Inspiring the creativity and imagination of university students during creative curriculum by teaching design

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Abstract

The aim of this study is to explore the creativity and imagination of analogy technique how to be inspired university students to produce works by instructional design. The researcher used work analysis and in-depth interview as research method to examine creators’ creative thinking. There were 40 works evaluated by 3 judges and ranked top 3 works. The Piano Card is selected as an example to discuss. The findings of this study are as follows: 1. How to inspire the creativity and imagination? The analogy of Piano Card used direct analogy to inspire the creativity and imagination. 2. How to apply NM analogy? We can apply KW-QA-QB-QC-ABD steps to create Piano Card within paper speaker. 3. What is the main emphasized opinion of instructional design? The instructor design creative show as motivation is the most important process of instructional design.

Keywords: creativity; imagination; teaching design; creative curriculum; analogy

1. Introduction

Creativity is an indispensable ability to determine the success in the future (Gardner, 2007). Creativity is central to “learning how to learn” and crucial in the ability to respond effectively to change (Torrance & Goff, 1989). McWilliam & Dawson (2008) argued that this shift allows more space for engaging with creativity as an outcome of pedagogical work in higher education. Alhajri (2010) pointed researches in creativity, innovation, and problem solving should be encouraged in university staff. Well-designed creativity training can enhance students’ divergent thinking abilities and problem-solving skills (Cheng, Wang, Liu, & Chen, 2010; Fleith, Renzulli, & Westberg, 2002). In this boundless, ever-changing
globalization market, in which knowledge is the niche for competition and cooperation, creative knowledge has already become an index that leads civilization into a continuous advance.

Instructional design is the systematic process of designing, developing, evaluating and managing the entire instructional process to ensure effective and efficient learning. It is based on what we know about instructional and learning theories, systems design, information systems and management (Morrison, Kemp & Ross, 2001). By teaching design for creativity is necessary to accomplish this goal and maintain competitive advantages.

The study is to explore the creativity and imagination of analogy technique how to be inspired university students to produce works by creative instructional design. These are as follows:
- How to inspire the creativity and imagination to create works by creative method?
- How to apply NM analogy to create creative work by the creators?
- How many opinions of the creator emphasized in 5 processes of instructional design?

2. Theoretical Framework

Since Guilford (1959) proposed the term creativity in the American Psychological Association, Guilford defined creativity as an essential mental activity for human beings. Torrance’s objective was to develop a reliable and valid test of creative thinking abilities that could be administered to individuals from kindergarten through adulthood (Torrance, 2008). In fact, creativity research is considerably better off than most comparable fields of study when it comes to conceptual clarity and terminological regimentation. There have been many serious definitional efforts, and there is widespread awareness of the problems and limitations of extant definitions (Klausen, 2010). Regardless of many definitions of creativity, creative work is both novel and valuable (Mayer, 1999; Runco, Millar, Acar, and Cramond, 2010). Creativity is the ability to produce work that is both novel (i.e. original, unexpected) and appropriate (i.e. useful, adaptive concerning task constraints) (Sternberg and Lubart, 1999). It has been reaching a consensus approach.

Analogy technique is possible to encourage people to be more creative and to approach tasks with creative outcomes in mind. The idea of teaching someone to be creative can strike people as an impossible task. Analogy technique is that one recognizes some similarities between the problem situation and brainstorming. It is popular to be used 4 kinds of analogy technique, including direct analogy, personal analogy, imaginary analogy, symbolic analogy (Altshuller, 2000; Shen, 2010). Direct Analogy (DA), that is directly to compare two objects, ideas or concepts and to have the original theme of the situation switch into the other one to generate a novel concept. Personal Analogy (PA) that is to have individuals become part of the question which have not solved yet or the image which are to be explored, and to have individual consciousness projected onto a particular object or idea. Imaginary or Fanatic (IFA) Analogy that is to think, as far as possible, by unusual ideas, or possibly to imagine questions by far-fetched way, for example, through the extraordinary imagination of sound, image, action, meaning to create a variety of creativities. Symbolic Analogy (SA) that is to use the characteristics of two conflicts, to have the unrelated phrases or words combined, and to obtain new ideas and the key of observation through the contradictions with streamline compression, lacking of coordination.

There is a thinking method named NM Method that intensively uses analogy for problem solving in Japan. NM Method, developed by a Japanese inventor—Masakazu Nakayama within named after initials. Nakamura (2003) pointed there are five steps as the following: (1) KW(Key Word): Define the function or the main feature of the required technical system in a short clause including a verb. (2) QA (Question Analogy): Look for an event that meets with the KEY WORD defined in step 1 among natural phenomena or man-made systems. (3) QB(Question Background): Clarify the principle and/or the mechanism that work(s) in the background of the analogous phenomenon found in step 2. (4) QC (Question Conception):
Idea generation from the principle and the mechanism of QB. (5) ABD (Abduction): Combine ideas and brush up the concept.

Instructional design is the systematic process of designing, developing, evaluating and managing the entire instructional process to ensure effective and efficient learning. It is based on what we know about instructional and learning theories, systems design, information systems and management (Morrison, Kemp & Ross, 2001). There are 5 processes of instructional design used in this study. It included creative motivation, providing teaching materials, conducting creative thinking methods, proceeding creative discussion and feedback, and evaluation.

3. Research Method

3.1. Participants and Judges

There were collected 40 works from applying creative technique of analogy. There were three university faculty members were invited as judges to evaluate and rate the 40 works. They specialized in patented invention, creative training, and production design. Three experts with experiences ranked top 3 works.

3.2. Method

The researcher used work analysis and in-depth interview as research method to examine creators’ creative thinking. Work analysis depended on judge’s selection of special work as an example. According on the special work as an example that in-depth interview was followed. In this study, the researcher interview the creator how to be inspired the creativity and imagination by creative method and apply NM analogy. And then, discussing how many opinions of the creator were emphasized in 5 processes of instructional design.

3.3. Association instructional design

There are 5 processes of instructional design used in instructional design. There are motivation, providing teaching materials, conducting creative thinking methods, proceeding creative discussion and feedback, and evaluation

4. Result analysis

Piano Card was selected by judges, below is about the work how to be inspired the creative idea, the creator how to apply NM analogy to make Piano Card, and what is the main emphasized opinion of instructional design.

4.1. How to be inspired?

The product named Piano Card (Figure 1). The analogy of piano card can be described in terms of directing analogy, the card incorporated ideas of piano, and then the piano card transferred to another situation. The piano card imagined in higher-order relations among relations. For example, the piano card may play, collapsible, collectible and can use in the Festivals of Christmas, April Fool's Day, Valentine's Day, and Chinese New Year. The piano card matched across two topics of function and festival. The quality of the piano-card analogy was determined by the nature and extent of the match. For example,
how to create the function and celebrate festival were imaged by creator. When it was determined which extent of the match, there were many creativities and imaginations would be inspired.

However, A creative output, an idea that is both original and appropriate (Howard, Culley and Dekoninck, 2008). The Piano Card is both original imagination and appropriate usability.

4.2. How to apply NM analogy

The creator used 5 steps of NM analogy to create piano card. First, KW (Key Word): Piano and card will like speaker as the main feature. The requirements of technical function of piano card must be thin, lightly, and have sound. Second, QA (Question Analogy): If I touch the white and black key, then it has sound and like people singing. It will be great. Third, QB (Question Background): If I want to sing a song, I need to put speaker into the card. What materials are proper to develop it? Maybe I can try to use and merger electronic chips into paper. Fourth, QC (Question Conception): We can make paper speaker in different key to distinguish scales. Fifth, ABD (Abduction): We can design the front side like a piano. When the piano card will be open up, it like as a upright piano. We can really touch and play from the front view, above view, right view and stereoscopic view.

4.3. What is the main emphasized opinion of instructional design

The creator stressed 5 processes of creative instructional design in creative motivation, providing teaching materials, conducting creative thinking methods, proceeding creative discussion and feedback, and evaluation with more useful to create works. Especially in motivation process. As the creator put it:

*I think there are two important points within creativity of analogy product about how can I do piano card, the first point is to see paper-trumpet-flowers (Figue.2) of 2010 Taipei International Flora Exposition at the Pavilion of Dreams by Taiwan Industrial Technology Research Institute(ITRI). We saw the film at the beginning class by our


classmates’ creative show. The other point is our instructor gave us a theme comment, led us to see the film of FleXpeake, let us know the paper-trumpet-flowers is made in many pieces of FleXpeake. And then she explain the relationship between FleXpeake and paper-trumpet-flowers. That is very important to inspire my creativity and imagination in the processes of incubation and illumination. So, classmates’ creative show as motivation is great for me to create the piano card (The creator, 15/10/2011).

Industrial Technology Research Institute (ITRI) of Taiwan proposed FleXpeake (Figure 3) and received the year winner of Wall Street Journal 2009 Technology Innovation Awards, it hosted in Redwood City of United States (Industrial Technology Research Institute, 2009). The creative design is toward the science and technology oriented in the future. This technology has been made into a product, selling at 2010 Taipei Flora Expo as souvenir. At the price is NTD 1,980 (about USD 66) for 2 pieces. They had been developing FleXpeake of research approach which combined within 124 pieces to make mechanical flowers at the Pavilion of Dreams of 2010 Taipei International Flora Exposition (Taipei City Government, 2010).

However, in the motivation process, the instructor conducts creative show of film in instructional design for forty students had only one time to show 2-3 minutes at the beginning class time in one semester (every 5 students/per class time, and by turn), they must show their creative collections (e.g. stories, cases, animations, picture, films, personal belongings show etc.) and it depends themselves on using power-point, multi-media or actual items to share with classmates. After students’ creative show, the instructor made a short comment and caused by the theme as motivation.

5. Conclusion

In this study, when we analyzed works and in-depth interviewed the creator of piano card, there were more positive confirmation about increasing analogy creativity by instructional design, especially in the process of motivation. Teaching design should be dominated various concrete principles and creative thinking. If an instructor may have a habit of imagination to collecting creative information, creative organization, creative development, detail design, testing and improvement in creative instructional design. The creative teaching should be imaginative, creative, and extraordinary for students.

References


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