

# Interdisciplinary take on a comparative evaluation of play-based intervention programs for children with different abilities and its transferability to Kingdom of Saudi Arabia

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**Abstract:** Early social interaction is the foundation for social skills. Children with physical and mental impairments may experience problems developing social skills. Research has shown that they often benefit from systematic interventions in neutral settings, as they participate in social interactions. The goal of this inquiry is to select the best features of three play-based intervention programs in Canada and assess whether they could be implemented in the Kingdom of Saudi Arabia (KSA), where they are lacking. The context of the KSA will be assessed to ensure successful implementation of play-based intervention programs for children ages 4-8. Exogenous interdisciplinarity theory will be applied to complete comparative case studies of the three programs to select useful and applicable features across the programs, and to customize a play-based programs that best fits KSA's culture and context.

**Keywords:** children; disability; intervention; physical and mental impairments; play-based program; social skills;

**Résumé :** Les enfants ayant des déficiences physiques et mentales peuvent rencontrer des problèmes de développement des habiletés sociales. Les recherches montrent que ces enfants bénéficient souvent d'interventions systématiques alors qu'ils participent à des interactions sociales. Cette enquête vise à repérer les meilleures caractéristiques de trois programmes d'intervention axés sur le jeu utilisés au Canada et à déterminer si elles pourraient être transposées en Arabie Saoudite où de tels programmes font défaut. Le contexte saoudien sera évalué afin d'y implémenter ces programmes pour les enfants âgés de 4 à 8 ans. La théorie de l'interdisciplinarité exogène sera appliquée pour compléter les études comparatives des trois programmes afin d'identifier les fonctions les plus utiles qui s'appliqueraient le mieux à la culture et au contexte saoudiens.

**Mots-clés :** déficiences physiques et mentales; enfants; habiletés sociales; handicap; programme axé sur le jeu; intervention

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“Why don’t you want to play?” a volunteer asked a girl with mild autism.

“I don’t have a partner,” the girl said.

“I am your partner,” the volunteer replied.

“No.” said the girl.

Amanda is a nine-year-old girl with mild autism. She participated in an inclusive play-based program in the Niagara Region to improve her social interaction. After an hour of program time, Amanda left the group and lay on the mats. She did not want to play because every typically developing child in her group had a child partner. Some of the other kids with impairments were partnered one-on-one with volunteers. I believe Amanda was waiting for someone from her peer group to approach her about being his or her partner rather than asking herself. My daughter was enrolled in the same group. Having noticed what Amanda was doing, I asked her to approach Amanda to be her partner. The two made an excellent pair.

Early social interaction is the foundation on which social skills are built. During early childhood, children learn to interact socially (Jamison, 2010). Children develop effective social communication skills in early childhood that enables them to socially interact, which benefits them throughout their lifespan. Maintaining effective communication and social relationships requires social skills (Liebkind, Jasinskaja-Lahti & Mähönen, 2012). Children first learn how to interact with adults, then participate in social interaction with peers (e.g., turn-taking, information sharing sequences, etc.) (Jamison, 2010). Typically developing children participate in systemic social interaction during early childhood, which aids in the acquisition of social interaction skills that help children communicate and interact with others, as well as learn about their environment (Brown, Odom, McConnell & Rathel, 2008). However, children with physical and mental impairments may acquire social interaction skills through different processes than typically developing children. Children with physical and mental impairments may

experience problems with developing social skills (Canney & Byrne 2006; Tempest & Wells, 2012); as a result, they are at a greater risk for being disliked and becoming aggressive and disruptive (McClellan & Katz, 1993). This altered path to social learning can create obstacles in the development of social skills. Research has shown that children with physical and mental impairments often benefit from systematic interventions in neutral settings where they can have the opportunities for social interactions necessary for healthy participation in social life (Hood, 2011). These intervention programs often have different primary goals, but they all share the same long-term goal, which is to help children develop appropriate social communication skills that allow them to communicate and interact with others. The literature has defined an intervention as a “purposeful action by an agent to create change” (Midgley, 2000, p. 8), whereas a systematic intervention refers to cases in which there is a clear methodological plan of action.

The goal of this inquiry is to select the best features of the three evaluated play-based intervention programs in Canada and assess whether they could be successfully implemented in the Kingdom of Saudi Arabia (KSA), specifically in my hometown, Mecca. In the KSA, play-based intervention programs for children with physical and mental impairments are lacking. There are several play-based intervention programs for these children, but these programs focus on medical, health, rehabilitation, psychological, or education services (Country Profile on Disability, 2002). In Mecca, organizations such as the Disabled Children’s Association, Global Goodness Association, Comprehensive Rehabilitation Centre, and Hearing and Speech Centre include an emphasis on play from an educational or rehabilitation perspective, rather than a recreational perspective. However, play and physical activity for enjoyment and for the purpose of developing social interaction skills for children with impairments are entirely unheard of.

The Kingdom of Saudi Arabia offers a great deal of assistance to children with impairments including free education, free medical treatment, financial assistance, and assistive devices (Country Profile on Disability, 2002). Still, these children are deprived of many of their needs, including their right to play and to participate in recreational activities. In the KSA, parents of children with impairments also have to deal with a lack of recreational places that are accessible to their children after school and on holidays. Oftentimes, parents of children with different abilities invest large amounts of time in the provision of care for their child. Moreover, these children spend most of their time cooped up in their homes, due to a lack of recreational places or the presence of anti-social behaviours, which further isolates them from society. For these reasons, it is necessary to implement play-based intervention programs in the KSA in order to reduce the burden on the parents of children with impairments.

This inquiry will examine play and physical activities as a form of recreational therapy and indirect social interaction and skill development. Exogenous interdisciplinarity theory will be applied to examine and compare three different play-based intervention programs in Canada. Different disciplines will provide several lenses through which these programs can be understood and explained. According to Repko (2008), interdisciplinarity is an approach to research that involves the integration and application of multiple disciplinary perspectives to solve complex problems. Exogenous interdisciplinarity research aims to be applied to society in order to solve “real life” issues (Klein, 1986). Greertz (1998) has shown that it is constructed with a focus on diversity, where problems are aimed to be solved by considering relational and practical factors and purposes. This inquiry will consist of three phases. The first phase requires the completion of comparative case studies of the selection play-based programs. Specifically, Brock University’s Children’s Movement Program (CMP) and Special Needs Activity Program (SNAP), as well as Acadia University’s Sensory Motor

Instructional Leadership Experience Program (SMILE). The second phase will require selecting useful and applicable patterns and features across all of the three play-based programs and identifying the key factors that promote effectiveness of play-based programs. The third phase is adapting and customizing the Canadian framework of play-based programs on the KSA's culture and context.

The three components of this research are: 1) the concept of play, 2) disability, and 3) social skills and intervention programs. Through an interdisciplinary approach these components can extend beyond the boundaries of Disability Studies and into other disciplines such as Psychology, Early Childhood Education, Physical Education, and Occupational Therapy. Additional disciplines such as Social Work contain information semi-relevant to the concept in question. This inquiry topic is vast and includes complex social aspects that are best understood through a variety of disciplines. As Henry (2005) states, complex issues cannot be solved using the perspective of only one discipline. Looking at this inquiry from the perspective of one discipline would neglect the other disciplines already involved. According to Klein (2010), inquiry that aims to solve society's problems should involve more than one discipline, as specialization can blind researchers to other contexts or points of view (Repko, 2008). This prevents the researcher from solving society's problems because of the increasing complexity of society (Klein, 2010). Interdisciplinary perspectives, when analyzed and implemented effectively, allow for a broad and comprehensive understanding of the inquiry topic.

## **1. Conceptual Framework**

There are a variety of ideas and concepts that make up my conceptual framework. These concepts are the social model of disability, social construction of disability, and reassigning meaning. In addition, these concepts contribute to inquirer understanding of disability, the concept of play, and social skills and intervention programs. According to

Straus (1982) the social model of disability is based on the belief that disability is socially constructed rather than biologically-based. Following the social model of disability, the entire nature of disability as well as the conditions that are considered disabling and the entire meaning associated with having a disability can change according to context and time. To analyze the social model of disability, one must first understand that impairment is biologically-based and culture and society have worked together to turn impairment into a 'disability'. Within the social model, impairment is distinguished from disability. The United Nations (UN) defines impairment as "any loss or abnormality of psychological or anatomical structure or function" (UN, 1983, I.c.6-7). This definition's meaning is directed to the medical profession. According to the UN, a disability is defined as "any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being" (UN, 1983, I.c.6-7). This definition confirms that disability is socially constructed and has resulted from the physical construction and social organization of society, and a failure to provide the necessary help to people with impairments.

Wendell (1996) discusses the social construction of disability and states that "disability is socially constructed through the failure or unwillingness to create ability among people who do not fit the physical and mental profile of paradigm citizens" (p.41). Second, disability has both cultural and historical backgrounds and cannot be a universal phenomenon. What is considered a disability in one culture may not be perceived in the same way in another culture or in another time period. For example, in the past, individuals who wore glasses or used hearing aids were considered disabled in the KSA; now they are no longer considered disabled and they no longer receive the government assistance that is provided to individuals with impairments. Also, Wendell (1996) stated that if she, as a Western woman, moved to South Africa, where women are required to walk long distances

for water every day she would be considered disabled. In short, culture has an important role in determining who is perceived as disabled (Wendell, 1996).

There are numerous ways that culture can affect disability, including: the exclusion of certain experiences within a particular culture, cultural stereotyping, selective stigmatization due to the fact that certain limitations and disabilities are stigmatized differently within cultures, cultural meanings associated with disability and illness, and the exclusion of people with disabilities from the cultural meanings of activities they are unable to perform (Wendell, 1996). With respect to this inquiry, understanding Western cultural ideas concerning disability will allow the inquirer to better understand the reality of the play-based intervention programs and provide reasoning for what the inquiry experience and evaluate. Also, it will allow the inquiry to determine what features can be successfully transferred to and adopted by the KSA's culture and context.

The names and labels given to children can affect their identities, how they see themselves and can reinforce stigma. One of the ways to begin to change the perspectives concerning names and labels can involve reassigning meaning. Efforts to reassign the meaning behind the terminology used to describe disabled individuals are necessary to shift society's understanding of disability. For example, the prefix "dis" used in disability often has a negative connotation. Some of the meanings of "dis" include "separation", "absence of", "the opposite of", and "deprived of" (Linton, 1998). For the purpose of this inquiry, the inquirer has decided to take a small step towards reassigning meaning by not using the term "disabled children or children with disability". Throughout this paper, the inquirer will use the term "children with different abilities" to refer to children with disabilities. Disability has been socially constructed and impairments have been turned into a disability by the lack of accessibility in different environments.

In this paper, the inquirer will distinguish between these two terms, as they are not interchangeable. The inquirer believes that each individual has something to offer regardless of ability. This is possible depending on the particular social environment. Also, this inquiry will promote the belief that early play-based intervention programs for children with different abilities can lead to healthier participation in social life, increased opportunities to utilize their physical repertoires and long-lasting social relationships and communication that will increase independence and decrease health risks. Effective communication and improved social interaction skills can support the idea of interdependent relationships. The results of this inquiry will be used to determine which features of play-based intervention programs would best promote play behaviour skills and social interaction and whether these best program features from a Canadian context can be implemented in the KSA. A comparative program evaluation of three play-based intervention programs will help to determine what are the best features, qualities, policies, rules and regulations that exist in these programs to support the effectiveness of programs, improve play behavior skills, and develop social interaction skills that increase the quality of life of children with moderate to severe impairments who participate in these programs. The results of this inquiry will be of interest to administrators, specialists, and parents of children with impairments.

## 2. Research Questions

This research seeks to answer the following questions:

- a. What is the quality of play-based intervention programs? What are the best features of each program that maximize strengths and opportunities?
- b. What policies, rules and regulations, and/or mandates exist to support the effectiveness of the SNAP, CMP, and SMILE programs?

- c. What cultural barriers exist to introducing the same features in the KSA?
- d. What features can/might be implemented from a Canadian context in another culture, specifically in the KSA?

### **3. Interdisciplinarity**

Interdisciplinarity is defined by first exploring disciplinarity as it is defined in the literature reviewed and examining the types of disciplinarity. Interdisciplinarity is also explored in much the same way: by looking at how it is defined in the literature, the types of interdisciplinarity, and the process of interdisciplinarity. Disciplinarity and interdisciplinarity are compared and contrasted because interdisciplinarity exists separately from disciplinarity.

#### **3.1. Disciplinarity**

A discipline is simply a community of scholars (Repko, 2008). The term discipline can be defined in many different ways. Chettiparamb (2007) gives three approaches to understanding and defining disciplines: first, the scientific approach uses methods, concepts and ways of knowing; second, the social approach looks at how the disciplines are socially embedded in society; and third, the organizational approach examines how knowledge is institutionally organized in universities.

In an academic context, discipline can refer to a field of study, but must be separated from the subject matter. Chandler (2009) makes a clear distinction between academic disciplines and subjects by defining the subject not as a topic to be studied, but as the way the topic is studied and the way the topic is viewed. He further proposes that academic disciplines include styles of thought that include “procedures for identifying and gathering evidence, ways of posing and sequencing questions, conventions for distinguishing productive from unproductive questions, and practices for establishing sound demonstrations,

building arguments, citing authorities, or making cases” (p. 732). Also, Chandler (2009) added that a discipline is a set of practices or imposed ordering. Disciplines promote depth of knowledge in one subject area using specific approaches (Shailer, 2005). Disciplines create a community of professionals, teachers, and students who understand the language of the discipline, including what is said, the way things are said, and the ideas that are discussed (Turner, 2000). Each discipline has its own identity and culture (Ausburg, Tanya & Henry Stuart, 2009). Repko (2008) concludes that disciplines are evolving, so that over time a discipline will take on other methods or theories, either created or adapted from other disciplines.

There have been strict boundaries placed on certain disciplines regarding concepts or theories that can be researched and built upon. Academic disciplines are distinguished from one another through numerous factors, including the questions disciplines ask about the world, their worldview or perspective, the set of assumptions, and the methods they use to build a body of knowledge around subject matter (Newell & Green, 1982). Repko (2008) added that a discipline is a body of knowledge or a particular branch of learning that has six factors that distinguish this knowledge from other knowledge formations: phenomena, epistemology, theories, assumptions, methods, and concepts. Each discipline regulates how their theories, concepts, methods, discourses, and research are preserved and publicized (Ausburg *et al.*, 2009). Each discipline asks different types of questions, takes on a different perspective, and makes different assumptions about different subjects (Repko, 2008).

The first universities began with four disciplines: Theology, Law, Medicine, and Philosophy (Max-Neef, 2005). These four disciplines encompassed all knowledge. Later, these faculties became more specific, resulting in the creation of both sub-disciplines and multiple disciplines (Max-Neef, 2005). A discipline is described as the specialization which

is necessary when collective knowledge increases beyond our ability to keep up with it. However, familiarity between disciplines, institutions, and departments is a modern occurrence (Max-Neef, 2005). Academic disciplines now appear in four categories: natural sciences (physics, biology, mathematics, chemistry and computer programming), social sciences (psychology, sociology, anthropology, political science, and economics), humanities (history, literature, philosophy, religious studies, and art, music, and theatre), and applied professions (medicine, social work, nursing and law) (Repko, 2008). Disciplinarity, however, is characterized by the specialization of mono-disciplines; single, isolated disciplines. For instance, one may study psychology without needing to study other disciplines such as physics (Max-Neef, 2005). Disciplinarity has dominance, and with its power it can marginalize anything that can threaten its ideologies, especially applied programs of multi and interdisciplinary studies (Ausburg, et al., 2009).

### **3.2. Interdisciplinary**

Although interdisciplinarity had a philosophical grounding in ancient times, it became popular in the last century as a result of the increasing complexity of society and specialization (Klein, 2005). Interdisciplinarity relies on a number of factors that work together in order to achieve successful interdisciplinary research. An interdisciplinary approach is not several disciplines coming together to work on a problem. In order for interdisciplinarity to occur, researchers must work together, exchange information, teach, and learn from each other. Interdisciplinarity is seen as a creative process that involves progress, reform, and modernization and is dynamic, flexible, liberal, and innovative (Weingart, 2000). It is also seen as involving boundary crossing, bridge building, mapping, bilingualism (Repko, 2008), as well as the new frontier (Weingart, 2000).

The definition of interdisciplinary research has been discussed and debated by many scholars over the years, several of whom are cited

below. The word *interdisciplinary* consists of two parts: *inter* and *disciplinary*. The prefix *inter* means “between or among”, while *disciplinary* means, “relating to a particular field of study”. Thus, a starting point for the definition of *interdisciplinary* is “between fields of study” (Stember, 1991, p. 4). Moreover, interdisciplinarity is defined as “the interaction between two or more disciplines. This interaction may range from the simple communication of ideas to the mutual integration of organizing concepts, methodologies, procedures, epistemology, terminology, data, and the organization of research and education in a fairly large field” (Salter & Hearn, 1996, p.186). In summary, Repko (2008) integrated several definitions, which resulted in the following definition, which has been widely accepted since it has elements of all the previous definitions. Repko (2008) states that interdisciplinary research is “...a process of answering a question, solving a problem, or addressing a topic that is too broad or complex to be dealt with adequately by a single discipline and draws on disciplinary perspectives and integrates their insights to produce a more comprehensive understanding or cognitive advancement” (p. 12).

Repko’s definition includes four concepts that most interdisciplinary research includes. First, interdisciplinary research is a process rather than a method. This process allows the researcher to have far greater methodological flexibility (Repko, 2008) even if they use a specific research method as part of the process (Neuman, 2006). Second is the disciplinary perspective or, in other words, bodies of specialized knowledge. Third, an interdisciplinary insight is a purposeful and integrated understanding of the particular problem by disciplinary experts or by interdisciplinarians (Repko, 2008). Fourth, interdisciplinary understanding or, in other words, cognitive advancement occurs by “integrat[ing] relevant knowledge around a significant issue” (Earl McGrath, 1978, p.8). Integration can be defined as “bringing interdependent parts of knowledge into a relationship which involves

relating part to part, part to whole, and whole to part” (Mayvil, 1978, p. 10).

The focus of this inquiry will be on evaluating three play-based intervention programs from the perspectives of Disability Studies, and other disciplines such as Psychology, Early Childhood Education, Physical Education, and Occupational Therapy. These disciplines view play as an essential part of early childhood for children with impairments. Although each discipline views play differently, an interdisciplinary understanding of these disciplines provides a comprehensive understanding of the concept of play so that play can be applied and used as a tool for enjoyment, development, learning, and therapy. A comparative program evaluation of three play-based intervention programs will provide a comprehensive understanding of the best features of these programs, as well as an interdisciplinary understanding of the concept of play and physical activity, which can create extraordinary life changing moments for children with different abilities. With respect to this paper, the interdisciplinary approach will allow the inquiry to have a flexible methodology that uses qualitative methods, as well as allow the researcher inquirer to use different data collection and data analysis techniques. Also, the interaction and integration between disciplines provides mutable insights to help solve the research problem by providing a creative and broad solution that would be impossible to achieve using only one discipline.

### **3.3. Difference between Disciplinary and Interdisciplinary**

Disciplines have specific topics, methods, theories, concepts and perspectives that they use (Salter & Hearn, 1997), whereas interdisciplinarians combine these attributes from different disciplines (Repko, 2008). Repko (2008) adds that disciplines differ in their levels of development and origins. Disciplines are older, while interdisciplines are newer and thus younger. Disciplines take their strength from

sets of boundaries in order to protect their existing structure (Repko, 2008; Szostak, 2012). These boundaries are clear and have specific rules that indicate a shared set of topics that can be addressed. They also often share a set of epistemological assumptions that consider what type of research can be conducted, and who should conduct it (Szostak, 2012). Interdisciplines are a threat to this kind of thinking because they do not have clear rules or boundaries. Interdisciplinarity challenges these boundaries in an attempt to create new knowledge (Repko, 2008).

Methods are another area where differences between disciplinarity and interdisciplinarity can be found. Each discipline and sometimes a group of disciplines have preferred and follow specific methodological approaches in terms of ontology, epistemology, and research tools (Klein, 1996). Interdisciplinary, on the other hand, apply methods used for synthesis and integration between disciplines (Repko, 2008). Interdisciplinary research accounts for, draws attention to, and considers the various assumptions that exist in the research, while disciplinary research often emphasizes certain ontological and epistemological beliefs over others in such a way that the biases of the discipline are revealed (Klein, 1996).

With regards to theories, disciplines are concerned with depth of knowledge (Shailer, 2005) and understanding (Weingart & Stehr, 2000). Also, disciplines deal with problems that can be researched and solved in the context of one discipline (Klein, 2010). However, interdisciplines are concerned with breadth (Shailer, 2005) of knowledge that can solve complex problems (Turner, 2000) that either encompass several disciplines (Klein, 2010) or that lie between the disciplines (Repko, 2008). Disciplines and specialization are required because of the unmanageable amount of collective knowledge. However, they have a disciplinary bias, whereas in interdisciplines the researcher has a personal bias when making choices about which disciplines to draw

theories, methods and assumptions from (Repko, 2008). Despite that, interdisciplines are required because of the increasing complexity of the world (Klein, 2010).

With regards to the concept of study, disciplinary and interdisciplinary have different perspectives. Salter and Hearn (1996) argue that “Disciplinarity prevents the true evolution and politicization of knowledge; it is the product of the power of those who would like to maintain the social order as it is” (p. 34). However, real world problems do not lend themselves to being solved by tradition. Accepting the traditional way of thinking and the rules that govern it will restrict the development of new knowledge. Disciplinarity tends to inhibit researchers from considering and acknowledging information from other disciplines that may support or challenge their research and its claims. In doing so, they often focus inward on the same problems in the same way. The Organization for Economic Co-operation and Development (OECD, 1982) suggested that disciplines have a tendency to lose sight of the amount of knowledge not accessible to them by the very limitations of their boundaries (Chettiparumb, 2007).

On the other hand, Nissani (1997) argues that interdisciplinarity “encourages creativity and allows for the flexibility that bridges the gaps in modern academia, thereby mobilizing greater resources toward social rationality and justice” (p. 201). Within disciplinary research, errors are often identified by those from outside the discipline who can utilize interdisciplinary knowledge or even knowledge from a single discipline apart from that which is being used in a particular study (Chettiparumb 2007). Through interdisciplinarity, disciplinary boundaries can be dissolved to generate knowledge that will benefit society. An interdisciplinary approach is a way to solve real world problems and to make learning come alive. Newell (1983) stated that without an interdisciplinary approach, disciplinary studies would not connect meaningfully to the real world, thus limiting any real

learning. According to Weingart and Stehr (2000), interdisciplinary research represents the future of exploring concepts. Thus, interdisciplinary research tends to have practical implications for policymakers, technologists, and communities. On the other hand, it may be difficult for interdisciplinarians to prove that their questions have more academic implications than a disciplinary approach (Calhoun & Rhoten, 2010). Some research problems cannot be categorized within only one discipline, while others can, which could mean that disciplines do have some value after all. For instance, the concept of play is a complex phenomenon that can easily cross from one disciplinary boundary into another; there are several different disciplines (e.g., Childhood Education, Occupation and Therapy, Physical Education, etc.) that study play using different perspectives.

### 3.3.1. Types of Interdisciplinarity

In 1972, the first major interdisciplinary typology was published for an international conference held in France in 1970, co-sponsored by the Organization for Economic Co-operation and Development (OECD) (Apostel, Berger, Brigg, & Michaud, 1972). The most widely used terms in the OECD typology were Multidisciplinary, Interdisciplinary, and Transdisciplinary. According to Besselaar, and Heimeriks (2001), types of interdisciplinarity can be distinguished according to the level of integration. Klein (2010) divides interdisciplinarity into 1) multidisciplinary, 2) interdisciplinary, and 3) transdisciplinarity. Below, each type of interdisciplinarity will be discussed in more detail.

*Multidisciplinarity.* Contrary to interdisciplinarity, multidisciplinary focuses on reaching beyond one discipline; using two or more disciplines side by side for a wider understanding of the subject. It does not, however, aim to amalgamate the two or more disciplines (Repko, 2008). Besselaar and Heimeriks (2001) agree and state that a multidisciplinary approach may combine different disciplinary approaches, but does

not integrate the findings or theories. Moreover, multidisciplinary can be defined “as a juxtaposition of various disciplines, sometimes with no apparent connection between them” (Salter & Hearn, 1996, p. 186). According to Klein (2010), multidisciplinary occurs when disciplines are juxtaposed in sequence or at the same time with no integration or interaction between them. Strathern (2004) suggests that multidisciplinary can unite multiple skills from different disciplines. In other words, a person may study, in sequence or simultaneously, more than one area of knowledge without building any connections between them. For example, one may become competent in Biology, Linguistics, and Sociology without generating any cooperation between these disciplines (Max-Neef, 2005). According to Reynolds (1998) “interdisciplinarity is best suited to problems of a multidisciplinary nature that cannot be addressed within the boundaries of one discipline” (as cited in Klein, 2000, p. 13). In multidisciplinary teams of researchers, participants carry out their analyses separately, as understood from the perspective of their individual disciplines, the result being a series of reports attached together, without any integrating synthesis between these disciplines (Max-Neef, 2005). A lack of integration is what draws the line between interdisciplinarity and multidisciplinary (Repko, 2008).

*Interdisciplinarity.* When integration and interaction become proactive, and linking, blending, and focusing are utilized, the line between interdisciplinarity and multidisciplinary is crossed (Klein, 2010). Moran (2008) states that interdisciplinarity is “always transformative in some way, producing new forms of knowledge in its engagement with discrete disciplines” (p. 15). Interdisciplinarity takes place when there is an intentional interaction and integration between disciplines (Klein, 2010). Klein (2010) believes there are many interdisciplinaritys and they have one common characteristic that gives meaning to the word ‘interdisciplinary’, which is integration. Newell (2008), on the

other hand, believes there is one interdisciplinarity that has different guises or forms. He argues that if there are many interdisciplinaritys, then there must be common processes between them (Newell, 2008). Klein states that interdisciplinaritys are different depending on the purpose of research and education, the role of the critique, as well as the role of the disciplines. Interdisciplinarity can be subdivided into many different types such as: 1. Narrow or broad; 2. Shared, cooperative, or solo; 3. Methodological or theoretical; 4. Bridge building or restructuring; 5. Instrumental, critical or conceptual; and 6. Endogenous or exogenous (Klein, 2005).

Narrow interdisciplinarity occurs when two or more disciplines that are close to each other in method, subject, or view interact (e.g., forest sciences), whereas broad (or wide) interdisciplinarity occurs when disciplines that are not related to each other interact (e.g., human sciences) (Klein, 2010; Newell, 1998). To do interdisciplinary research between them, the researcher has to create a bridge between them to integrate their insights.

With respect to the comparative evaluation of play-based intervention programs for children with different abilities inquiry, the disciplines involved in the research offer a narrow scope; for example, the disciplines of Early Childhood Education, Physical Education, and Occupational Therapy, three disciplines involved in this analysis, view the concept of play as an essential part of life for children with impairments. Moreover, the disciplines of Social Work and Disability Studies are close to each other and share some insights. Social Work provides services for all communities including care for young people, elder care, care for people with impairments, etc. Also, Social Work focuses more on providing services and helping to solve social problems, while Disability Studies focuses more on the experience of people with different abilities. Both share the goal of achieving social justice and providing a decent life for people with impairments.

Shared interdisciplinarity occurs when a group of researchers share the research findings from their own studies; thus the overall process includes the ideas and skills of different people (Klein, 2010; Boden, 1999). Cooperative interdisciplinarity takes place when individual researchers or groups of researchers cooperate with a broader group of researchers and "feed" off of each other's findings, exemplifying teamwork (Klein, 2010; Boden, 1999). It is also possible to conduct interdisciplinarity as an individual without a team (Klein, 2010). With respect to this inquiry, it will be solo interdisciplinary research, meaning that it is individual work.

Methodological interdisciplinarity occurs when methods are borrowed from other disciplines in order to enhance research results (Bruun, Hukkinen, Huutoniemi, & Klein, 2005). For example, recent developments have established mixed methodological research, where qualitative and quantitative methods are used (Smelser, 2004). Theoretical interdisciplinarity includes the use of a theoretical framework and synthesis in order to view the problem in a more comprehensive way (Klein, 2010; Boden 1999).

Interdisciplinarity can be based on the metaphor of bridge building or restructuring (Apostel, Berger, Briggs, & Michaud, 1972). Bridge building occurs when links are made between two or more disciplines (Apostel et al., 1972), but often lacks critical reflection of the disciplines' theories, knowledge, or perspectives (Klein, 1996). However, restructuring interdisciplinarity occurs when several disciplines make a new whole such as interdisciplines based on a topic (e.g., Disability Studies) (Apostel et al., 1972; Klein, 2010).

Interdisciplinarity research can be defined as instrumental, critical or conceptual. First, instrumental interdisciplinarity responds to the external demands of society and attempts to address real world problems (Salter & Hearn, 1996). Instrumental interdisciplinarity is a pragmatic approach that focuses on research, and methodological borrowing

and integration (Klein, 2005). The instrumental interdisciplinarity view of knowledge does not seek to challenge disciplinary boundaries or epistemological assumptions. Instead, it attempts to find practical solutions to real-world problems in response to the outside demands of society (Klein, 2005, 2010; Repko, 2008). The results of this inquiry are needed to solve real-world problems in the KSA in response to the problem of children with impairments not having recreational programs to attend after school and on holidays. Secondly, conceptual interdisciplinarity is pragmatic. It emphasizes the integration of knowledge and the importance of questions that cannot easily be answered through one discipline, as in the case of cultural studies and feminism (Salter & Hearn, 1996). Conceptual interdisciplinarity emphasizes the creation and the synthesis of new knowledge. Finally, critical interdisciplinarity aims to interrogate existing structures of knowledge and education, raises questions of value and purpose (Repko, 2008) and seeks to transform and dismantle the boundary between the literary and the political, treat cultural objects relationally, and advocate for the inclusion of low culture (Klein, 2005a). Critical interdisciplinarity questions knowledge formation and attempts to make changes to the way knowledge is traditionally organized (Klein, 2010; Repko, 2008).

Moreover, interdisciplinarity includes a distinction between endogenous and exogenous interdisciplinarity. Endogenous interdisciplinarity is defined as being “concerned with the production of new knowledge”, while exogenous interdisciplinarity is defined as a method that “interrogates the disciplines on the demarcations as they apply to ‘real life’ and demands that the University fulfill its social mission” (Salter and Hearn, 1996, p. 28). Exogenous research aims to be applied to society in order to solve “real life” issues (Klein, 1986). Exogenous interdisciplinarity questions the disciplines through its research (Shailer, 2005). Exogenous interdisciplinarity is similar to instrumental interdisciplinarity in that it aims to solve real-world

problems and achieve social justice, which is the aim of this inquiry, by enhancing the social skills of children with impairments through a play-based program. However, endogenous interdisciplinarity is similar to critical interdisciplinarity in that it seeks new knowledge and new ways to organize knowledge through research.

*Transdisciplinarity.* Transdisciplinarity began to appear in the humanities in the late 20<sup>th</sup> century as a method for labeling a critical evaluation of knowledge (Repko, 2008). Transdisciplinarity can be defined as “a process of establishing a common system of axioms for a set of disciplines” (Salter & Hearn, 1996, p. 186). Transdisciplinarity includes aspects of transcending, transgressing, and transforming in order to create a synthesis and fill in gaps between certain disciplines (Klein, 2010; Chettiparamb, 2007). It may also include knowledge from individuals or the public or private sectors (Repko, 2008). Newel (2013) states that “Transdisciplinarians focus their research on the development of public policy on complex real-world problems and conduct their research in collaboration with stakeholders and institutions /agencies with their own interests, perspectives, and insights” (p. 35). Transdisciplinarians attempt to benefit the sciences by changing the process through which knowledge is produced (Newel, 2013). Transdisciplinarity requires a synthesis of knowledge from various disciplines. Teams who work in transdisciplinarity research not only share a common question but often share methods, knowledge, and create a common conceptual framework. They also share each other’s disciplinary language or generate a new common language (Aboelela, S.W. *et al.*, 2007).

Transdisciplinarity is similar to interdisciplinarity in that it focuses on collaborative research and problem solving. However, transdisciplinarity is different in that it crosses both disciplinary boundaries to sectors of society by involving stakeholders in the private and public domains (Repko, 2008). According Morin (2008), transdisciplinary “goes

beyond interdisciplinarity, which involves using the methods of one discipline to inform another and drawing on multiple disciplines while actually challenging the disciplinary organization of knowledge, and the reductive/disjunctive way of thinking” (p. xxi). Lattuca (2001) explains that transdisciplinarity differs from interdisciplinarity in that concepts, methods, or theories are borrowed from one discipline and are useful to other disciplines that are interested in the same problem. For instance, sociobiology uses the concepts of both evolutionary biology and natural selection to understand the behaviours of animals (Lattuca, 2001).

Both transdisciplinary and interdisciplinary studies aim to produce solutions to problems wherein the solution transcends a solitary discipline. They also cooperate in their endeavors to bring multiple disciplines together. Transdisciplinary studies focus on solving problems by combining and modifying disciplines, whereas interdisciplinary studies concentrate on assimilating and incorporating disciplines to use the same idioms and terminology (Jantsch, 1972).

### 3.3.2. Models of the Interdisciplinary Research Process

Klein, Newell, and Szostak wrote a step-by-step process for performing interdisciplinary research. These models are a guideline for interdisciplinary researchers. The Klein model has 12 steps, which were outlined in 1990 in *Interdisciplinarity: History, Theory, and Practice* (p. 188-189). The Newell model was written in 2001 and is very similar to Klein’s model and has 13 steps (14 steps when revised in 2007). Newell (2007) modified his model by splitting one step into two parts. Part A involves *gathering* all current disciplinary knowledge and *searching* for new information and part B involves *gathering* disciplinary knowledge and *identifying* non-linear linkages. Thirdly, Szostak’s model, outlined in 2002 in *How to Do Interdisciplinarity: Integrating the Debate*, introduces a 12-step model (p. 105-119). Szostak’s model is more distinct than Klein and Newell’s models and has 12 steps. Below,

the common steps between the three models are integrated, while uncommon steps are clarified.

- The first step in Klein (1990), Newell (2001), and Szostak's (2002) models are almost the same. Each model suggests that the researcher should start the interdisciplinarity research with an interdisciplinary question and define the problem, topic or issue.
- In the second step, Klein and Newell suggest that the researcher should determine all knowledge they require including relevant disciplines, while Klein adds relevant models, traditions, and literatures. On the other hand, Szostak's second step relates to the first step, which is identifying key phenomena involved as well as subsidiary phenomena.
- In step three, Klein suggests that the researcher should develop an integrative framework and appropriate questions to be investigated. Newell does not have a similar step. Szostak's third step is to identify relevant disciplines and disciplinary perspectives, which is similar to Klein's and Newell's second steps.
- All three models, Klein (1990), Newell (2001), and Szostak (2002), have a similar fourth step that focuses on the research method. Klein suggests specifying particular studies to be undertaken. Newell suggests developing a working command of the relevant concepts, theories, and methods of each discipline, while Szostak ascertains what theories and methods are particularly relevant to the question at hand. As with phenomena, theories and methods that may shed some lesser light on the question should not be casually ignored.
- Step five: Klein, Newell, and Szostak have the same idea, that the research should gather all current and relevant disciplinary knowledge.
- Step six: Also similar in Klein, Newell, and Szostak's models is their suggestion that after a detailed literature survey has been performed, the researcher should gain adequacy in the relevant disciplines by having an overall feeling for each discipline, and more in-depth knowledge about the relevant methods, theories, and perspectives of the research problem. Klein (2005) stated that adequacy is necessary, but the interdisciplinarian is not necessarily an expert in all disciplines.

- Step seven is unique to Newell's model. It requires the generation of disciplinary insights into the problem, which is somewhat related to the previous step.
- Step eight appears only in Newell and Szostak's models. Here, the researcher should compare and contrast results from previous disciplines by looking for different concepts with common meanings or concepts with different meanings, through which those insights are expressed.
- Step nine in Klein, Newell, and Szostak's models have similar ideas that focus on analyzing the problem from each discipline and evaluate each discipline's insight, assumptions and concepts in the context of the specific problem. This step can also be done by looking at the strengths and weaknesses of each discipline and how the methods, evidence, and definition of each discipline are skewed (Repko, 2008).
- Step ten in Klein and Newell's models had a similar step in which the researches should resolve disciplinary conflicts of each disciplinary insight by working toward a common vocabulary and set of assumptions. Repko (2008) suggests recognizing and confronting differences.
- Step eleven appears only in Newell's model. It involves creating common ground. Bromme (2000) recommends developing a common language.
- Step twelve is also only in Newell's model. It involves identifying (non-linear) linkages between variables studied by different disciplines.
- Step thirteen is the most important step in interdisciplinarity research. Klein, Newell, and Szostak have a similar step in which the researcher should integrate individual pieces to determine a pattern of mutual relatedness and relevancy which results in constructing a more comprehensive understanding of the problem.
- Step fourteen in Newell and Szostak's models suggests reflecting on the results of integration by producing a model (metaphor, theme) that captures the new understanding.
- Step fifteen in all three models suggests that the researcher should test their results of integration by attempting to solve the problem to confirm or disconfirm the proposed solution.
- Step sixteen is only in Szostak's model. This step involves the researcher communicating the results.

In summary, Klein, Newell, and Szostak's models have common steps that can be integrated together to determine the basic steps in interdisciplinary research regardless of the order of the steps. The main differences between the three models are the disparities between the number, order, and identity of the steps. Repko (2005) summarizes these three models and adapts their similarities into a new model in order to simplify this intricate research method. He modified his model by adding a two-part step. Part A [steps 1- 6] draws on disciplinary insights and part B [Steps 7- 10] integrates insights and produces an interdisciplinary understanding.

The interdisciplinary process for this inquiry will be loosely based on Repko's model (2008), as it is a more simplified version. Part A involves several steps: steps one and two are used to define the problem and to justify the use of interdisciplinarity, not just disciplinary research, which in this case is the comparative program evaluation of the performance of different play-based intervention programs in Canada and assessment of their potential success in a new culture. Each one of these programs has different goals, rules, and missions, which involve different disciplines providing multiple lenses through which these programs can be understood and explained. Step three involves selecting the most relevant disciplines, which are Disability Studies, Psychology, Early Childhood Education, Physical Education, and Occupational Therapy. Step four is the literature review, which has been divided into three components: 1) the concept of play, 2) disability, and 3) social skills and intervention programs. Step five involves adequately gathering all relevant disciplines to create more in-depth knowledge that includes information from these discipline, theories, methods, tools, and concepts. For example, methods and tools are important aspects of disciplines that can be integrated in interdisciplinary studies. This inquiry will utilize Patton's guidelines to evaluate these programs and SWOT analysis to customize the

Canadian play-based program. Additionally, the inquire will use the Delphi method to evaluate the potential success of the new program in a new culture. Step six involves analyzing the problem from each point of view and evaluating each insight. All data collected and coded from the three phases will be evaluated and analyzed using different methods, such as inductive and deductive analysis based on inquirer framework and literature review for the discipline they are already involved in.

Part B also involves several steps: Steps seven and eight involve looking for and evaluating conflict between disciplines in order to resolve it and create a common ground. For example, the concept of play is essential and considered an important part of childhood; however, the disciplines of Early Childhood Education, Physical Education, and Occupational Therapy view play from a different point of view. Also, these three disciplines focus on improving individuals by teaching them new play skills, developing their social skills, etc., while the social model of disability that has been adapted by Disability Studies focuses on individuals' experiences in their environments. Steps nine and ten involve integrating insight and producing an interdisciplinary understanding of the problem, and testing this new understanding by applying it to the problem, issue, or question, which will be an ongoing process as the inquirer conducts this inquiry.

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