CHAPTER 1 INTRODUCTION

If people look at the process on how a human learns, it cannot be denied that childhood is a significant time in life to learn. Therefore, children are the hope of all societies. If adults treat them well, they will be the most valuable assets of societies. To achieve the development of children's intelligence, one way is to play toys. Toys are widely believed an important part to develop children's brains because they assist children's cognition. Also, they are able to develop various children's skills, intelligence, and fun.

1.1 Children's Brain System

Children learn well when they enjoy what they are playing with. The limbic system, at the same time, will open for new information and knowledge (Dr. Prasert Boongrid, 2008). (see Figure 1.1) The limbic system connects to neocortex, which is the biggest part in human's brain. Neocortex consists of two significant parts that are frontal lobe and parietal lobe.

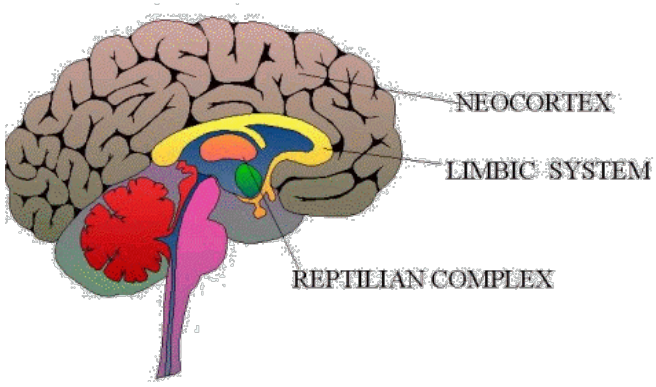

Figure 1.1 Limbic System and Neocortex

(Sources: Rob D, 2013)

The frontal lobe's functions are to choose, concentrate, plan, think, learn, memorize, develop intelligence, analyze, verbalize and create strategy. The parietal lobe's function respond to tactile sensory, high-level thinking, spatial display, calculation, music, language spelling, understanding, imagination, position, dimension and three dimensions (Ariya Supunpesud, 2000). (see Figure 1.2)

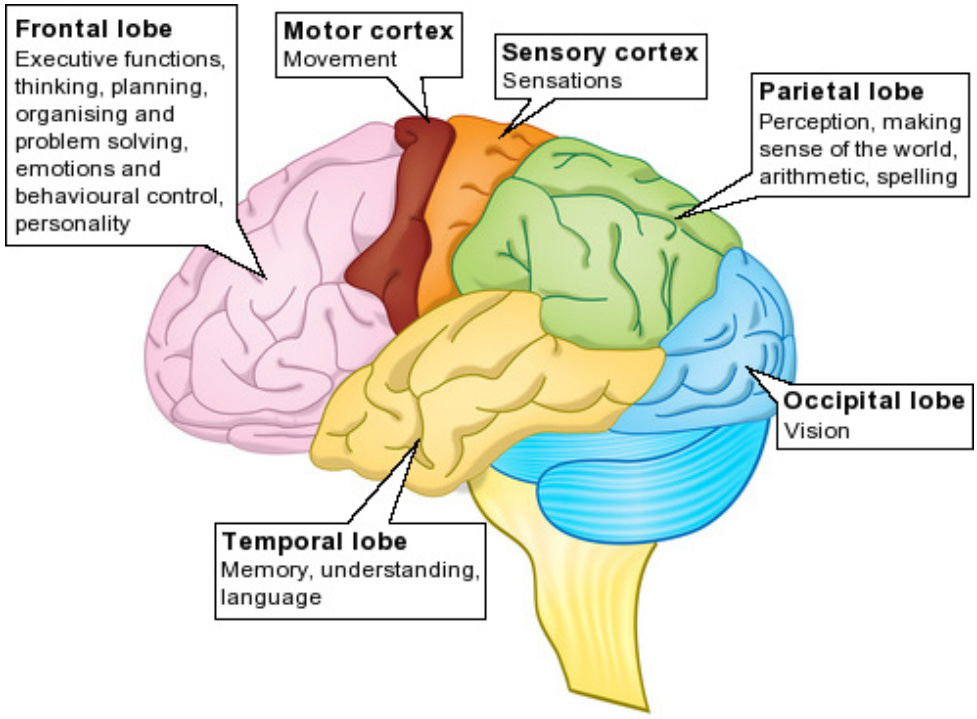

Figure 1.2 Part of the brain

(Source: Community Brain Injury Program for Children and Youth in British Columbia, 2012)

1.1.1 Neurons System

As regards children learning process, especially during the ages between 3 to 6 years old, their brains develop faster than other body parts (see Figure 1.3). During this time, dendrites expand and myelinations are created as an axon part consisting touchable

point called synapse; in the mean time, there is a fast connection between axons by their synapses and other dendrites. All of these are increasing fast and many neurons cause information cycle. Information is transferred through neurotransmitters process.

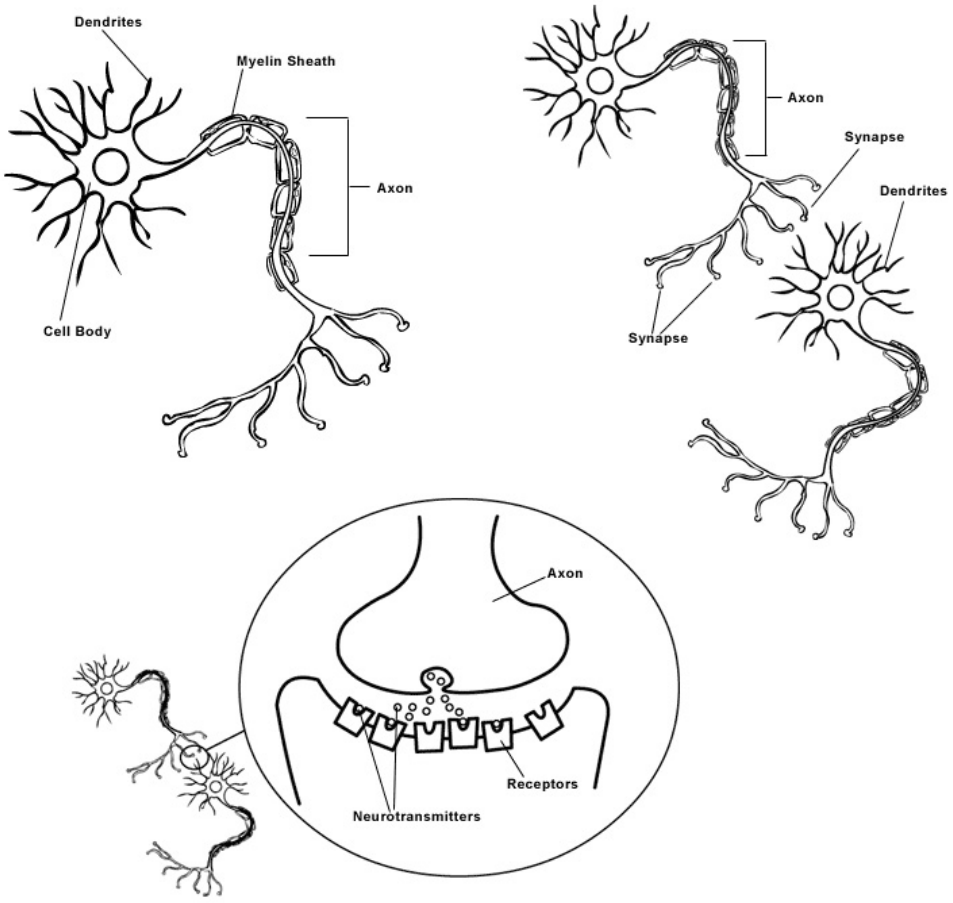

Figure 1.3 Neurons System

(Source: D. Shrira, 2007)

Therefore, children are able to improve their learning by playing. It is important that children should be happy before learning a new thing. Many abilities can be improved from paying toys, such as critical thinking, concentration, problem solving, language learning, memorization, motor skills and especially imagination.

1.2 Children's Imagination

Albert Einstein (1931, p.97) said, "Imagination is more important than knowledge. The knowledge is limited to all we now know and understand, while imagination embraces the entire world, and all there ever will be to know and understand". Moreover, Sir Ken Robinson (2006) talked in Ted lecture that "creativity now is as important in education as literacy, and we should treat it with the same status". Besides, Jim Rohn claimed that "The great gift of the human imagination is that it has no limits or ending." Therefore, imagination is the significant factor that could innovate product to the world. Furthermore, the outcome of imagination is in a form of good books, music and others. Thus, the best way to improve imagination should begin from younger ages.

1.3 Play and Children

Game makers develop difficult games for children but children still play them. On the other hand, children do not want to learn in tough classes because games have more fun than lessons in class. This reason supports that children learn well when they are joyfully performing. Moreover, teachers should influence the children to increase more invention. It is better than feeding information with the ready-knowledge (Seymour Papert, 1993).

Play help children learn. It is necessary to understand children and what interest them. Adults are able to learn children's ability when they play such problem-solving skills such as thinking, planning, and organizing. Play is children's private world. They are powerful, successful, and imaginatine in their private world. They create their own

rules in their mind and feel free, relax, and practice trial and error by themselves. It is the best experience to learn (Hymes, 1981).

According to play and imitation theory by Piaget, children are able to overcome egocentrism when they play with others. They learn through social information and challenge with conflict from play. The confliction affects the understanding of others that they have different ideas too. Piaget believed play is pure assimilation for children to adapt themselves to reality. They seriously try to accommodate to reality. The ability to give and take in plays and imitation is a child's world. Moreover, it is important to learn about symbol. They learn a thing can stand for itself or represent something else. It is called "Dual Representation" by DeLoache. For example, children hang a stethoscope touch and become a doctor. A stethoscope touch is the symbol for the role-play. Children themselves play this as a symbolic representation of their inner world. Furthermore, they learn through touching, testing, and smelling with materials, equipments and imagination. They have the first-hand experience from play. For these reasons, it can be concluded that the world of play is important in the early stage of children's development.

1.4 Symbols Representation and Children

Nowadays it cannot be denied that symbols connect with human as they are seen everywhere in modern life. Ittelson, W.H. (1996) said that 'As I sit here at my breakfast table, my morning newspaper has printing on it; it has a graph telling me how the national budget will be spent, a map trying to tell me something about the weather; a table of baseball statistics, an engineering drawing with which I can build a garden chair, photographs of distant places and people, a caricature expressing what the editor

thinks of a political figure... On the wall in front of me hangs...a calendar [and above it] is a clock. All this and more, and I haven't even turned on the TV or the computer...'. Humans are accustomed to use symbols to represent thing. For adults, it is usual to focus on the nature of symbol. For example, when an adult reads an article, he will pay attention to the meaning of words. He would not pay any attention to the curves or shapes of the fonts. However, it cannot be said that children focus on the same thing as adults. Children today know several symbols in society more than in the past such as model, map, text, numbers, mathematical, and photographs (David H. Uttal et al., 2009). There are many experiments show that young children understand symbols in a different way from adults. The author will review that in the Chapter Two; the literature review.

1.5 Statement of Problem

The condition that children can learn is similar to real things because they can practice from the toys. Seymour Pepert (1980) claimed that if toy providers are teachers, they should not limit children's imagination by tools that they created. Many toy types in the toy market assist child development in several ways. The toys are developing tools to improve children's imagination. However, many toys in market are not appropriate for children's imagination because of many rules created from toy developers that limit children's imagination. Many toys designers are not concerned about children's different ages. For example, they claim that toys are suitable for children aged 3 to 6. However, children aged 3 are different from 6 years old. This research will find out this difference. Moreover, the old-fashioned paper toys have not been developed for quite a long time; therefore, this research tries to develop paper toys to test children. The 2D abstract toys are more effective tools than 3D objects to improve their imagination

because 2D objects lack dimension function. Therefore, the objects increases children's ability to focus on as symbol representation (DeLoache, 2009) because children have to improve the use of their imagination which simulates the missing dimension part. Moreover, the abstract paper toys are of low cost. Therefore, these toys can be developed as tools to improve children's imagination, even for children who have fewer opportunities.

1.6 Research Question and Hypothesis

In general children see real things, symbols, and medium. They will refer to the thing from their real experience. This can support by dual representation showing that the children refer to that object itself or another thing. According to Miller theory, toys can be divided into four levels of reality and children aged 3 to 6 years old like to pretend play (Miller, 2006). The four levels of reality are in the following.

- **Real things** - The real things are the product that used in every day life.
- **Replica (Imitation) objects** - Toys include three scales: small, regular, and extra size.
- **Abstract objects** - Toys have symbols and geometric forms. For example, toys are created from papers.
- **Imagination** - Toys are not real things. These depend on children's imagination play.

However, this research focuses on abstract object combined with imagination. In sum, the children imagine that toys are something else (see Figure 1.4).

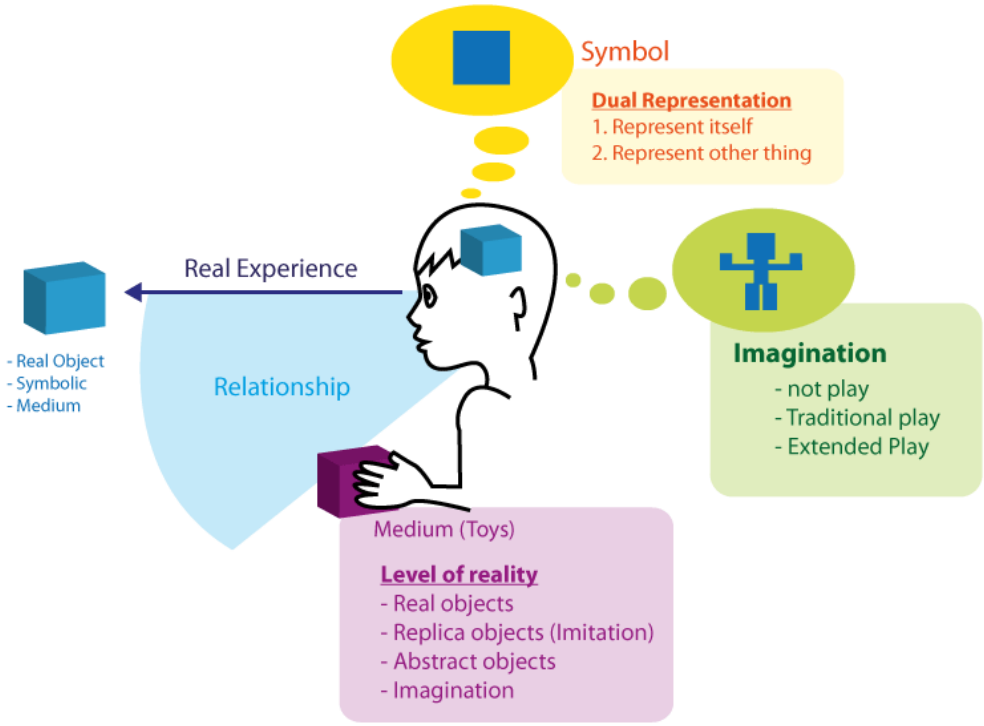

Figure 1.4 Research question and Hypothesis

1.6.1 Aim & Objective

- To study if children are able to refer the real thing from abstract objects (Dual representation). The study includes how the objects affect children's imagination.
- To study the affect of the decrease of the salience object on the increment of children's imagination.
- To study if toy scales affect children's imagination play.

In the condition that the definition of imagination in this research is that the children play by their imagination (extended play – that is, children instead of a missing object

with other objects, they pretend as if there was a object, and they were enjoyed and excited.), they do not stop to play or traditional play.