Importance of Toy Play in Special Education for young Children: Perspectives and Approaches

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Abstract

Special needs children have different needs compared to typically growing children in various aspects of life. Their learning is hampered due to the difficulties they face in the normal way of learning. Special education practices have been adopting various play-based methods to address special needs children's difficulties and needs. This research reviews toy play as a learning method and its importance in young special needs children's education. The paper takes different perspectives on play and how it is characterized. A study of Toy Play taxonomies is also presented from the perspective of the learning needs of special needs children. Three prominent special education approaches are studied, and a synthesis of how to play fits into these approaches is presented. The future of toy play and further research areas is discussed. Early childhood play is a normal phenomenon that has much use in early intervention, early childhood special education, and early childhood education. Among these areas, there are still many disagreements about how to characterize and use play. These tensions jeopardize evaluation, action, and curriculum planning practices, as well as their links to science and practice. This essay examines play in early learning, early childhood special education, early childhood education, and how play is viewed and used in these settings.

1. Introduction

Special education is at least two centuries old since its inception. Much research has happened in the field of special education using play as a natural way of learning. Literature of the last three decades talks about what has been achieved and what needs to be looked into regarding toy play in

special education [1]. What is the role of toy play in the education of young special needs children is of particular interest for this review?

1.1. Scenario 1

Tia is a 4-year-old bubbly girl who struggles with recognizing and writing alphabets. Her parents and teachers are worried, for she has crossed her natural age of learning these basics and lags behind her peers at least by two years [2]. One day her teacher creates a picture puzzle of alphabets using cardboard pieces [3]. Now Tia uses the puzzle, and she can easily recognize the alphabets and arrange the alphabet pieces in order. More importantly, she is enjoying doing it!

1.2. Scenario 2

Roy is a 7-year shy boy who hates math and struggles with simple 2- and 3-digit additions. His father is a single parent who is worried about his academic performance [4]. One day the father stumbles upon a toy in a shop, and he brings it home. It was a set of blocks, and now Roy is playing with those blocks, and he not only can carry out the additions but does not hate math anymore!

This research is set out with the objectives of understanding:
- Why toy play is important in the special education of young children.
- The different perspectives of play and why do they matter.
- The types of toy play and the learning needs they can address.
- Special education best practices that can be adopted to implement the toy play method.

This research reviews toy plays in terms of its intrinsic meaning, perspectives through the lens of psychology and education disciplines, and its application through best practices in special education [5]. The research uses content analysis as a review method. Synthesis is used as a method to present the insights.

2. Background

Play is the occupation of children – Maria Montessori. As early as the 1800s, Friedrich Froebel, a German educator, proposed that children learn best in their natural settings doing what they do most naturally. He believed that children construct their knowledge through the experience gained while playing [6]. He called his school the "Kindergarten," German for "the Garden of Children," a term popularly used everywhere in the world for preschools or schools for very young children [7]. It

is Froebel who, for the first time, designed 20 sets of (solid wood) *objects,* which he coined as Gifts and Occupations, which were used in early education. In the early 1900s, Swiss psychologist Jean Piaget put forth a theory that would change the way children's development was perceived [8]. He proposed that children think differently from their adult counterparts and show four distinct developmental stages. The first two stages, namely the sensory-motor stage and the preoperational stage, show the greatest potential for learning through play [9]. At around the same time in Russia, psychologist Lev Vygotsky put forth the theory of the influence of play on children's cognitive and social development.

3. Meanings of Play

The earliest attempted definitions of 'play' by researchers looked at play as a consequence and tried to explain why children play. Johan Huizinga, for the first time, considered play as an activity and what characterizes play [10]. Over the later two decades, literature on 'play' provides many definitions and meanings of play, which varies from free play to object play to playground play. For the sake of the subject matter for the paper, the author considers 'object play' as the central idea. The later definitions of play consider the involvement of mind and reward of the act of play (which characterize play) as in the definition of O'Connor and LaPoint: "Play is any voluntary, human activity aimed at intrinsic satisfaction, which is initiated and completed by the player(s) requiring mental awareness [11]." Studies also provide the account of development in young children through 'object/toy play. Lifter, Mason, and Barton give the meaning of play as "Play is what children do with toys that engage their attention and interest, regardless of whatever else is going on and whoever else is present." Zimmerman and Calovini define a toy as a *learning material,* which simulates children to discover relationships [12].

4. Perspectives of Play

Children are thought to construct their knowledge through play and apply their knowledge to carry out the play. Play is a characteristic feature of a growing child. At different stages, they exhibit different aspects of the play that inform [13]. Children carry out of the very early stage, children very early stage n carry out simple object or toy play that exhibit the *natural* aspect of their knowledge, whereas, in the later years' play, they perform complex toy play functions that exhibit the *cultural* aspect of their knowledge [14]. In the early growing stages, children exhibit inductive thinking for

play. They have very limited social interactions, and they construct the knowledge out of the experience of the things around them [15]. As they grow, they exhibit deductive thinking, which comes from different social interactions with their parents, friends, caregivers, teachers, etc. In special need children, they may be exhibiting lesser complexities in their toy-play not because their knowledge is less developed but because they think differently from the normally or typically growing children [16]. Vygotsky's theory of defect logy sees play as a manifestation of a child's natural and cultural knowledge.

Literature on how the play is viewed based on play patterns and thinking in the developing children falls into two broad perspectives: Behavioral perspective and Constructive perspective. The behavioral perspective looks at playing more as an assessment tool, looking at play uses and how play can be taught to children [17]. Psychologists and therapists usually use this perspective to assess the abilities or disabilities of growing children and how they can use the toy-play to increase the complexity of play patterns in children. On the other hand, the constructive perspective sees the play in the perspective of reason or basis behind the play; it emphasizes what characterizes play and how the child constructs the knowledge [18]. Educators use this perspective to use toy play as a learning tool for addressing the learning objectives in children. For a researcher interested in studying toy play for special needs children, both these perspectives are important since the behavioral perspective provides a window for assessing the learning gaps/needs of special needs children. Constructive perspective provides the characteristics of play and informs the type of interventions and instructional designs for addressing particular learning gaps or special needs children's needs [19]. The literature on play as an activity and what characterizes play gives insight into five criteria of object play. They can be summarized as:

4.1. Play Is Spontaneous, Extempore, and Natural

Play comes very naturally to all children, even for children who struggle with learning. This comfort aspect with play makes it a powerful tool for learning for special needs children [20].

4.2. Play Is Not Fully Functional, Meaning It May Not Be Completely Purposeful in the Context in Which It Is Conducted

In the many definitions of play in the literature, play is defined as being seemingly purposeless is enjoyable. Play cannot be completely purposeless or nonfunctional. It happens out of

internal motivation that satisfies the physical, mental, and emotional urge to be happy and joyous, an effective method for learning for special needs children. Learning demands self-motivation and play is intrinsically motivated [21].

4.3. Play Uses Creativity and Imagination

In both the natural and cultural construction of knowledge, children use creativity and imagination during play structured by their own mental rules. Learning is enhanced by creativity and imagination, and hence play is an important learning method [22].

4.4. Play is Enjoyable, Pleasurable, and Rewarding

These factors are critical for the play and are held valuable by the players, that is, children. Special need children must enjoy learning since they already have difficulties learning.

4.5. Play Happens Under No Pressure or No Stress Situation

During play, children experience a stress-free physical and social environment. Sometimes play does the role of releasing stress for children. Learning cannot happen under stress or pressure moreover; learning should be enjoyable and should not induce stress in children. This criterion is very important, especially for special needs children, to enjoy while learning and learning while playing [23].

5. Taxonomies of Toy Play

Researchers have formulated Toy-play taxonomies for research using toys or object play with special needs children. These taxonomies help in the selection of toys, measurement of playability, and devising intervention strategies. Some taxonomy suggests the classification of toy play based on the contextual and non-contextual nature of toy play [24]. Graphical Representation of Toy-Play Taxonomy is indicated in Figure 1.

Figure 1 - Toy-play Taxonomy: Graphical Representation
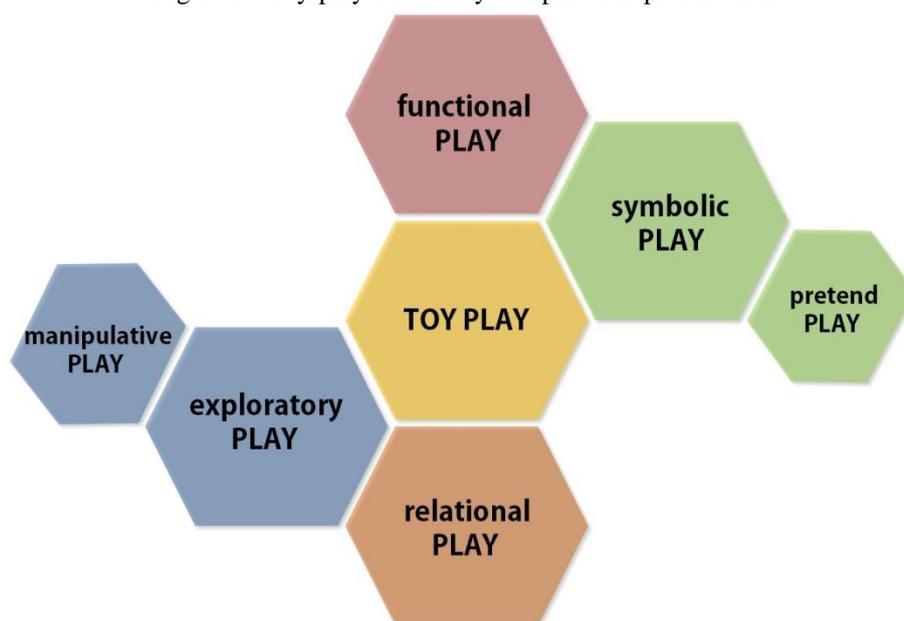
The toy play taxonomies explain the level of complexity and the type of action carried out in each type. Literature about identifying and assessing the difficulties in special needs children gives many accounts of different learning deficits or special needs children's needs. A systematic study of play interventions conducted for special needs children shows the effective use of toy play in learning. It reinforces the importance of toy play as an effective method in the special education of young children [25]. Specific uses of play taxonomies can be found in the literature on the researchers conducted with toy play. Barton and Wolery give comprehensive benefits of object play. Through toy play, children can develop manipulation techniques, abstract thinking, and problem-solving, symbolic thinking, displaying empathy, spatial imagination, and social interaction & communication [26]. A synthesis of the toy play taxonomy to the learning needs or deficits of special needs children shows how to play can be used for different learning needs (Table 1).

6. Positioning Toy Play in Special Need Education Approaches

Special education literature provides several practices over the last two centuries and some of the most effective best practices in the last two to three decades. Positioning of object play or toy play into these practices is particularly important to understand the effectiveness of toy play as an intervention method. Three special need education best practices: Evidence-based approach, needs-based approach, and Systemic Change approach are considered for analysis and synthesis of toy play vis-à-vis these approaches [27].

6.1. Evidence-Based Approach and Toy Play

The evidence-based approach bases its practice on time-tested empirical research. It employs research methods of group experiment, quasi-experiment, and single-subject control research. This approach is characterized by systematic, rigorous, and objective methods that validate the research results. In this approach, whatever intervention method the teachers choose has to be proven through high-quality research. The practice advocates using a larger sample size and repeated studies that yield converging results.

Using an evidence-based approach for toy play intervention poses limitations or shortcomings: 1. Toy play cannot be used with a large sample size. However, longitudinal or cross-sectional studies are possible. However, toy play being more observation-based research, restricted sample size works best. 2. Toy play intervention may aim to cater to every special needs child. It is individualized. The evidence-based approach may not give true results or work every time with every special needs child [28].

The evidence-based approach can be helpful for the toy play method in 1. Determining the toy typologies to be used based on the empirical results. 2. Devising the right strategies for toy play intervention. Here, toy play typologies and intervention strategies are not to be researched as separate entities; rather, toy typologies should be in-built into the strategies.

6.2. Needs-Based Approach and Toy Play

The needs-based approach aims to identify the learning needs of each child and provide individual support so that each child could have better access and engagement across environments. Two major practices that follow the needs-based approach are:

a) Collaborative Practice.
b) Meaningful and Individualized curriculum.

The collaborative practice uses various stakeholders' or collaborators' efforts and expertise to address the needs of special needs children in designing special education processes, planning, and intervention strategies. This practice works with collaborating with children's families and involving all possible environments that the children engage with, like home, preschool, daycare, etc [29].

Though this practice has proven to be very effective, understanding every child's (social, economic & cultural) environments, especially in countries with much diversity, becomes difficult for special educators. Using collaborative practice for toy play interventions could be useful in that: 1. It

is easier for special educators if they know the toy preferences of each child. 2. They could use parent support for continued efforts in different environments for the special need children [30].

Table 1 - A Study of Toy Play Taxonomies and the Learning Needs for Special Need Children

Toy play taxonomy	Actions	Learning needs/deficits that can be addressed
Exploratory Play (Baranek et al., 2005) Manipulative Play (Barton, 2010)	Handling of objects like touching, tumbling, rolling, placing, twisting, etc.	Sensory/Fine Motor Skills (Eisert & Lamory, 2010) Spatial Working Memory (Momarella, Lucangeli & Cornoldi, 2010)
Functional Play(Baranek et al., 2005)	Playing with the toy as intended function of the toy, for example: using a toy car to roll.	Sensory/fine Motor Skills(Eisert & Lamory, 2010) Spatial Working Memory (Momarella, Lucangeli & Cornoldi, 2010) Sustained Attention(Krakow & Kopp, 1983) Observational Learning(Taylor & DeQuinzio, 2012) Memory Retention (Broadley& MacDonald, 1993)
Relational Play (Westeyn et al., 2012)	Grouping objects based on size, form, color, texture, etc. A spatial configuration like block building, puzzles, etc.	Sensory/fine Motor Skills (Eisert & Lamory, 2010) Spatial Working Memory & Arithmetic Deficit(Momarella, Lucangeli & Cornoldi, 2010) Sustained Attention(Krakow & Kopp, 1983) Observational Learning(Taylor &DeQuinzio, 2012) Memory Retention (Brodley & MacDonald, 1993) Cognitive Skills(Malone, Stoneman & Langone, 1994)
Symbolic Play(Baranek et al., 2005) Pretend Play (McCune-Nicolich, 1981)	Use of toys in a make-believe manner. Object substitution, abstraction, giving meaning to objects, role-playing, etc.	Sensory/Fine Motor Skills (Eisert & Lamory, 2010) Sustained Attention(Krakow & Kopp, 1983) Observational Learning (Taylor & DeQuinzio, 2012) Cognitive Skills (Malone, Stoneman & Langone, 1994) Memory Retention (Brodley & MacDonald, 1993) Language Development & Communication (Stewart, 2010) Response to social stimuli (Sigman & Ruskin, 1999)

Meaningful and Individualized curriculum practice uses individualized curriculum and intervention strategies to fit individual needs of the child and meaningful in the sense of choosing the right content that gives maximum benefit or learning effect for each child, the specific content areas being self-determination, communication, and self-directed movement (Horn & Kang, 2012). Literature shows that the practices aimed at improving specific content have been successful with children with special learning needs. Using individualized practices for toy play interventions may set limitations: 1. not all learning outcomes can be designed with individualized interventions. 2. Most of the literature shows a limited number of studies done with young children with proven efficacy of the

practice, especially in the sensory-motor domain, making it difficult to choose the right intervention method and content for toy play.

More recent studies in the sensory-motor domain suggest that the motor response to sensory stimuli is a more complex phenomenon that emerges from the task itself, the child of the interaction is involved, and the environment in the context of play. Meaningful, individualized curriculum practice can be useful for toy play method in 1, Identifying internal and external factors that influence the method's efficacy 2. Creating a 'need matrix' for the special needs children under consideration for toy play intervention [31].

6.3. Systemic Change Approach and Toy Play

The systemic change approach aims to provide an overall development framework for schools specifically for special education. "This framework offers school personnel and other stakeholders, organized change efforts coherently, while keeping the focus on successful learning results for all students." Systemic change approach includes designing curricula and instructional designs, physical and social environments, and learning processes, assessing student learning, and communications and interactions with students, teachers, parents, and administrators. Ferguson proposes five broad changes in the implementation of systemic change practice:

- Student-centric learning approach where the student is an active learner rather than a passive receiver of knowledge.
- Offering needs-based curriculum and providing additional support to students in learning.
- Exercising group practice among teachers where teachers share their expertise to work together towards a needs-based approach.
- Parents' involvement in creating family-school linkages where school teachers and administrators are involved with students' families to help each other create a cooperative ecosystem for special education.
- Continuous change and improvement with a focus on education reforms by schools.

The systemic change approach works towards three goals:

1. Developing curriculum and learning processes that cater to the learning needs of special needs children (syllabi and intervention methodologies).
2. Creating appropriate Physical and social environments for the children to learn in (classroom, furniture, and play environment).

3. Providing support by involving children's families in the learning process (co-creating processes).

Using the systemic change approach for toy play intervention presents many toy play design and implementation opportunities to cater to children with various learning needs: 1. Toy play can be an integral part of instructional design. 2. Toy play interventions can happen in groups of small sizes that can be replicated over larger groups. 3. Expertise of different educators can be used to assess the learning of special needs children. 4. Specific physical and social environments can be designed to facilitate toy play interventions in effective ways. 5. Parent's help can be sought to understand children's needs and preferences and ensure their effective learning in environments other than schools [32].

7. Conclusion

Various meanings of toy play were reviewed to understand the functional and semantic aspects of toy play. Both the behavioral and constructive perspectives are important for toy play intervention strategies, especially for young children with special needs. Nature of play, the context of the play, the mindset of the player/s, and conditions for play are important considerations for toy play intervention strategies. The paper reviewed some extensively used toy play taxonomies in research across the literature. It is useful to understand the use of toy play taxonomies to address the learning needs of these young children. The review of some of the best practices in inclusive education presented their limitations and opportunities for toy play intervention. While the evidence-based practice could be a great approach for toy play methods, not much research has happened using toy play that has given converging results. The needs-based approach becomes the obvious choice for the toy play method. In contrast, the systemic change approach has many benefits of including physical and social environments. It offers a holistic approach to individualized curriculum and meaningful learning. Special educators must select the appropriate approach, considering the specific learning needs, conditions, and environment of the special needs children and how educators can collaborate to bring about better learning outcomes.

The review saw a bulk of literature involving research with toy play intervention. It reiterates the importance of toy play as an effective method in special education. Some studies used toy play taxonomies for research. Some studies put forth the learning needs in special need children and the identification methods and improve toy play patterns. This paper presented a brief synthesis of which toy play taxonomy can address what learning need/s. The paper also presented the opportunities and

limitations of using best practices for toy play interventions. There is a need to study what toy play produces specific learning, which can be mapped with the specific learning need for the special need children? Can a system of *standards or guidelines* be developed that describes the toys for particular learning outcomes?

Moreover, what approach of special education best practices to be adopted for specific toy play intervention? How can the effectiveness be measured? The seminal research already done in special need education for young children has proven the benefits of toy play methods. The future of such research holds much hope and promise that learning could reach these young children and that learning can be enjoyable for them, for play is the way and probably the only way.

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