Child Development

and

Early Stimulation and Learning Resources

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APPENDIX 22
According to Article 31 of the Convention on the Rights of the Child:

“States Parties recognise the right of the child to rest and leisure, to engage in play and recreational activities appropriate to the age of the child and to participate freely in cultural life and the arts.”

“States Parties shall respect and promote the right of the child to participate fully in cultural and artistic life and shall encourage the provision of appropriate and equal opportunities for cultural, artistic, recreational and leisure activity.”

Play enriches the lives of children; even in the most unfavourable environments children often find opportunities for recreation. Play is essential for children healthy development and wellbeing as it promotes their cognitive, social and physical skills as well as creativity, imagination and self-confidence. Concern for the underestimation of the importance of play by power holders resulted in the General comment No. 17 (2013) on Article 31. Amongst others, the lack of investment in appropriate provisions has undermined children’s right to play. The Committee stated that: “Where investment is made, it is in the provision of structured and organised activities, but equally important is the need to create time and space for children to engage in spontaneous play, recreation and creativity, and to promote societal attitudes that support and encourage such activity.” The insufficient progress of and support for Article 31 of the Convention on the Rights of the Child particularly raised concerns for the opportunities of certain groups of children, including girls, poor children, children with disabilities, indigenous children and children belonging to minorities.
1. Introduction

The importance of Early Childhood Care and Development (ECCD) and education should not be underestimated. Research by the World Bank has shown that children who participated in ECCD and education programmes were more likely to enroll in primary education and were more interested in learning academic skills, like mathematics, writing and reading; than their peers who did not participate in such programmes. In addition, ECCD addressed issues related to education, such as health and nutrition. By investing in early childhood initiatives, an equal start for all children is guaranteed and the foundations for children and their communities are strengthened.

Play and learning resources are crucial in ECCD and education initiatives as they stimulate children's development. Even so, toys and other educational materials might not be readily available in some countries due to poverty or instability. In those countries, providing ready-made resources might not be the best option as local communities might not be able to use them or cannot easily replace broken parts. As a result, those resources are often abandoned and local communities remain inconvenienced. In this article, we will look at play and learning resources in a broad sense: What resources are actually required to enhance ECCD and education initiatives? And how can local, natural or recyclable materials best be utilised in a sustainable manner?

The article is structured as follows: in the first chapter, children's cognitive-intellectual, social-emotional and physical development are discussed respectively as well as their implications for educational resources. The second chapter presents information about holistic development and alternative education approaches, including Waldorf education, Montessori education, Reggio Emilia and the Froebel educational approach. This is followed by a chapter about playful learning and the resources needed to stimulate indoor versus outdoor play and home-based versus centre-based play. Chapter four is about inclusive development and discusses: age-appropriate, gender-balanced, and culturally and contextually relevant resources, as well as resources for children with disabilities. The last chapter contains information about sustainable use of resources and will present two examples of organisations that seek to maximise the use of local and recyclable play and learning materials.

2. Early Childhood Development

Cognitive-Intellectual Development

From birth onwards children are mentally and physically active, and their activity greatly contributes to their own development (Siegler et al., 2006). Children are also intrinsically motivated to learn and will use resources in their surrounding to increase their understanding of the world. However, children's cognitive development and subsequent use of resources depends on their age, and as such on their stage of cognitive development. Piaget distinguished between four distinct stages of cognitive development, each stage representing a particular timeframe in which children's thinking and subsequent actions differ qualitatively. Piaget's four stages of cognitive development are: the sensorimotor stage (birth to two years), the preoperational stage (2 to 7 years), the concrete operational stage (7 to 12 years), and the formal operational stage (12 years and beyond). Considering our focus on early childhood, we will discuss the first two stages of cognitive development and their subsequent implications for resources.

Children's thinking develops especially rapidly in the first two years of their lives (Siegler et al., 2006) In these two years, which covers Piaget's sensorimotor stage, children learn about the world mainly through their sensory and motor abilities. These allow them to perceive and explore the world and subsequently gain knowledge about the objects and people in it. Very
young infant’s actions consist mainly of reflexes, like sucking and grasping, and are focused on their own bodies. Older infants become more interested in their surroundings as they start performing actions on their environment, such as the rattling or banging of objects. Actions are first concrete (e.g. banging an object and listening to the sound) and become more abstract as the child gets older (e.g. banging different objects and listening to the difference in sound these different objects make). In this manner, very young children acquire basic knowledge about concepts such as time, space, and causality.

In the preoperational stage toddlers and preschoolers become able to express their experiences through language and mental representations. This stage is characterised by the development of symbolic representations. Through pretend or imaginary play children learn that objects and resources can represent something else; wooden sticks are used as swords or magical wands and a piece of cloth represents a princess’ dress or a knight’s cape. Role-playing is also common and games like ‘mommy and daddy’ or ‘doctor and patient’ are well liked amongst children of this age group. Pretend play is also linked to social and linguistic competence (Bergen, 2002). Although children’s thinking makes enormous spurts in the preoperational stage, some limitations remain. The two main limitations in cognition during this stage are egocentrism, perceiving the world solely from one owns point of views, and centration, focusing on one central feature of a certain object.

The stage of children’s cognitive development holds implications for how best to educate and stimulate the development of young children. A ‘child centered’ approach is often deemed important for the development of young children, which implicates that age-related differences in cognitive level have to be taken into account. A second implication concerns children’s active participation in the learning process and the consideration that children learn through physical and mental interactions with the environment. Therefore, a focus on active experience is important when teaching children understanding of basic concepts such as time, space, and causality. Hence, resources should stimulate physical interaction with the environment and ensure active engagement of the young child.

Where Piaget’s constructivist’s theory mainly focuses on the individual child that actively seeks to explore the world and makes sense of it on its own, sociocultural theories of cognitive development focus on the importance of social interactions and the cultural values underlying these interactions. Guided participation, the process through which more knowledgeable persons organise activities and assist less knowledgeable persons to complete the activity, is seen as key to the development and learning of young children (Rogoff, Misty, Gönçü, and Mosier, 1993). Guided participation can take various patterns depending on the culture. One pattern is the guided learning through the structuring of children’s attention, motivation, and involvement by adults, in a setting that differs from the context of ongoing mature activities. A second pattern sees children take the responsibility for their own learning by organising their attention, motivation and involvement through observation of and participation in their community’s daily activities. The former pattern is mostly encountered in western middle-class communities while the latter is common to certain communities in developing countries.

It is important to consider the sociocultural perspective of the cognitive development of young children, as resources and education programmes should be aligned to their knowledge and abilities. According to sociocultural theorists learning should be a cooperative activity in which children are assisted by adults and peers. A great example of cooperative learning is Ann Brown’s (1997) ‘community of learners programme’. This programme, which focused of inner-city children aged 6-12 in the USA, consists of a project that allows children to explore a particular topic in depth. In the initial phase of the project the children are divided into small groups, with each group researching a part of the broader topic. After the initial phase new groups are formed, each including one child of the original groups. The newly formed groups have to solve a problem that requires the combined knowledge and skills that the children have learned in their previous groups. Through these kinds of cooperative activity children learn to work together, thereby stimulating peer learning. In addition, communities of learners
challenge both children’s cognition and motivation; ensuring that by learning a little they want to learn more.

Social-Emotional Development

According to social learning theories, observation and imitation are important learning mechanisms for children. Children actively participate in their social environment and learn social behaviours by watching other people perform actions and by subsequently imitating these actions. Hence, learning is mediated by humans and inherently social in nature. Bandura (1965) has been especially influential in establishing the social nature of learning. His theory of social cognition states that observational learning is very efficient, as it allows children to mentally store information about certain actions by other people in order that they can reproduce those actions at a later stage.

An experiment by Bandura (1965) highlighted the power of observational learning and the role of behavioural reinforcement. In the experiment preschool children first saw a short film in which an adult model performed aggressive behaviour on an inflatable Bobo doll. The children had been divided into three groups; one third of the children saw the model be rewarded for the behaviour, one third saw the model be punished for the behaviour, and the remaining children did not see the model experiencing any consequences. Bandura found that children that saw the model being rewarded imitated the aggressive behaviour on the Bobo doll significantly more often when they were given the chance, than the children that saw the model being punished for its behaviour. Yet, when the children were specifically asked to imitate the actions all groups performed the behaviours, indicating that all had learned from the observation of the model’s action.

How children learn social behaviours and social roles also depend on the context in which they grow-up; as stated in the previous section development patterns differ depending on culture (Rogoff et al., 1993). As a result, the importance that is placed on social learning through participatory observation and imitation also varies per culture. Individualistic cultures, mostly in Western countries, have a child-centered focus. Young children are mostly placed in centers, outside of ongoing real life, yet within these centers much attention is given to the individual child. In center-based care, talking to children as means of instruction is common. Consequently, children learn less from adults modeling actions. In contrast, collectivist cultures have a child-embeddedness focus that sees children take part in community life and learn through participatory observation. These cultures value shared activities for children over a focus on the individual child. In addition, children growing-up in collectivist cultures might not learn optimally from intensive social scaffolding or dyadic interactions between teacher and child common in early childhood education settings in the west (Fleer, 2003; Odden & Rochat, 2004).

Physical Development

In the early childhood years, children start learning a set of physical activities known as fundamental motor skills. These skills can be divided in two groups: locomotor skills, moving around, and object control skills, manipulating and projecting objects (Stodden, Goodway, Langendorfer, Robertson, Rudisill, Garcia, & Garcia, 2008). The former include skills like crawling and walking, the latter include skills such as throwing, kicking, catching, and rolling (Haywood & Getchell, 2005). According to Clark and Metcalfe (2002) these skills are the basis for future movement and physical activity.

Different experiences, as well as individual constraints and environmental opportunities, lead to differential developmental trajectories of motor skill competence. Children do not learn fundamental motor skills naturally but have to be stimulated in their physical development (Goodway and Branta, 2003). When not stimulated in early childhood these children might never gain full proficiency in certain physical activities in adolescence or adulthood. Seefeldt (1980) argued that there might be a ‘critical threshold’ of motor skills competence. Above this threshold, children will be able to complete physical tasks and activities necessary in adult life, while below the threshold children will not be able to perform some motor skills and tasks and will retain from certain physical activities. Therefore, motor skills competence is an im-
important determinant of physical activity. In addition, it has been assumed that a child’s per-
ception of his/her competence on a motor task influences the child’s persistence on the task. As a result, perceptions of competence and task difficulty also influence a child’s involvement and engagement in a variety of physical tasks and games.

3. Holistic Development and Alternative Education

In recent years there has been a renewed focus on the holistic development of children, meaning that attention is paid to the various levels of child development; thereby integrating the cognitive-intellectual, socio-emotional and physical development of children. Through holistic education, children learn more than just academic subjects and teachers prepare their students not just for academic tests. Instead, children learn a variety of skills that prepare them for adult life. Children are stimulated to explore their own identity and to experience with different social roles. As a result, their self-confidence is boosted and they are well aware of and respect their environment. Early Childhood Care and Development (ECCD) is an important factor in promoting children's holistic development. The early childhood years are crucial in the development of intelligence, personality and social behaviour. By providing young children with ECCD a range of development problems are avoided or reduced, thereby bringing lasting benefits to individuals and society.

The past decades saw an increase in schools providing alternative education. Parents and teachers alike were often dissatisfied with the standard ways of educating children. Especially, the large focus on the academic skills at the expense of social and life skills yielded dismay. Increasingly younger children must meet the requirements of standardised tests. Playtime has made way for learning time. Resources that triggered children's imagination and explorer skills have been replaced by resources that do not require much of these skills and instead function with a ‘push on the button’. Schools and early childhood education centers providing alternative education often seek to stimulate children’s active thinking and participation. They see play as essential for the development of children into self-confident and responsible individuals who contribute in a positive manner to society. Therefore, a holistic approach is needed that pays attention not just to the academic or cognitive-intellectual development of children, but also seeks to integrate children’s socio-emotional and physical development in the educational approach. An example of a focus on holistic development in alternative education is Waldorf education, which states that they emphasise the teaching of the whole child – head, heart, and hands. In the following sections I will discuss four alternative education approaches that stimulate children's holistic development: Waldorf education, Montessori education, Reggio Emilia, and Froebel education. Specific attention is given to early childhood education and the use of resources in these four different education approaches.

Waldorf Education

According to Steiner’s philosophy, imitation is seen as the special talent that characterises the first seven years of a child’s life. Children imitate not just the specific actions, such as speech and gestures, but also the values and attitudes of more skilled people. The early childhood teacher has the task to structure imitation and stimulate imagination in young children. Imitation is structured through the teacher’s engagement in activities, such as baking, painting and gardening, which allow the children to observe and imitate her actions. Imagina-

1 Information retrieved from: http://www.whywaldorfworks.org/
In Waldorf education, story telling and free fantasy play stimulate children's creativity, allowing them to reenact scenes. The early childhood teacher creates a protective and secure environment while also being warm and loving. Waldorf schools value a child-friendly classroom that feels like home. Toys are made of natural materials to stimulate children's active thinking and handling. Waldorf schools encourage learning through active involvement and peer interaction.

Montessori education is based on a philosophy of human development that centers on two main principles: children are active and intrinsically motivated learners, and they have an innate psychological path of development. Montessori education provides children with hands-on learning experiences that stimulate peer learning and independence. Montessori programs for children under three years of age fall into two categories: a 'Nido' (Italian for nest) focusing on infants up to one year and a 'young child community' serving children aged one to three. Children aged three to seven are educated in mixed-aged groups in classroom called 'children's houses'. Learning materials are scaled to the size and abilities of the children, and activities emphasize independence. Reggio Emilia education focuses on what children can do instead of what they cannot do. The early childhood teacher structures play, allowing children to explore and experiment to foster self-identity, independence, and creative skills. Learning spaces and materials are designed to challenge children to discover, explore, and experiment.
Froebel Education

The German pedagogue Friedrich Froebel laid the foundation for modern education by recognising that children had unique capabilities and that education should be tailored to children’s individual strengths and needs. Froebel also introduced the concept of the kindergarten, the first organised early childhood educational method. He discovered that brain development was especially rapid in the first three years of life and saw the importance of starting education early in order to maximally stimulate children’s learning and development. Froebel regarded humans as creative beings and saw play as an important means for children to discover how things work. Play-based, child-centered and a holistic perspective are therefore characteristic of the Froebel education approach. Educational play resources, called Froebel gifts, are used in preschools practicing this approach. These resources appear simple but stimulate young children’s learning in a sophisticated manner. Through manipulation of the physical objects children learn about the objects’ properties and universal concepts such as causality.

![Figure 1. Example of Froebel Gift](image)

All four alternative education approaches see children as active, self-motivated learners. They emphasise the importance of free playtime, because it stimulates children’s creativity and problem-solving skills. Learning has to be structured though tailored to each child’s individual needs and abilities, and social and practical skills are believed to be as important as academic skills. Resources have to trigger children’s imagination and creativity. Natural materials are preferred as it teaches children about properties of natural objects and the physical world. In addition, natural materials stimulate children’s sensorimotor development through their experience with different materials and shapes.

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4 Information retrieved from: http://www.froebelgifts.com/
Play has enormous benefits for children’s development. Through play children learn about the social and physical world and experiment with the properties of objects and the consequences of actions. Play contributes to the children’s development in two important ways. Firstly, it allows them to learn about social rules and practice a variety of social roles. Through pretend play children learn to control their behaviour and abide by socially imposed rules. For example, pretend play gives children the opportunity to take the position of a character, like a mother or a doctor, and enact the actions that the child associates with that specific character. Gender roles are reenacted as well. For example, in Bandura’s experiment, girls were in general less aggressive in their actions towards the Bobo doll than boys. Probably the children had learned about gender roles and choose to inhibit the actions that they believed to be inappropriate regarding their sex. Gender segregated play is common in most cultures (Maccoby, 2002). Playing with peers of their own sex teaches children to develop the gender specific skills and roles of their culture.

Secondly, physical play helps to develop the motor skills of young children. Through games like climbing, running and hiding, children practice their gross motor skills, including their physical stamina and agility. In addition, physical play teaches children a range of essential abilities, such as the development of strategies and planning, which might benefit them later in life. (Gray, 2005: 438). Constructive play allows children to work with their hands and practice their fine motor skills, while word games enhance children’s language skills.

Special value should be given to age-mixed play. Research has shown that age-mixed play is qualitatively different than play with peers that are similar in age (Feldman & Gray, 1999). Age-mixed play is less competitive and more oriented towards learning from each other. Older children teach certain skills and knowledge to younger children, which enable the latter to develop their interests and skills and acquire understanding of rules and strategies at a more advanced level. At the same time, older children consolidate their own knowledge by helping the younger children (Gray, 2005: 441). Older children also learn to control their movements in physical games and practice their nurturing skills when interacting with younger children. In short, play gives children a platform to learn about many things, including social behaviour and roles. It is crucial to the social as well as the cognitive and physical development of young children. Interestingly, most research about early childhood play and learning resources concentrates on the social and cognitive aspects of children’s development. This implies that more research could be directed to the development of children’s motor skills as well as to play environments that stimulate children’s physical development.

Outdoor versus Indoor Resources

Although, the play environment has received some attention in the literature on play resources, not many studies have been specifically dedicated to this subject. In the case that this topic was addressed the main focus was on indoor play areas. Yet, outdoor play areas are also very important for children’s physical development as well as for the development of peer relations; they give children a platform to initiate and structure play. Morgante (2013) and Petrakos and Howe (1996) stated that the environment has an important impact on the type of play and the level of physical activity children engage in. Their findings also showed that different materials elicit different types of play. In addition, Barbour (1999) found that materials and equipment in outdoor learning areas influences children’s physical and social development, as they either boosts or constrains physical activity of children with varying motor skills competence. Unfortunately, most outdoor play equipment used in schools and education centers, as well as in neighbourhoods, just stimulates children’s gross motor skills (e.g.
swings, slides and jungle gyms). Typical playgrounds are situated on asphalt and have few play materials, like the above-mentioned, that can be use by only one child at the time and as such fosters individual and competitive play.

Research shows that when children have to design their own play area it would be full of nature. The playground would be covered with trees, plants, sand, mud; animals and insects would roam freely and the area would include a wide-range of playing opportunities that would address both children’s gross and fine motor skills. Fjørtoft and Sageie (2000) researched the impact of a natural landscape play area on the motor development of kindergarten children aged five, six, and seven. They found that a natural landscape allowed for all-round play and the exploring of the area, which benefitted the children’s motor skill competence. Thus, natural environments with a diverse range of playing materials allows for various forms of play, where children with different levels of physical competence can develop their gross and fine motor skills. In addition, equipment where multiple children can play at the same time supports cooperative instead of competitive play.

Indoor play areas differ from outdoor areas, as children are not in a natural environment that already has multiple objects and resources to discover. Even so, one could try to bring resources from the natural world to the indoor play area. A good example is the treasure basket, which allows very young children to explore objects from the real world instead of toys. The objects have interesting and different shapes, textures, colours and smells, and allow the baby to explore through touching, watching, smelling or even sucking the object. In addition, infants who are a bit older can perform various actions on the objects. Objects in the treasure basket are made of natural materials and are chosen specifically to stimulate one of the five senses of the child. It is important that the child takes the initiative in exploring the objects and their possibilities, yet adult interaction can enrich the experience. Young children’s social awareness can be increased when more children explore the objects of one treasure basket, which enhances interaction and imitation of movement and sounds.

In addition to bringing natural resources into the indoor play area it is also possible to build and/or decorate the room in such a way that the inside world is in close relation to the outside world. Children prefer light and spacious surroundings, yet with small ‘play corners’ where they can retreat occasionally. Alternative education centers and schools (as well as some regular schools) like to decorate the classroom with natural materials that children found and brought with them (e.g. coloured leaves, chestnuts, and acorns in autumn). In addition, classrooms are decorated with children’s drawing and paintings, which brightens up the room and boosts children’s confidence and self-esteem.

Home-based versus School-based Resources

As the main body of research has been carried out in schools and centers, little can be said of children’s use of resources in the home setting. Even so, research has indicated that children’s play differs substantially between these two contexts. Observations of children engaging in home-based individual play and children engaging in school-based free play have shown that play is often more sophisticated in the home environment (Buchanan and Cooney, 2000; Malone, 2006). Therefore, it is important that caregivers and teachers exchange information about the young child’s play behaviour during the day. In addition, it is important to promote play in both environments, as play might be qualitatively different and could stimulate children’s development in a contemplating manner.

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5. Inclusive Development and Resources

**Age-appropriate resources**
Young children should be provided with age-appropriate play materials. This implies that toys should stimulate the fine and gross motor skills, as well as the social and cognitive development of the child. Toys should be challenging and motivating but compatible with the child’s level of development to prevent overstimulation. A misconception among adults, parents and teachers is that modern, expensive play resources are best for children’s development. Yet, those toys, which are often automatic and work by pressing a button, make that children lose interest quickly (Bantz & Siktberg, 1993). Many alternative age-appropriate toys exist that do challenge and motivate young children and can be found in the direct environment. Children like bright colours, interesting sounds and different textures. Objects from the natural and home environment, like fruits, kitchen utensils and fabrics often meet those criteria and are interesting play materials for young children. As such, all parents and teachers, regardless of income and resourcefulness, can provide their children with age-appropriate educational play materials.

Further, with young children it is important to take into account the safety of toys. In the first months children like to explore objects by sucking on them and when given the chance they will put objects and toys in their mouth. Therefore, adults should provide infants with rattles...
and toys that are not too small in size and do not have lose parts that can cause choking.

Interestingly, not much research has looked at age-appropriate resources for infants and toddlers. Similarly, the 6 to 8 year age group has also often been left out of research. It seems that the overwhelming focus on the preschool age group has contributed to a somewhat unilateral view on children and play and learning materials. Yet, resources that might be suitable for 3-5 year-olds might not necessarily be appropriate for younger or older children. Future research should incorporate a wider age category in order to find out which resources are most suitable for the education and development of children of different ages and development levels.

**Gender balanced resources**

Preschool children have considerable knowledge of gender stereotypes and they use gender category information to interpret behaviour (Martin, Ruble, Szkrybalo, 2002; Giles and Heyman, 2004) Research by Zosuls et al. (2009) has shown that children start using gender labels when they are around 19 months old; girls somewhat earlier than boys. Gender labeling increases gender-typed play, a trend that is first seen in 17-month old infants and further mounts when children are around 21-months of age. The gender associated with certain resources, such as toys and objects influences children’s play material preferences and has implications for their social and cognitive development. For example, play with girl-stereotyped stimulates nurturing and role-play whereas play with boy-stereotyped toys fosters mobility and manipulative play (Cherney et al., 2003).

Cherney et al. (2003) found that children aged 18-47 months differed in their toy preferences according to gender. It was found that boys preferred own-sex stereotyped toys while girls favoured neutral stereotyped play resources. Mechanical toys, like cars, cameras, radios and workbenches were particularly popular with young children as children spend a large proportion of time playing with those objects. Mechanical toys provided children with motivation and as such stimulated exploration and innovation. In addition, the researchers found that the highest level of play complexity was encountered while children were playing with girl-stereotyped toys, like dolls and kitchen’s sets. It is important that adults provide children with these type of toys and actively direct and encourage boys to these play areas. In summary, it is important to provide children with a variety of play resources, both girl-stereotyped and boy-stereotyped resources as well as neutral resources, to elicit different types of play and give children a broad play experience.

** Culturally and contextually relevant resources**

It is important to pay attention to context and culture in the play environment of young children. Most play resources for young children are based on western models and do not take into account the cultural diversity and origins of children. Instead, a generalised perspective on toys and play environments is taken, which is reflected in the often universal design of early childhood centers. Chang, Ritter, and Hays (2005) asked play therapists what items they included in their playroom to represent culturally diverse populations. This highlighted the use of toys that appeals to children from different cultural backgrounds, like ethnic dolls and sandtray figures, which allow for the representation of cultural and natural environments in the playroom. Further, it was also seen as important to include local resources, such as food items and dress-up clothes, which are representative of the local context and culture.

When talking about culture it is crucial to consider language as well. Educators increasingly see the benefits of multilingual education programmes. According to UNESCO, “Years of research have shown that children who begin their education in their mother tongue make a better start, and continue to perform better, than those for whom school starts with a new language.” As far as possible, resources should be aligned to children’s language preference, indicating that books and posters as well as teacher’s stories and explanations, prefer-

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ably should be in the child's first language.

**Babin: Mother tongue education for preschool children**
Babin, a South-African preschool located in Stellenbosch, provides young children, aged three to six, with mother tongue education (Afrikaans or English). Although there are different groups based on the language preference, children have the opportunity to meet and interact in the playground. As such, an opportunity is provided for children from different cultural backgrounds and language groups to meet on equal terms in a safe and homely atmosphere. The focus on creative activities, such as arts and music, made that children did not experience communication barriers.

**Resources for children with disabilities**
Play in typically developing children, and play in most children with developmental or intellectual disabilities, evolves in a similar sequence but at different rates (Cherney et al., 2003). Young children with disabilities particularly differ in the frequency, diversity, and complexity of play with toys compared to same-aged children without disabilities. As a result their play is often simpler, less diverse and more repetitive, which has consequences for the quality of interactions and the time adults and peers spend with these children (Frey and Kaiser, 2011). To stimulate play in children with special needs it is crucial to understand the child’s current play abilities and to encourage more advanced play with toys and objects (Malone and Langone, 1999). It is not enough to provide these children with a variety of toys. Adults should have an active role by structuring and supporting the child’s play. One way of doing this is through joint attention, the shared focus of two individuals (the child and the adult) on one object (e.g. toy). Joint attention, as well as modeling and describing play actions by adults, has proved to increase children’s performance of different actions and their complexity of play with toys (Frey and Kaiser, 2011).

Children with multiple or severe mental or physical disabilities often rely on sensory stimulation. Through listening, looking, smelling, tasting and feeling they are stimulated in their development and they gain sense of their environment. Subsequently, play resources should be sensory appealing and motivating. Children with less severe mental and/or physical impairments often benefit from adaptive toys or ordinary toys that are modified to meet the children's needs (Hsieh, 2008). For example, non-slip materials could be attached to a toy to promote stability and to prevent the object from rolling out of reach; large puzzle pieces will enable children with motor delays to practice their motor skills. Children with specific disabilities, such as hearing or visual impairments have to be supplied with play materials that focus on and stimulate their other senses.

Studies by Malone (2006, 2009) showed that preschoolers with disabilities demonstrate more sophisticated and a greater variety of play during home-based individual play than during school-based free play. As most research has focused on children in early childhood education centers or schools, this might have resulted in a too pessimistic image of the abilities of children with disabilities. Home-based individual play with adult engagement and support could greatly benefit the learning and development opportunities of children with special needs and therefore home-based play should be stimulated.
6. Sustainability

Play and learning resources can be sustainable in the sense that they are made of local, natural or recycled materials. For example, earth blocks, an eco-friendly alternative to Lego, are made of compressed coffee beans, tree bark, sawdust and even tea chaff. In addition, toys can promote environmental awareness and sustainable values by actively involving children in the creation of new objects out of recyclable materials.

The Mobile Mini-Circus for Children and the Afghan Educational Children’s Circus
The Afghan, Kabul based, non-profit organisations Mobile Mini-Circus for Children (MMCC) and the Afghan Educational Children’s Circus (AECC) aim to encourage children’s education and development through the use of circus skills. They have adopted a ‘cheerful pedagogy’ that instead of being based on text-based methods stimulates children to learn with their senses. Play is seen as crucial as it contributes to the child’s social development by stimulating communication and cooperation. Subsequently, circus skills are used to aid the teaching a range of social skills. For example, acrobatic acts, like human pyramids, are used to create trust between the young acrobats. Teaching the children circus and acrobatic skills thus goes far beyond mere entertainment as it helps children to overcome trauma and become more resilient. In addition, the MMCC/AECC seeks to enhance the children’s teaching capabilities by stimulating them to take leadership roles. As a result, the children themselves, under supervision of an adult, run 75 per cent of all the activities. Much attention is also given to the children’s play and learning environment, in which colours and creative design are seen as essential. According to the organisation the design of its centres can serve as: “a template to transform often colourless education environments into places for cheerful learning”. In addition, the organisation has modified and used empty shipping containers as semi-permanent bases in more remote areas in order to reach more vulnerable children.

According to Barreto et al. (2013) toys are not just important for children’s cognitive and emotional development but they also play a role in passing on cultural knowledge and values. Subsequently, toys could also be used to promote ideas and values about sustainability. The researchers provided a group of children with recyclable materials that could be manipulated and transformed into new toys or playing materials. The original materials included various cardboard and plastic packages that children could cut, glue and colour. As such, the children could use the materials for different purposes by transforming the shape, size and colour of the materials. The skills and concepts children used while creating there toys were

Little Elephant Training Centre for Early Education (LETCEE): Recycling
LETCEE, a non-profit organisation based in Greytown, South Africa, seeks to promote adults work with young children. The organisation assists community members in designing and constructing educational toys and resources out of recyclable materials that are tailored to the needs of the community at hand. These low cost resources, like toys and children’s furniture, can be used both in the Early Childhood Centre as well as in the home situation. High value is placed on maximising the use of education resources; just a few toys are used in many different ways to facilitate children's learning experience. Therefore, LETCEE runs a Toy Library and provides a short course on toy library management, which includes trainings about the value of play and the selection of play materials for the library. In short, LETCEE promotes sustainable use of play and learning resources by creating new toys and resources out of recyclable materials and maximising their use through toy libraries.
closely linked to Piaget’s processes of classification (ability to name, identify, and group sets of objects) and seriation (ability to sort objects according to shape, size, or colour), and consequently provided the children with a learning experience. In addition, play with the recyclable materials allowed for the moral development of the children through the exchange of ideas and through cooperation and helping behaviour (Barreto et al., 2013). After the experiment the participating children indicated that they enjoyed creating new things out of used materials, with one child indicating that one should not throw away materials. Clearly, awareness about the reuse of materials had been created.

The probability that resources are actually used increases when the items are available in the local context, either in the natural environment or produced locally. The examples of LETCEE and MMCC/AECC show that education environments can be brightened up with limited resources, that play and learning resources can be created from recyclable materials and that few toys can be used in different ways and combinations to maximise their use. For example, toy libraries are useful as they can have a variety of toys available to a large number of children.

7. Conclusion

Young children learn through play. According to Piaget, children are intrinsically motivated learners who actively seek out experiences that contribute to their development and who use resources to discover and explore their environment. Culture and social relations also play an important role, as observation and imitation are crucial to children’s learning and their understanding of the physical and social world. Through play children develop both their cognitive and motor skills and learn about social rules, norms and values. For ECCD and education initiatives it is important to stimulate children’s cognitive, social and physical development in a holistic manner. Alternative education approaches have responded to the need for holistic education for young children. These approaches often pay special attention to children’s learning and playing environment, in which experience is central. Simple resources, often made from natural or local materials, are used to stimulate children’s play in sophisticated ways.

Play and learning resources have an important role in supporting young children’s development. Children’s use of resources depends upon age and therefore should match the child’s development stage. Appropriate resources should meet certain requirements; in addition to being age-appropriate, resources should be gender-balanced, and culturally and contextually relevant. There should also be resources available to children with physical, mental or developmental disabilities. Further, attention should be given to sustainable resources.

Resources can be classified as sustainable because they are made of local, natural or recyclable materials. Resources can also create awareness about the environment by teaching children about the importance of recycling and the sustainable use of materials. Two examples of from South Africa and Afghanistan have highlighted good practices that enhance the sustainable use of resources. First, the use of local or natural materials is cheaper and increases the chance that the resources are used and repaired when broken. Second, with few materials or resources available one can still make a difference. For example, by using recyclable materials to create new toys. Third, play and learning resources can be maximised in their use by applying them in different combinations and in different ways. Although some studies have considered the importance of sustainability more emphasis could be placed on this topic. In the future, as well as in poor or fragile countries, the use of sustainable play and learning resources is of the utmost importance.
References


Fleer, M. (2003). Early childhood education as an evolving 'community of practice' or as lived 'social reproduction': researching the 'taken-for-granted'. *Contemporary Issues in Early Childhood, 4*, n1.


## Appendix: Indicative resources for early stimulation and play

<table>
<thead>
<tr>
<th>Development</th>
<th>Resources needed</th>
<th>Role of adults</th>
<th>Local resources Home-based</th>
<th>Local resources School-based</th>
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<tr>
<td><strong>Reflexes and actions</strong></td>
<td>Objects that stimulate the senses (e.g. rattlers, mobiles, play mat).</td>
<td>Provision of play materials and safe environment. Stimulating and structuring play. Adults can easily construct simple toys for young children out of local and natural resources. Everyday household objects can also serve as play materials. Adults can compose a treasure basket filled with interesting objects to explore.</td>
<td>Sight: mobiles (constructed from local resources, such as coloured stones, feathers). Hearing: rattlers (made from gourds filled with rice) Taste and smell: different types of food appropriate for young children (mashed fruits, vegetables). Touch: treasure basket filled with local and natural resources or a play mat with different textures.</td>
<td>Treasure basket with local and natural resources (e.g. paper, wooden blocks, shells, spoons, fabrics). Can be used indoors and outdoors (with indoor and outdoor resources or a mix); most everyday and natural objects are gender neutral; Stimulate young children’s social and cognitive development as well as their physical development (e.g. grasping)</td>
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<td><strong>Symbolic representations and pretend play</strong></td>
<td>Objects that stimulate children’s imagination (e.g. fancy dresses, household and natural materials that can represent imaginary objects)</td>
<td>No direct role, children will actively look for resources to use in pretend play. (These resources are often available in the local or natural environment; there is no need to buy ready-to-use fancy dresses or attributes).</td>
<td>Fabrics and cloths can serve as costumes, which enable the child to pretend that he/she is a certain character (e.g. doctor, princess, wizard). Similarly, other resources and materials available in the environment can function as attributes in the pretend play (broom becomes a horse, a stick becomes a wand etc.)</td>
<td>Pretend play costumes can also be used in the classroom. They do not have to be very sophisticated. A piece of fabric is gender neutral as it can serve as a dress or a cape (or anything else). The same goes for objects. Pretend play stimulates children’s social, cognitive, and physical development and is both an indoor as well as an outdoor activity.</td>
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<td><strong>Guided participation:</strong> Observation and imitation</td>
<td>Variety of objects and items</td>
<td>The adult plays an active role in the guided participation as the child observes and imitates the adult. At the same time, the adult assists the child to achieve certain actions. This is a type of social scaffolding, as it enables the child to achieve an action that it would not be able to achieve on its own.</td>
<td>Guided participation can be established with many activities and materials. Social activities that require joint attention are probably most suitable for learning. For example parents could involve their child in everyday household activities, like baking and gardening.</td>
<td>Puzzles, wooden blocks. These are gender-neutral toys that can be used for joint interaction (e.g. building a tower of wooden blocks together). These toys mostly stimulate children’s cognitive and social development and are mostly used indoors.</td>
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<td><strong>Locomotor skills (crawling, walking)</strong></td>
<td>Resources that promote locomotion (e.g. push and pull alongs, walkers, ride-on, skippy balls, etc.)</td>
<td>Assisting and stimulating children in locomotion actions. Providing children with resources that encourage locomotor actions.</td>
<td>Push and pull alongs can be created using a toy with wheels and a stick.</td>
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<td><strong>Object control skills</strong></td>
<td>Objects that allow the performance of actions (e.g. balls, shape sorters, building blocks etc.)</td>
<td>Providing resources and assisting and stimulating play.</td>
<td>(Wooden) blocks of similar sizes or different sizes promote children’s object control skills as well as their cognitive development.</td>
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<td><strong>General Development</strong></td>
<td>Motivating and safe toys that are compatible with the child’s level of development (e.g. sensory stimulating resources without sharp edges, small parts, dangerous materials).</td>
<td>Provision of toys and supervision. It is important that available play resources are matched to the children’s age and development. Young preschool children benefit more from structured or realistic play resources, as it helps them to structure their play. Older preschool children achieve highest levels of symbolic play with unstructured (unrealistic) play materials, as these enable them to use their imagination.</td>
<td>Structured toys resemble real life persons, objects, or actions (e.g. dolls, dollhouses, kitchen or working tools, toy cars). Unstructured toys can be natural materials, such as sticks, pebbles and blocks.</td>
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<td>Gender knowledge</td>
<td>Girl-stereotyped resources (e.g. dolls and kitchen /food materials), boy-stereotyped resources (e.g. mechanic toys: cars, workbench, radio), gender neutral resources (e.g. animals, blocks, crayons, puzzles).</td>
<td>Providing children with variety of play resources. Stimulating boys to play with girl-stereotyped toys as these elicit high complexity play. Providing children with neutral-stereotyped toys as these are often most tailored towards learning skills and concepts.</td>
<td>Masculine toys: mechanical toys that require manipulation motivate young children to explore and discover (e.g. workbench with various tools; vehicles with spinning wheels, technical objects such as old radios). Feminine toys: kitchen/food items (e.g. rice, pasta, fruits and vegetables, as well as spoons, pots and pans), ethnic dolls. Neutral toys: these toys are often most suitable for learning (e.g. building blocks, art materials).</td>
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<td>Play in children with disabilities</td>
<td>Adaptive or modified toys, like toys with salient features that are easy to handle by children with mental or physical impairment.</td>
<td>Providing adaptive or modified toys and assisting and actively stimulating play. In many cases, ordinary toys can be adapted in order for them to be suitable for children with disabilities.</td>
<td>Ordinary toys can be adapted by placing strings to increase stability; non-slip materials can be added to prevent toys from rolling out of reach.</td>
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<td><strong>Sustainable values</strong></td>
<td>Recyclable items, like plastic and cardboard packages, natural items, such as sticks, sand, stones, or shells.</td>
<td>Providing recyclable and/or natural resources. Stimulating children to create new toys out of used materials, promoting the reuse of materials. Providing children with information about the environment and the need for sustainable use of resources.</td>
<td>Everyday objects can be used to create new toys. For example, plastic or cardboard paper packages, sticks or skewers, and paper roles could be used to create toy vehicles. Similarly, sticks, chestnut, and dyed wool can be used to make cobwebs. These natural materials are gender neutral.</td>
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<td><strong>Cultural knowledge</strong></td>
<td>Resources relevant to context and culture.</td>
<td>Providing children with contextually and culturally relevant play materials. Resources from the local or natural environment are easily available and contextually relevant.</td>
<td>Ethnic dolls, culture-specific costumes, books and posters in local language. These resources are mostly used indoors, and include girl-stereotyped (dolls) as well as neutral toys.</td>
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