Self-organising system design method to improve creativity and effectiveness of experimental learning

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Abstract. The learning process in the experimental design of visual communication design is one of the in-depth processes of the design methodology application. The objectives of this study include (1) increasing the effectiveness of self-organising system method to spur the level of creativity; (2) Improving the quality of the experimental learning process technically; and (3) Testing the effectiveness of self-organising system method. This type of research used qualitative research that reflectively describes the findings of factual data regarding the development of the learning process and the effectiveness of the self-organising system in the field. Data collection procedures used the reflection model proposed by Ralph, namely, reflective and intuitive designs. The research results show that (1) learning outcomes can be improved through the process of creativity as a result of experimental learning methods of visual communication design and the application of the self-organising system design method, (2) the quality of experimental learning processes can be improved through the self-organising system design method as an alternative of experimental learning in the visual communication design course, and (3) effectiveness of the strategy can be tested through the self-organising system method that significantly influences the experimental learning process in the visual communication design course.

1. Introduction

Learning outcomes should be oriented to how the learning process seeks to foster and strengthen learning desires. Creating a learning atmosphere can build learning awareness, and moral awareness through fundamental socio-cultural values, develop intellectual potentials, and moral values. In the process of preparing prospective intellectuals, scientists, and practitioners (professionals), it is necessary to prioritise students’ competencies in an integrated way. Both hard skills and soft skills are mixed with character education through the development of students’ potentials, and lecturers’ pedagogical activities that synergistically take place in each learning process and ongoing development of experimental courses.

Visual communication design requires the students’ readiness to absorb the theoretical knowledge and practical ability. Improving both hard skills and soft skills can be approached with a methodical implementation in conjunction with the students’ needs and learning processes. As a course can deepen or strengthen study options, students are equipped technically with a basis of visual communication and artistic application when taking basic courses in Typography, Illustration, Graphic Design and Visual
Communication Design. To train students' sensitivity in choosing typography, colours, signs, and certain symbols, it is crucial to present the world of creative ideas through visual communication materials.

This research focuses more on the process of enriching design knowledge, deepening technical aspects, exploring creative ideas, and innovative techniques through various design methods by thinking out of the box, one of which is through the application of the self-organising system method. A learning process not only introduces and applies the self-organising system method but also gives flexibility to the conceptual and technical application and the breadth of the design horizon through an experimental process. At the same time, students are triggered to increase the competence through creative ideas, explorative technical achievements, and design competitions by presenting creative ideas and the power of argumentation on artistic design products through multi-media presentation skills.

There are three focuses on the design process, namely the divergent method, the transformation method, the convergence method, developed further by Nate Burgos and Adam Kalish [1]. Jones puts this design method in another way, namely acting and thinking like designers and groups of designers by dividing the two ways, namely traditional ways and new ways (modern). He called the traditional way a designer as a craftsman (a craft method), and a designer as a draftsman (a drawing method), while the modern method is called the designer as a black box, the designer as a glass box, the designer as a system processor, and the designer as the controller & evaluator. In the process of designing product designs, students are free from the constraints of assessment and categorisation of their design products. They can independently implement their aesthetic desires by managing the technical aspects that require the improvement of such an aspect. Art involves everything that has subtle, small, gentle, and departs from the primary standard, namely the mastery of skills and understanding of philosophy [2]. Because the value of art includes three categories such as the value of logic (right/wrong), ethics (good/evil) and aesthetics (beautiful/bad). Students are expected to grow naturally and mentally to increase other competencies.

The learning process requires a set of hierarchical learning systems, including the important role of the methods used and developed. For that reason, the learning device has a big influence on the achievement of students’ learning outcomes as an embodiment of learning objectives and achievement of competency standards planned in teaching and learning activities. The development of learning tools is a series of processes or activities carried out to produce a learning device based on the existing development theory. Therefore, researchers want to look back at the effectiveness of a learning method especially in the application of the self-organising system method in increasing the creativity and effectiveness of experimental learning in visual communication design.

2. Research Method

This qualitative research reflectively describes the findings of factual data regarding the development of learning processes and the effectiveness of the self-organising system in the field. The procedure is set to determine the research subject using purposive sampling, and the instruments consist of the questionnaires used for applying methods, students’ worksheets, and the creation of visual communication design to map out the effectiveness of the applicable method. Data collection procedures used a reflection model coined by Ralph, namely designing reflective and intuitive models of reflections.

Likewise, this is called Borg’s & Gall’s type of research and development or commonly called Research and Development (R&D), along with its levels of effectiveness through doable activities [3]. To determine research subjects, researchers used selected sampling techniques worth considering, for example, samples taken from students who had passed typography, graphic design, and visual communication design courses. This requirement aims to support learning processes and the mastery of graphic techniques so that students have equivalent abilities before obtaining the treatment using the self-organising system method in the experimental learning of the visual communication design course.

The main instruments include (1) questionnaire sheet of learning motivation through the self-organising system method, (2) students’ worksheets (LKM) of visual communication design work, and (3) learning evaluation sheets. The research data arose from interviews with students when applying
design methods, visual observations, both visual data of work processes and students’ gestures during the design procedure and evaluating the work produced after receiving the treatment.

To obtain comprehensive data regarding the effectiveness of the self-organising system, the experimental learning in the visual communication design course has three criteria, namely (1) students’ questionnaire sheets to determine the response, enthusiasm, and learning motivation through the practice of the self-organising system procedure, (2) students’ worksheets (LKM) that provide procedures for design methods applied in the processes of visual communication design works, and the data acquisition regarding students’ abilities to absorb design methods in carrying out aesthetic, artistic, and communicative procedures, and quality values, and (3) learning evaluation techniques that measure the successes and effectiveness of the self-organising system in the experimental learning of the visual communication design course.

The data analysis techniques include (a) analysing data, the effectiveness of self-organising system in the experimental learning of the visual communication design course, (b) revising data, aspects of ideas, techniques, artistic contents of expressions, aesthetics and message values in the visual communication design work, and (c) verifying data to obtain accurate research findings so that they can be recommended for developing the experimental learning in the visual communication design course [4]. To determine the validity of data, the degree of trust (credibility) through the examination of data includes the extension of participation, perseverance of observation, triangulation, peer checking, adequacy of references, case studies, and member checks [5]. The data validity checking technique utilises other supporting data outside the data arisen from checking purposes as a data comparison. Through the triangulation technique, data confirmation is used to validate a source with others by comparing learning outcomes data.

The processes of data analysis comprise (a) analysing data, the effectiveness of self-organising system in the experimental learning of the visual communication design course, (b) revising data, aspects of ideas, techniques, artistic contents of expressions, aesthetics and message values in the visual communication design work, and (c) verifying data to obtain accurate research findings so that students can be recommended for developing the experimental learning of the visual communication design course [4].

3. Result and Discussion

To present this article, students apply a procedural design step whose fulcrum is to take the problem-solving step in creating processes. William confirms the core design problem; there are five elements of problems as a key to recognising design problems, namely the goal setting, designing goals, facts, concepts, needs, and problems. These elements can be used to compile a cross matrix of disciplines in a wide variety of design processes, even though it is intended for architectural procedures and other design-based disciplines [6]. This pattern becomes the basis of references in formulating the design process scheme adopted in the learning of visual communication design.

To apply the self-organising system design in terms of creative processes, students are required to understand principles and design procedures when preparing practical assignments in the form of visual communication design and product design schemes. Students are trained to understand the design of work procedures because each creative team must be synergistic and independent in packaging design products replete with the background of the problems and objects, locations and corporations. The branding process is carried out by students through this method, and students are given the opportunity as freely as possible to conduct a self-management system as agreed in the respective teamwork. This method discusses independence, and independence is discussed by interdependence [7], [8] not by individualism, exclusivism, isolationism or parochialism. Independence shows independence from other parties, but still establish harmonious cooperation with individuals, groups or organisation to succeed and move forward together [9].
3.1. A self-organising system is a practical design method that increases university students’ learning motivation in the experimental visual communication learning design

![Figure 1. The visual communication design and experimental learning processes using self-organising system method and the group’s design presentation](image)

To obtain comprehensive data concerning the effectiveness of the self-organising system in the experimental learning of the visual communication design course, (1) students are given a questionnaire sheet to determine the response, enthusiasm, and motivation to learn through the practice of the self-organising system procedure, (2) students’ worksheets provide procedures for design methods applied in the process of creating visual communication design works for data acquisition regarding students’ abilities to absorb design methods in undertaking aesthetic, artistic, and communicative procedures, and quality values, and (3) learning evaluation techniques to measure the success and effectiveness of the self-organising system in the visual communication design course.

3.2. The process of applying the self-organising system method can increase the university students’ learning creativity and the effectiveness of experimental learning for visual communication design

In terms of the experimental learning process of visual communication design, the self-organising system design method involves students in the learning processes through which design themes are discussed and identified in groups. Students are intensively involved ranging from the preparation stage of design made to the classical but limited brainstorming in each group. This is likely to finalise the preliminary ideas into the concepts of creating more detailed designs. Wide-ranging opportunities emerge in the form of icons presented and formulated in such a way as a representation of a group’s insights based on self-management systems as outlined in work with the design team. This also gives a creative space of each student to express ideas as independently and creatively as possible.

![Figure 2. The process display of product designs for the rebranding and presentation purposes at the public space of Lippo Mall](image)

3.3. The application results of self-organising system design method can effectively increase university students’ learning outcomes for the Experimental Design of Visual Communication Design course. Culture is closely related to the development of the idea [10]. Education deals with the communication of ideas and emerging improvements. There are two ways of changing or replacing ideas, namely (a)
contrasting two ideas (old and new ones), and (b) ignoring old ideas and focusing on essential factors. In this sense, there is a separation of ideas in which a new idea will lose if it is assessed with an old one. The emergence of new ones will even strengthen old ideas. The most effective way to change ideas is not derived from the external, but the internal factor and all the old information is arranged in a new transformative way. De Bono reveals the following differences in vertical and lateral ways of thinking; (1) Vertical thinking is selective, while lateral thinking is generative; (2) Vertical thinking only moves when there is a direction to move, but lateral one moves in order to develop a direction; (3) Vertical thinking is analytical, but the lateral one is provocative; (4) Vertical thinking is sequential, while the lateral one leaps; (5) Vertical thinking must have right steps, while the lateral one does not have any right steps; (6) Vertical thinking excludes irrelevance, but the lateral one accepts every possibility of external influences; (7) Vertical thinking uses categories, classifications and labels that have been fixed, but the lateral one does not use them at all; and (8) Vertical thinking chooses the right path, but the lateral one explores improperly. Vertical thinking is a limited process, but the lateral one is an all-round possibility.

De Bono concludes that both ways of thinking are good to use, and necessary in the learning processes as well. The direct outcomes of the experimental learning of visual communication design are the application of a self-organising system design method, an authentic design product that is produced collaboratively in a team. This learning activity is carried out to make active blended learning based on learning activities that encourage students’ creativity to produce visual communication design work, passion and creative vision without the lecturers’ interventions in the course. The assessment is merely limited to accompanying and motivating sessions and several steps of reinforcement required by students to generate creative ideas, collaborative values and public-oriented visual designs.

![Figure 3. The display of products in the form of work of arts and designs at the public space of Lippo Mall](image)

This premise fosters university students’ positive attitudes and confidence concerning the teamwork ability in the creative processes. Moreover, the principle of independence will lead to some creative steps that must be cultivated in any learning dynamics. The effectiveness of learning outcomes becomes an alternative to develop a blended-learning model; in particular, the application of self-organising system design methods in the experimental visual communication design course.

4. Conclusion

Within a semester, the self-organising system design method has been applied to the learning processes of experimental visual communication design courses as a direct response to the university students’ enthusiasm to follow the whole series of lectures attentively. The results show that the self-organising system design can be applied for the experimental learning in the visual communication design course at the Fine Arts Education Study Program of Universitas Sarjanawiyata Tamansiswa, Yogyakarta, as concluded below.

- A self-organising system is an advantageous design method that increases the university students’ motivation for experimental learning in the visual communication design course. The learning processes can influence the results of creative and innovative design products.
• Self-organising system design method can increase students’ learning creativity and the effectiveness of experimental learning in the visual communication design course. This method can increase the power of creation, along with learning effectiveness so that students are more productive.
• The results of the self-organizing system design method can effectively improve students’ learning outcomes for experimental learning in the visual communication design course.
• The strategy of applying the self-organising system design method can effectively improve students’ learning outcomes for the experimental learning in the visual communication design course.

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References
[1] Cristhoper Jones 1972 Design method (London: Willey Interscience)
[2] Jacob Sumardjo 2006 Jurnal Ilmu Desain FSRD ITB 2 p 86
[3] W R Borg & M D Gall 1983 Educational an introduction (4th ed research) (New York: Longman)
[4] Cohen, Louis Lawrence Manion, Keith Morrison 2007 Research methods in education (London: Routledge)
[5] Lexy J Moleong 2000 Metodologi penelitian kualitatif (Bandung: Rosda Karya)
[6] William Pena 1967 Problem seeking (an architectural programming primer) (CRSS: Copyrighted Material)
[7] Stephen R Covey 1999. The seven habits of highly effective people (Jakarta: Binarupa Aksara)
[8] Sumardjo 1999 Transformasi model penyuluhan pertanian menuju pengembangan kemandirian petani” in dissertation (Bogor: Institut Pertanian Bogor)
[9] Sri-Edi Swasono 2003 Jurnal Ekonomi Rakyat II
[10] Edward De Bono 1987 Berpikir lateral (Jakarta: Erlangga)