2016). For this reason, it can be said that teamwork is at the essence of a co-teaching relationship (Perez, 2012).

Teaching can be an isolating experience, and co-teaching offers professionals the opportunity to collaborate, problem-solve, and create, all in an effort to provide supportive and effective learning for all students. By this way, co-teaching can be fun with increased teacher interchanges providing opportunities for closer interactions with students (Wilson & Blednick, 2011)**.** This methodology might be a shift in perspective because it changes from a single teacher delivering the curriculum to an entire class to a co-teacher working collaboratively to meet the individual needs of each student (Conderman, Bresnahan & Pedersen, 2009).

However, co-teaching is not a comfortable arrangement for all professionals. The fact of sharing responsibility, modifying teaching styles and preferences and working closely with another adult represents serious challenges for some educators. For this reason, there are some topics that are important to discuss so as to have positive relationships between co-teachers and become a good co-teaching team (Cook & Friend, 1995; Fattig & Taylor, 2008). Discussing these factors fosters a working relationship built on trust and understanding.

Nonetheless, each individual co-teaching partnership must design their own unique model of co-teaching to best serve their students, as each co-teaching team is different (Beninghof, 2012).

Teachers must take into consideration that there are some factors that influence the co-teaching program in a specific school (Cook & Friend, 1995):

- Size and grade levels of the schools
- Number of students with IEPs and their class/age distribution
- Number and disciplines of the specialists available to co-teach
- Level of administrative support
- Role responsibilities of potential co-teachers
- Stability of school enrolment and caseload composition
- Relevance of IEP to general education curriculum

Furthermore, co-taught classes can provide rich teaching and learning opportunities for students and teachers. As with any relationship, building a co-teaching partnership takes time. As teachers work together, they build trust and establish a structure in which both teachers can work smoothly (Sacks, 2014; Texas Education Agency, n.d.).

All in all, co-teaching is demanding, but sharing responsibilities can create a positive teaching environment (Wilson & Blednick, 2011).

Below there are described the main factors that must be taken into consideration in order to become an effective co-teaching team.

a) Getting to know each other

In order to create a successful co-teaching classroom, it is important to learn about the according co-teaching partner. It is essential to get to know each other personally, as well as professionally (Towson University, 2012).

As soon as co-teachers will learn who his or her co-teaching partner will be, it is important to reach out to that individual, suggesting a meeting prior to the start of the school year. Then, it is good to spend a few minutes getting to know each other, what will help the process of becoming comfortable as teaching partners (Texas Education Agency, n.d).

Co-teachers must be honest and share with one another what they like and do not like to occur in their classroom (Murawski & Dieker, 2004). The more both co-teaching partners share information proactively, the less likely a situation will come up that will surprise them or put them in an uncomfortable position (Murawski, 2010).

Although honest communication is not an easy task, there are various direct and indirect ways that can help to preserve or create compatibility. Addressing the needs and challenges of a co-teaching partnership is essential for successful co-teaching (Wilson & Blednick, 2011).

In addition, in order to begin building relationships and create a team, both teachers must have a common understanding of co-teaching and share a vision for student achievement and collaboration. Teachers often possess different teaching styles, aspirations, attitudes, expectations, and abilities to adapt to change. The first step should be centred to talk about each teacher's preferences.

By this way co-teachers must communicate effectively to accomplish their mission (Texas Education Agency, n.d.).

Talking and discussing the knowledge and understanding of co-teaching helps to clarify their ideas about control, fairness, competence, work ethic, classroom management, expectations and what comprises success and failure (Wilson & Blednick, 2011).

Personally

While sharing the main personal information, it is important to know about the personality of the other co-teacher. Collaborating together in a co-teaching team requires an understanding of the own personality type and values and those of the other partner. Everyone is different, just like students are. For this reason, co-teaching becomes easier when both teachers understand each other's unique personalities (Perez, 2012).

In *Annex 9* some questions that can be useful to get to know a co-teacher personally are presented.

Professionally

Some issues that should be discussed to get to know a co-teacher professionally are:

- o Attitudes

Teachers must discuss about which is their teaching philosophy. Some questions that can help them to share it are presented in *Annex 10.*

By this way, before teaching, co-teachers should discuss what each of them considers non-negotiable (those beliefs that are most important for each of them as a teacher). If some of the items conflict it is important to reach an agreement before facing students (Texas Education Agency, s.d.).

- o Hopes

Teachers must discuss what they hope it will be achieved or their teaching goals. Some questions that can help them to do it are also presented in *Annex 10.*

If they do not discuss what they want to acquire, they might have difficulties to share the classroom. They might find that they do not agree on the general atmosphere that makes teaching and learning successful.

o   Responsibilities

Co-teachers should also discuss which responsibilities they expect to have in the co-taught classroom (Murawski, 2010), such as:

- *Confidentiality.* Co-teachers have to agree on which of their activities are to be public and which are to be confidential classroom matters. It is easy to miscommunicate on this matter (Cook & Friend, 1995).
- *Innovation.* Exploring the six approaches of co-teaching (how/when to implement them) (Texas Education Agency, s.d.).
- *Compromise.* Finding a planning time and using it effectively (Texas Education Agency, s.d.).

o   Expectations

Finally, teachers need to talk about what their expectations are in the classroom. These include the teaching styles and preferences presented in *Annex 10.*

All I all, teachers should share beliefs about teaching and learning to successful co-teaching (Adams & Cessna, 1991) such as the ability of all children to learn, the rights of children to experience success in their classroom, regardless their ability level, and their own role in student learning (Cook & Friend, 1995).

It has to be taken into consideration that nearly every teacher has pet peeves about some aspect of teaching or the classroom environment that could interfere with a positive working relationship. For this reason, as part of co-teaching is respecting the other person's quirks as a teacher, knowing the partner's pet peeves is one way to accomplish this.

On the other hand, it is important to know that co-teaching is not a comfortable arrangement for all professionals. The fact of sharing responsibility, modifying teaching styles and preferences and working closely with another adult represents serious challenges for some educators. However, for other it provides a source of excitement that can lead to renewed enthusiasm about teaching (Cook, & Friend, 1995).

By this way, beginning by getting to know one another's personalities, sharing the goals, teaching styles and preferences, as well as expectations on classroom behaviour and student performance is a good starting point to become a co-teaching team.

b) *Planning quality time together*

Co-planning is an essential service delivery component in the process of collaborating and co-teaching (Dieker & Barnett, 1996; Jitendra, Edwards, Choatka, & Treadway, 2002; Trent et al., 2003). It is this activity that ensures that there is differentiation, individualization, strategies, and other pedagogical techniques that make the lesson specific to that particular group of students so that each can access the general education curriculum more effectively.

Teachers in a co-taught environment must share common goals, be able to positively collaborate, and equally put effort in the lesson preparation and planning; otherwise, disagreements between co-teachers might arise (Fennick & Liddy, 2001; Mastropieri et al., 2005).

By this way, they have to figure out as a team what is going to be taught and how it is going to be taught. However, teachers are individuals and as such will have their own preferred style for instructing. It is important that teachers respect this fact, so that both are comfortable with their plan related to what will be taught as well as how it will be taught (Murawski, 2010)**.**

Why to co-plan?

Co-planning presents many advantages for co-teachers as well as for students:

- First of all, co-planning is invaluable in gathering information to create a more active and productive learning atmosphere for students with and without disabilities (Murawski, 2010)**.**
- Co-taught teams can effectively meet the needs of all students. Without co-planning, lessons that are developed may just address the general needs of students in the classroom. By this way, the instructional plan is more uniform and can be differentiated to meet the needs of all students in an inclusive setting (Fennick & Liddy, 2001; Murawski & Dieker, 2004).

  All in all, co-planning provides the opportunity for co-teachers to consider the social, academic, behavioural, and other needs of all students as they proactively

plan for students' success (Fennick, 2001; Murawski, 2004; Wilson & Blednick, 2011).

- Co-planning allows teachers to scrutinize the curriculum and make critical decisions about what needs to be covered, taught and learned (Wilson & Blednick, 2011). By this way, it helps teachers establish and clarify their collaborative goals, which helps to decrease the risk of hidden agendas during instruction (Thousand et al., 2006).

- Ongoing co-planning enables open communication, facilitates team problem solving and promotes equity in co-teaching (Fennick, 2001). Consequently, co-teachers are more likely to develop trust and respect (Murawski, 2010)**.**

- It also allows teachers to reflect on the effectiveness of co-teaching, celebrate successes, and address any questions or concerns (Sacks, 2014).

- As teachers work together to plan instruction, even veteran teachers report learning new and exciting techniques that invigorate them and re-interest them in the art of teaching.

    When to co-plan?

Co-teachers must have time to sit down and meet to plan sessions (Sacks, 2014). If possible, co-teachers should set aside a period for planning once or twice a week (Dieker & Murawski, 2003). However, without time in their schedule for co-planning, it would be impossible to maximize the full benefits of co-teaching. For this reason, effective co-teachers must schedule planning time during the school week (Wilson & Blednick, 2011).

On the other hand, even with scheduled planning time, co-teachers often find themselves planning before and after school, between lessons, over the phone and by e-mail (Wilson & Blednick, 2011).

Nonetheless, depending on the type of co-teaching used, the amount of planning time that is needed varies (Cook & Friend, 1995).

    How to co-plan?

        o   Prior to the co-planning process

Both teachers need to take into consideration the following terms (Towson University, 2012):

- Have and keep an agenda. Know what the key items are that need to be discussed during that planning time. This will help them both with time management.

- Use their time wisely. Decide the time of day allocated for planning, the duration of planning period, the frequency of planning, where planning takes place.

- Have a regular schedule for meeting. If co-teachers do not have a regular time for meeting and planning set in stone, it will not occur.

- Determine the method used for communicating.

- Familiarizing them with the curriculum.

- Determining the planning style (i.e., plan books, flip charts, lists, etc.). It is useful to use a common planning document shared between both co-teachers (Sacks, 2014).

- Developing emergency substitute plans.

  o During the planning period

The process of co-planning can be complex, yet it is essential for the incorporation of the elements required for successful instruction and learning.

It is useful to use the Co-Teaching Pyramid, which provides a guide for co-teachers as they co-plan. The pyramid incorporates the elements of student needs, effective instruction, co-teaching models, and lesson and materials. The pyramid has four basic layers or levels (Wilson & Blednick, 2011):

- *Layer 1*, the base of the pyramid is at the unit level. When beginning to plan a unit, co-teachers think about which content they want students to learn as well as the cognitive demands for students in the class. All in all, the teachers identify any developmental, linguistic, physical, or experiential challenges that could impact student learning (individualization) (Texas Education Agency, n.d.).

- *Layer 2* is at the lesson level. They look at the demands of the particular lesson and ask what the challenges of the lesson are. Co-teachers should analyse the assignment and materials that are needed for the diverse needs of the specific students of the class. By this way, they design learning activities with the

necessary accommodations/modifications so the students can develop and demonstrate understanding of the grade-level expectations (differentiation) (Texas Education Agency, n.d.).

- *Layer 3* is at the instructional and strategy level. Co-teachers determine what essential element of instructional design is appropriate for the aim of the lesson based on the task demands and which corresponding strategy or routine will be implemented. In addition, they both determine how the students will demonstrate understanding (evaluation) (Texas Education Agency, n.d.).

- *Layer 4* helps co-teachers decide what most effective, efficient, and intensive co-teaching approach to use so all students can access and learn the content (Towson University, 2012; Perez, 2012).
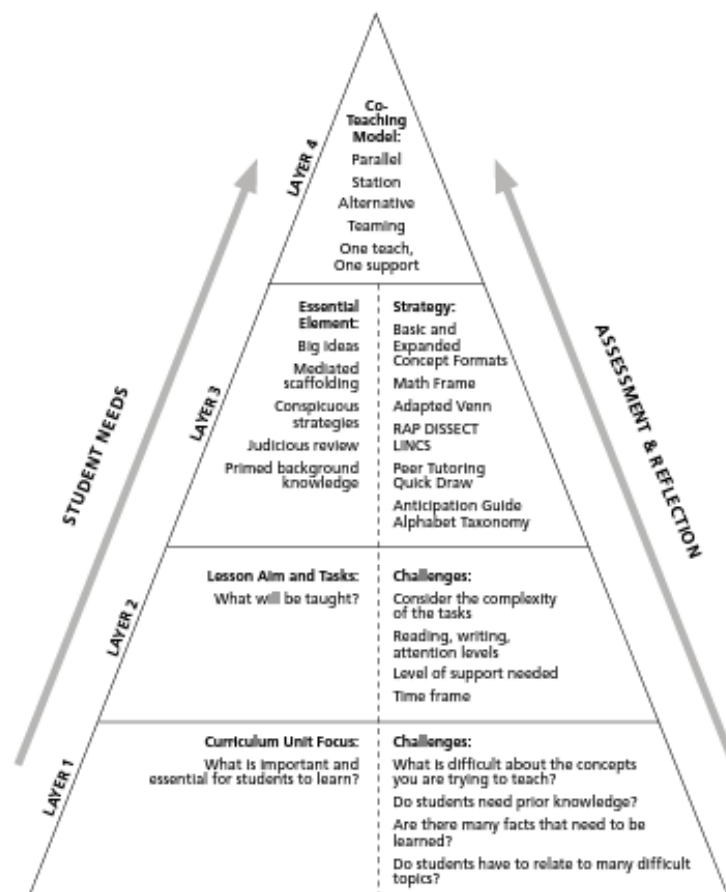
Image 12: Wilson, G., & Blednick, J. (2011). *Teaching in tandem*. Alexandria, Va.: ASCD.

Apart from this, co-teachers must design lesson plans to have their lessons well-structured and shared. A lesson plan can include the following elements (Wilson & Blednick, 2011; Dieker, 2006; Murawski, 2010):

- Date.

- Subject area.

- Grade level.

- Lesson's aim or essential question.

- Sequence of student tasks (i.e., listen to lecture, answer questions orally, read, and write a response) or lesson activities.

- Materials designed to meet student needs.

- Adaptations and strategies to be used in delivering the lesson.

- Selections of co-teaching models for each task.

- Student focus. By preselecting a student for intense reflection each day, the co-teachers can focus on, talk about, and reflect on that student's needs.

- Assessment (standard/modified).

- Co-teacher reflection. Did this lesson go well, or was it a bust? How could the lesson have been improved? Were other adaptations or strategies needed?

- Planning for future lessons. What needs to be done next?

  o After teaching

After co-taught lessons, things to consider include the following (Towson University, 2012):

- Grading (teachers can divide the grading responsibilities or grade the assignment together).

- Evaluate groups. Which students are accelerated, on-level, or at-risk? When and how will you teach the at-risk students? How will you challenge the accelerated students?

- Reflecting. What worked? What didn't work?

- Don't re-create the wheel. Teachers spend an inordinate amount of time complaining about a lack of planning time. It is better to make the most of the time they have and try to arrange other meetings or ways of communicating.

c) *Achieving parity between co-teachers*

No matter the actions that co-teachers are doing, both teachers should be viewed as equals inside the classroom. By this way, once both teachers share roles and responsibilities within the classroom, parity will be accomplished (Towson University, 2012).

In order to demonstrate parity, co-teachers should start on treating each member of the co-teaching team with respect. Each member has to give and take direction for the co-teaching lesson so that the students can achieve the desired benefits (Villa, Thousand & Nevin, 2013).

According to this, co-teachers must agree to redistribute their classroom leadership and decision-making responsibilities among themselves (Villa, Thousand & Nevin, 2013).

Distributing classroom leadership

It is probable that many teachers are used to teaching alone in the classroom. For this reason, once there are two professionals teaching, they must find a way to share or divide responsibilities to achieve the best student outcomes.

However, this process is often complicated by a number of factors such as ego, areas of expertise, philosophy of education, values, past experiences, personal and professional goals, personality traits, cognitive styles and sense of time (Beninghof, 2012).

For this reason, it is good to define the roles and responsibilities of each of the teachers at the beginning of the co-teaching experience, so they will know what to do in each of the different situations.

In *Annex 11* some combined teacher actions during co-teaching are presented.

This phenomenon of role redistribution on which the functions of the traditional teacher are divided among members of a team is known as the distributed functions theory of leadership (Johnson and Johnson 1999, 2009).

Distributing decision-making responsibilities

In order to achieve parity, teachers need to know that negotiating decisions in a co-taught classroom is an important process and can be a time-consuming issue unless they agree on parameters and procedures in advance.

Co-teachers must take into consideration that team decision making is important when (Perez, 2012):

- The decision or outcome may have a direct impact on their program.
- The broader the input, the more valuable the input.
- The issue is multifaceted.
- The implications of the decision will directly affect their program.
- Multiple perspectives are needed.

By this way, if any problem appears during their co-taught lessons, it is useful that co-teachers look deeply into a problem and find solutions together (Wilson & Blednick, 2011).

In *Annex 12* the steps to problem-solving are presented.

Other actions to achieve parity

In addition, to achieve and maintain this parity, teachers can do other things apart from distributing the classroom leadership and decision-making responsibilities equally (Murawski, 2010; Cook & Friend, 1995).

These proposals are presented in *Annex 13*.

All in all, teachers should make sure the world (and this includes the students) knows that they are a team. By this way, both must be recognized as the classroom teachers. They have to share a belief system that supports the idea that each of the co-teaching team members has unique and needed expertise. This means that the presence of two or more people with different knowledge, skills and resources allows the co-teachers to learn from each other (Villa, Thousand & Nevin, 2013).

d) *Sharing common agreed-on goals*

Co-teachers must know that for real collaboration to occur, it is important for educators to "share a sense of identity and common values" (Grossman, Wineburg & Woolworth, 2001). According to Friend & Cook (2007), one of the main characteristics of effective teams is that team's goals are clear.

Nonetheless, the most successful co-teaching teams spend time, up front, discussing and agreeing upon shared goals or outcomes. This means that it requires planning time to coordinate their work (Villa, Thousand & Nevin, 2013).

Co-teachers must establish short-term goals as well as long-term goals that they might consider establishing together (Murawski, 2010).

e) Informing others about co-teaching

It is important to communicate to other teachers, parents and students about co-teaching and the changes on the methodology that it will do (Cook & Friend, 1995). Students need to understand why there will be two teachers in their classroom or why they will sometimes have two teachers and other times only one (Murawski, 2010).

Nonetheless, co-teachers must take into consideration that the information shared and how it is communicated influence significantly how others view, and subsequently respond, to the co-teaching effort (Cook & Friend, 1995).

Regardless of which strategies seem to be most efficient to talk to others about the co-teaching approach, maintaining a balance of communication strategies is important. Too much reliance on one-way communication (e.g., from the school to the parents via written material) becomes ineffective because those who are informed do not have opportunities to question or clarify the information they receive (Cook & Friend, 1995)

By this way, teachers should inform all parents of students in a co-taught class that their children are in a multiple-instructor learning environment (Seay, Carol, Hilsmier and Duncan, 2010). There are many ways to effectively emphasize to parents that a course is truly co-taught. For example, both teachers' names might appear on student report cards, or student assignments may undergo review by both teachers (Cook, 2004).

For this reason, it is important that co-teachers discuss about how introductions will be handled on the first day with students. They have to agree on how they will communicate to students that they have parity in the classroom, even if one is not there at all times (Texas Education Agency, s.d.).

All in all, it is important to know that informing others about a new program makes them feel participate (Cook & Friend, 1995).

f) Organizing the physical environment

It has to be taken into consideration that the physical environment of a co-taught class has a definite impact on the success of co-teaching and promoting positive acceptance of all learners (Perez, 2012). The way the partners set up the class will either aid or detract from their instruction (Murawski, 2010).

Teachers' space

First of all, teachers need to have parity while sharing their space. At the beginning, both teachers should decide if they would like a shared or separate workspace and the location of their workspaces in the classroom (Towson University, 2012). Both adults need to feel they have an area for their personal items (Murawski, 2010).

If students see that both teachers have a desk or that both names are clearly posted on the door or in the room, they will be more likely to accept that the class will be shared. Even if teachers are only collaborating for one part of the day (e.g., during language or arts time), it is helpful for both names to be prominently displayed. Without both names on the door or somewhere in the room, students get the unintended message that the class is the sole authority of one of the teachers, whose name is displayed (Murawski, 2010).

Apart from this, teachers should know which materials they have that they can bring to their relationship (computers, manipulatives, web sites, adapted books, textbooks, lab materials, etc.). In addition, they need to know where these materials are. If all of the teacher's materials are elsewhere or inaccessible, it is unlikely that teachers will use them. On the other hand, if teachers have shared space, one can show the other the various materials he has at their disposal to add to instruction. These may include manipulatives, books on tape, highlighter tape, or graphic organizers (Murawski, 2010).

Finally, co-teachers might determine how regrouping will occur for the use of parallel teaching, alternative teaching, and station teaching. Once they will cooperatively determine how they will best be able to use their classroom space or additional space such as other classrooms, outside areas, and so forth, they will be able to instruct students how to move to these positions in order to avoid chaos and frustration (Murawski, 2010).

<u>Students' space</u>

On the other hand, both teachers should decide how the students' desks should be arranged. The teachers should take into consideration the instructional content, teaching styles, and co-teaching models to do so (Towson University, 2012). This will provide a greater mobility for both students and teachers (Perez, 2012).

In addition, teachers need to discuss whether they want to give students assigned seats or allow them to choose their own. There are certainly pros and cons to both. Allowing students to choose their own seats gives them autonomy and choice, but it also pretty much ensures that students will argue about who gets to sit next to whom. A good choice is to give assigned seats (usually alphabetical) for the first two weeks of class. Later, let them choose their own seats, which are naturally contingent on appropriate behaviour.

Whatever co-teachers decide, they both must have discussed it and agreed. Also, co-teachers should consider non-traditional seating layouts. Instead of uniform rows, desk clusters or semicircles may be more conducive to inclusive instruction (Murawski, 2010).

Apart from that, each student should have a storage space within his or her reach and it should be clearly labelled. By this way, materials and educational resources should be clearly marked so that students can find them easily and replace them in their appropriate space (Perez, 2012).

If the teachers decide to organize the learning environment by centres, both teachers should decide their locations and what types of centres will be included in the classroom (i.e. math, reading, writing, science, spelling, and computer) (Towson University, 2012). Furthermore, they have to make space to allow for flexible grouping (Perez, 2012).

Even more with younger students, specific areas should be designated for group activities, centres, break time, and workstations.

Nonetheless, the space of the students has to be well adapted to the physical limitations of the students. If any of the students has a mobility difficulty or needs any adaptation, teachers should talk about it before.

Also, if there are students who will need a quiet area for redirection or focus, there should be a space in the room created for that activity. By this way, it might be helpful if co-teachers think about where students who need more individual help should sit. It is likely that one of the co-teachers may need to sit occasionally near a student to help him with academic or behavioural tasks. This can be a challenge for teachers, as students with disabilities should not always be relegated to the back and sides of the room, but at the same time, a seat or other space that will not distract other students may need to be provided for help (Murawski, 2010).

All in all, the classroom has to ensure physical comfortability of the students in the class (Perez, 2012).

Classroom environment

Apart from arranging the teachers' and students' space, it is also important to take into consideration the classroom environment. Effective co-teachers understand the role that environment plays in supporting the diversity of learners in the classroom. Co-teachers can increase their effectiveness when they look critically at the environments they have created, understanding that learning is enhanced through an emphasis on the physical appeal of the classroom, the careful selection of what is to be taught, the knowledge of effective teaching techniques and the goal of every student's well-being (Wilson & Blednick, 2011).

First of all, posting of routines, special events and a calendar of assignment due dates, helps students organize their time and work and is particularly effective for those students who have difficulty starting and systematically working on an assignment **(**Wilson & Blednick, 2011). In addition, it helps the students to have support rules and procedures with visual representations (Perez, 2012).

In addition, displaying posters and students' work in the wall helps them to remember what they have done and to revise some ideas and contents learned (Wilson & Blednick, 2011). The schedule should also be posted, explained and practiced for greater understanding (Perez, 2012).

Nonetheless, the lighting, seating arrangement, room temperature and sounds must be adjusted to the students and content of the lesson. Boundaries to separate different

spaces in the class should be taken into consideration, as well as minimizing visual and auditory distractions on the learning environment.

The space should allow for varied levels of energy and noise in the classroom depending on the goal or task (from relaxed, focused learning to rigorous investigations). All in all, co-teachers must ensure that the room reinforces the message of a positive environment (Perez, 2012).

If a classroom is too small, sometimes it is particularly challenging when co-teachers need to teach in parallel groups or stations. Grouping students with just chairs instead of chairs and desks, or having students sit on the floor in groups on different sides of the room often helps. Again, the co-teachers can experiment to try to make the best of the difficult situation (Wilson & Blednick, 2011).

g) *Establishing norms and rules*

Co-teachers must discuss about classroom management issues. Teachers must make and share with students proactive decisions regarding rules and procedures. In addition, they have to decide which reactive decisions they will make regarding student behaviour. Every class has its own issues related to management; however, an inclusive class may have additional concerns (Murawski, 2010).

Proactive Procedures

Each class must have rules that facilitate classroom management and routines (Perez, 2012). In a co-taught class, both teachers should collaborate regarding their expectations for their classroom rules (Towson University, 2012).

By this way, co-teachers should discuss what they expect from their students' behaviours, and the system of rewards and consequences used in the classroom. If not, there can appear discussions and misunderstandings (Cook & Friend, 1995)

These expectations should address the following components (Murawski, 2010):

- It needs to be student centred by including the students in the development and implementation of the rules.
- It must be written in positive simple terms using developmentally appropriate terminology.

- Establish 3-5 rules.

- It needs to be posted so they are visible at all times.

- Both teachers are responsible for implementing rules.

- Parents, students, and faculty should be aware of the expectations.

Many teachers and researchers suggest that classroom rules must be created in conjunction with student input (Emmer et al., 2002; Walker et al., 2006) although the day-to-day logistics of the classroom need to be determined by the teachers and reinforced and practiced regularly.

On the other hand, co-teachers must take into consideration that the more structure there is in activities and tasks, the better for both students and co-teachers will be, because it allows teachers and students to relax. By this way, the stress of the unknown is removed and many student behaviours that arise from confusion or lack of structure are avoided.

However, structure in activities does not have to be rigid, but having a general routine helps everyone know what is expected, which is a benefit to both students with and without disabilities. In addition, structure helps co-teachers in determining their roles and responsibilities.

In addition to scheduling, co-teachers also need to discuss how they want to coordinate daily procedures such as homework, pencil sharpening, asking for materials, bathroom or hallway passes, quizzes, and the like. It is important for co-teachers to jointly determine what they feel comfortable with and to share the classroom procedures with students.

Some of these classroom procedures are described in *Annex 14*.

Reactive Responses

Both teachers need to discuss their philosophy on discipline and develop a standard discipline plan. By this way, classroom discipline needs to be implemented consistently, agreeing on the reactive responses that co-teachers must have in different situations that might appear. For this reason, teachers need to be aware of students' behaviours and maintain constant communication (Towson University, 2012).

According to this, teachers must know that despite their efforts at setting up solid classroom procedures, there will still be tardiness, inappropriate behaviour, defiance,

and other behaviours that need to be addressed in order for instruction to continue (Murawski, 2010).

Some of the reactive responses to negative and positive behaviours are presented in *Annex 15.*

h) *Instructing and assessing the students*

Instruction

Instruction is one of the most important parts about teaching and maybe the most visible for students. For this reason, co-teachers must know that with this methodology it is easier to vary instructional practices, which increases flexibility and creativity during lessons (Hanover Research, 2012).

However, before starting with the instruction, it is important to have an appropriate classroom environment to enhance learning. Co-teachers must also know about their students, different teaching strategies and what needs to be taught, so as to make the most of the instruction process.

o Appropriate classroom environment

The classroom environment should be a safe, inviting, and comfortable setting for students and teachers.

In order to establish a positive environment it is important that co-teachers consider different aspects such as (Towson University, 2012):

- *Organization of Student Information.* Both teachers should agree on a system for keeping records of student information and monitoring student progress (data notebooks, file folders, journals, portfolios…)
- *Planning and Implementing Daily Routines*. Both teachers need to agree on routines prior to school opening and establish these routines with the students during the first week of school (morning routine, walking in the hallway, bathroom breaks, student jobs, transitions between classes, subjects, and activities and dismissal routines).

o   Understanding students' needs

Nonetheless, co-teachers must know that the most important part about instruction is the students. Every teacher needs to make sure to address his HALO. HALO stands for "high achievers, average achievers, low achievers, and others," students who vary between levels or may have additional needs that should be considered when lesson planning (Murawski, 2010).

For this reason, it is important to start identifying the academic, behavioural, social, and emotional needs of all students. Without knowing about students' special needs appropriate supports cannot be put into place (Texas Education Agency, n.d.).

When co-teachers focus attention on students and their needs, they begin forming a partnership with a common purpose (Wilson & Blednick, 2011).

By this way, students in a co-teaching classroom have diverse learning styles and needs and have their own unique entry points of learning (Wilson & Blednick, 2011). Accordingly, teachers can arrange instruction by using flexible grouping in many situations (Perez, 2012).

o   Strategies for Flexible Grouping

In order to make different flexible groups, it is good to consider how groups will be organized. They can be arranged according to different factors presented in *Annex 16.*

o   Knowing what needs to be taught

Curriculum is what needs to be taught or covered in a particular grade or class during the academic year (Wilson & Blednick, 2011). For this reason, apart from having a good classroom environment and focusing on students, the curriculum must be discussed for co-taught teams. Otherwise, just placing two teachers in a room together, delivering instruction in a general education setting to students with some students with disabilities without curricular goals to meet their learning, behavioral, and social goals, will ensure that the co-teaching relationship does not work for all students (Dieker, 2016).

When the co-teachers agree on what needs to be taught and to what degree, they then can devote attention to how students learn. If the curriculum is undefined, there can be a

tendency to cover too much while students actually will learn too little (Wilson & Blednick, 2011).

o   Useful teaching strategies

In addition, co-teachers can use some strategies to help students learn the big ideas (Wilson & Blednick, 2011). Big ideas emphasize those elements of a curriculum that are essential for understanding both the overarching ideas and the specifics within topics.

One useful teaching strategy to do so is the Basic Concept Format and the Expanded Concept Format (Wilson, 2007).

Steps to creating a basic Concept Format (BCF) are:

1. Divide a square into four segments with a circle in the centre.
2. Insert the concept into the centre circle.
3. Discuss as a group the basic elements of the concept. The four leaders are the big ideas that are needed to deeply understand the concept.

The Expanded Concept Format (ECF) further delineates the information from the BCF by taking one or all of the defining elements and creating additional frameworks.

Countries and Explorers	Colonies
Belgian: Henry Stanley	Belgium: West Africa, Belgian Congo
Portugal: Bartolomeu Dias	Britain: West Africa
Britain: Richard Burton	France: Tunisia, West Africa
France: Pierre de Brazza	

European Colonization and Exploration of Africa 1800s

Reasons	Effects
Missionary work	Depletion of natural resources
Convert to Christianity	Mistreatment of indigenous inhabitants
End slavery	Underdeveloped the continent
Gain power	
European nationalism	
Need for natural resources for industrialization	

Where	When
Virginia	1607

Colony: Jamestown

Who	Significance
Country: England	First English colony in Virginia to succeed
John Smith: Leader	Established profitable tobacco farms
John Rolfe: planted tobacco seeds; married Pocahontas (Algonquin)	Indentured servants (worked on farms as payback for their trip to New World)
Native Americans: Algonquin (Chief Powhatan)	Africans first arrived in the New World as indentured servants, later they arrived as slaves

Image 13 and 14: Wilson, G., & Blednick, J. (2011). *Teaching in tandem*. Alexandria, Va.: ASCD.

These formats are useful in a variety of content areas and especially with the co-teaching approach. Using a parallel model, each co-teacher can develop an expanded concept format and then bring the class together to compare the results. The format can be used whenever important concepts or vocabulary need to be learned. Using a station

model, the co-teachers can set up an independent station where students work individually, in pairs, or in a group to investigate the concepts or vocabulary words.

Assessment

Nonetheless, co-teachers must collaborate on assessment procedures. Assessment is the gathering of information to make decisions. Co-teachers must know that assessment includes measurement, evaluation and grading.

By this way, grading should be discussed by both teachers, in order to ensure common expectations for individual students and avoid conflict when it comes time to assign grades.

Ideally, grading of assignments should be divided between the two teachers, who may choose to grade the same assignment at first to compare and discuss their judgments (Hanover Research, 2012). This means that they need to discuss what they think are the best ways to determine student improvement and learning in the classroom (Murawski, 2010).

By this way, as teachers prepare to co-teach, they should discuss multiple forms of data used to evaluate student understanding and performance (i.e., daily grades, project grades, checklists, rubrics, work samples, observation/anecdotal records, benchmark tests, etc.) and how frequently they will collect progress monitoring data (Texas Education Agency, s.d.). Therefore, co-teachers must assure that grades accurately reflect student achievement.

All in all, they need to determine what areas need to be measured, how they should be measured, by whom, when, and for what purpose. They need to discuss how they want to evaluate students and their progress, and finally they need to determine how they will work together to determine the grades for the students in their class (Murawski, 2010).

However, co-teachers must take into consideration that:

- There is no one right way to assess students. They are different learners, and they will require different modes of assessment.
- It is not "You grade your kids" and "I'll grade mine." They are both teachers' kids, and they will assess them together.

Student grades should always be determined using curriculum based measurements. When determining how to monitor progress and report grades, co-teachers must have a clear understanding of what is being evaluated, the unique needs of all students, and how evaluation data should be collected.

For this reason, one of the most controversial aspects of inclusive classrooms is grading. Teachers have to consider before grading the following aspects (Wilson & Blednick, 2011):

- What all students are expected to learn both the basics and higher-order thinking.
- What most students will learn.
- What some students will learn.

All in all, for instruction and assessment to work, communication is key. As both co-teachers begin to share the same group of students, it is necessary to be open to feedback from one another (Murawski, 2010).

i) *Co-assessing their effectiveness*

As Bigge, Stump, Spagna, and Silberman (1999) attest, "assessment is much more than administering tests and achieving scores. It is gathering information to make decisions".

By this way, on-going communication and program evaluation are critical keys to co-teaching relationships. Throughout the year during planning, co-teachers should talk about the "health" of the co-teach relationship, celebrate successes, and identify potential barriers and areas for improvement. For this reason, partners must establish trust (Villa, Thousand & Nevin, 2013).

In order to know if co-teaching is beneficial or not, it is important to evaluate the following things (Texas Education Agency, n.d.):
- Instructional settings (looking at whether students are in less restrictive settings than before co-teaching was implemented: their behaviour, attendance and perceptions);
- Results of formative assessments, such as benchmark tests (not just analysing traditional grades, IEP progress reports, and state assessment results);
- Parent responses and perceptions to co-teaching;
- Community (professional and other staff members) responses to co-teaching.

After co-teaching implementation, it is important that co-teachers reflect on what has been done and check if the goals have been achieved (Villa, Thousand & Nevin, 2013).

In addition, co-teachers need to give and receive feedback from one to the other. According to this, they should tell to their co-teaching partners the way they would prefer to receive feedback (Cook & Friend, 1995).

Finally, co-teachers must listen to the data and the students to know if they are successful or not (Dieker, 2016). They can give students a survey to see what they liked and did not like about co-teaching. That way they can use their responses to reflect together and to improve their collaborative efforts (Murawski, 2010).

To sum up, to build a stronger relationship between co-teachers, the attributes presented in *Annex 17* need to be considered.

3. PRACTICAL PART

3.1. CONTEXTUALIZATION

In the following part I present the experience of implementing the co-teaching methodology in the Open Future International School of Krakow.

As I have been doing my internship in the 2nd blue grade class of the Open Future International School of Krakow (Poland) with the general education teacher Anna Bogun, I proposed her to implement this methodology in the classroom. She was excited to discover, willing to participate and experience a method new for her that had so many benefits both for students and teachers. By this way, she became my co-teacher during the experience and helped me to understand better this methodology.

3.1.1. School context

Open Future International School is a private school where families and children that attend belong to a high socioeconomic level. Mostly all the students are from Poland, so their mother tongue is Polish. However, there are some students that although they were born in Poland, their families are from other countries, what makes that there is a great cultural diversity.

On the other hand, there are some pupils that were not born in Poland, and they come from different countries such as Ukraine, USA, UK, India, Finland, Libya etc.

What is remarkable about Open Future International School is that it follows the International Baccalaureate Organization programme (IB, 2016), which is a well-known and solid educational system around the world that has emphasis on student personal development. This methodology aims to do more than other curricula by developing inquiring, knowledgeable and caring young people who are motivated to succeed.

3.1.2. Classroom profile

As I have said, the lessons were designed for the 2nd blue grade students (7 and 8 years –old students) of the Open Future International School of Krakow (Poland).

In this classroom, there are 18 children, 10 boys and 8 girls. Most of them were born in Poland, but there are also students from Romania, Armenia, Ukraine, Livia, USA and India.

The main language of communication between the students is Polish, although some of them (the immigrant students) speak English between them and usually with the other students. By this way, Polish native speakers use English to communicate with them as well.

The teacher usually communicates with them in English (80% of the lessons) although sometimes she does it in Polish (20%). Children usually speak to her in English, although sometimes they forget and do it in Polish, since they know that she can understand them.

The learning level of the students is generally high, as mostly all the parents are interested and care about their children's education. Nonetheless, this level is not the same for all of them. There are 6 fast finishers students that usually need extended activities so as to avoid their boredom. In addition, there are 3 slow learners that need some adaptations, supports or more attention from the teacher so as to make the activities and follow the rhythm of the class.

Three students reveal difficulties that are common for dyslexia. They take part in individual compensational classes at school (each Friday morning) where they practice writing, reading, Polish grammar and orthography. Two of them have also classes with a speech therapist (one time per week) and school psychologist (extra compensational classes).

On the other hand, the English level of the students is notably high for their age and considering that they are not native speakers. Children have a wide range of vocabulary and know about basic grammar rules. Although they comprehend almost everything and are able to express themselves orally in English, they still have problems with writing because they just write as they hear (the sounds in English are not the same as the letters individually).

However, it must be said that English speaking students take part in additional Polish classes (one time per week).

On the whole, it is a classroom where kids are engaged on learning. However, in general they are really active kids that need to move around and to talk to their friends. For this reason, the teacher usually has to struggle in order to catch their attention or make them be in silence.

3.2.   BECOMING A CO-TEACHING TEAM

In order to implement this methodology, I considered that the best way to start with was explaining to my future co-teacher Mrs. Anna Bogun what this methodology was about. We spent time together and I presented her what this approach meant, why it would be positive to implement it in the classroom and which the best way to do it was.

Afterwards, I told them that becoming a co-teaching team required time and we had to follow different steps so as to do it correctly.

Below, I describe what we discussed and the conclusions we came to according to the different states that co-teachers must consider.

3.2.1.   Getting to know each other

Mrs. Anna Bogun and I were already working together for more than two months when we decided to meet and start to become a co-teaching team. As I was doing my Internship in her class, I worked as an assistant next to her and I had the opportunity to lead some classes as well.

For this reason, when in this point we had to know each other personally and professionally, we realized that we already knew a lot one from the other.

Personally, both are open-minded, friendly, altruistic and respectful. I consider that being like this helped us to have a very good relationship. We liked to be together, and consequently, to co-teach one next to the other.

Professionally, both of us are charismatic, expressive and dominative in the classroom. We like kids to be engaged in the activities, motivated, to have their attention and to see that they are listening and paying attention to us. In addition, we agree that we have to provide opportunities to pupils to learn. We have to make them think, experiment and reflect on their learning process. Providing innovative and exciting activities is a good way to do that, because we like to surprise kids with new tasks and aims.

What is more, we are both hard-working, we like doing things in the best way, and to be flexible in order to change things and make adaptations when it is needed.

All in all, we both like the job of teaching and we want the best for our students. As we have many things in common, we realized that it became easy to work together.

3.2.2. Planning quality time together

Once we decided to implement co-teaching in the classroom, we decided to set up time to meet, sit down and co-plan our lessons and actions.

Due to lack of time, we decided just to implement two lessons using co-teaching. As it was the first time that we were using this methodology, I consider that we needed more time to co-plan. We had a meeting before each of the lessons, to decide what we wanted to do, which strategy would be the best to use and how we would distribute our responsibilities to help all the students in the class.

After the lessons, we met to share our impressions, sensations and things that worked or that we would change for the next time.

As the Co-Teaching Pyramid (see *Image 12*) provides a guide for teachers when they co-plan, we decided to use it to describe and organize our co-planned lessons.

Co-Teaching Pyramid

<u>Layer 1</u>

- o   Curriculum Unit Focus:

What is important and essential for students to learn?
The concept of adaptation, the circumstances that lead to adaptation and how plants and animals adapt or respond to environmental conditions

- o   Challenges:

What is difficult about the concepts you are trying to teach?
Lesson 1: diagrams and animals' classification

Lesson 2: plants' adaptations to the environment

Do students need prior knowledge?
Yes, students need to know about the different environments or habitats that exist, so that animals and plants adapt to them (they were learning about this environments in the previous lessons).

Are there many facts that need to be learned?

Lesson 1: diagrams, animals' classification (name of the group, characteristics and examples of animals).

Lesson 2: how cactus, Aloe Vera and water plants adapt to their environments.

Do students have to relate to many difficult topics?
No, they don't.

<u>Layer 2</u>

o Lesson Aims and Tasks:

What will be taught?

Lesson 1:

- Understand how animals are classified according to their characteristics (mammals, reptiles, amphibians, fish, birds and *insects).*
- Be able to give examples and classify animals into the different groups.
- Understand the concept of animals' adaptation to the environment.

Lesson 2:

- Be able to describe the main important parts of plants.
- Learn about cactus, Aloe Vera and water plants.
- Understand the concept of plants' adaptation to the environment.

o Challenges:

Consider the complexity of the tasks
The most complicated tasks (such as the one children will have to write down the main characteristics of the animals and the plants studied) will be supported with some materials (written information) so children will not struggle when writing in English.

Reading, writing, attention levels
Three students reveal difficulties that are common for dyslexia. They confuse the order of letters in words; they have trouble with following a sequence of directions and with remembering facts and numbers. In addition, a student has short concentration span.

Level of support needed
Teaching and learning process is individualized in the classroom. All pupils that reveal learning difficulties get tasks that are appropriate for them. We aim that tasks and engagements that are given to our pupils are placed in their "Zone of Proximal Development".

Time frame

As these lessons belong to the interdisciplinary project followed in the class, they will take around 2-3 hours each of them, with small breaks in the middle.

Layer 3

o Essential element:

Big ideas

Students will learn new vocabulary (animals, parts of plants, and other new words). In addition, they will understand better the concept of adaptation of animals and plants through different examples.

Mediated Scaffolding

Working in groups will allow them to help one another. In addition, as we will be two teachers in the classroom, we will provide them more assistance in their work.

Judicious review

At the beginning of each lesson there will be a review of the contents learnt in the previous class, so students will connect and relate the new knowledge with their previous one.

o Strategy: group work, manipulative activities, visual aids, realia and independent work

Layer 4

o Co-Teaching Model:

Lesson 1: Team Teaching

Pupils will be working in groups of 3 in many of the activities, so teachers will have a common responsibility in the class. They will be sharing the classroom and the leading of the lesson, so their roles will be changing in the different situations to provide the best supports to each of the students.

Lesson 2: Station Teaching

As pupils will learn about three different plants (cactus, Aloe-Vera and water plant), the co-teaching strategy that will be used is station teaching. In one station, pupils will learn about cactus with Teacher 1, in another about water plant with Teacher 2 and in the last station pupils will work independently with the Aloe-Vera plant.

Lesson plans

Methodology and type of activities

Apart from the co-teaching methodology, during this unit, it will be used the transdisciplinary research project method, according to IB (International Baccalaureate) methodology. This methodology is used in the school and it aims to develop inquiring, knowledgeable and caring young people through transdisciplinary research projects method by six themes:

- *Who we are*
- *Where we are in place and time*
- *How we express ourselves*
- *How the world works*
- *How we organize ourselves*
- **Sharing the planet**

Both co-teaching lessons belong to the 6th Unit of Inquiry "*Sharing the planet: over time, living things need to adapt in order to survive*".

This Unit of Inquiry takes around 4 to 6 weeks, but the planning below is focused on the two co-taught lessons.

All activities are based on the manipulation of objects and learning facts and concepts of the environment, linking them with everyday life situations and previous knowledges acquired. Thus, the sessions will foster a more meaningful and useful learning so they can cope with different real life situations.

Furthermore, the lessons will be done and taught in English, since it is an International School where an 80% of the lessons are taught in English.

As the Unit follows the IB methodology, it encourages teamwork in various activities for students to learn to work collaboratively, to respect themselves and help each other. Nonetheless, all the activities planned are adapted to the fast finishers and slow learners students as well as to their maturity level. The activities proposed try to be dynamic so as to answer to their needs and promote their learning.

All in all, during the lessons, the main skills that IB methodology defends (become inquirer, knowledgeable, thinker, communicator, principled, open-minded, caring, risk-taker, balanced and reflective) are going to be developed.

<u>LESSON 1: Animals adaptation and classification</u>

o Date

17th of May, 2016.

o Subject area

Interdisciplinary project (Science, Maths, Arts & Crafts and Language)

o Grade level

2nd grade (7-8 years-old students)

o Lesson's aim or essential question

- Understand how animals are classified according to their characteristics (mammals, reptiles, amphibians, fish, birds and *insects).*
- Be able to give examples and classify animals into the different groups.
- Understand the concept of animals' adaptation to the environment.

o Sequence of student tasks or lesson activities

Activity 1: Reminding last topic (15 min)

During this activity, pupils will remember about what they had been learning during the last lesson. In order to do it, children will be sitting in the carpet in a circle, and the activity will be carried as a big group.

There will be some mixed-up inscriptions *(Annex 18)* in a bag with the main characteristics of the different ecosystems or habitats (tundra, desert, rainforest, Polar Regions, grassland and savanna). Children will be asked to take one of these inscriptions, read them aloud and say in which of the different habitats they think it belongs to.

All the solutions will be put in the middle of the circle, so all the pupils will be able to read them again if they want to.

Activity 2: Animals' pictures classification (5 min)

In order to do this activity, children will be asked to be in groups of three. In order to do the groups, each kid will take a number from a plastic box and will be grouped with those who will have the same number. Then, they will seat to their desks with their groups.

Activity 2.1: Desert or rainforest (10 min)

Teachers will give the students a set of pictures of different animals *(Annex 19).* First of all, as they had been talking about the different ecosystems where animals can live, teachers will ask them to classify those animals in two groups, according if they live in the desert or in the rainforest. After it, they will share the results on the blackboard. Each group will have to say in which ecosystem they put some of the animals. By this way, they will revise the vocabulary about animals and will learn new words as well.

Break time (6 min)

In the school, it is common to have short breaks between different activities, so children can drink some water, go to the toilet, talk to their friends and move around for some minutes. This helps them to give their brain a break and get focused on the task when they come back again.

Activity 2.2: Diagrams (20 min)

Teachers will tell the students that it will be their turn to classify the animals given in different groups, according to their characteristics. In order to do this, teachers will tell them that they are going to use diagrams. They will provide an example of it in the blackboard, so children will understand how to do it.

After that, teachers will ask the students to think about at least three different ideas to classify the animals (size, colour, reproduction, respiratory system, skin…).

Once they will have finished with the diagrams, the teacher will ask each of the groups to come in front of the class and show their results to the others.

Activity 3: Video about animals' classification (30 min)

In order to introduce the video, teachers will tell the students that people for ages were thinking about which was the best way to classify the animals. They will present them the different names of groups of animals but they will not tell the students anything about each of the groups.

Then, teachers will play a video about animals. They will give the responsibility to each of the groups to focus on one group of animals (mammals, amphibians, reptiles, fish, birds or insects) and to write down in a paper some information about them.

Teachers will play the video twice.

When taking notes, children will have to answer the following states:

> *What are the main characteristics of this group of animals?*

> *Give some examples of animals that belong to this group.*

After this, they will share the results in the blackboard of the different groups of animals, making some draws on it to make it more fun and interesting.

Break time (6 min)

Activity 4: Animal types charts (30 min)

In this activity, teachers will give an empty chart for each of the students *(Annex 20).* In addition, they will give an envelope with some sentences written inside it *(Annex 21)* for each of the groups.

Teachers will ask the groups to classify these sentences according to the characteristics of the different groups of animals.

Once they will have done it, teachers will ask the students to write it down on their charts, meanwhile one of them will be writing the answers on the blackboard.

Activity 5: Examples of animals (10 min)

Finally, teachers will give the students a worksheet with pictures of all the animals that they had been classifying during the lesson *(Annex 22).* In this point, according to the characteristics of the different groups of animals learnt, they will have to circle the animals with a different colour to know to which of the groups each animals belongs.

Once they will finish, teachers will collect their answers and works.

Activity 6: Closing activity (10 min)

After these activities, teachers will ask them to come back to the carpet. They will ask the pupils what they have learnt during the lesson. They will revise the main important points about the lesson, asking random kids to participate and know if they have learnt or not.

Finally, they will play some relaxing music of animals to close the session and make children feel relaxed.

o   Materials designed to meet student needs

The materials that will be used during this lesson are: mixed-up inscriptions, names of ecosystems, numbers to make the groups inside a bag, images of animals for each group, colour papers to make the diagrams, computer and projector to play the video, blackboard, worksheets with charts, envelops with mixed sentences about animals' characteristics and worksheets with animals' pictures.

o   Adaptations and strategies to be used in delivering the lesson

In order to adapt this session to the different needs of the students, many of the activities will be done in groups. By this way, children will help each other inside the group.

In addition, visual aids will be provided in many activities to help children understand new words and make them feel more engaged in the activities. For the fast finishers students, in some activities the teacher will ask them for extra information or to collect information about other types of animals as well.

o   Selections of co-teaching models for each task

During this session it will be used the team co-teaching strategy. Each of the teachers will have different responsibilities in each of the activities and tasks, so they will be sharing the responsibility of leading instruction among the lesson. In the following point, it is described how teachers shared their responsibilities in each of the activities.

o   Assessment

The formative assessment will be carried out when revising the contents about ecosystems that children learnt during the previous lessons.

In addition, when doing the diagrams about animals' classification, teachers will use this information as initial assessment and will know how to adapt the following task in the best way.

Finally, the worksheets and work done during the lesson will be part as formative assessment, as it will help teachers to know where students are in their learning process.

o Co-teacher reflection

After the lesson, both teachers realized that while reminding the last topic, children were a little bit confused about each of the characteristics of the different ecosystems.

In addition, when they were taking notes in English about the video, it would have been better to pre-teach some vocabulary words that were presented in the video, so it would have been easier for them to take notes.

Finally, the last feeling is that the time went so fast and it took longer than it was planned. For this reason, some changes had to be done.

LESSON 2: Plants adaptations

o Date

18th of May, 2016.

o Subject area

Interdisciplinary project (Science, Maths, Arts & Crafts and Language)

o Grade level

2nd grade (7-8 years-old students)

o Lesson's aim or essential question
- Be able to describe the main important parts of plants.
- Learn about cactus, Aloe Vera and water plants.
- Understand the concept of plants' adaptation to the environment.

o Sequence of student tasks or lesson activities

Activity 1: Reminding last topic (15 min)

During this activity, pupils will remember about what they had been learning during the last lesson. In order to do it, children will be sitting in the carpet in a circle, and the activity will be carried as a big group.

Teachers will put the image in the projector of the worksheet they did at the end of the last lesson. They will ask random students for an animal. The student will have to point the animal, say in which group of animals it belongs to and the reason why it does. This will help them to remember the main characteristics of each of the groups of animals.

Activity 2: Introduction to stations (10 min)

Teachers will introduce the students that not only animals need to adapt to the environment. Plants need to do it as well.

They will explain to the pupils that during the following lessons, they will be working in groups in three different stations. In one station there will be one teacher, in another station another one and the last will work as an independent station (without any teacher on it).

First of all, teachers will show the students in the projector how the worksheet *(Annex 23)* that they will have to complete in each of the stations will look like and what they will have to do (it will be very useful for the students and even more for the ones who will start in the independent station).

Then, teachers will role-play how students will work in each of the stations (one will be a teacher and the other one a student). Thus, they will present the materials of each of the stations to the pupils, as well as the instructions that they will have to follow in the independent station.

Finally, students and teachers will decide and describe which the rules of the stations will be (respect the material for other groups, not to speak aloud, not to move around, change the station when time will be over…). By this way, they will come to consensus together.

Finally, the groups will be done by the teacher. By this way, the group that will be formed with some students who are fast learners will be placed during the first round in the independent station. Groups will be of 5-6 people. Each group will wear a colourful bracelet provided by the teachers, so it will be easier for them as well to know which the groups are.

Activity 3: Working on the stations (25 min each)

As said before, there will be 3 different stations were all the kids will go through. In each of the stations there will be the plant that will be studied, some information about it *(Annex 24, 25 & 26)* and some tools to observe and experience how the plant is (magnifying glass, water and plastic knives).

In the independent station, there will also be a paper with the different steps that children have to follow in order to do the activity *(Annex 27).* It will help them to guide their work.

In addition, it will be an additional station in the carpet where children will be able to go once they will have finished their task in the station. In this additional station, they will find some books about other plants and they will have additional worksheets to complete too.

- Station 1: cactus station
- Station 2: water plant station
- Station 3: Aloe Vera station
- Additional station: plants information

Between each station there will be a break time of 5 minutes, when students will have time to finish their work, pack their things and move to the next station.

Activity 4: Closing activity (10 min)

After these activities, teachers will ask them to come back to the carpet. They will ask the pupils what they have learnt during the lesson. They will revise the main important things about the lesson, asking random kids to participate and know if they have learnt or not.

In addition, as they will work using a new methodology for them, teachers will ask the pupils how they felt during the lesson and particularly how they felt in the independent station.

o Materials designed to meet student needs

The materials that will be used during this lesson are: computer, projector, worksheets about plants, information' worksheets in each of the stations, real plants, magnifying glasses, plastic knives, some water and books about plants.

o Adaptations and strategies to be used in delivering the lesson

In order to adapt the lesson to the different levels of learning, the groups will be heterogeneous, so children will help them each other. The information worksheets about plants will be structured with questions, so it will be easier for the students to find the information needed. In addition, having the real plants will help the students to see and understand all the information that they will learn.

In addition, the instructions that they will have in the independent station will be an adaptation for those students who will feel stressed and lost without having the teacher next to them telling what to do. These instructions will be written with some drawings in one side, so they will understand them better.

Finally, the additional station will be an adaptation for those students who need extra activities so as not to feel bored.

o Selections of co-teaching models for each task

In this lesson, it will be used the station teaching strategy. In one station, pupils will learn about cactus with Teacher 1, in another about water plant with Teacher 2 and in the last station pupils will work independently with the Aloe-Vera plant.

o Assessment

The formative assessment will be carried out when revising the contents about animals' adaptations that children learnt during the previous lessons.

In addition, the worksheets and work done during the stations will be part as formative assessment as well, as it will help teachers to know where students in their learning process are situated.

o Co-teacher reflection

After the lesson, both teachers realized that it was very interesting for them and for the students to work in stations. Children struggled a bit working in the independent station at the beginning, but it became easier for them when they already knew what to do because they had been previously working in the other stations with the teacher's help.

Pupils were so engaged that they took the time between stations to observe, experiment with the plant or to finish completing their worksheet.

3.2.3. Achieving parity between co-teachers

In order to achieve parity between us, apart from planning together and distributing the responsibilities such as preparing the materials, we decided to distribute the classroom leadership as well. By this way, we get to know what we had to do each of us during co-taught lessons.

In the following tables I present which the roles and responsibilities of each of the teachers were in each of the activities of both lessons implemented.

Teacher number 1 represents Mrs. Anna Bogun and Teacher number 2 me.

LESSON 1

Activities	When Teacher 1 was…	Teacher 2 was…
Activity 1: Reminding last topic	Leading instruction	Assisting specific students' behaviours and interacting with the children asking them questions
Activity 2: Animals' pictures classification	Organizing the groups to sit down on their desks	Distributing numbers to the students to make groups
Activity 2.1: Desert or rainforest	Distributing animals' images	Explaining the task
	Assisting the groups	Assisting the groups
	Writing down the names of animals in the blackboard	Leading instruction (sharing answers)
Activity 2.2: Diagrams	Drawing an example of diagram in the blackboard	Leading instruction (explaining what diagrams are)
	Distributing colourful papers to make the diagrams	Solving doubts

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	Assisting the groups	Assisting the groups
	Writing down the classification ideas of kids in the blackboard	Leading instruction (assisting children while presenting their results)
Activity 3: Video about animals' classification	Leading instruction (presenting the different groups of animals)	Assisting students' behaviour
	Leading instruction (asking each group to be a specific group and explaining the task)	Distributing the material (paper to collect information and name of the animals' group) and writing down the questions on the blackboard
	Assisting students' concentration	Playing the video (computer)
	Leading instruction (asking the students about their notes)	Drawing representative images in the blackboard that could help them to understand the content
Activity 4: Animal types charts	Assisting students' behaviour and distributing the material (charts and envelopes)	Leading instruction (explaining the students what the task is about)
	Assisting the groups	Assisting the groups
	Writing the sentences in the blackboard	Leading instruction (asking the kids for their results)
Activity 5: Examples of animals	Assisting students' behaviour and distributing the material (worksheets)	Leading instruction (explaining the students what the task is about)
	Assisting the groups	Assisting the groups and collecting the worksheets
Activity 6: Closing activity	Leading instruction (revision)	Assisting specific students' behaviours
	Asking them to listen and relax	Playing some relaxing music about animals

Table 2: Own source

LESSON 2

Activities	When Teacher 1 was…	Teacher 2 was…
Activity 1: Reminding last topic	Leading instruction (revising last lesson's worksheet)	Projecting the worksheet on the projector Assisting students' specific behaviours
Activity 2: Introduction to stations	Showing the worksheet on the projector	Leading instruction (explaining them how they are going to work and the worksheet)
	Role-playing as a student in the station	Role-playing as a teacher in the station
	Assisting students' specific behaviours Asking questions to pupils	Leading instruction (showing the kids the stations and the materials)

	Writing the rules of the lesson down on the blackboard	Deciding the rules that should be respected with the pupils
	Telling the students the groups	Distributing the bracelets to the students and asking them to start in a specific station
Activity 3: Working on the stations	Leading cactus station	Leading water plant station
	Assisting independent station if needed	Assisting independent station if needed
Activity 4: Closing activity	Picking up the material of each of the stations	Leading instruction (asking the students what they have learnt and how they have felt)

Table 3: Own source

3.2.4. Sharing common agreed-on goals

Mrs. Anna and I wanted to have our aims clear during our co-teaching experience.

For this reason, as I have said before, we wanted students during both lessons to:

- Understand the concept of adaptation
- Know the circumstances that lead to adaptation
- Comprehend how plants and animals adapt or respond to environmental conditions

Concretely, as presented before, the goals that we wanted students to achieve in each of the lessons are the following.

Lesson 1:

- Understand how animals are classified according to their characteristics (mammals, reptiles, amphibians, fish, birds and *insects).*
- Be able to give examples and classify animals into the different groups.
- Understand the concept of animals' adaptation to the environment.

Lesson 2:

- Be able to describe the main important parts of plants.
- Learn about cactus, Aloe Vera and water plants.
- Understand the concept of plants' adaptation to the environment.

3.2.5. Informing others about co-teaching

In order to co-teach, both of us decided to explain this methodology to the headmaster and coordinator of the school. They allowed us to use this approach in the classroom, and they gave us all the support that we needed.

In addition, as we wanted to watch our experience, we also considered to inform the parents about this methodology and ask for their permission to record it.

Finally, before starting the lessons we informed the kids that during both lessons they were going to have two teachers at the same time. Mrs. Anna and I would have the same responsibilities and roles in the classroom, so they could ask for any of both helps.

3.2.6. Organizing the physical environment

As I have said before, as I had been assisting two months before starting to co-teach in 2nd blue class, I already had my own space to place my materials and things.

In addition, Mrs. Anna and I knew where the materials of the classroom were, as we were working together for a long time.

However, it was not until this experience that we decided to talk about how we would organize the space in each of the activities. I realised that it was an important issue to discuss depending on the co-teaching approach that we wanted to use.

We also discussed how the groups would be, if we would let them choose their own seats or we would tell them were to sit. We considered the best way to arrange students' desks during the station teaching lesson, so it would be easier for students to move from one station to another.

We also decided either to carry an activity in the carpet or on their desks, depending on our beliefs and expectations.

3.2.7. Establishing norms and rules

As we were going to share a teaching experience, we thought that we should establish common norms and rules during both lessons, so as to avoid confusion among kids.

During station co-taught experience, we decided to stablish rules with the students. These rules concerned the level of noise, respect of the materials, space and timing. We asked the students to help us write down the rules.

We both agreed that children should raise their hand when they wanted to say something. The level of noise should be low when teacher was explaining the activity or providing any information to the students, and could be higher when students would be working in groups (they should talk and discuss between them).

In addition, they should ask for permission to any of both teachers if they needed to go to the toilet. The permission would be given to them, but not if they would ask for it just before or after the break time.

In addition, we considered that pupils should take also the break time to drink water or eat their snacks.

We decided to tell the students to ask to any other student if they needed any material and if they did not receive any, provide it for them.

According to their tasks, we both agreed that children must write their names and the date in each of the worksheets done, and place them in their working portfolio when they finished.

Apart from this, as we were doing during the previous two months, children behaviours would be priced or punished with the classroom Clip-chart.

The Clip-chart is made with seven posters. It shows how students have worked throughout the day. There are 18 clothes pegs with each of pupils' names, in order to move them through the posters for pointing out how much they have worked. It is used both to motivate students and to punish them:

1. Fantastic
2. Great job
3. Good day
4. Ready to learn
5. Think about it
6. Teacher's choice
7. Parents contact

Image 15: Own source

Finally, we decided to continue using the beans jar to price their behaviour and work during the different tasks. We would give them some beans as a positive reinforcement for the classroom attitude and participation.

3.2.8. Instructing and assessing the students

In order to plan our instruction, we started talking about the different needs that the students of our classroom had. We designed the different activities thinking about our HALO (high achievers, average achievers, low achievers, and others).

As I described in the lesson plans, I included the different adaptations that we made to provide support to all the students in the classroom.

Apart from this, when making groups, we decided to group them randomly in the team teaching lesson and thinking on their possibilities and needs in the station teaching lesson.

By this way, we used useful teaching strategies (IB methodology) and different types of activities (group work, manipulative activities, visual aids, realia and independent work).

On the other hand, as we were just co-teaching two lessons, we focused on the pre-assessment and formative assessment of both lessons. When we introduced new concepts, we pre-assessed what the pupils knew about it (animals' classification). This helped us to adapt the following tasks to the level of the students.

In addition, at the beginning of each lesson, when we were revising the contents taught during the last lesson, we were collecting formative assessment. By this way, this assessment showed us where children were on their learning process. Finally, the worksheets and works completed during both lessons helped us to understand and complete the formative assessment as well.

3.2.9. Co-assessing our effectiveness

After implementing co-teaching, Mrs. Anna and I met to reflect on the experience.

First of all, we both agreed that we felt more comfortable doing station teaching rather than team teaching.

During the team teaching experience, we thought that it was difficult to know which of us should intervene on unexpected situations. We had to remember when was our time to lead the instruction in each of the activities, so it was a little bit more stressful for both of us. However, we realized that children were more engaged than in solo-taught lessons. They had two different aids and supports all the time. They received the information through two different points of view. They had their questions and requests answered faster when needed.

In the station teaching, each of us was in one station delivering instruction to the students. We repeated the same experience with each of the groups of students, so we

were able to correct our mistakes and repeat or improve our triumphs. Nonetheless, we both were worried about the independent station. We could not control what the kids were doing, and if they were working and learning or not. However, after this experience, when we collected their works, we realized that it was a good situation for the pupils because they became more independent and autonomous.

In addition, during both experiences we saw that we had trouble on managing our time. In station teaching experience, we could not prolong the time, because the groups had to switch them up. For this reason, we consider that station strategy is positive for people who have problems on managing their time (both teachers and students).

All in all, we had a positive feeling of co-teaching.

I would like to highlight a statement that my co-teacher Mrs Anna told me at the end of our experience:

"Co-teaching is not only about assisting; it is about taking part in the life of a class and sharing the responsibilities to teach and to help children to grow".

Finally, we just regretted not having started to co-teach earlier. Teaching experience became much more fun and engaging when we shared it.

4. CONCLUSIONS

After this work I have realized that co-teaching is a very useful methodology that can be used in schools so as to benefit both teachers and students.

I have understood that co-teaching is to have two qualified teachers in the classroom so that the students can be taught from several different viewpoints. Teachers can present the same information from different learning styles. By this way, group instruction is easily implemented. Having two teachers opens more opportunities for students to receive more one-on-one instruction or assistance.

At the beginning I thought that co-teaching would benefit specially special education students, because they are the ones who usually need more support from the teacher. However, I realized that having two qualified teachers in the classroom also allows the average general education students to receive more interaction with the teacher who would normally be engaged in the learning process of the struggling learners. Thus, not only do the special education students benefit, but the average general education students benefit also.

Implementing this methodology in a Primary Education classroom allowed me to confirm or disprove the hypothesis that I had at the beginning of my work.

Initially I thought that this methodology required implication between both teachers. Since I was co-teaching with Mrs Anna Bogun, I realized that without her collaboration, interest and participation it would have been impossible to implement it. In addition, I confirmed that co-teaching needs time of preparation for teachers. I noticed that time to talk, plan, share and reflect about our co-teaching experiences was essential. It was impossible just to arrive at the classroom and put this methodology into practice.

On the other hand, I consider that my work has helped me to know and investigate an innovative methodology unknown for me until then. It has allowed me to work next to a professional, hard-working and amazing teacher, to reflect on our teaching experiences and above all to learn from her.

I have understood that this is a good methodology to help children to learn in a better way, that in fact it is what teachers we want to achieve.

However, I have also noticed that this methodology is only possible to implement when human resources are enough in a school and two teachers have time to meet and share a classroom.

For this reason, on the one hand I consider that this work is a good guide for teachers who are willing to co-teach, because it not only describes what this methodology is about, but also how it is the best way to implement it and it shows a real experience of this approach.

On the other hand, due to lack of time, the practical part is just based on two lessons of co-teaching. According to this, not all the co-teaching strategies have been implemented and it is difficult to conclude saying which of them the best to use is.

Doing this work I became more reflective, open-minded to implement innovative methodologies in the classroom, risk-taker while trying new things and it has made me lose the fear of being wrong.

As Villa, Thousand & Nevin (2004) noted, many teachers have recognized that they greatly prefer co-teaching to teaching alone. I have to admit that I felt really accompanied when teaching with Mrs. Anna, because we both found out the best solutions in the different situations we had to face in the classroom.

Finally, although I could not prove whether students improved their results or not (the experience was too short that it was not unreliable to draw key results out of two lessons) I realized that pupils preferred co-teaching than solo-teaching. Out of the reflection we had with the students at the end of the experience, they showed to be very motivated and happy when having two teachers in the class.

All in all, this thesis has marked a turning point in my training.

I will never forget all what I have learnt during these months about this methodology, that surprised me every day, but especially I will never forget the co-teaching experience that I had next to Mrs. Anna Bogun in the Open Future International School.

As a future investigation or research about this topic, I consider that it could be interesting to implement a longer experience of co-teaching (at least a Didactic Unit) and extract the academic results obtained for the students in order to compare them with their previous ones (with solo-teaching methodology). By this way, this methodology

would be implemented in more schools as it would show that it helps to improve the results of the students. As my hypothesis was at the beginning, I am convinced it helps to do so.

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6. ANNEXES

ANNEX 1

<u>Summary of the co-teaching definition</u>

<u>Co-teaching is</u>
Two or more co-equal, preferably, credentialed, faculty working together.
Conducted in the same classroom at the same time.
Conducted with heterogeneous groups.
When both teachers plan for instruction together. When the general education teacher (GET) is together with the special education teacher (SET), the GET is the content specialist while the SET is the expert on individualizing and delivery to various learning modalities.
When both teachers provide substantive instruction together. Having planned together, the SET can grade homework, teach content, facilitate activities, etc.
When both teachers assess and evaluate student progress. IEP goals are kept in mind, as are the curricular goals and standards for that grade level.
When teachers maximize the benefits of having two teachers in the room by having both teachers actively engaged with students. Examples of different co-teaching models include Team Teaching, Station Teaching, Parallel Teaching, Alternative Teaching, and One Teach, One Support (Friend & Cook, 2003).
When teachers reflect on the progress and process, offering one another feedback on teaching styles, content, activities, and other items pertinent to improving teaching situation.

<u>Table 3:</u> Murawski, W. W. (2002a). Demystifying co-teaching. *The CARS+ Newsletter*, 22(3), 17–19.

ANNEX 2

Summary of what co-teaching is not

Co-teaching is not
A teacher and an assistant, teacher's aide, or paraprofessional.
When a few students are pulled out of the classroom on a regular basis to work with the special educator. It is also not job sharing, where teachers teach different days.
Pulling a group of students with disabilities to the back of the general education class.
When one teacher plans all lessons meanwhile the other walks in to the room and says, *"what are we doing today and what would you like me to do?"*
When the teacher or helper who is not the general education teacher (GET) walks around the room all period or just sits and takes notes as the GET teaches the content.
When GET and SET teachers are together and the GET grades "his" kids and the SET grades "her kids" or when the GET grades all students and the SET surreptitiously changes the grades and calls it *"modifying after the fact"*.
When teachers take turns being "in charge" of the class so that the other teacher can get caught up in grading, photocopying, making phone calls, creating IEPs, etc., or when students remain in the large-group setting in lecture-format as teachers rotate who gets to "talk at them".
When teachers get frustrated with one another and tell the rest of the faculty in the teachers' lounge or when one teacher simply tells the other teacher what to do and how to do it.

Table 4: Murawski, W. W. (2002a). Demystifying co-teaching. *The CARS+ Newsletter*, 22(3), 17–19.
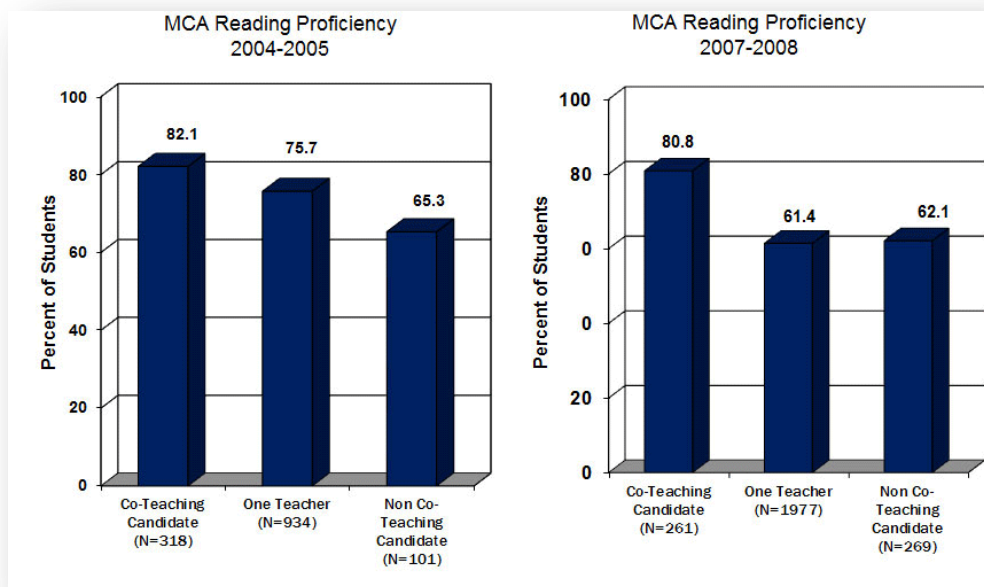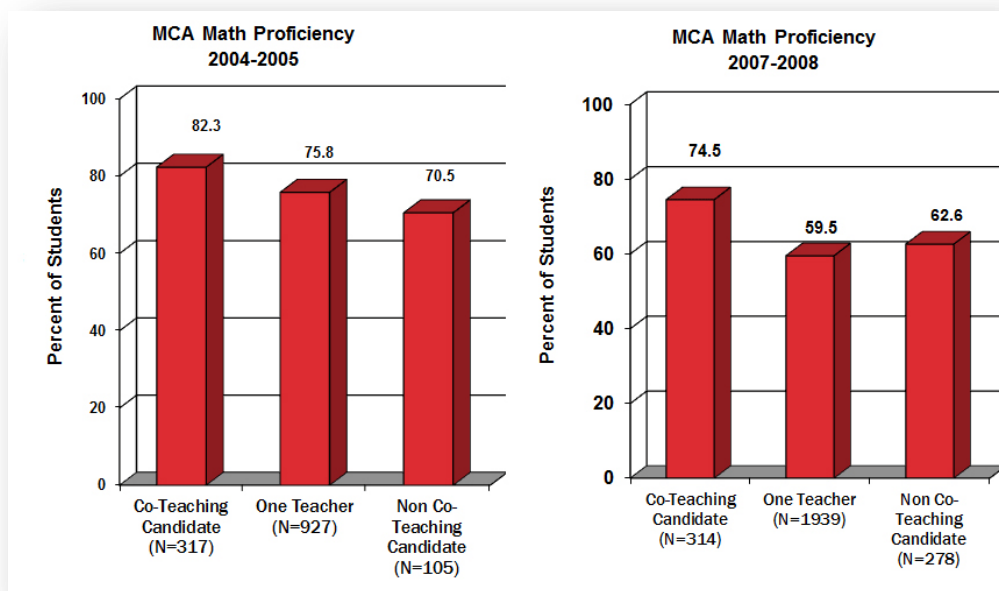
ANNEX 3

Research 2 results

ANNEX 4

Pros and Cons of One Teach, One Support Approach

Pros of This Approach	Cons of This Approach
Most similar to traditional teaching	Most similar to traditional teaching, which does not always work for many students.
Strong comfort level for teachers. The supporting teacher can walk around and still continue to observe the other teacher model good teaching practices (Liberty University, 2010).	So comfortable that teachers may not try to do new things and may resort to what has always been done – just taking turns doing it. Furthermore, having the supporting walking around during the lesson may be distracting to some students (Liberty University, 2010).
Least amount of time to co-plan (Wilson & Blednick, 2011).	Teachers may opt not to co-plan at all and may just divide the lesson, resulting in a lack of true collaboration.
Good for information that needs to be delivered by one voice.	Some teachers feel that when they are not "on stage", they can leave or do things other than work with kids.
Supporting co-teacher can help with class management. In addition, it's easier to keep students on task because of the proximity of the teacher (Liberty University, 2010) and the reminders received for the supporting teacher (Wilson & Blednick, 2011).	If co-teachers have not talked about classroom management, they may not use similar approaches, and this may be distracting during the lesson.
Can help increase instructional time as supporting co-teacher can take care of paperwork and non-instructional duties, such as taking roll, collecting homework, etc. In addition, students receive individual help in a timely manner (Liberty University, 2010; Wilson &	Too often the special educator is relegated to this role, especially if he is not comfortable with content, and effectively becomes an assistant. As a consequence, students might question his authority in the classroom, too (Friend, Reising & Cook, 1993). Through the eyes of the

Blednick, 2011).	students, one teacher might have more control than the other. Finally, students might begin to expect immediate one-on-one assistance in all the lessons (Liberty University, 2010).
Supporting co-teacher can ensure that students receive accommodated or modified materials as needed. Furthermore, it saves time when distributing materials (Liberty University, 2010).	If the special educator is always the one providing the accommodations, students begin to associate her with special education because students might relate to one person as the teacher and the other as a teacher's aide (Liberty University, 2010). This role needs to be shared to avoid stigmatization.
Teachers can "pass the chalk" to ensure that both teachers get face time and both can lead the part of the lesson with which they feel most comfortable. Students would receive a variety of instruction and would understand that both teachers are equal (Friend, Reising & Cook, 1993).	Co-teachers can overuse this approach so it ends up becoming "your turn to speak, my turn to speak", rather than truly collaborative endeavour designed to maximize the expertise of both educators.
The teacher in the support role can help identify which students are or are not "getting it" during the lesson and share that with the teacher in the lead role. By this way, as a process observer, the supporting teacher can observe behaviour not seen by the teacher directing the lesson (Liberty University, 2010). Then, she can resolve individually student confusion (Wilson & Blednick, 2011).	If teachers are not yet comfortable with one another, the co-teacher in the support role may not share that information or jump during the lesson, choosing instead to "pull" students or "reteach" later, in essence returning to a reactive, rather than proactive, method of addressing students' needs.

Table 5: Murawski, W. W. (2010). *Collaborative teaching in elementary schools*. Thousand Oaks, Calif.: Corwin.

ANNEX 5

Pros and Cons of Station Teaching

Pros of This Approach	Cons of This Approach
This approach enables a much smaller student-teacher ratio for more individualized instruction (Texas Education Agency, n.d.; Liberty University, 2010; Wilson & Blednick, 2011).	Teachers sometimes put students with similar abilities or disabilities together.
The smaller stations or centres often provide a safer environment for students to engage in discussion or to participate more actively. By this way, student response rate is increased (Wilson & Blednick, 2011).	The noise factor can be an issue with any regrouping approach. The more groups there will be, the louder it might be because of the high activity level of the stations (Friend, Reising & Cook, 1993; Liberty University, 2010).
The physical movement of students moving between stations provides a kinaesthetic element and brain brake that many children need.	Transitioning between stations can be chaotic and frightening for students who need structure. Co-teachers need to work with students on transitioning.
Stations help students focus on one topic for a more specific, shorter amount of time, which is very helpful for students with academic, behavioural, attentional or social needs. By this way, fewer discipline problems occur because students are engaged in active, hand-son learning (Liberty University, 2010).	When material is broken into "chunks", students are more likely to learn and retain it, but they may still have difficulty with generalizing and making the connections between them.
This approach allows teachers to focus on one particular topic area to plan. Each teacher can be primarily responsible for his/her own centre. Consequently, each teacher has a clear teaching responsibility	Despite the fact that teachers can take primary responsibility planning one or more stations, they still need to know what the other stations are doing to make connections between them. Moreover,

(Liberty University, 2010) and teacher parity is highlighted (Wilson & Blednick, 2011).	teachers have to plan their lessons well so the students will move from one station to another at scheduled times (Friend, Reising & Cook, 1993) so teaching ends at the same time. For this reason, in order to work effectively, this approach requires a lot of preplanning (Liberty University, 2010).
Materials can be easily reused by each group if there are not sufficient materials for the whole class. Furthermore, more material can be covered in a shorter amount of time (Liberty University, 2010).	Co-teachers need to plan in advance to make sure the materials are ready and can be disseminated quickly. They will need also a wider range of materials.
Planning and presenting one topic allows co-teachers to have content with which they are familiar and are able to improve as they reteach it multiple times.	Only focusing on one aspect of the lesson may allow teachers to disengage from the other aspects. They need to communicate with each other.
Stations also provide the opportunity for co-teachers to provide intensive instruction for students with special needs without "pulling out" to another classroom. Also with this approach it is possible to separate students who need to work away from each other (Liberty University, 2010). All in all, station teaching makes differentiated instruction possible (Wilson & Blednick, 2011).	Both teachers need to know dealing with mixed ability classes and modifying materials when necessary.

<u>Table 6:</u> Murawski, W. W. (2010). *Collaborative teaching in elementary schools*. Thousand Oaks, Calif.: Corwin.

ANNEX 6

Pros and Cons of Parallel Teaching

Pros of This Approach	Cons of This Approach
Both teachers are actively engaged in instruction with students. Furthermore, preplanning provides better teaching to the students (Liberty University, 2010). By this way, the parity between teachers is much easier (Wilson& Blednick, 2011).	Teachers may feel they can "do their own thing" with "their" group, instead of ensuring that students in both groups are getting consistent instruction.
Both teachers get "face time" with students. In addition, splitting the class allows teachers to separate disruptive students that do not work well together (Liberty University, 2010). As a consequence, it increases the possibility of more students responding and participating in class discussions (Wilson& Blednick, 2011).	Some teachers may not be as familiar with the content and thus may be uncomfortable with this approach.
This approach provides teachers with a smaller student-teacher ratio for more individualized instruction (Liberty University, 2010; Friend, Reising & Cook, 1993). Concretely, the student-to-teacher ratio immediately decreases by half (Wilson & Blednick, 2011).	Both space and noise can be a factor if groups are held in the same classroom and teachers and students are not careful. This means that there must be enough flexible space in the classroom to accommodate two groups and the noise level must be controlled (Liberty University, 2010; Friend, Reising & Cook, 1993).
Teachers may be encouraged to do more kinaesthetic, hands-on, or otherwise engaging lessons if there are fewer students to manage. According to Friend, Reising & Cook (1993), it is often used when students need to respond aloud or to interact with one	Some teachers may not be familiar with constructivist or kinaesthetic activities and would need to do additional planning or research to come up with these lessons.

another.	
Breaking into smaller groups enables teachers to "chunk" material and have students focus on one particular topic with one teacher.	Both teachers need to be familiar with the content to be taught and they need to co-plan who will do what, so the students will learn equally (Liberty University, 2010).
Groups can stay with one teacher or can later switch so that each teacher sees both groups.	Timing is essential so that one group does not finish before the other, thereby causing additional chaos. This means that the pace of the lesson must be the same so they finish at the same time (Liberty University, 2010).
Each teacher can select an area with which they are the most comfortable to teach in a group.	Teachers may both want the same topic or may find it difficult to determine what or how to divide the content.
Each teacher can plan for his/her own group which lessons they need for co-planning time. Using this method, each teacher has the comfort level of working separately to teach the same lesson (Liberty University, 2010).	Teachers may see this as an opportunity for them to avoid co-planning and just divide and stay on their own "island".
Teachers can put students in groups by learning styles, interests or readiness levels. By this way, it increases teachers' abilities to access student understanding (Wilson& Blednick, 2011).	Some teachers may think that having two groups is an excuse to group special education students, which is not the intent.

Table 7: Murawski, W. W. (2010). *Collaborative teaching in elementary schools*. Thousand Oaks, Calif.: Corwin.

ANNEX 7

<u>Pros and Cons of Alternative Teaching</u>

Pros of This Approach	**Cons of This Approach**
Working with small groups or with individual pupils, helps meet the personal needs of students. This provides a unique opportunity for teachers to deliver intensive and individualized instruction (reinforcement or enrichment) to students.	Groups must vary with purpose and composition or the students in the group will quickly become labelled (e.g., the "smart" group). If not, they could be stigmatized.
Both teachers can remain in the classroom so one teacher can informally observe the other modelling good teaching.	If one teacher is always being the one who provides extra support, the students might view the teacher working with the larger group as the teacher in control.
Pupils learn on their level without being pulled out from the classroom.	Noise level must be controlled if both teachers are working in the classroom. In addition, there must be an adequate space where the teacher can provide support without disturbing the other students or getting the small group distracted.

<u>Table 8:</u> Liberty University (2010). *Student Teaching Handbook: Some approaches to Co-Teaching.& Wilson, G., & Blednick, J. (2011). Teaching in tandem.* Alexandria, Va.: ASCD.

ANNEX 8

<u>Pros and Cons of Team Teaching</u>

Pros of This Approach	**Cons of This Approach**
This approach, more than all others, can help to demonstrate parity between co-teachers since both teachers are *"sharing the stage", so they* are seen by the students as equals (Liberty University, 2010; Wilson& Blednick, 2011).	Co-teachers who are not yet comfortable with one another or who do not yet trust or respect one another can find this approach the most difficult to use well.
During planning for this approach, both teachers tend to have more ownership because they know they will be actively engaged in front of the class with their partner; this can lead to improved planning and instruction. This means that both teachers are actively involved in classroom organization and management (Liberty University, 2010).	This may take more planning on the part of teachers, which is always difficult due to time constraints (Liberty University, 2010); in addition, co-teachers have to give up control in order to be open to their partner's suggestions for instruction.
This approach enables co-teachers to do role-plays, model discussions, conduct debates, facilitate games, model note taking, and use other interactive instructional approaches that are difficult to do well as a solo teacher. This approach encourages risk taking because teachers may try things in pairs that they wouldn't try alone (Liberty University, 2010).	Co-teachers have to be open to a variety of different types of instruction and have to be willing to plan accordingly. Many "traditional" teachers are unused to, and sometimes nervous about, using varied approaches.
Having both teachers engage actively with students simultaneously means both teachers have input on a lesson. This helps students, because if they do not	Time is always a factor and co-teachers can't afford to have lessons take twice as long. Also, avoid having lessons where they are merely breaking up who says

understand something one person said, they may understand the way it is explained by the other (Wilson& Blednick, 2011). By this way, each teacher has an active role in the classroom (Liberty University, 2010).	what and going back and forth. For this reason, teachers' roles need to be clearly defined for shared responsibility (Liberty University, 2010).
Having both teachers facilitate activities, such as games, independent or guided practice, etc., means that both can be walking around helping students so they don't have to wait as long to be included or to have questions answered. In addition, it also facilitates flexible groupings when it is needed (Wilson & Blednick, 2011).	Students report that a con of this approach is that they cannot get away with as much. However, this is actually a pro for teachers. The additional behaviour management when teachers work together is a pleasant result of co-teaching.

Table 9: Murawski, W. W. (2010). *Collaborative teaching in elementary schools*. Thousand Oaks, Calif.: Corwin.

ANNEX 9

Getting to know each other personally

Some questions that can be useful to get to know a co-teacher personally are (Perez, 2012):

- *What are your personal attributes?*
- *What are some challenges you have faced?*
- *What are your hobbies?*
- *Do you have any pets?*
- *How would you describe your family?*
- *What are your pet peeves?*
- *What three words would you use to describe your personality?*
- *How would you describe yourself? How would others describe you?*
- *Why did you become a teacher?*
- *How do you learn best?*
- *What is your best attribute as a person? A teacher?*

Tasks

- *Do you need it now?*
- *Are you focused on deadlines?*
- *Are you orderly and organized?*
- *Is it important to finish one thing before starting another task?*
- *Do you proceed with the end in mind?*

Facts

- *Concerned with who, what, when, where, why, and how?*
- *Approach things in a concrete-sequential way?*
- *Like to make lists?*
- *Detail oriented?*
- *Keep track of things?*
- *Go beneath the surface to find out more?*

People

- *Sharing, supportive, a communicator?*

- *Talkative and like group activities?*

- *Appreciate discussing issues?*

- *Are relationships important?*

- *Prefer working with others instead of independently?*

Ideas

- *Look at the big picture?*

- *Conceptualize issues?*

- *Envision what's more possible?*

- *Express ideas to others?*

- *Get to the future early?*

- *Engage in backwards planning?*

Personality Style Activity

- *What are the strengths of your style? (List four adjectives.)*

- *What are the limitations of your style? (List four adjectives.)*

- *What style would you find the most difficult to work with?*

- *Why would that be challenging for you when co-teaching?*

- *How would co-teaching with someone of a different style be a beneficial to your students? Why?*

ANNEX 10

<u>Getting to know each other professionally</u>

Some questions that can be useful for teachers to discuss about their attitudes according to their teaching philosophy are (Beninghof, 2012; Murawski, 2010; Texas Education Agency, n.d.):

- *How do you believe students learn best?*
- *What does good teaching look like?*
- *What is the ideal relationship between student and teacher?*
- *What word describes the role of the teacher? (leader/facilitator/coach/giver/expert/boss?)*
- *Which is your philosophy regarding teaching students with disabilities in a general education classroom?*
- *What is your belief/vision regarding co-teaching?*

Questions that can help teachers to share their hopes are (Beninghof, 2012):

- *Do you want to foster critical thinking?*
- *Problem solving strategies?*
- *Twenty-first-century skills?*
- *Good citizenship?*
- *Cooperation?*
- *Stewardship of the planet?*

Teachers should also discuss their expectations about (Fattig & Taylor, 2008; Texas Education Agency, n.d.):

- Acceptable noise level in the room during the teacher lecture, small group work and independent work time.
- Transition strategies such as countdown (five to one), sound cue and light cue.
- Allotting time for student completion of work like having enrichment work ready for students finishing early, providing additional time for students who need it, accepting partially completed assignments.

- Interacting with students.
- Deciding how to address specific student needs during co-teaching.
- Determining how to resolve conflicts with co-teaching partners.
- Establishing classroom routines and behaviour management.
- Articulating student expectations (performance and procedures).
- Determining grading procedures and accountability.

ANNEX 11

Distributing classroom leadership

In the following table are presented some combined teacher actions during co-teaching:

IF ONE TEACHER IS…	THE OTHER CAN BE…
Leading Instruction	**Observing:** - Student understanding and/ or questions (body language, facial expressions, etc.) - Specific types of questions asked by instructing teacher - Specific student interactions and behaviours - Teacher movement - Specific teacher behaviours - Specific student or group behaviours
	Charting: - Where questions are directed within the classroom - Gender of responders - On-ask / off task behaviour - Teacher wait time - Specific teacher behaviours or movements - Specific student or group behaviours
	Circulating: - Checking for comprehension - Using proximity control for behaviour management - Checking for comprehension - Providing one-on-one support as needed
	Collecting and reviewing last night's homework
	Introducing a social or study skill
	Reviewing directions: modelling first problem on the assignment
	Writing down instructions on board
	Repeating or clarifying any difficult concepts
	Passing out papers
	Giving instructions orally
	Facilitating a silent activity
	Introducing a new concept to whole group
	Asking clarifying questions
Reading a test aloud to a group of students	Proctoring a test silently with a group of students
Explaining a new concept through discussion	Introducing a new concept through role play or modelling;
Provide enriching or extended activities on a	Re-teach or review an old concept with students who did not understand it

concept already discussed in class	
Provide enriching or extended activities related to items on a test	Re-teach or review those concepts or questions that were missed on an exam with those students who missed those questions on the exam
Predicting what will happen next (in book or text) by brainstorming with a group of students using the overhead	Predicting what will happen next (in a book or text) by showing objects that have already been introduced in the story and using them to predict what happens next
Re-teaching or pre-teaching with a small group	Monitoring large groups as they work on practice materials
Facilitating sustained silent reading	Reading aloud quietly with a small group Previewing upcoming information
Lecturing	Modelling note taking on the board/overhead Ensuring "brain brakes" to help students process lecture information
Running last minute copies or errands	Reviewing homework; providing a study or test-taking strategy
Prepping half of the class for one side of a debate	Prepping the other half of the class for the opposing side of the debate
Checking for understanding (reviewing a chapter, etc.) by leading a discussion with half of the class	Checking of understanding (reviewing a chapter, etc.) by leading a discussion with half of the class
Checking for understanding with large heterogeneous group of students	Checking for understanding with small heterogeneous group of students
Facilitating a station or group	Facilitating a station or group

Table 10: Dieker, Lisa. A. & Murawski, Wendy W. (2003). "Co-teaching at the Secondary Level: Unique Issues, Current Trends, and Suggestions for Success."

ANNEX 12

<u>Distributing decision-making responsibilities</u>

The steps to problem-solving are (Wilson & Blednick, 2011):

1. Make a description of the common co-teaching problem, written in the third person with fictitious characters.
2. Create a statement of the problem: a simple, one- or two-sentence description of the difficulty. It is important to get to the heart of the problem and state it clearly because a problem cannot be solved until it is plainly defined.
3. Take a hard look at what led up to the difficulty. It takes time to generate a one- or two-sentence statement that defines the antecedents of any problem. Knowing what generated the problem gives good insight into how the problem can be solved.
4. Think about how the problem is being denied or addressed. By discussing how the problem is being denied or addressed, the participants can see how the problem is perpetuated.
5. Propose ways of promoting a positive outcome. Participants brainstorm a series of possible solutions. In most cases, a combination of changes will be required to adequately solve the problem.

ANNEX 13

<u>Other actions to achieve parity</u>

In addition, to achieve and maintain this parity, teachers can do the following things as well (Murawski, 2010; Cook & Friend, 1995):

Teachers' names. In order for both teachers to be viewed as equals, both names should be displayed on the following:

- On the board

- On report cards

- Around the classroom

- Outside the classroom

- In all parent communication

Sharing the amount of work. In order for both teacher to share equal roles and responsibilities, the following work should be distributed evenly:

- Planning

- Preparing

- Teaching

- Grading

- Reflecting

- Completing an IEP

- Communicating with administration

- Communicating with parents

ANNEX 14

<u>Classroom procedures</u>

o Classroom routines

Co-teachers must decide which the most important procedures and routines should be developed (Perez, 2012).

Every classroom has routines such as organizational ones. For example, how students prepare to leave a classroom, what they are to do when they enter the class, whether permission is given during instruction for students to leave the class, and so on (Cook & Friend, 1995). There are also the instructional routines such as the ways in which students are to organize their written assignments, including paper headings, lab and other report formats, and other conventions. It also includes the way students seek assistance, from another student or from the teacher, how they are to turn in assignments and whether they are to keep assignment notebooks.

All in all, both teachers must know these routines. At the very least, this shared knowledge prevents students from playing the teachers off against one another by seeing who will give them an answer they prefer (Cook & Friend, 1995).

o Noise

Teachers have different levels of tolerance for the noise level of a classroom. For this reason, it is important to talk about it between the co-teachers and to take into account other person's preferences on his or her noise level (Cook & Friend, 1995; Perez, 2012).

Apart from this, the discussion also should include the signals that are used to quiet a class.

In addition, teachers need to adapt their level of noise tolerance according to the co-teaching approach that they are using in that moment. It is interesting they can usually deal with the noise level of cooperative groups in a class but anticipate noise issues with parallel teaching and station teaching.

Afterwards, they should experiment and reflect on what worked and what was distracting. Then, they can consider ways to see how the noise can be less distracting next time (Wilson & Blednick, 2011).

o Materials

Co-teachers need to determine jointly what their policy will be regarding student materials. First of all, they have to agree on which materials students are expected to have or bring to class (Perez, 2012).

Nonetheless, teachers must agree on what they are going to do for example if a student forgets his pencil. They can either tell him it is his responsibility to find one or provide him one so that he has no excuse not to do the work.

Other classroom policies and procedures

Apart from those, there are other classroom policies that should be taken into consideration such as (Fattig & Taylor, 2008):

- Bathroom policy
- Pencil sharpening
- Drinks of water
- Use or answering of telephone
- Collecting and returning papers
- Asking for help when needed
- Homework remembering

As many teachers might know, sometimes it is difficult to keep some students in their seats. There will always be times when a student wants to go to the bathroom, sharpen his pencil, drink some water, or just find a way to get into the hallway and out of the classroom. Given that fact, it is important that both co-teachers have a common answer to some of these situations.

ANNEX 15

Negative and positive behaviours

- o Negative behaviours

Tardiness

Teachers must adopt a policy with students who arrive late to the class.

They can use the tardy notebook method. It is when co-teachers place a notebook on a small table located near the classroom door as students enter. As one teacher begins the class, the other monitors for those students who are tardy. As a student enters the room, the co-teacher in the support role merely motions to the tardy notebook and then monitors that the student signs in appropriately. Students are requested to sign in with name, time, date, and reason they were tardy. This system helps makes students more aware of and accountable for their tardiness. In addition, however, it allows students into class without interrupting the opening instruction. It also provides documentation for future review (Murawski, 2010).

Figure 9.5 Tardy Notebook

Date	Name	Time Arrived	Rationale	Excuse Note?
3/3	Marty Farrell	8:10	Woke up late	No
3/3	Wa-ling Yun	9:16	Dentist appointment	Yes (in recipe box)
3/3	Joachim Smith	8:05	Woke up late	No
3/4	Joachim Smith	8:26	Car trouble	Yes (in recipe box)

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Inappropriate behaviour

In many situations of the class, it can happen that kids are talking to each other or engaging in other little (but bothersome) behaviours.

Sometimes, during co-teaching methodology, one co-teacher directs the instruction and the other co-teacher is in charge of classroom management. However, when they are both actively engaged with kids, they can share the task of overseeing behaviours.

A wonderful low-key strategy to helping rein-force or redirect student behaviour is the "see me later" card. They have created these notes to let the students know that they are doing something that needs to be stopped or doing something that we hope they will continue. With this method, children do not have to say anything when they receive it. They just have to simply give it back to the teacher who gave it to him/her at the end of the class. Then, and only then it is the time to discuss it (Murawski, 2010).

However, if a student engages in behaviour that is a danger to him or others, the school should have a policy in place. This is definitely one of those times it is nice to have two teachers in the room so that, if possible, one can stay with the students while the other can talk with him or her or take them somewhere. However, it is positive to decide in advance what roles each one will take if they have to make that decision.

Defiance

If a student is defiant, rude, or uses inappropriate language, maybe it is not enough just to give him/her a "see me later" card if someone is aggressive or calls a curse word.

However, co-teachers must know that some students struggle with extreme emotions, behaviours, or self-control, so they need to determine what some of the options will be to react in these situations. These strategies may include (Murawski, 2010):

- Giving "time away" or "brain breaks".

- Making a cubicle or quiet area in the room.

- Removing the student from the environment to talk to them.

- Using a quiet voice.

- Using a point system.

- Sending the student to an in-school suspension (ISS).

- Calling home.

- Creating behaviour charts.

- Allowing the student to write or draw his/her feelings.

- Using "antiseptic bouncing" in advance of the behaviour escalating.

Complaints

It can happen that a student says "That's not fair," or calls another student a name. According to this, teachers must know that one of the concepts that should be introduced early on in an inclusive classroom is that "fair does not mean equal."

Rather than hiding those adaptations, it is in the teachers' and students' best interests for teachers to make it clear the first days of school that they will be doing different things for different students during the school year.

It might be positive to have a poster in the room saying: *"Fair does not mean equal; it means that everyone gets what he or she needs"* (Murawski, 2010).

Nonetheless, another good strategy for dealing with the "that's not fair" conundrum is to teach students about learning styles help them identify their primary learning modalities: auditory, visual, kinaesthetic, and tactile.

Finally, co-teachers can also share their own areas of strength and weakness with students so that they see that their teachers are not perfect either.

Unexpected reactions

Co-teachers must know that there will always be unplanned behavioural concerns that can arise in the classroom.

However, the more they consider individual students and situations and plan accordingly, the more likely they will be able to deal with those they considered and those they did not.

By this way, co-teachers need to be communicating and preparing each other if they want to be the most successful.

Rather than each of them taking his/her own role and not sharing it with the other colleague, they need to be helping one another learn their areas of expertise.

Negative Consequences

According to those negative situations that might occur in the class, there must be some results according to some inappropriate behaviour. When determining a consequence, the teachers need to make sure it is relevant to the behaviour. Ultimately, the consequence should extinguish the behaviour (Towson University, 2012).

The most important thing is that both teachers agree on the consequences and are consistent with implementation. By this way, both teachers should address the problem together and immediately.

These are some examples of negative consequences listed in order by severity:

- Taking away the distraction
- Moving the clips down on the rainbow ladder
- Personally reflecting on behaviour in an oral or written form
- Writing an apology letter
- Staying in for recess
- Calling home
- Office referrals

If the inappropriate behaviour keeps occurring, the teachers need to determine the antecedent and decide the next steps that need to be taken in order to extinguish the behaviour.

- o Positive behaviours

Apart from applying negative consequences to bad behaviours, co-teachers must also need to reinforce positive behaviour with rewards. The Positive Behaviour Intervention Supports (PBIS) allows doing it.

According to this, co-teachers must know that once a reward is earned, it should not be taken away because the student will focus on the negative behaviour rather than the positive behaviour that earned the reward (Towson University, 2012).

Some of the PBIS that can be used in a co-taught class are:

- **Rainbow ladder/ clip chart:** Students move their clips among the colours on the chart depending on their behaviour.

- **Table points:** Each table of students can earn points by displaying appropriate behaviour.
- **Tickets or Dollars:** Students will be given tickets/dollars for demonstrating appropriate behaviour which can be used to buy prizes.
- **Class points:** Teachers will give the class points if all students portray proper behaviour, a point could be represented by a marble, tally, paper clip, etc.

Before implementation, students and teachers should decide on the reward together so as to make it more motivating for the students.

ANNEX 16

<u>Flexible grouping</u>

Groups can be arranged according to different factors:

- o Level of the students

  - Pre-assess their levels
  - Use student work samples to determine placement
  - Use formative assessment to adjust groupings
  - Make sure these groups are fluid, not fixed

- o Interests

  - Groups will change according to student interest inventories
  - Class discussions
  - Personal profiles

- o How students learn best

  - According to learning style
  - Multiple intelligences
  - Alone, in pairs or in groups
  - In accordance with classroom observation

- o Student choice

  - Within a range of options
  - Students select
  - Selected by random draw

ANNEX 17

<u>Co-assessing co-teachers effectiveness</u>

In order to build a stronger relationship between co-teachers, the following attributes need to be considered (Perez, 2012):

- Ability to swap positions at any time.
- A shared common vision: listening, supporting and believing in each other.
- A committed belief that all students can learn and succeed.
- Willingness to remove obstacles and problem-solve together.
- Willingness to redistribute job functions and share responsibilities.
- An acceptance of student differences and a commitment to do something about these differences.
- Confidence in each other and their individual teaching styles.
- Enjoying the process and taking each day as a new adventure.
- Being flexible and adaptable to change.
- Being able to defend one another.
- Trusting and respecting each other.
- Engaging in action research and data-driven decisions by analysing student work samples.
- Providing constructive feedback to each other on a regular basis.

ANNEX 18

Worksheet Activity 1 (Lesson 1)

DESERT
It does not rain and it has dry soil.
It is very hot during the day and very cold at night.
GRASSLANDS
There are small plants such as grasses.
There are not big trees because it does not rain enough.
SAVANNA
There are few individual trees.
There is a rainy season in the summer and a dry season in the winter.
TUNDRA
It is a very cold and dry place because it does not rain.
It has few nutrients to support plant and animal life.
RAINFOREST
It is a very humid and warm place.

It is the place where we can find the majority of animals and plants of the planet.
POLAR REGIONS
It is very cold and there and lots of snow.
These zones are in the poles of the Earth.

ANNEX 19

Worksheet Activity 2 (Lesson 1)
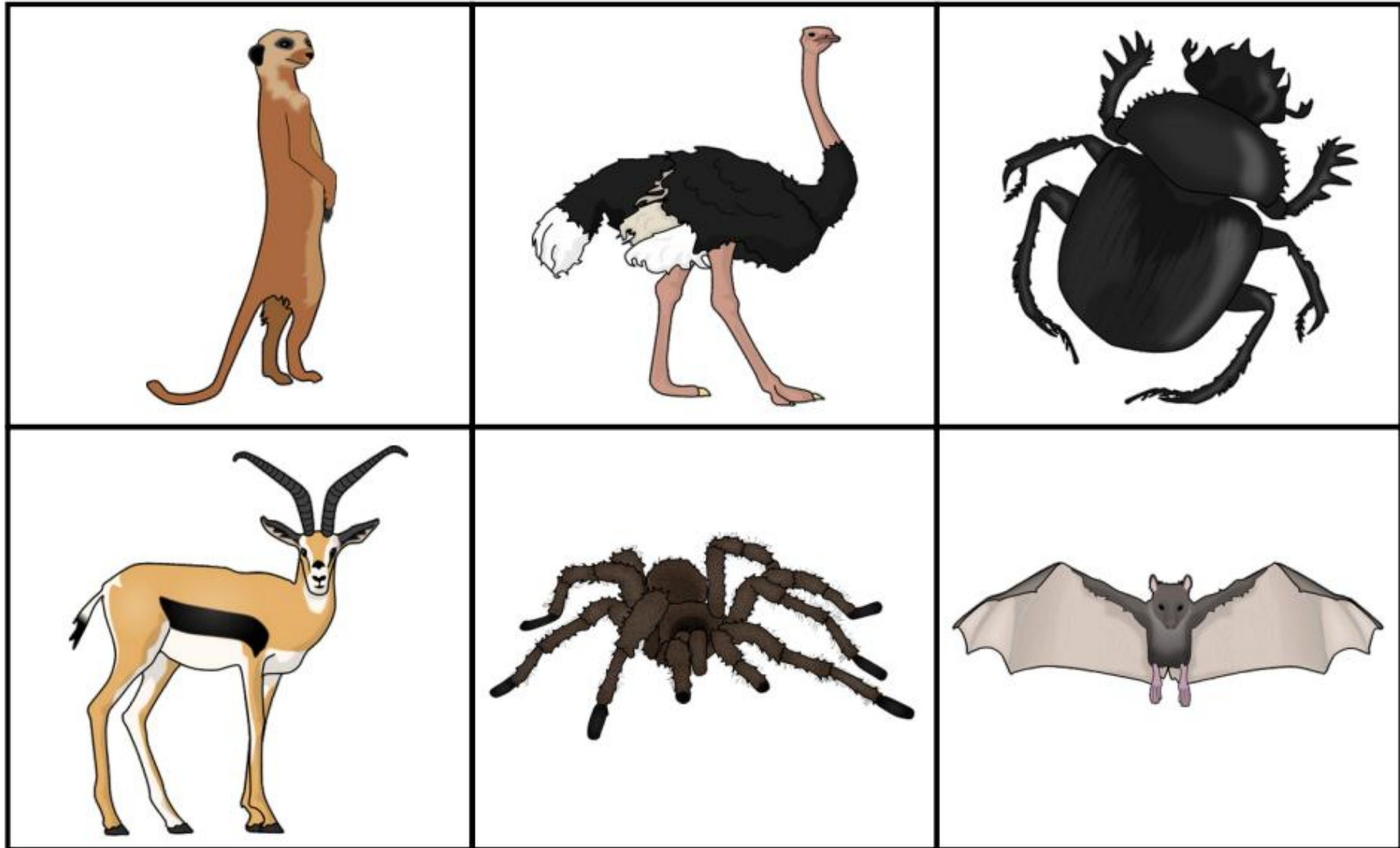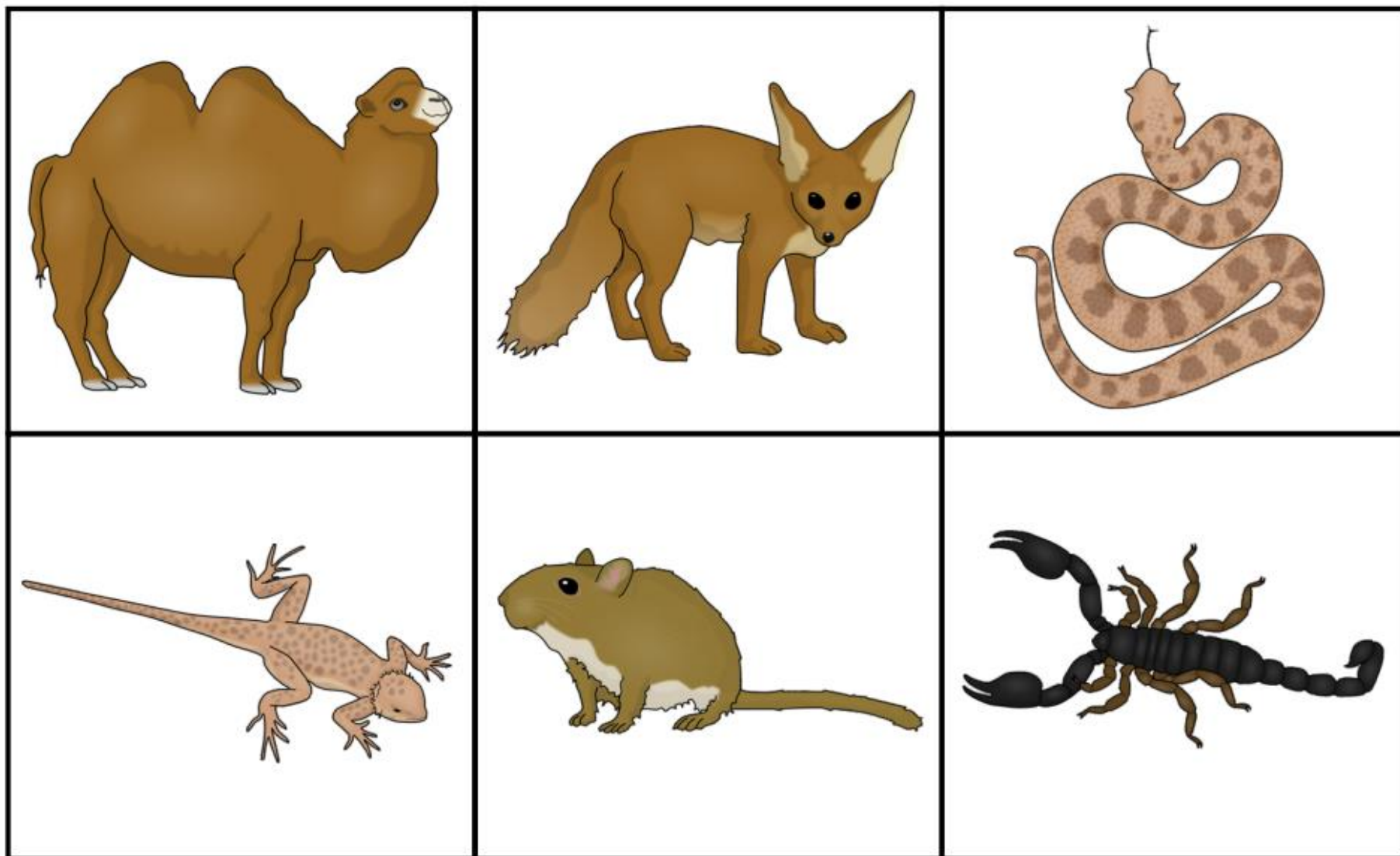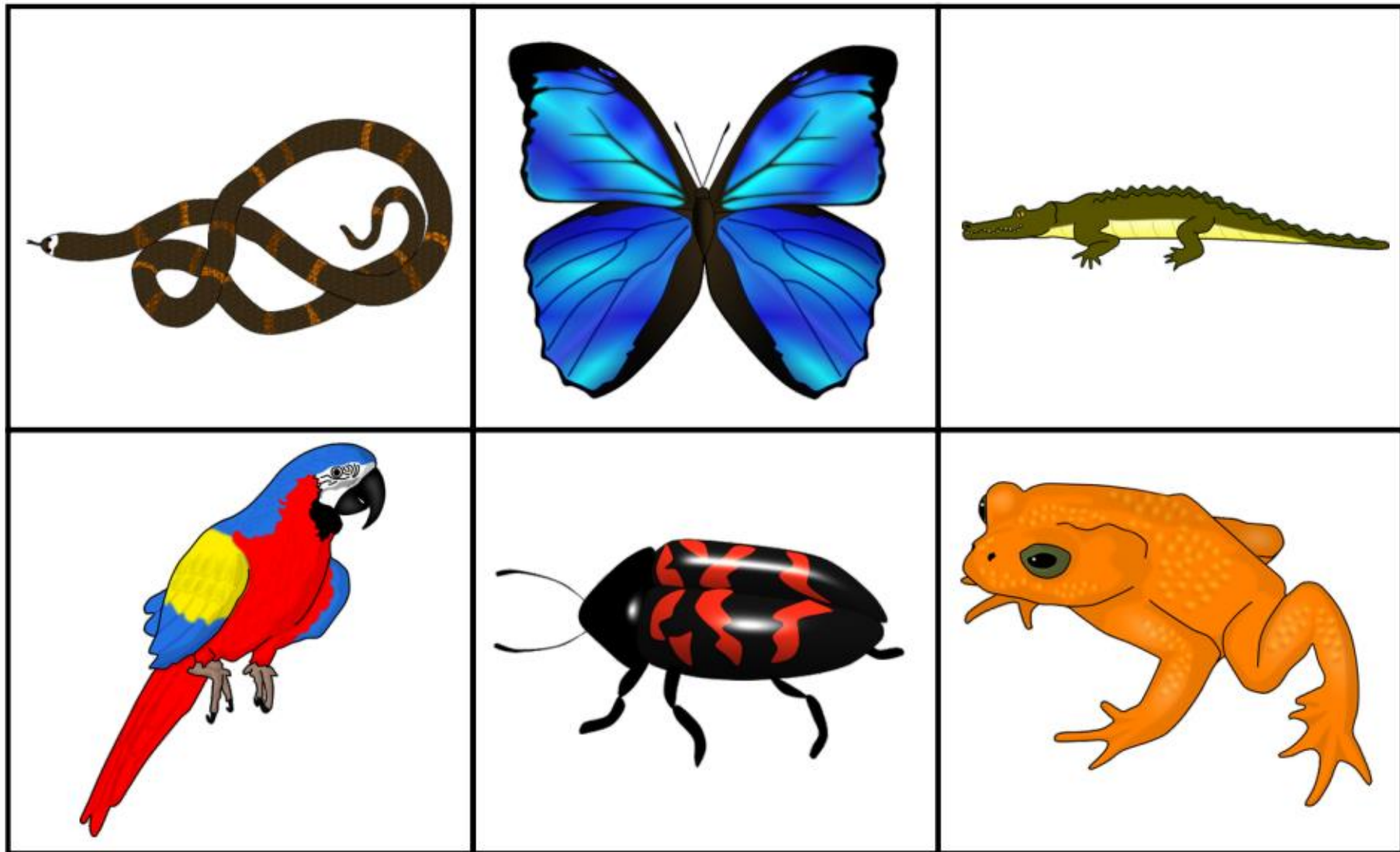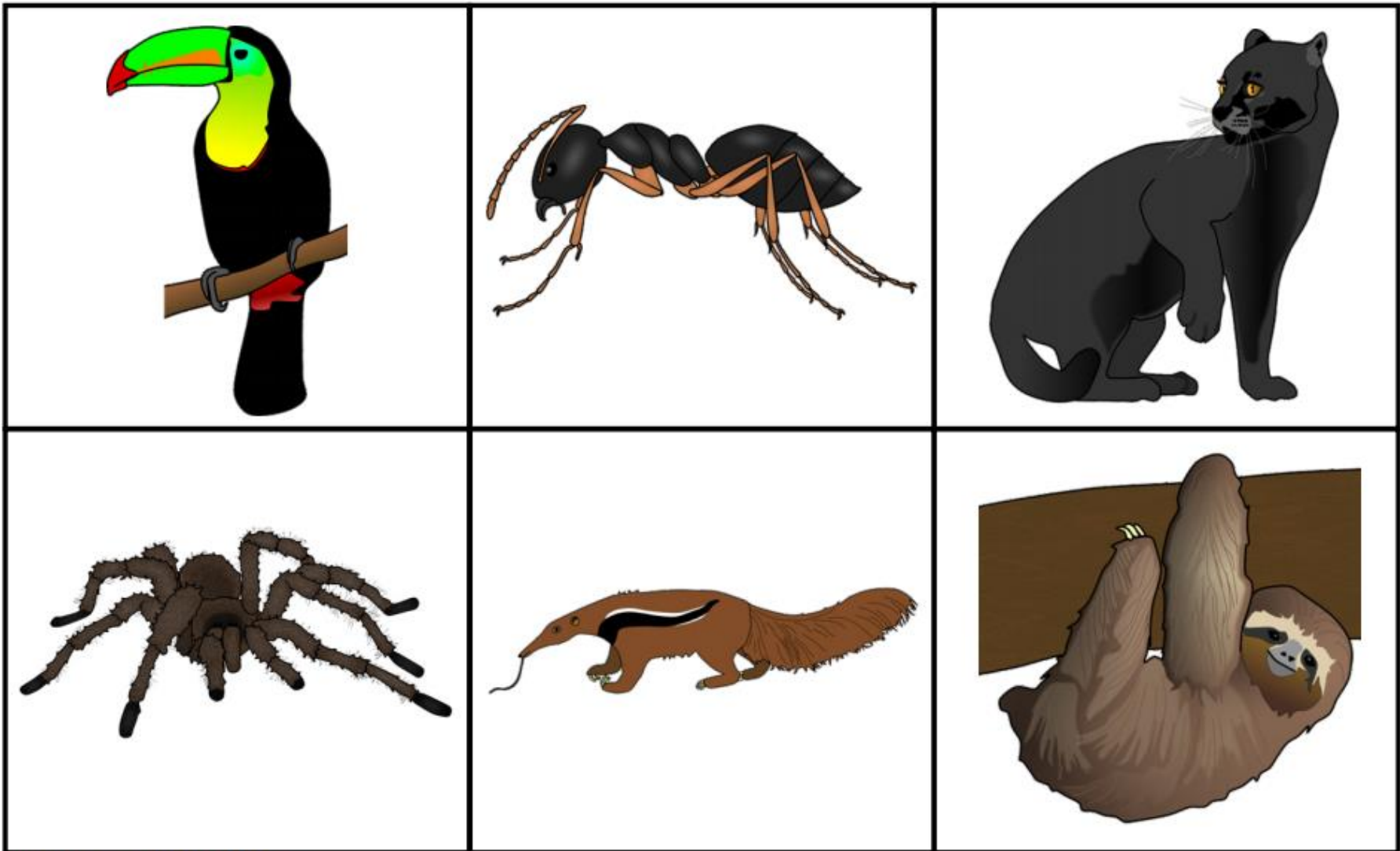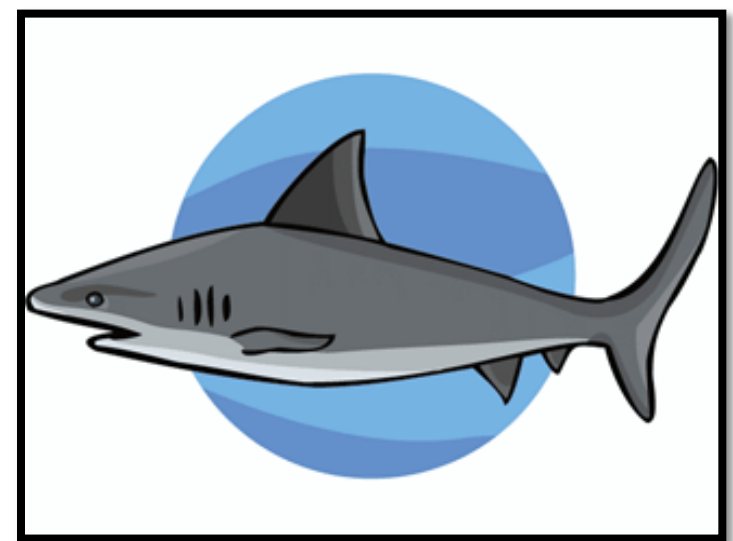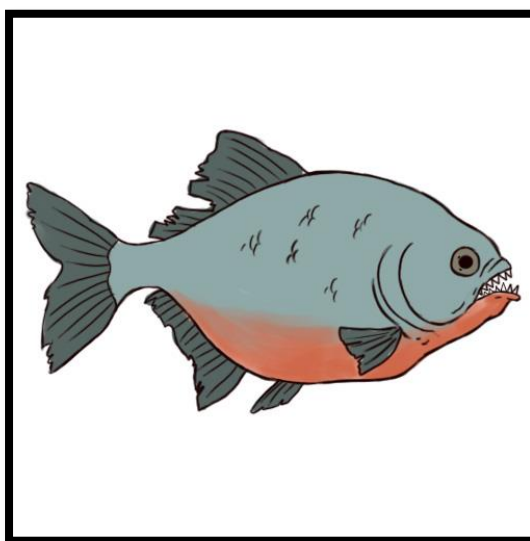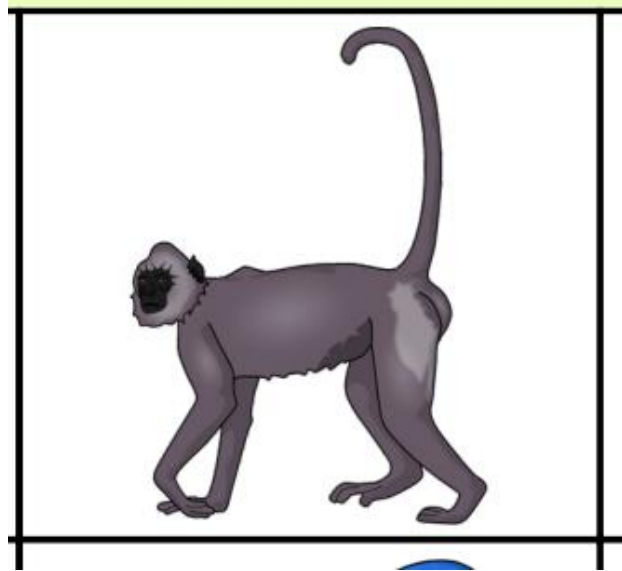
ANNEX 20
Worksheet Activity 4 (Lesson 1)

MAMMALS	AMPHIBIANS	REPTILES
_____	_____	_____
_____	_____	_____
_____	_____	_____
FISH	BIRDS	INSECTS
_____	_____	_____
_____	_____	_____
_____	_____	_____

AMPHIBIANS

They live on the land and in the water.

They have humid skin.

They breathe with lungs and gills.

They reproduce through eggs.

MAMMALS

They have hair or fur.

Mothers feed their young with milk.

They have lungs and need air to breathe.

They give birth to reproduce themselves.

REPTILES

They have scales, not fur.

They usually reproduce through eggs.

They have dry skin.

They have 4 legs or no legs.

BIRDS

They have feathers.

They have wings.

They reproduce through eggs.

They have 2 legs.

FISH

They breathe under water using gills.

They live in the water.

They have scales and fins.

They reproduce through eggs.

INSECTS

They do not have bones (invertebrates).

They are very small.

They reproduce through eggs.

They breathe through tracheae.

Worksheet Activity 5 (Lesson 1)

Circle the **MAMMALS** with red, the **REPTILES** with green, the **AMPHIBIANS** with yellow, the **FISH** with blue, the **BIRDS** with orange and the **INSECTS** with black colour.

ANNEX 23   <u>Worksheet Activity 2 and 3 (Lesson 2)</u>
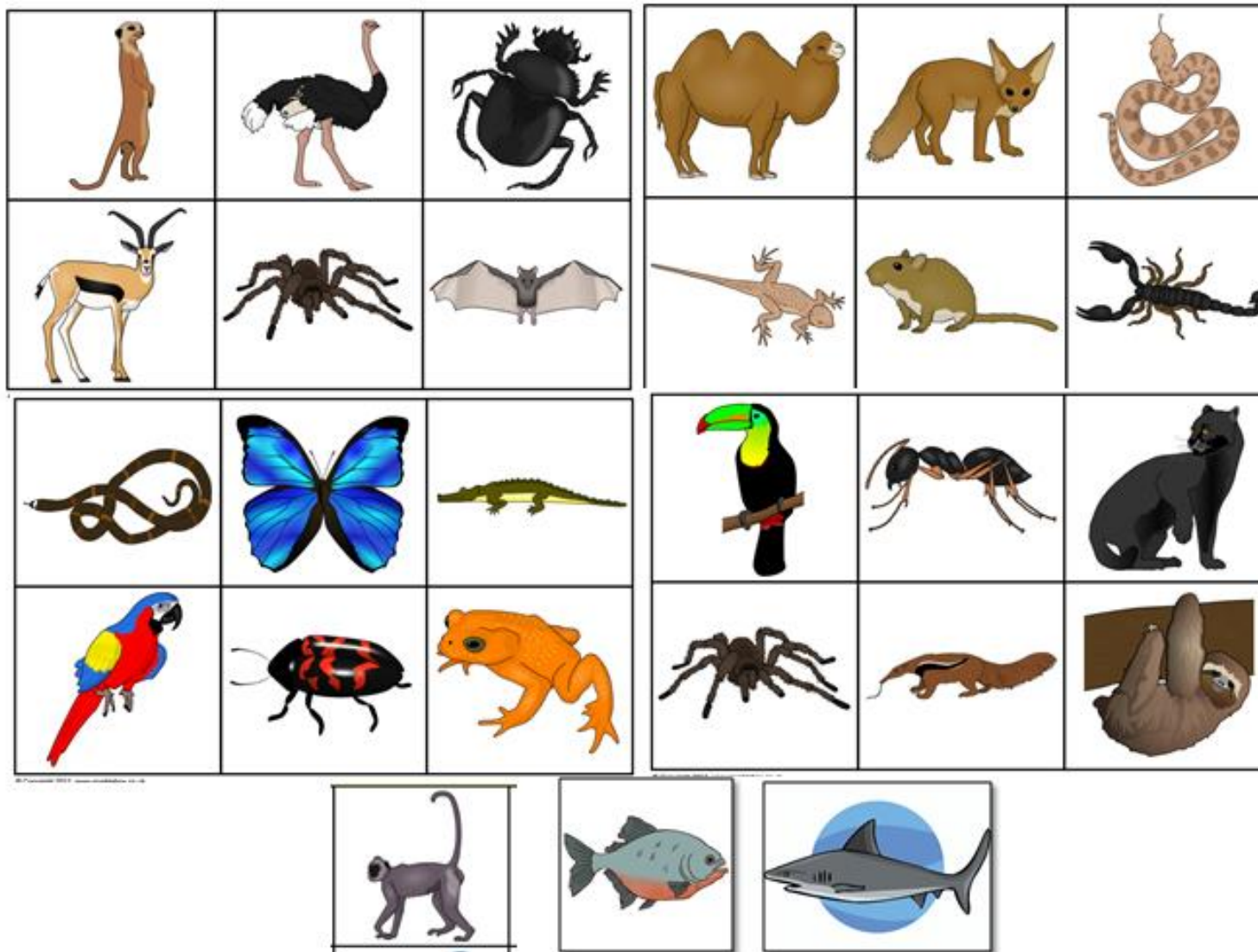
Plant Research Report   by: _____

Plant Name: _____

Draw the plant with its parts:

Plant facts

Origin: _____

Description: _____

_____

_____

Habitat: _____

_____

Draw how the habitat looks like:

Three interesting facts about this plant are:

1.	2.	3.

Cactus information

The plural name of cactus is cacti. Plural means more than one.

➢ How does it look like?
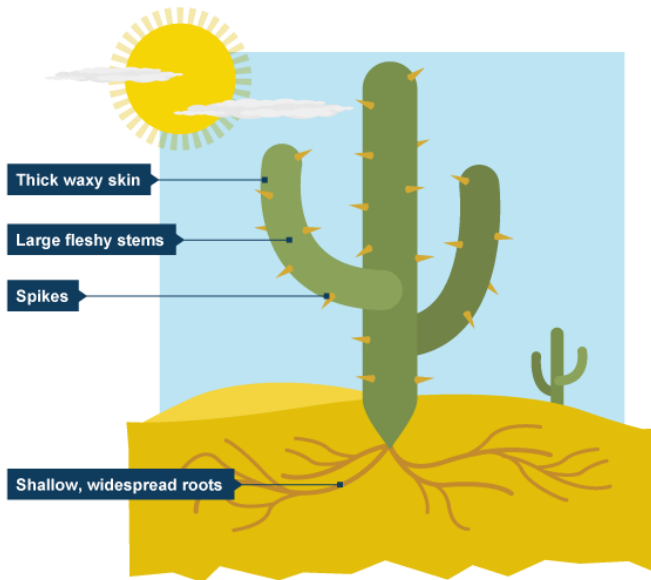
It does not have normal **leaves.**

It has **spines**. Sometimes they are poisonous. They help to protect the cactus from animals that want to drink liquid from the inside of the plant.

It has spongy **roots** and l**eaves** so it can save the water. They have to do this because most cacti live in hot, dry areas that don't get much rain.

Thick waxy skin

Large fleshy stems

Spikes

Shallow, widespread roots

- The *most important root* on a cactus is longer and stronger than in other plants. This lets a cactus find and drink water that is deep down in the ground.
- A cactus also has lots and lots of *small roots* that are close to the surface of the ground. This lets the roots take the water from any rain that falls quickly.

➢ Where does it live?

Cacti are native from America.

➢ What is its habitat?

A cactus is a plant that grows where the soil is dry and rocky, like in the desert

➢ How many years can it live?

Cacti can live for many, many years.

Water plant information

> **How does it look like?**

Its **leaves** are rounded and they are attached to spongy and sometimes inflated **bags.**

It has hanging **roots** that are dark colour.

In spring, it has **flowers.** They are purple or pink colour and have six petals.

> **Where does it live?**

It is a floating aquatic plant native from America.

> **What is its habitat?**

We can find it in humid environments like the rainforest.

They can live in lakes, rivers, ponds, ditches of temperate climates.

Aloe Vera information

> **Where does it live?**

This plant comes from the north of Africa.

> **How does it look like?**

It has very short stem.

It has very long thick leaves.

It has flowers 90 cm tall that produce seeds.

> **Why is this plant popular?**

Because it has medical properties.

Aloe produces two different substances, gel and latex.

- **Latex** is yellow in colour, and you can find it under the plant's skin.
- Aloe Vera **gel** is transparent, and you can find it on the leaves.

Gel   Juice/Latex
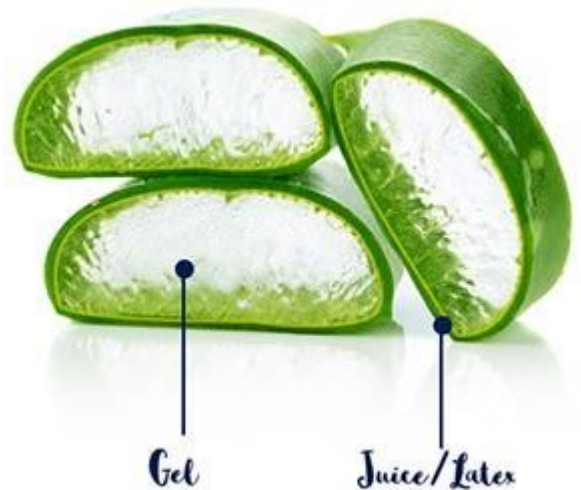
> **What is its habitat?**

This plant lives in dry places.

It needs very little water.

Aloe Vera gel has a 96% of water that helps the plant to survive in the dry environments.

> **How many years can it live?**
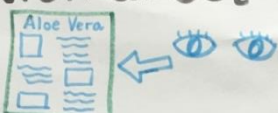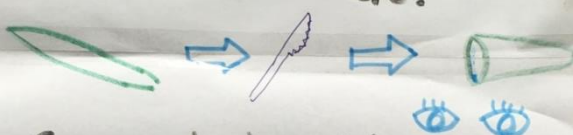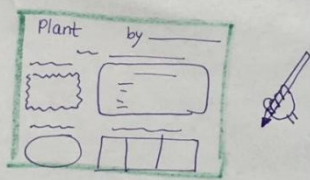
It can live for 100 years.

ANNEX 27

Instructions independent station