

Research on Behavioral Semanteme Form Based on Early Education Products

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Abstract. Currently, there are a variety of the early education products in the market. A strict approach for classification of these products, however, is generally absent. But even so, any kind of the early education products are indeed built on the same principle that almost all devisers are making attempts to attract users for participation and experience from the three aspects--the visual sense, the auditory sense and the sense of touch. The way for experience is also limited to some certain operant behavior including “press”, “twist” and “thump”. Due to the fact that young children are the targeted users for the early education products and because of their unique characteristics—the so-called “realistic feature” embedded into their intelligence, their behavioral norms are conspicuously distinguishing from adults. It is therefore that the development of related products should not be conducted in the logical way of adults. It is proper to cultivate the cognitive ability, judgment and logics of infants in a simplistic and pleasant context and circumstances.

This research will delve into behavior from a perspective of Semantics by initiating a study on “Form”, which is the carrier for products’ semanteme. Experimental data of a series of early education products will be reviewed for reference and for making contributions to the quantitative research on the influence of forms on behavior. Three key concepts, which are the “form”, the “semanteme” and the “behavior”, will also be effectively integrated into and contributing to the two new concepts, the “Behavioral Semanteme Form” and the “Semanteme Form Model”. The research aims at providing the entire and detailed explanations to the formation, structural characteristics and category of the semanteme by adopting the operable and controllable approaches.

Keywords: Product semantics States; Behavioral semantics States; user experience.

1 The Present Situation of Market for Devise of Early Education Products

Product Semantics refers to a discipline which focuses on the symbolic features of the forms of artificial products. The forms of products indeed reflect devisor’s philosophy and ideas, as well as the functions and appearance of the products. The designing of the form is conducted through the entire process of devise.

As the increasing attentions and investments being directed on the early childhood education, a variety of early education products spring up in the market, some of which are devised based on the adults' logics and from adults' perspective rather than in compliance with the children's behavioral semantemes and therefore fail to draw the interests from them. Conversely, these kinds of products will have a counterproductive function in causing children's resentments and make them abandon the use of products, which makes the early education meaningless. This research is concerned about how to understand the features of behavioral forms which exactly results in children's basic operation by an accurate and controllable approach. This research is also, based on these features, pursuing the improvement of the user experience of the early education products and the avoidance of the misoperation and delay of the operation in order to guarantee the safety of children during their experience.

2 Consistency of Behavioral Semanteme Form and Semanteme Form Model, and Its Influence on Early Education Products

In an attempt to depict more clearly and accurately the forms of products which are appropriate for children's use, this article integrates three concepts, the Forms, the Semanteme and the Behavior, into two new ones, the "Behavioral Semanteme Form" and the "Semanteme Form Model", aiming at offering explanations to the formation, structural features and category of the semanteme by adopting a controllable and operable approach. The ultimate purpose is to contribute the feasible and operable devising guidance and thoughts the early education products.

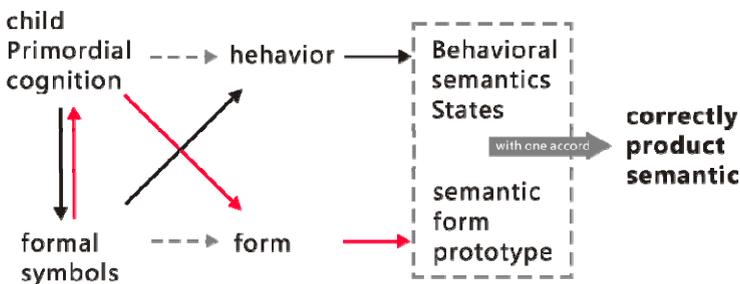


Diagram 2-1

2.1 Behavioral Semanteme Form

Behavioral Semanteme Form refers to the semanteme reflected by people's behavior to pursue their own goals. For instance, when a person is thumping the protuberance, he basically pursues the purpose to flatten that protuberance. Due to the fact that early education products are targeting at the children whose intelligence is under development and devised to direct children to have a positive and correct reactions towards subjects and events, the functions, structures and forms should be devised in a way that is mostly consistent with children's behavioral semanteme.

In order to explain Behavioral Semanteme Form in details, the processes regarding children's behavioral semanteme form have been decomposed. (See Diagram 2-1) The targeted users of the early education products are mostly children who have not yet received education. Characteristically, this group of children possesses the incomplete understandings on subjects surrounding them and has the under-constructing mental model. Their innate characters, instinctive reaction and innate conditioned reflex mainly constitute their cognition towards subjects, which can be highly summarized into the initial cognition demonstrated in the diagram. Children's initial cognition will generate feedbacks to the given symbolic forms, which includes behavior of "touching", "thumping", "twisting" and "pinching". In another word, the semanteme demonstrated by this behavior depicts the behavior's purpose, which is the Behavioral Semanteme Form generated during the cognition.

2.2 Semanteme Form Model

Single symbolic form does not have the effect to convey semanteme form due to the limitations that semanteme form is the general, applicable and subjective feeling obtained after cognition. Meanwhile, symbols of the shape will produce the morphological characteristics after the subjective cognition. The morphological characteristics of early education products are the symbols of shape for children's initial cognition. Human beings will define the morphological characteristics by the mental models which come from the past experience. For instance, if the symbol of the annulus perceived in the past is curved and rounded, then human beings tend to believe this kind of shapes to be rounded when they see the quasi-annulus next time. Regarding the forms of early education products which target at children with incomplete mental models, the initial cognition of children on the forms is exactly the semanteme expressed by the morphological characteristics of this kind of products, which refers to the Semanteme Form Model in Diagram 2-1.

2.3 Positive Influence of Consistency of These Two New Concepts on Early Education Products

The initial cognition of children and the symbol of shape are interacted and interdependent with each other. The behavioral semanteme of children is the feedback of the symbol of shape while the semanteme form is the generally applicable and subjective image conveyed by the symbol of shape through children's initial cognition. Only when the Semanteme Form Model is consistent with the Behavioral Semanteme Form, the morphological characteristics of the products can be appropriate to children's initial cognition and the products being devised can be most effective.

3 Morphological Experiment Based on Initial Cognition of Preschool Children

3.1 Planning and Methodology of the Experiment

In order to figure out what symbols of shape are consistent to forms of children's initial cognition, 12 basic symbols of shape have been abstracted from some early

education products as shown in Diagram 3-1, 3-2 and 3-3. Four forms in Diagram 3-1 are marked as A1, A2, A3 and A4 and the same for the latter two models. Meanwhile, each behavior and conduct produced during children’s interaction with the early education products will be recorded and classified into three major categories, the “Press”, the “Thump” and the “Twist”. The “Press” category was matched with four basic symbols of shape in Diagram 3-1. Children pressed the model in this diagram as they pleased without instructions from adults. Through these four typical symbols of shape, the ones to which children are most and least sensitive will be figured out. The remaining two models can be deducted by analogy. The “Thump” models in Diagram 3-2, and the “Twist” models in Diagram 3-3 are tested.



Diagram 3-1



Diagram 3-2



Diagram 3-3

3.2 Experimental Results and Data

52 children at age between 2 and 5 have been randomly selected in a kindergarten in Wuhan, of whom 27 are girls and 25 are boys. They have conducted the above experiment respectively. In addition, 52 parents were also selected randomly. The following is the result.

The result demonstrates that in the “Press” category, A4 (Square Form) caused children’s impulsive to press and touch while A2 was the one that least children touched or pressed. In the “Thump” category, B4 (Square Form) was thumped for the most times while least children thumped B1. In Experiment C, C2 and C3 (two middle buttons) attracted the almost equal twists while C4 was seldom twisted.



Diagram 3-4



Diagram 3-5

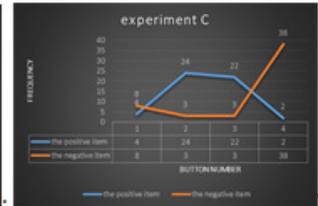


Diagram 3-6

4 Conclusion

The experiment suggested that children's initial cognition under an incomplete mental model is different from the one of adults. The style of children's initial cognition is approaching a simplistic, linear, flat and original symbol of shape. The square form will offer a sense of security to children when they are interacting with the model. The quasi-ball square form changes at an uncontrollable and complicated way and is less stable than the morphological change of the square form, which is beyond children's understanding. Therefore, the devisors should consider designing the linear and simple form, as well as the adoption of stable morphological change during the devise. In Experiment C, children had the strongest impulsive to twist the obviously sunken form despite that adults would mostly choose buttons like C1. This suggested that the mental model of adults regarded some forms resembling the gas switch, air fan switch as the basis to obtain experience while children tended towards the innate cognition on complete forms. Therefore, when designing the forms of early education products, the designers may consider using another form to compensate the incomplete forms, maximally utilizing and guiding children's psychological features to compensate the incomplete forms.

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