

VISUAL COMMUNICATION DESIGN COGNITIVE ACTIVITY MODEL (A BEGINNER DESIGNER CASE STUDY)

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Abstract—Design thinking is becoming more readily understood today, as design practitioners become familiar with the thinking processes involved in using conceptual knowledge to drive better solutions to unclear problems. This study aims to develop ways or methods for novice visual communication designers from cognitive activities for novice visual communication designers, to obtain findings from the results of a prospective comparative analysis. With the proposed methodology, model I activities take place in a chronological flow under specific guidelines involving various forms of design understanding. The guide is closely related to the design phase from problem to detailed design and the cognitive processes of divergent and convergent thinking. This methodology provides open-minded beginners seeking to advance the design process, solve complex design problems, and make better design decisions. This research has a unique approach to methodological development. Next steps The proposed methodology guides more effective cognitive activity during the design process and has the potential for application in design education due to its focus on the needs of novice designers.

Keywords: *Design methodology, Design thinking process, visual communication design, novice and expert designers, cognitive activity-based design methodology.*

INTRODUCTION

The research proposes and explores the ideas of *the Activity-Based Design Method*, a Design technique developed through a comparative analysis of the design thinking processes of new designers. In the process of design literacy, not only specific instructions for detailed design elements but also thorough guidance on design solutions is essential. As a designer is faced with a design task, the existing design methodology often dictates operations structure to perform during the design process — activities that can vary depending on the task, or object. This approach can help novice designers in particular, including students, improve their design output. To help address this issue, the proposed methodology incorporates increased awareness of the cognitive activities that underlie design practice. Because the methodology provides guidance that focuses on cognitive processes as opposed to activities dictated by visual design guidelines, which are independent of the designer's

cognitive processes - can help create useful design solutions. **Cognition** involves the process of thinking, recognizing, remembering, judging, and solving problems. **The processes in cognition** above are brain functions that are at a high level.

RESEARCH METHODS

This study uses a method that has four stages, namely: 1. Literature Review, (2) Experiments and analysis of experimental results, (3) Development of cognitive-based design methods based on analysis, and (4) evaluation of the methodology. It is the basis of this comparative analysis that produces a method for beginners developed by classifying cognitive action reviews that are identified as related to design into cognitive processes and design activities that are proven to be effective. Beginners apply these methods to the review and trial processes, this allows for a thorough evaluation of their applicability in the design process. The method in this study was used in field trials to establish its effectiveness.

Research Scope

Design Beginners are people who are new to various situations, jobs, and activities: they are someone who has no experience in that field. In the professional realm, students are included in the group of beginners referred to as practitioners. When beginners undergo training and education in their chosen field, they gain expertise and can eventually become experts (Cross 2004, 428). The expert category is obtained when the learning experience has been able to increase the effectiveness of one another and become better so that they are interrelated to increase their function or benefits as a designer who has solved problems in terms of design. In research related to novice skills, the usual method is to carry out a comparative analysis of each group. This research has a pedagogic goal to improve and develop effective design methods, the initial examples are the first and second-generation students in the field of visual communication design, namely, novice designers who become participants, seen from three criteria:

1. Have the ability and skills to master software and adequate tools so that evaluation can be done effectively and in stages.

2. Have never had experience in a particular design and design project.
3. Knowing field conditions regarding design issues and visual graphics.

In this case, designers who have been for more than 10 years are said to be professionals if they meet several additional criteria:

- 1) It's been recognized by design groups and the community
- 2) Has its method of solving problems in design
- 3) Have qualified skills in device design

Design Methodology

In visual communication design, many current methodologies can be described as audience-centered or task-oriented (Bennet 2006). According to the authors, this method has the potential to eliminate consideration of the visual communication designer's thought process, which has various roles, such as a "communicator" or "translator" of a message.

A designer can use thinking procedures that are completely logical but still reflect a personal view of the design narrative and concept. The function of the design methodology is to increase the creativity and intuition of novice designers, and a designer must be able to map out effective activities in design projects.

Design Thinking Process

The term *Design Thinking* or the process of design thinking is gaining popularity in the fields of branding, marketing, and service/consumer experience, where attempts are made to integrate innovation and creativity through design thinking (Lockwood 2010). The process of considering, analyzing, and reviewing designs is important in instructing students to handle students with various inclinations and abilities. Visualize the design thinking process by communicating between the designer and the situation, conversations related to the development of new ideas, and making decisions about attractive designs.

Comparative Analysis of the cognitive processes of novice visual communication designers. How to measure or identify the design thinking process? One of the forms is when students work on designs by sketching using paper or digital media, each of them reporting what they designed by making initial designs or sketches. The results of this observation will support this research. After the method was implemented, it was followed by a retrospective interview using visual cues or symbols such as reference sketches which became the source of the designer's designs for further identification.

Some of the data sets collected:

1. Designer portfolio
2. Sketch or design draft
3. Observation notes or design references
4. And the presentation scheme in presenting a design product

Analysis, design thinking, and design solutions are needed to show how cognitive methods affect the quality of the latter. The assessment categories are informative, persuasive, aesthetic, creative, level of completion, and overall judgment (Bernard 2005, 13-18; Kruger & Cross 2006, 530).

In this study, we summarize the effective design cognition, activities, and cognitive processes obtained from comparative analysis.

- In formulating a problem, it is necessary to produce a concept by structuring a problem. The most important part of this assignment is writing the paradigm, as well as the design concept using keywords before going into visualization.
- The problem formulation should be shaped according to the designer's interpretation, without excessive consideration to avoid cramping into the problem-defining or information-gathering phase.
- One form of an effective design process strategy is to repeat the co-evolution of problems and solutions at all stages of problem structuring, concept, concept visualization, design development, and finishing. Working on several *alternative drafts* simultaneously by comparing them improves the quality of the design.

This process will be achieved by making design decisions with confidence in the visual elements, the expression of which means they must have a design concept, and the design is rationalized. Quick decision-making can give designers more time for detail work, and high turnaround rates.

Creation of a cognitive activity-based design methodology Methodology is the study of methods. Why is a methodology needed:

- a. Designing is a problem-solving activity based on a systematic, scientific, and rational method
- b. Alignment of design activities as scientific activities by emphasizing methods for solving design problems.
- c. The complexity of presenting a design lies in how the designer can express the widest range of problems surrounding the design.
- d. Avoiding subjective elements (like an artist in his work), the wider the designer breaks down and defines the problem, the more objective the resulting design will be.

Design Methodology Objectives

Design methodology aims as a key to be able to gain unique insights and essential truths, to generate more holistic solutions to achieve a better experience for users of products, services, and environments and rely on their systems. Study the theoretical basis of design and how to achieve these goals methodologically. Introduction to the method and sequence of designing and building a method of thinking that is by the design problem process, namely the problem-solving method. Developing the ability to

analyze and critically read every movement and what is happening around it.

The reasons why design requires a methodology is:

1. Some views on the systematic approach to design problems.
2. Systematic process design activities.

Scope of knowledge in design methodology:

1. Divergence – exploring the possibilities and limitations of various situations by applying critical thinking through qualitative/quantitative research methods to create new understandings (problem spaces) toward better design solutions.
2. Transformation – redefining the specification of design solutions that can better guide traditional and contemporary design activities (architecture, graphics, industry, information, interaction, etc.) and requires a multidisciplinary response.
3. Convergence – the prototyping of various possible scenarios as a design solution that gradually or significantly improves upon the initial situational concerns.
4. Sustainability – managing processes, exploring, redefining, and prototyping design solutions on an ongoing basis.
5. Articulation - the visual relationship between the part and the whole.

Activity Modes

Activity modes refer to the various modes of activity that designers perform – actions such as thinking, evaluating, writing, sketching, or working with digital schematics. Figure 1 illustrates the process of designing activities to be carried out and when; These activities can be carried out in a structured manner. Problem formation concept creation and solution creation from concept visualization are designer actions toward cognition activity.

In the process of solution and concept visualization, method users explore visual images, typography, and composition. This scheme is done by making an initial design or sketch of the visual elements that must be suitable to be able to describe the design concept. Design sketches using visual quality and graphic software can enhance and expand the designer's visual exploration and support the process of graphic design solutions. Beginning designers are recommended to use graphics software or software to generate two or three alternatives to be able to compare against visual developments. Conceptual design throughout the process and making decisions based on those visuals is very important.

Design Process

The design process, in this case, the design or design phase, consists of (1) problem-solving (2) initial design (3) design improvement, and (4) detailed design. Quality and time are very important things that must be considered in visual communication design.

Cognitive Process

The last category, namely cognitive, can help a novice designer make satisfactory visual design steps or designs. Two divergent-to-convergent thinking processes are needed, one for an interesting visual concept and the other for achieving a satisfying creation. The cognitive processes involved in exploring possibilities can enhance design quality and bring creativity and conation into design solutions.

The Methodology is Evaluated

If the evaluation starts with training in the methodology, it is filled with questions and answers to ensure that the methodology is understood. Design task examinations are conducted to thoroughly investigate the feasibility and effectiveness of the design processes that emerge from them. After the individual trial step in the experimental studio/field field trials were held in a realistic pedagogic setting.

Visual design class for first-year students. The purpose of the evaluation is to express:

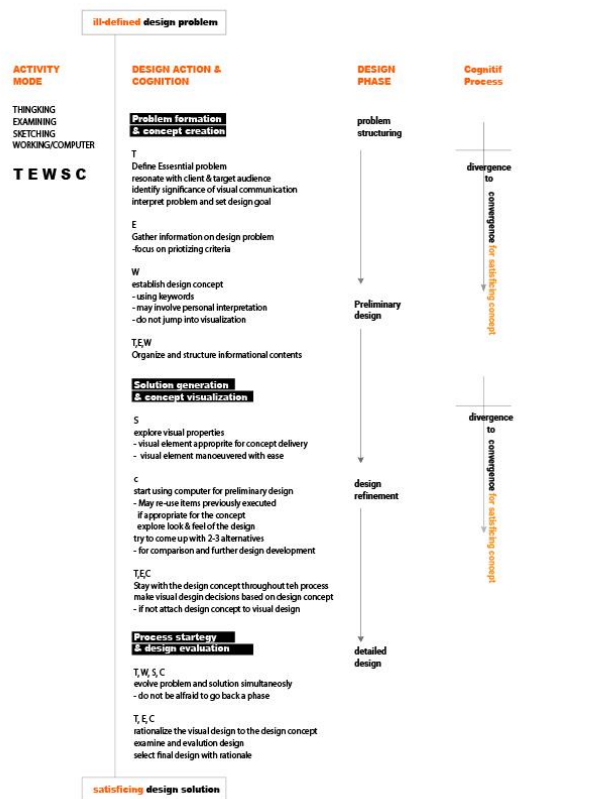


FIGURE 1. Cognitive Activity-Based Design Methodology for Beginner Visual Communication Designers (Hyunju Lee 2016)

- Effectiveness and overall feasibility of the methodology
- Motivational factors and points of interest in the design process
- Achievement of design objectives using methodologies and
- Every problem arises in a realistic pedagogic environment.

Review and Trial

In the review and trial of three novice participants acting as participants, for individual trials, participants are given design content – tasks to be completed using the methodology. Their reports consist of observational notes, writings, sketches, design literacy, and design solution concepts as data that provide an overview of task performance and beginner activity modes, design cognition, design phases, and cognitive processes.

Following are the results of one's review and analysis of the design process seen in the Individual trials.

1. Argued that the design process involves "planning" to get to the next stage, thinking that problem mapping is effective because it builds concrete concepts to support decision-making during the design process. This insight is the same as the findings of Kavakli & Gero (2002), where the level of activity. The novice designer's cognitive peaks early in the process and continues to decline, whereas the expert designer continues to improve throughout the process. Beginner 1 construes the possibility that with the guidance of the novice designer's methodology can come to demonstrate cognitive processes as practiced by experts.

Various decisions are taken by beginners 1 based on the design concept and result in the use of keywords for the construction of an effective design concept. One of them is exploring appropriate visual elements for the representation and rationalization of concepts that also help advance the design process. For example, after designing a design, beginner 1 comes up with the keywords "campus" and "every day" he conjures 'campus' as the main visual element and 'classroom' as an additional element. This design also emphasizes the design concept with the phrase 'journey of the campus'. Keywords, which beginners rely on to help finalize their design concepts can also influence visual and verbal messages in designs that are communicative solutions.

Beginner object 2, by using the methodology guide method, the design of ideas takes less time, concrete abstracts can divert and move forward in design planning with this reliable methodology, it can produce more focused and concrete design thinking.

The beginner abstract approach 2 has the potential to benefit and receive training that can help make thinking processes more objective. A beginner often depends on the theme of the design task assigned to him. In contrast, professional designers are often faced with various design problems, solutions, objectives, themes, audiences, and so on in their area of expertise, which in turn helps to stabilize their product process.

Beginner 3 uses the scheme working on two drafts, which is beneficial the results of this scheme mention that it is very helpful in exploring visual forms/visual elements. The main creative phase into the production phase is not only making sketches but also working with digital/computer media as a means of visual exploration. Beginner stage 3 describes that the design methodology feels like a burden at first, but the actual design process flows more naturally and can lead him to engage in divergent-convergent thinking that he had forgotten in previous design projects.

Cognitive activity in design methodology provides an unrestricted mode of action/structure in sequential design: this enhances the role of structure in encouraging divergent thinking during conceptualization and visualization. the process of selecting a visual concept during convergent thinking, because novice designers allow themselves to make an initial evaluation of their still-changing decisions before implementation.

Appreciation of colleagues in the process of designing a design has a motivational role for one another to produce solutions that are more original, creative, and effective.

In the process of activities from designing ideas to visualizing visual communication designs, peer feedback is very influential in the visualization stage, because peer comments can become more concrete when design problems become more visible (e.g. Kim & Lee 2010, 281-3). Each peer/individual's comments may be subjective, but often colleagues must assess the communicative aspect of design solutions, accumulated peer feedback takes a fixed and appropriate objectivity.

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CONCLUSION AND DISCUSSION METHODOLOGY

Research using the cognitive activity method provides an approach that novice designers can use to develop their

design process. It can be concluded that it provides guidance in cognitive activity, which makes design decisions more effective.

Several forms of methodological influence can be distinguished from other approaches, in contrast to operation-oriented, actual activity, task-oriented, and target-oriented design methodologies. In contrast to the proposed method, this research considers cognitive design activities (cognitive processes) in the design phase. This allows aspiring designers to bring creative minds to charge in their projects. The point of the proposed methodology is the guidance that will be provided to ensure improved solutions are 'satisfactory' by novice designers, to some degree lacking design knowledge, experience, and confidence in their abilities to think like experts. Process methodology training can help beginners acquire knowledge of the design thinking process and knowledge of the logic and urgency of design.

Another advantage of using this methodology is its ability to reduce time spent on assignments. Applying the methodology, the designer can ascertain objectives that address important design issues in a design assignment.

The improvement produced by this method approach can be seen in the design process more than the results because, in visual communication design, the assessment is very dependent on the design/visual representation design and design implementation. Implementing this method helps the thinking process, along with the development of the designer's technical ability to execute visuals, as well as the development of designs for quality solutions.

So this research methodology will be more effective if applied over a longer period, has sufficient exploration space for visual quality from various design aspects, and can improve quality development. Novice designers who participated in this study greatly appreciated the opportunity to explore existing design theory in the methodology and introduction to the methodology is an early stage of the recommended Education phase. It is common for novice designers to seek references or information from external sources and feedback from mentors and colleagues can be an important resource in identifying potential solution weaknesses and how to improve them.

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