

Potential of Visualizing Preference as Internal Factor for the Creative Process

- Case study of the “Beyond Creativity” workshop

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Abstract

Background Nowadays, many researches on the objective and logical evaluations of created (=designed) objects are conducted in design engineering and the Kansei design field. However, there are not many studies on the relationship between a creator’s creativity and the evaluation of the created artwork in the fine art field. Many students in the fine art field conduct creative work with their limited favorite styles although they have not yet developed their own expressive characteristics. This simply means that they need to be introspective and cultivate their own preference (=Kansei) as an internal factor. With this background in mind, the purpose of this research is to provide students in art & design school with new perspectives so that they can examine their own preferences and develop characteristics of their creative work. Thus, not only Kansei as a source of creativity but also Kansei as an evaluation on perceived stimulus from outside are addressed in this research.

Methods For the purpose of this study “Beyond Creativity” was conducted with 14 students of art & design at Southern Illinois University (SIU). Each participant selected a favorite item from daily life. Each one was required to conduct a presentation about why they selected the item in as logical a way as possible. Then, they selected a favorite artwork from a magazine, named “Glass Quarterly”. Each student’s preference as a creator’s internal factor was visualized with the Evaluation Grid Method (EG method). Each one was also required to present on this. The result of the EG method was analyzed by multivariate analysis, Semantic Differential method (SD method) and factor analysis.

Result Each participant’s preference as an internal factor was visualized by an evaluation structure with the EG method. The evaluation structure was composed of 57 adjectives (Ave. 4.75 per person) and 195 definite reasons (Ave. 16.25 per person). From the factor analysis, it was revealed that a participant used the following 3 factors to evaluate the selected as a favorite glasswork: “originality factor,” “abstractness factor,” and “conservativeness factor.” Each selected favorite artwork was scored based on these three factors.

Conclusion Each one’s preference for an artwork was visualized and scored with the EG method and factor analysis even though it was said to be difficult to describe. Each student could understand one’s preference for creative work. Moreover, all students were able to easily convey each other’s preference objectively and logically to others. From the results, each participant was able to examine their own preference based on the visualized and scored evaluation results. Thus, the results mean each student can understand their characteristics of creative work. That is instrumental in trying various expressions in their creative work. Moreover, they can convey their creative work to others objectively and logically by using the results of the analysis.

Keywords Creativity, Preference, Internal factor, Introspection

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1. Introduction

Much of the current research on objective and logical evaluations of created (designed) objects is conducted in the design engineering and Kansei design fields; however, there are not many studies on the relationship between the creator's own ingenuity and the introspection and evaluation of the created object. According to Harada's research, Kansei is defined as a "mental function creating images" and a "source of creativity"; he also emphasized that Kansei exemplifies "beauty and comfort, ability of reacting and evaluating symbolically and intuitively," and "ability to evaluate on perceived stimulus from outside" (Harada, 1998). Lee (1998) further states that Kansei images help inspire the creative process, serving as a "fountain" of creative ideas.

Some current research in the cognitive psychology field focuses on the creation of new ideas by using observed information from the actual world. According to Kiyokawa's research team, a creative idea is related to external factors as well as internal factors unique to the designer (Kiyokawa, Washida, Ueda, & Peng, 2010). In other words, a designer searches and selects information from various inputs, where external factors are placed in context with the designer's internal factors such as gender, knowledge, viewpoint, preference, and personal characteristics to begin the creating process[Fig. 1]. Some internal factors are generated through various experiences and education, the latter of which can be considered one type of experience as well. Kiyokawa focused on external factors in her research, and reported rates based on the amount of external information that influenced the creative idea process. Kang (2013) also focused on external factors, dealing primarily with ways to observe, share, and apply external factors to the design process. Kang, Suto, and Patitad (2013) also proposed the TTS method, which allows designers to take advantage of various external factors in an effective manner.

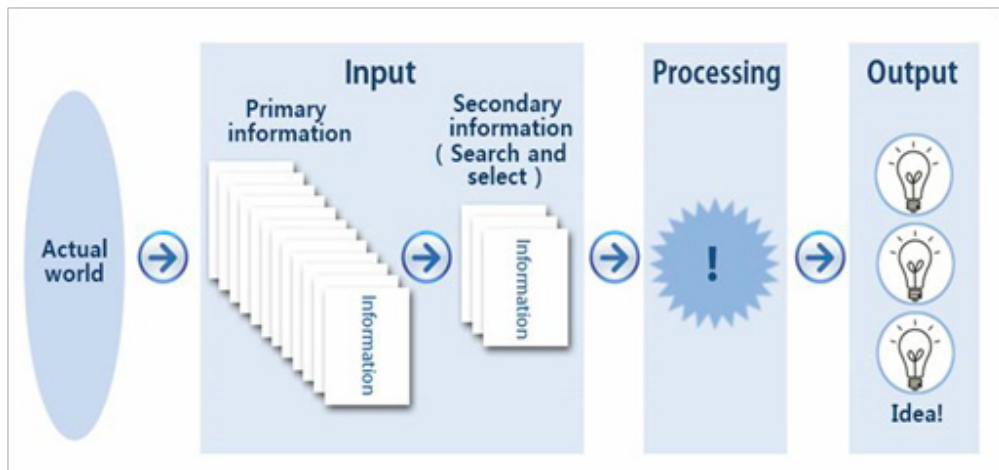


Figure 1 The process of creating ideas

There are also some approaches to the relationship between internal factors and creative ideas in cognitive psychology research. Leung's research team reported that the experience of living abroad positively affects new idea creation (Leung, Maddux, Galinsky & Chiu, 2008).

Ashikawa's research team reported that personal characteristics as the basis of internal factors influence the process of knowledge activation in creative work. Generally, humans gain new knowledge for each internal factor through personal experiences and education, because these unique experiences trigger unique viewpoints. These viewpoints comprise an important internal factor that may contribute to creating a novel idea. James (2003) also has emphasized that these different viewpoints during the observation period are a very important part of the creative process. Brown and Wyatt (2010) reported that personal viewpoints, which are generated through various experiences, are hard to change suddenly; as such, they emphasized the importance of observation during the design process to utilize external factors within a multi-disciplinary team. These results from previous research mean that a creator, such as a designer, fine artist, or craftsman, creates something using various external factors based on their own internal factors, the latter are derived from personal viewpoints.

Students in art and design school are educated to create various types of expressions based on original ideas. Many students, however, get "stuck" creating work within their limited favorite styles and preferences, rather than developing their own expressive characteristics. In other words, they create a new idea based on only limited external factors, though ideally they will develop their own expressive characteristics and, thus, fresh and original ideas using unlimited expressive styles based on their unique viewpoints. They will also have to continuously refine their expressive style; therefore, they should engage in introspection and reflection on expressive styles based on others' opinions, and evaluate their creative work as well as convey its value to others. If this is the case, how can students in art and design school experience this introspection of preferences as internal factors in creative work, and adequately convey the value of their creations to others in logical and objective ways?

From these backgrounds, the this research will provide a special experience to students in art and design school regarding new perspectives based on the viewpoints of Kansei so that they can engage in introspection of their preferences as internal factors and develop unique characteristics that will pervade their creative work. Moreover, this study will suggest a new experience through which they can logically convey the value of their creative work to others, using the results of objective analysis. Thus, Kansei is not only a source of creativity but also a method of evaluation on perceived external stimuli.

2. Method

2. 1. Evaluation Grid Method

In this research, the evaluation grid method (EG method) was used to visualize a creator's preference. EG method is one of the techniques used during interview surveys within the psychology field, as it visualizes people's evaluation structure of an object (Morita and Kanade, 2005). This method clarifies which perceived information is linked with which abstractive judgment based on an overview of the visualized evaluation structure. Humans generally evaluate an object using sensitive understanding (Middle layer in Fig. 2), though

this sensitive understanding requires some objective reasoning (Bottom layer in Fig. 2). The abstractive judgment value is extracted based on the sensitive understanding (Upper layer in Fig. 2). EG method helps to convey some information logically and objectively using the visualized evaluation structure (i.e., the creator's internal factors help to convey his or her creativity to others in logical and objective ways through the use of the EG method).

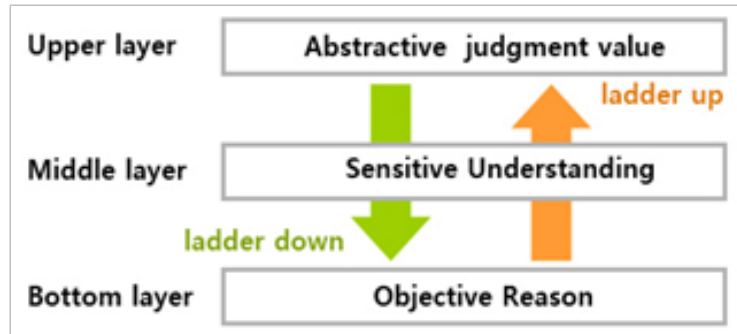


Figure 2 The concept of evaluation grid method

2. 2. “Beyond Creativity” Workshop

In line with this study's purpose to provide a special experience for students in art and design school to develop characteristics of their creative work. Therefore, a workshop titled “Beyond Creativity” was conducted with 14 students in a glass art course at Southern Illinois University (SIU). The educational position of the glass art course in SIU is more of a fine art field than a craft or a design field. In many cases of fine art fields, the aesthetic value of created work is highly important when evaluating the work. Conversely, function is more highly valued in design or craft fields. Therefore, the purpose of the “Beyond Creativity” workshop is to help the students engage in introspection of their own preferences based on an analytical approach.

The workshop was composed of five steps, wherein each participant did the following:

- (1) Selected a favorite item related to daily life and brought it to the workshop; then, they conducted a presentation on why they selected the item.
- (2) Selected a favorite glass art work (glass work) from the magazine *Glass Quarterly*, which is well-known in the glass art field, and constructed a personal preference evaluation with EG method (Left in Fig. 3).
- (3) This step is comprised of three parts: (a) First, participants were separated into one of five groups, and then, using the EG method, organized their individual preference structure based on the relationships between adjective words; (b) then, they added their opinion to the evaluation structure of the other participants in their group using EG method (Right in Fig. 3); (c) lastly, each participant conducted an interim presentation as to why they selected that particular glass work as their favorite using the results of EG method.

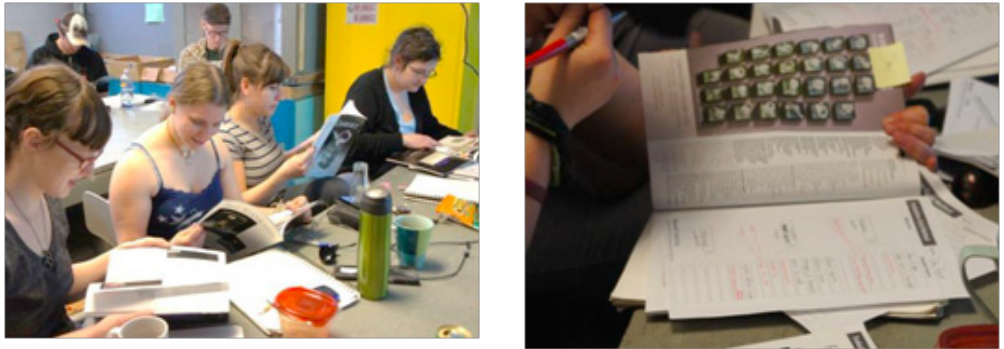


Figure 3 The scenes of 2nd and 3rd step

(4) Evaluate each of the others' selected artwork by using the semantic differential method (SD method) based on 27 extracted adjectives from step 3. The results of SD method were analyzed via a factor analysis.

(5) Created a new idea for a drinking vessel for the other participants based on the understanding not only of the others' preferences regarding the creative process but also the others' aesthetic preferences. There were 10 participants in this fifth step.

3. Results

3. 1. Results of The Workshop

During students' presentations regarding the selection of their favorite daily-life item, most participants used short sentences that contained common key words such as "cool" and "easy to use." Most presentations had an average length of 1.37 minutes, even though no time limit was given.

Fig. 4 shows how each participant's evaluation and selection of their favorite glass work in the second step is based on unique internal factors, leading to a variety of selected works across the group.



Figure 4 The selected art glass works

In the third step, each participant's preference structure was visualized using the EG method. During this time, the other participants within the same group added adjective words about and specific reasons for choosing the selected glass work on others' EG method sheets. Fig. 5 illustrates sample results of preference evaluation construction using the EG method. The black words in the figure illustrate the extracted adjective words by each participant and specific reasons for why the glass work was selected; the red words signify extracted adjectives by other participants and specific reasons for selecting this same glass work. During step 4 mentioned above, each participant extracted as many adjective words as possible from the middle layer. Results reveal that 57 unique adjectives (average of 4.75 per person) and 195 specific reasons (average of 16.25 per person) were extracted using the EG method. More than half of the presentations required in step 3 were about 10 minutes long (average time of 7.14 min). Each participant was meant to understand not only their own preferences in the creative process but also others' preferences as well. All participants answered that the evaluation structure was more complicated than they initially thought.

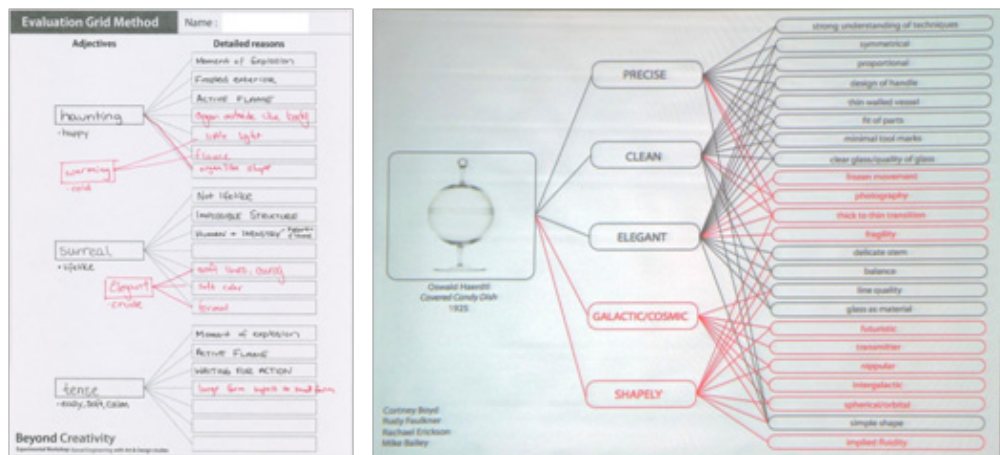


Figure 5 Examples of constructed evaluation using the EG method

Through the second and third steps, each participant was able to visualize the evaluation of preference construction using cause-and-effect relations within the EG method. From this visualized structure, they could logically realize not only each participant's evaluation construction of their selected favorite glass work but also others' evaluation construction of the selected piece.

This result conflicts with the results of the warm-up task in the first step. Using the EG method in the second and third steps, participants could obtain a wider variety of objective information than in the first step as to why a particular object was selected.

3. 2. Results of SD Method and Factor Analysis

From the second and the third steps, a total 57 adjective words were extracted from all participants. These words were narrowed down to 27 adjective words for the SD method based on three people's observations, including one Native American. In the final step, 10 participants evaluated their selected works using the 27 adjective words as the standard for the SD method. A factor analysis was then conducted using all results from the SD method.

Table 1 shows the results of the factor analysis.

The following three principal factors were interpreted from the selected glass work: (1) Originality of expression, (2) Abstractness of expression, and (3) Conservativeness of expression (Table 2). Fig. 6 shows the position of the each selected glasswork based on scores of the extracted three factors.

Results revealed that each participant could identify the selected glass work based on the visualization of their scores of the others' favorite art work. Moreover, each participant could verify the others' preferences from the result of the above analysis.

Table 1 Result of factor analysis

		Factor		
		1	2	3
Boring	Interesting	-0.767	-0.267	-0.160
Haunting	Forgettable	0.699	0.047	0.092
Static	Dynamic	-0.683	0.103	-0.003
Expressive	Impassive	0.641	-0.055	0.130
Complex	Simple	0.600	-0.042	-0.191
Unexpected	Predictable	0.587	0.049	0.292
Strong	Weark	0.510	0.086	-0.102
Monochromatic	Colorful	-0.492	0.311	-0.050
Dull	Bright	-0.486	0.028	-0.150
Textual	Flat	0.473	-0.286	-0.101
Uninformative	Informative	-0.467	-0.073	0.108
Tense	Calm	0.445	-0.396	-0.094
Fitting	Contrasting	-0.409	0.224	0.017
Elegant	Messy	0.049	0.846	0.091
Clean	Dirty	0.008	0.748	0.020
Smooth	Rough	-0.291	0.605	0.333
Clumsy	Skillful	-0.348	-0.550	0.225
Useful	Useless	-0.026	0.513	-0.110
Vague	Precise	-0.221	-0.451	0.415
Surreal	Realistic	0.359	-0.399	0.378
Sensual	Chaste	0.129	0.250	0.675
Fluid	Solid	0.048	0.104	0.459

Table 2 Result of interpreted three principal factors

Adjective Word	Elgenvalue	Factor Interpretation
Boring, Forgettable, Static, Impassive, Simple, Predictable, Weark, Monochromative, Dull, Flat, Uniformative, Calm, Fitting	4.695	Originality of expression (Conventional-Original)
Messy, Dierty, Rough, Clumsy, Useless, Vague, Surreal	3.332	Abstractness of expression (Abstractive-Objective)
Chaste, Solid	1.731	Conservativeness of expression (Conservative-Raunchy)

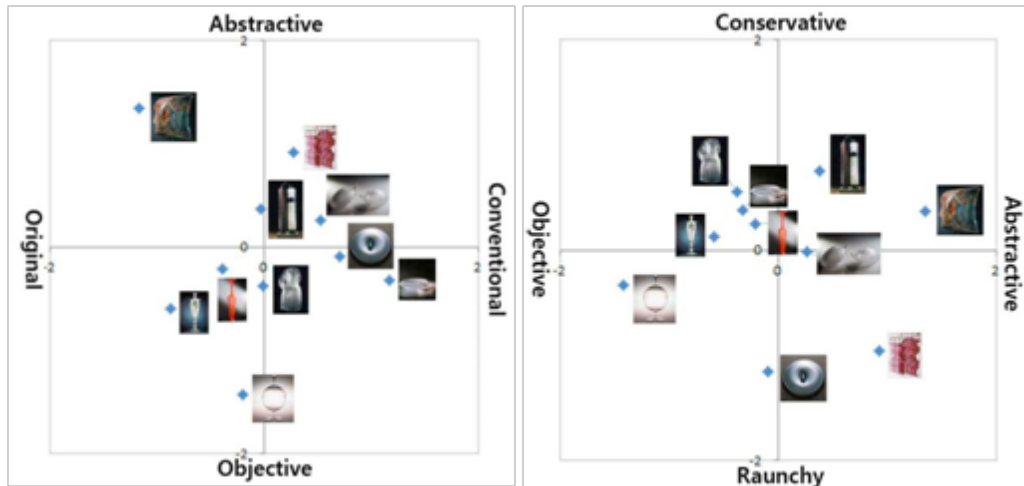


Figure 6 The position of each selected art glass work with three factors

3. 3. Creating a New Idea for a Drinking Vessel for Other Student Posing as a Client

Each participant created a new idea for a drinking vessel for the other participants posing as a client based on the understanding of not only their own preferences regarding the creative process but also others' preferences as well. Fig. 7 shows several students conducting presentations about their created ideas.



Figure 7 The created ideas for drinking vessel

Each of these presentations was limited to 3 minutes; however, almost of all presentations exceeded this time limited. This is regarded as positive. Moreover, each of the 10 participants logically described why they created the new idea, using 34 adjective words (average of 3.4 per person) and 122 specific reasons (average of 12.2 per person) based on cause-and-effect relationships. At the conclusion of all presentations, many of the students posing as the client commented that these presentations were better and easier to understand than the presentations given during the first and second steps of the workshop.

4. Conclusion

This research aimed to provide students in art and design school with new perspectives so that they can engage in introspection of their own preferences that manifest as internal

factors, and to develop characteristics of their creative work. Thus, Kansei in this study is not only seen as a source of creativity but also as an evaluation tool for a perceived external stimulus. The “Beyond Creativity” workshop was created for this purpose and conducted with students enrolled in a glass art course at SIU.

As a result, students’ preferences for creative work were visualized, evaluated, and scored. In addition, others’ evaluation on these preferences in creative work were analyzed using the EG method and factor analysis. The visualized and scored preferences in this research are nothing more than one of the internal factors utilized to create an idea; however, all participants were able to engage in introspection on their own preferences based on not only their own evaluation but also the objective evaluation of others. The results show that each student is able to understand his or her own preferences of creative work. That is instrumental in experimenting with various expressions in their creative work and in conveying the value of this work to others in objective and logical ways. These processes helped each participant reflect on their own Kansei and develop the characteristics of their creative work.

In this research, we focused on the creator’s preference as the key internal factor, prior to the creator engaging in introspection on this preference using visualization and scoring. In future studies, we need to clarify the relationship with the internal factor reflected upon by the creator as well as the quality of the created idea.

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