

# Types of Children’s Cultural and Creative Products Based on Card Sorting Method

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## ABSTRACT

Children’s cultural and creative products refer to cultural and creative products for children, covering a wide range of types from educational toys to cultural inheritance tools. However, there is still a lack of a scientific and systematic method to classify these products, which in turn affects the accuracy of product design and market positioning, as well as the realization of product innovation and educational value. To address this issue, this article first conducts a quantitative literature analysis on children’s cultural and creative products. Point out three research directions for children’s cultural and creative products. On this basis, this article proposes a card classification method to scientifically classify the types of children’s cultural and creative products. According to the 3D clustering diagram, 20 children’s cultural and creative product cards were clustered into four major categories. The researchers sorted out four groups of clustered children’s cultural and creative cards and their corresponding grouping labels. The experimental results showed that children’s cultural and creative products can be divided into four categories, named as educational interactive category, technology integration category, cultural science popularization category, Beautiful and practical. And the characteristics of each category of products are described. The study believes that it provides a reliable and reusable method for redefining the category classification of children’s cultural and creative products. The results can help designers clarify product positioning, promote product innovation, and meet the diverse needs of children, while also providing strong support for product marketing and sales.

**Keywords:** Card sorting, Children’s cultural and creative products

## INTRODUCTION

Children’s cultural and creative products are cultural and creative products for children’s groups. Product design integrates excellent cultural resources into it through a variety of design methods, subtly affect children’s groups, and help children understand historical geography, local customs, art aesthetics and other cultural content. Cultivate children’s cultural self-confidence. In the selection of classification methods, due to the lack of official classification of children’s cultural and creative products, it has affected the accuracy of children’s cultural and creative design and market positioning, as well as

the realization of product innovation and educational value. In response to this issue, this article will explore the classification methods of children's cultural and creative products and lay the foundation for the development of the cultural and creative industry of the children.

## OVERVIEW

### Current Status of Research on Foreign Children's Cultural and Creative Products

Children's cultural and creative products refer to cultural and creative products aimed at children. Product design incorporates excellent cultural resources into them through various design techniques, subtly influencing children, and helping children understand history, geography, customs, art aesthetics and other cultures. content to cultivate children's cultural confidence (Wang Yingman, 2021).

This article first uses bibliometric methods to analyze cultural and creative products. Judging from the number of literature, there are limited papers focusing on the research direction of children's cultural and creative products. The study searched the Web of Science database for documents with "Cultural and creative products" as the first keyword and "Children" and "Toy" as the second keyword. and documents with "Creative" as the first keyword and "Playing with teaching aids" and "Children products" as the second keyword. As shown in Table 1, a total of 350 relevant documents were retrieved, ranging from 1992 to 2024. Bibliometric analysis software CiteSpace and bibliometrix were used to conduct quantitative analysis and visual presentation of the literature. Cluster analysis was conducted on the keywords of foreign literature on children's cultural and creative products, As shown in Figure 1, current foreign research mainly focuses on the following three aspects: (1) The inherent impact of cultural and creative products on the applicable population. Including #0 creativity development trajectory, #1 creative personality, #3 creative thinking. The research content involves increasing creativity, and specific keywords include art, students, ideas, attitudes, divergent thinking, and identification. and the importance and methods of stimulating creativity of different ages and groups, such as On the edge between the digital and the physical: materials that enhance children's creativity, etc. (Michela Ponticorvo et al., 2020) (2) Ways of involving children in the design process. Includes #8 Design-Led Intervention, #9 Engaging Teens. Specific keywords include feedback and perception. Involves integrating children's expertise and perspectives into design, emphasizing the usability of children's products, allowing children to be highly involved and tailoring products to their preferences and needs (Martina Galler, 2022). (3) Medicine and food. This theme is more about considering issues related to child-oriented products and stimulating the interest and creativity of special children. Includes #2 complementary foods, #4 health-promoting alternatives, #5 aberration products, #7 CD19-specific CAR T cells. Specific keywords include nutrition, food labeling, or standards.

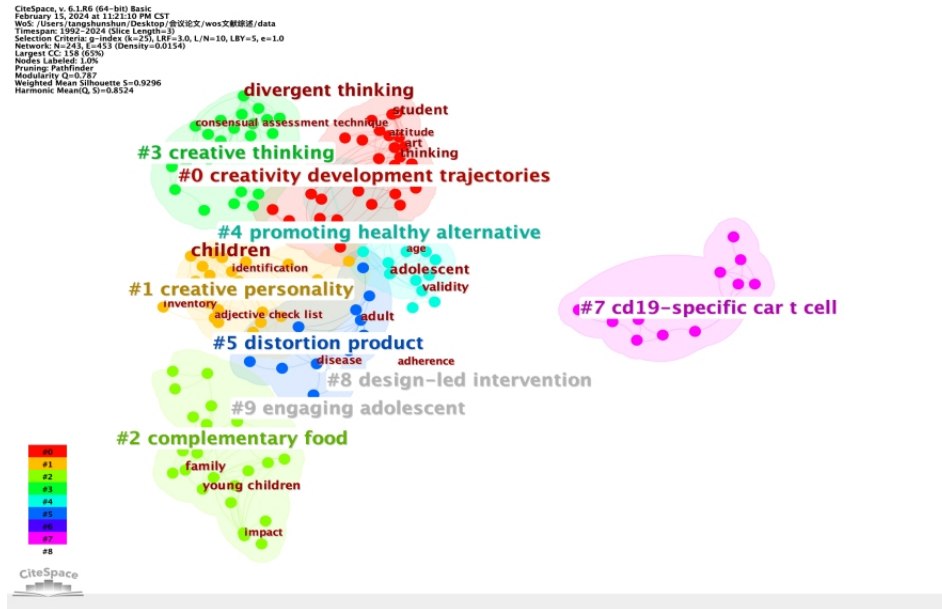


Figure 1: Keyword clustering.

As shown in Figure 2, the country is on the left, the author is in the middle, and the keywords are on the right. The United Kingdom and the United States publish the most articles, while China publishes less. It mainly focuses on creativity, computational thinking, divergent thinking, etc. Based on the clustering results in Figure 1, the research on children's cultural and creative products mainly focuses on cultivating the creativity of adolescent groups.

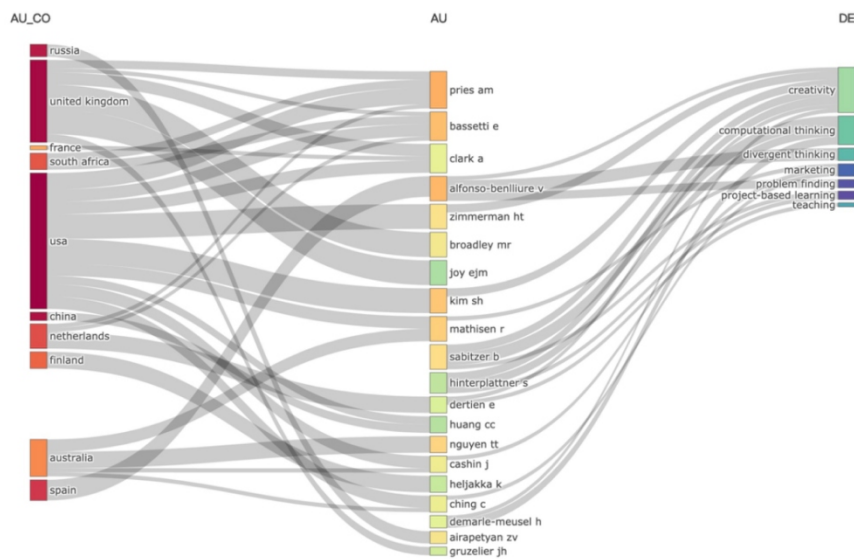


Figure 2: Sankey diagram.

In summary, research on children's cultural and creative products mainly focuses on stimulating children's creativity, such as seeking new methods to promote flexible thinking and creativity in the collaborative process. It is worth noting that in the quantitative research, it was found that this content lacks the dissemination and research of traditional culture. Although the search keywords include the word "culture", most of the overall literature focuses on the stimulation of children's creativity by child-oriented products. and cultivation, there are fewer acting skills involving the extraction and innovative application of cultural genes.

### **Research on Card Sorting Method**

Card classification originated from George Kelly's personal construct theory. Personal construct theory is based on the belief that "different people categorize the world differently, but there are enough commonalities for us to understand each other, but also enough differences to make us individuals." Card sorting involves using a single criterion to classify a group of Pictures, objects or marker cards are sorted into different groups. The advantage is the simplicity of managing scale and its applicability to all domain expertise (Finche, 2005). Card sorting can provide insight into participants' mental models, providing a way to create an information architecture that meets user needs (Wentzel et al., 2016). Card sorting first appeared in the 1980s. Card sorting is a method of studying user experience in the field of interaction design, and can be used to analyze users' cognition of interactive tasks. It is a technology for classifying information blocks and is often used in the planning and design of information architecture for software products or Internet products. Card sorting is divided into closed card-sorting and open card-sorting. Nowadays, card sorting can not only be performed face-to-face using real cards, and then analyzed through software such as EZSort, Card-sort, SPSS, etc.; online card sorting analysis can also be performed using the Internet, such as tools such as Web-sort and optimal workshop (Zhihui et al., 2020).

## **CURRENT STATUS OF RESEARCH ON CLASSIFICATION OF CHILDREN'S CULTURAL AND CREATIVE PRODUCTS**

### **Current Status of Research on Classification of Children's Cultural and Creative Products**

There are currently different opinions on the classification of cultural and creative products. Zhang Jian classified cultural products into content-based cultural and creative products, creative-type cultural and creative products and extended-type cultural and creative products. Yang Huizi believes that there are roughly three categories of cultural and creative products, namely arts and crafts, cultural and creative products and art derivatives, and film and television and animation cultural and creative products (Yang Huizi, 2017). At present, there is no clear definition of the classification of children's cultural and creative products, so this study uses card sorting method to conduct classification research on children's cultural and creative products.

## Research Process

The process of the card sorting experiment of children's cultural and creative products is roughly as follows. First, collect relevant data and generate children's cultural and creative product cards; second, select the card sorting method; then invite participants to perform card sorting; and finally analyze the results of the card sorting.

## CHILDREN'S CULTURAL AND CREATIVE PRODUCT CLASSIFICATION EXPERIMENT

### Information Collection and Card Generation

This study collected and summarized popular and common children's cultural and creative products on the market, and selected relatively typical children's cultural and creative products to generate card content. Scholars Rosendfield and Morville proposed that the number of 20 to 25 cards is sufficient to represent the overall content (Courage, 2004). Based on this, the number of cards was chosen to be 20, and the content of the 20 cards is as follows (Figure 3):



Figure 3: Children's cultural and creative product card.

### Card Sorting Method Selection

In terms of classification methods, card sorting is divided into two types, open card sorting and closed card sorting. According to scholar Donna Spencer, open card sorting refers to participants creating their own card groups and

naming labels for the groups; closed card sorting is when the researcher provides a set of categories and then asks participants to put the content into categories. Within these categories (Spencer, 2009). According to the categories of participants, the card sorting method is divided into group card sorting and individual sorting. As the name suggests, group card sorting invites groups as participants; individual card sorting invites individuals as participants. According to different classification scenarios, card sorting is divided into offline card sorting and online card sorting.

In the choice of classification method, due to the lack of official classification of children's cultural and creative products, this experiment chose open card sorting to obtain participants' classification labels for children's cultural and creative products. When choosing between offline card sorting and online card sorting, this study chose to use the online card sorting analysis website Optimal Workshop as the online card sorting method due to the flexible activity time and the convenience of participants from other places to participate in the experiment. platform. Based on the factors of online card sorting, all invited participants participated in the sorting experiment on an individual basis.

### **Implementation of Card Sorting**

Card sorting experimental operations are mainly conducted through the online card sorting platform Optimal Workshop. The researchers established a children's cultural and creative product classification experimental project through the Optimal Workshop platform, input the proposed 20 card data into it, and wrote a preface for the experiment to help participants understand the purpose of the experiment. At the same time, they collected participants' information through questionnaires before sorting the cards. Basic Information.

A total of 9 participants were invited to this card sorting, and the 9 participants were scholars and experts from the fields of art design and vocational education. The participant information is as follows. Nine participants participated in the online card sorting by clicking on the experimental link shared by the researcher, and followed the guidance prompts on the interface to sort the cards for children's cultural and creative products.

### **Card Sorting Results Analysis**

As an online card sorting analysis website, Optimal Workshop not only has a card sorting project, but also can conduct real-time analysis of card sorting result data and generate corresponding similarity matrices, clustering dendrograms, and 3D clustering renderings. Based on the 3D cluster diagram formed by the optional workshop, the study further analyzes and summarizes the classification of children's cultural and creative products. According to statistics, the number of groups of participants are 10, 3, 5, 4, 4, 3, 4, 6, and 5. The average number of groups of participants was calculated to be approximately 4.89. Therefore, it was decided to divide the number of groups of children's cultural and creative products into roughly Set as 4 or 5 groups (Figure 4).

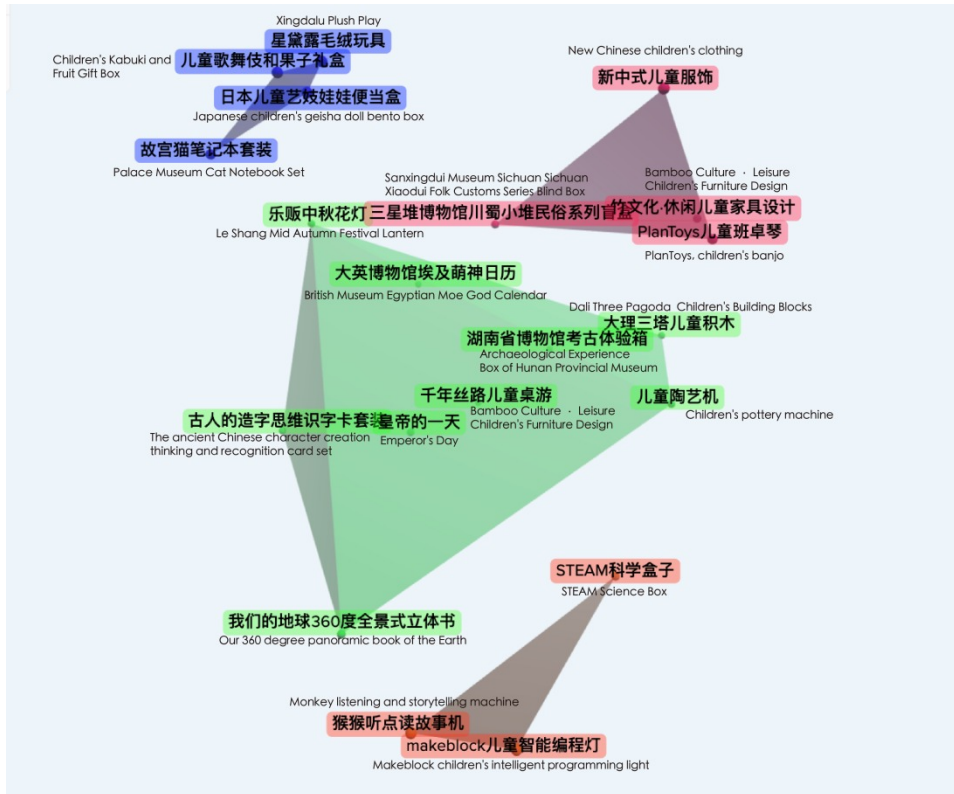


Figure 4: 3D clustering diagram.

According to the 3D clustering diagram, 20 children's cultural and creative product cards were clustered into four major categories. The researchers sorted out four groups of clustered children's cultural and creative cards and their corresponding grouping labels, as shown in the figure below.

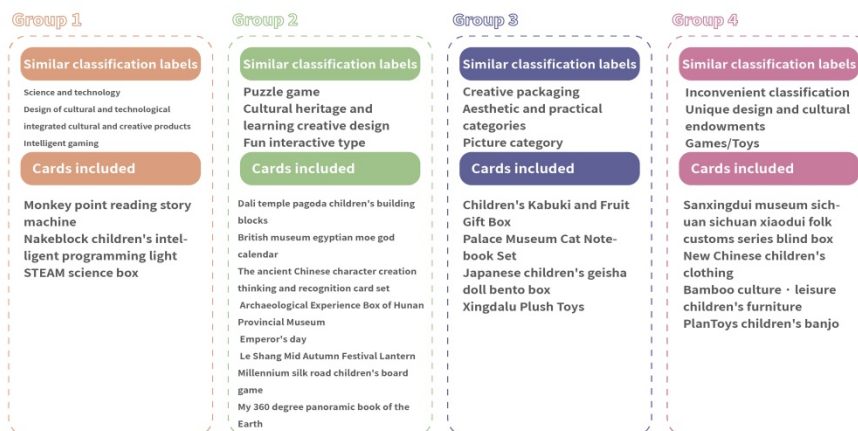


Figure 5: Clustering grouping labels and card summary diagram.

Based on the cluster grouping and label and card summary tables, the researchers named the four clusters after discussion and analysis, and finally determined that the categories of children's cultural and creative products are educational and interactive cultural and creative products, and technology-integrated cultural and creative products. Creative products, beautiful and practical cultural and creative products, cultural and science popularization cultural and creative products.

## **DISCUSSION BASED ON THE CLASSIFICATION OF CHILDREN'S CULTURAL AND CREATIVE PRODUCTS**

### **Puzzle Interactive Cultural and Creative Products**

As the name suggests, educational interactive cultural and creative products are cultural products that can promote children's intellectual development and improve their intelligence. This type of cultural and creative products can not only help children gradually develop a basic and concrete understanding of their own cultural background, but also gradually develop their hands-on ability and logical thinking ability in the process of using them. This type of cultural and creative forms include pictures, building blocks, board games and other educational toys, etc. For example, the yaofish Millennium Silk Road children's board game integrates Silk Road cultural content into the board game, allowing children to experience the Silk Road business journey in the form of a board game, and cultivating children's knowledge of equivalent substitutions and path planning abilities (Figure 6-A).

### **Technology Integration Cultural and Creative Products**

Technology-integrated cultural and creative products refer to products that use intelligent technology product media for cultural communication. Due to the technological nature of such cultural and creative products, the culture carried by technology-integrated cultural and creative products is often children's enlightenment knowledge of science and technology. Common types of such products include smart electronic products, Internet APPs, etc. The makeblock (Figure 6-B) children's smart programming lamp is a typical cultural and creative product that integrates technology. It helps children get started with programming through simple graphical building blocks and leads them to explore the world of lighting games and design.

### **Cultural and Popular Science Cultural and Creative Products**

Cultural and science-based cultural creations are products that can educate cultural knowledge. Such products generally take the form of picture books, arts and crafts reproductions, DIY handmade bags, creative figures, etc. For example, the Sanxingdui Museum launched the Sichuan-Sichuan Xiaodui Folk Custom Series blind box. The figure's shape is extracted from the Sanxingdui bronze mask. It is also matched with folk costumes and movements with local cultural characteristics of Sichuan and Sichuan, reflecting the characteristics of Sichuan culture in terms of shape and movement artistic conception (Figure 6-C).



### Beautiful and Practical Cultural and Creative Products

Beautiful and practical cultural creations refer to products that have both decorative appearance and practical functions. It is often used as daily necessities in daily life, such as water cups, stationery, doll backpacks, etc. The Egyptian Cute God Calendar produced by the British Museum is a typical beautiful and practical cultural and creative product. The Egyptian Cute God on the calendar is vivid and cute. The user displays the month and date through three square dice, and slides the roller to set the day of the week as a daily reminder. At the same time as a date tool, the calendar also brings a certain degree of interactive fun to users. The freely adjustable months and dates also make the calendar suitable for any year and can be used for a long time (Figure 6-D).



**Figure 6:** Classification cases of cultural and creative products.

### CONCLUSION

This study focuses on the classification of children's cultural and creative products, uses bibliometric methods to sort out existing research fields, and combines card sorting to explore the scientific classification system of children's cultural and creative products.

This study first used bibliometric methods to conduct a comprehensive analysis of the field of children's cultural and creative products, thereby identifying three core research directions. First, the research focuses on the impact of cultural and creative products on group innovation capabilities; second, explores the participation model of children in design activities; third, research on medical and food children's products. The research uncovers an analysis of current trends focusing on in-depth exploration of children's education and creative thinking. However, the analysis shows that there are relatively few studies on the design process of extracting and transforming cultural and aesthetic genes, which reflects that there is still room for further development in the field of assistive children's product design. This article uses card sorting as a method of classifying children's cultural and creative products. Four major categories of children's cultural and creative products have been identified: educational and interactive cultural and creative products, technology-integrated cultural and creative products, beautiful and practical cultural and creative products, and cultural and

science-popularizing cultural and creative products. These categories can serve as a basis for further exploration and development of children's culture and creative product design. Overall, the findings provide insights into the classification, design, and future directions of children's cultural and creative products, informing future research and design practice in the field of children's cultural and creative products.

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