

# Research on Innovative Design of Children's Toys Based on the Influence of Electronic Products on Children

Boyu Feng

Ulster College at Shaanxi University of Science & Technology, Shaanxi University of Science & Technology, Shaanxi, China

202115010113@sust.edu.cn

**Abstract.** In recent years, with the development and progress of society, science and technology have more and more developed, so there are more and more kinds of electronic products. Along with this situation, the age of electronic product users is gradually becoming children, and children's interest is completely attracted by electronic products, so they can't extricate themselves. Based on the research on the innovative design of children's toys under the influence of electronic products, this paper adopts the methods of social investigation, browsing and referring to relevant literature, and designing and applying. The results show that in order to shift children's attention from electronic products to the real world, the designed toys must grasp children's interests and combine with modern technology to give toys corresponding attraction. If the design field wants to innovate toy design, it must keep up with the development of The Times. At the same time, when toys have a certain feedback mechanism, they will have a stronger appeal to children.

**Keywords:** Smartphones, electronic products, children's toys, innovative design.

## 1. Introduction

Toys are indispensable in the process of children's growth. From simple educational toys to complex video games, the types and forms of toys are constantly changing. However, with the changes of the times, the design and significance of toys are constantly developing. At the same time, there are many kinds of electronic products. With the improvement of people's living standards and the development of science and technology, almost every family has computers, televisions, mobile phones, and other electronic products. Related research has found that people can communicate socially and enjoy leisure experiences more conveniently through mobile phones. Over-reliance on and use of mobile phones and too much energy on mobile phones will also lead to problems related to the concurrent use of mobile phones, such as mobile phone addiction and phobia, which have caused quite serious harm to people. All these can prove that mobile phones have two sides, both advantages and disadvantages [1]. More and more teenagers are beginning to focus on these electronic products. It has become a common thing for young people to keep their hands on electronic products. They are always used to using these electronic products to kill boring time. In today's society, there are many people who lack exercise and exercise because of long-term contact with electronic products and indulging in them. This situation will lead to a decline in their physical fitness. Thereby making it easier to get sick.

The purpose of this paper is to study how to innovate the design of children's toys, so as to improve the attractiveness of toys to teenagers and make them reduce the use of electronic products. Therefore, the research topic is the innovative design of children's toys based on the influence of electronic products on children. The main method of this study is to browse and refer to relevant literature to find problems, apply innovative designs, and get feedback through interviewing users, so as to draw conclusions. Relevant literature shows that teenagers are more prone to internet addiction when they use electronic devices for a long time, which has a great negative impact on the growth of teenagers. Now there is a new term called Internet Addiction. In professional research, Internet Addiction (IA) is defined as compulsive and impulsive use of the Internet. Its characteristics include overuse (and eagerness to use the Internet), withdrawal (anger, tension, depression, and anxiety when users can't access the Internet for a few days), tolerance (users need to increase their use of the Internet to satisfy

users) and negative consequences (such as feeling physically tired and anxious) [2]. Therefore, the main significance of this study is to find out how to innovate the design of toys through the analysis of existing toys and social status quo, so as to shift the attention of teenagers from electronic products to real life and reduce the occurrence of internet addiction among teenagers, which is not only of great benefit to the physical and mental development of teenagers, but also can reduce the occurrence of juvenile delinquency.

## 2. Analyse

### 2.1. Cause

With the development of science and technology and the progress of The Times, more and more high-tech electronic products appear in people's lives. Children are no exception. When adults' recreational activities change from books and social activities to electronic entertainment such as mobile games and TikTok, children's toys also change from physical toys to mobile phones.

Related papers show that in recent years, it is easier for people to get in touch with and get information from the outside world through technological progress. However, the negative impact of this is that excessive use of the Internet and mobile phones may lead to various physical and mental health problems. Adolescence is an important stage in people's growing life. During this period, a person will experience rapid changes in physical aspects, cognition about sex, judgment, and views on society, and handling emotions, which will make him transition from childhood to adulthood. In these changes, because different teenagers are experiencing these very different changes, they may feel different about these changes during this period. And they may encounter difficulties when interacting with family and others. Therefore, it is believed that the influence of the internet on all aspects of teenagers' lives is becoming greater and greater. It can lead to addiction, which is characterized by abnormal biological, psychological, and physical functions of a person and behavioral harm [3]. This makes children's hands-on and social skills become lower and lower.

It can often be seen in life that these children who are not in primary school can even skillfully control electronic products because their parents leave them to play at will because of their busy work or their pursuit of relaxation. Although people's daily life is enriched by online games, the pressure is relieved, and people can get more social interaction through online games, thus improving their social ability. However, if this happens to minors, including children and teenagers, excessive use and participation in online games may bring risks to these groups [4]. Because of Covid-19 in 2019, children can only take online classes with smart devices at home, they can't go out for outdoor sports, and at the same time, they are no longer interested in other toys, some scholars have said that being unable to go out, playing video games in front of electronic products such as tablets, smartphones and computer screens for a long time has become the only entertainment for these children when they can't go out. During the COVID-19 pandemic, their stability at all levels will be affected by this huge lifestyle change and may have serious consequences [5]. The problem that comes with this phenomenon is not only the sharp increase of myopia rate among teenagers but more seriously, when children are immersed in their own electronic products, at this time, social interaction is not important to them. Now that the epidemic has passed and everything has returned to normal, teenagers should go outdoors and play with others instead of continuing to indulge in smartphones. This is very important for children because adolescence is the best stage for them to build their cognitive and social skills. During this period, teenagers should do more outdoor sports and interact and communicate with others. Therefore, how to design toys has become a very important issue. Nowadays, the significance of toys is not only to meet the needs of children's play but more importantly, in today's era when teenagers are addicted to electronic products, how to design toys can attract children's attention from electronic products, thus changing this situation and helping teenagers grow up more healthily.

Toys are designed not only for beauty and attraction but also to meet children's needs and interests. For example, for young children, educational toys and puzzles are one of the most popular toy

categories. These toys can help children exercise their thinking and hand-eye coordination. For older children, video games and plastic toys may attract their attention more.

## 2.2. Effects

Many scholars have found through research that children's excessive use of electronic products will have great harm and influence on their growth. In today's high-tech digital age, children's outdoor games and other behaviors, as well as some key global factors and trends, are greatly promoted by mobile phones, mobile applications, and games. Nowadays, children prefer indoor electronic game activities rather than actively playing outside, which will seriously reduce their health activities. Children's excessive use of screen media and playing digital games are strongly related to sports, poor cognitive and social skills, and lack of physical activity [6].

First of all, electronic products affect children's social skills, because many children are unwilling to communicate with others because they play with electronic products for a long time, which is not good for the development of their personality and social skills. Secondly, electronic products affect children's eyesight. When children watch electronic products, the blink time is half less than usual, which is easy to leads to poor eyesight. Finally, electronic products will also affect children's sports development ability. Children are addicted to electronic products and do not exercise for a long time, which will affect their physical and mental health. For those children who are in adolescence, there may still be problems such as not being able to concentrate on one thing well, being depressed and having depression, thinking more slowly than their peers, not being able to fall asleep normally and even knowing about sex beyond their age. These problems will all occur because of being immersed in electronic devices for a long time, and even more serious cases may lead to serious crimes. These are all the damages caused by electronic products to children. It is reported that online game addiction is common among children and adolescents who suffer from self-harm, while male participants and students living on campus are more susceptible. For children and adolescents who are addicted to online games to identify self-harm behaviors, "concentration", "failure in trying to control the game" and "withdrawal" are crucial symptoms, while "loss of interest" and "deception" are less influential symptoms [4].

## 3. Solutions

### 3.1. Problem Finding

Some people think that children will create a fictional world when they play and let themselves participate in it. In these virtual games, the fictional world mentioned will be called the game framework, and each child's participation in these game frameworks is different. Similarly, when playing video games, children's immersion will be affected by their different cognition and emotional participation in the fictional world of the game. Therefore, some people worry that children's imaginations will be influenced by voices coming from both mainstream media and academia [7]. Therefore, with the development of modern science and technology, for the design of children's toys, it is not only necessary to grasp children's psychology but also to design some new toys that combine intelligence with the characteristics of today's social situation. More importantly, the process of playing with these toys can give these toys some characteristics, so that children can exercise some aspects by playing with these toys. For example, the balanced version can exercise children's balance and the puzzle can exercise children's balance. This is very important in toy design.

### 3.2. Design Ideas

At the same time, children's toy design is very different from industrial design. In the product design of industrial design, the design idea is to find problems in life, thus creating social pain points, and then solve such social pain points through design. The most important factor in children's toy design is how to substitute ourselves for a child who needs toys. Because of the different ages and cognition, many times the toys that are designed may be attractive to adults, but they may be too

cumbersome or unattractive for children of the corresponding age. Therefore, the most important problem in toy design is that need to substitute ourselves for children and design toys from the perspective of children.

### 3.3. User Location

Children of different ages have different needs for toys' functions and appearances. Moreover, children of different ages have different personalities and preferences. Therefore, when designing toys, should have a clear user orientation, and the children's age span should not be too large. At the same time, toys designed for children of different ages should have different exercise functions. For example, at present, the research focuses on early childhood (21-27 months), because this stage is the key development stage of children. Children's social world and social skills will develop rapidly during this period, so children will get different social experiences. Children need to have enough social and emotional skills to make the best progress [8]. 1-2-year-old babies begin to learn to speak at this time, and some have mastered certain vocabulary, their behavior has changed from big movements to fine movements, and they have a certain ability to distinguish and think, and they like interactive games with their mothers best. At this time, simple operational toys and interesting jigsaw puzzles are very suitable for them. Babies at the age of 2-3 have learned to run and jump, and they are full of energy. With the concept of autonomy and peer awareness, their language coherence is better. He began to explore the surrounding environment, was curious about everything, liked to observe, and preferred to imitate. Toys that can be used by hands and brains are very helpful to his ability training. At the age of 3-4, the baby's life circle has been greatly developed, social skills have been rapidly improved, and they have begun to learn independently.

They like to imitate adults and choose toys that combine brains with hands, which can enable the baby to gain more learning space through educational toys. Babies aged 4-6 like to get to the bottom of the matter and test their abilities in various ways. At this time, his abilities of expression, understanding, socialization, and logical judgment are developing rapidly, and challenging and brainy toys can make him never tire of playing. At the same time, different toys according to the preferences of children of different ages to meet the needs of users. Of course, for children's toy design, there are still several very important issues that need to be considered. For example, the safety of toys is the most important thing. Children of different ages have different requirements for toy safety. For children's toys in infancy, should avoid too small components or too hard and sharp parts. When it comes to teenagers, should consider other safety of toys. There is also the consideration of toy materials. A lot of research data show that children's health will be affected by the chemicals in the materials of plastic toys, so it is necessary to conduct more detailed investigations and find more humanized and environmentally friendly substitutes to replace these harmful substances, so as to ensure children's health [9]. In children's toys, materials are also very important. Different toy application scenarios also have different toy materials.

When outdoors and targeting teenagers, should try to choose some hard and environmentally friendly materials that are not easy to deform, while when facing baby's toy products, need to choose soft and skin-friendly materials. With the change of educational concept, more and more parents begin to pay attention to the cultivation of children's comprehensive quality.

Therefore, children's toys are no longer just entertainment tools but are regarded as an educational tool. More and more toys begin to incorporate educational elements to help children improve their cognitive ability, creativity, and logical reasoning abilities. With the support of the Internet and intelligent technology, the intelligent development of children's toys is accelerating rapidly. Not only did ordinary toys begin to use electronic components and sensors, but many children's toys with intelligent functions emerged. These toys can be connected to mobile phones or tablets and provide interactive and educational content through corresponding applications. Environmental awareness has gradually occupied an important position in children's toy design. More and more toy manufacturers begin to use environmentally friendly materials and renewable resources to produce toys, so as to reduce the impact on the environment. For example, classic wooden toys not only have

natural texture and touch but also are creative and plastic; Paper toys guide children to play by stimulating their imagination and the fun of designing with their own hands. In addition, some high-tech toys have begun to use recyclable materials and environmental protection equipment to promote sustainable development and resource reuse.

#### 4. Innovative Way

At the same time, the definition of innovation refers to the behavior of improving or creating things, methods, elements, paths, and environments by using existing knowledge and materials in a specific environment. In order to meet the needs of idealization or society and to obtain certain beneficial effects. When designing toys, should combine with the development of society, keep pace with the times, not stick to the traditional idea of toy function and modeling design, and combine with intelligent products to attract the attention of teenagers.

According to the needs of society, designers should give toys some inspiring functions, and toy innovation should meet the following requirements: innovation in visual perception, innovation in play mode, and innovation in material selection. First of all, visual perception needs to bring the most intuitive enjoyment to children. Children's curiosity and concentration on toys can be stimulated through the beauty of toy perception. Perception is the first intuitive feeling that a toy brings to everyone and children. The visual beauty of children's toys includes three aspects: whether the appearance, color, and pattern surface and appearance have affinity, whether the proportion is beautiful, whether the color is comfortable, and whether the narrative of the pattern is attractive enough for children. These factors are all necessary conditions that affect toy innovation. If want to innovate visually, must break conventional thinking. For example, the wheels of toys are all around in conventional cognition but can use different shapes of wheels to form a round edge to achieve innovative results. The narrative of toy patterns, that is, the story interest expressed by patterns, is not only the innovation of appearance and color but also one of the breakthrough points of toy innovation. Storytelling with patterns is an important motivation to attract children to play. By incorporating the storyline, children can eagerly pay attention to the interaction with this toy. Secondly, the innovation of toy play is the top priority of innovation. Lego toys are popular all over the world because of their unique play. Lego toys don't stick to the traditional toy playing method, realizing children's free creation and unlimited playing mode. Children can create their own toys with different parts according to their own ideas, which can be used as inspiration to adopt the innovation of children's free creation mode in toy design. Different components of toys can be designed to be assembled to realize the theme designed for themselves. The diverse shapes of toys can not only create different shapes but also convey the fun of mathematics. The idea of connecting geometry learning, architecture, and art is to cultivate children's understanding of sensibility and rationality through games. At the same time, children can create their own toys to stimulate their artistic feelings. Through their findings, the author draws a conclusion that there are obvious connections between the development of teenagers' sensory creation and the development of artistic perception, as well as between interpersonal relationships and interpersonal relationship components. Understanding the specific characteristics of artistic creation and artistic perception is helpful to improve the general cultural and spiritual level, at the same time, it can cultivate the generalization skills of emotion and creativity, and then help to understand the feeling and significance of designing works of art [10]. At the same time, can also make innovations in the selection of materials for toys.

New environmentally friendly materials are undoubtedly the innovation in the selection of materials for toys today. When more environmentally friendly materials and replaceable materials replace traditional materials, toys will be more in line with the main topics and requirements of the times. Children's inner needs and development are very important in their growth period. Whether toys can conform to their hearts and inspire them to produce greater wisdom is an important factor that must be considered in innovative toy design. Children of different ages have different psychology, so innovation is to accurately grasp their psychology, and creative toys should also consider whether

they can meet the requirements, meet children's psychological needs to the maximum extent, and develop their potential.

## 5. Conclusion

Toys are indispensable in the process of children's growth. From simple educational toys to complex video games, the types and forms of toys are constantly changing. With the development and progress of society, science and technology are more and more developed, so there are more and more kinds of electronic products. When designing toys, should combine with the development of society, keep pace with the times, not stick to the traditional idea of toy function and modeling design, and combine with intelligent products to attract the attention of teenagers. At the same time, according to the needs of society, should give toys some inspiring functions, and toy innovation should meet the following requirements: innovation in visual perception, innovation in play mode, and innovation in material selection. This study explores the current social situation and discusses how to carry out innovative toy design under the current social situation. Combined with the current social situation, it shows that teenagers are more and more addicted to electronic products and lack communication with others and real entertainment. Therefore, this study hopes to find out how to shift children's attention from electronic products to real toys through research. At the same time, it also analyses how to innovate toys, hoping to change the social status quo and help teenagers grow and develop better through innovative design of toys. hope there will be more innovative toys in the future.

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