

Action Research for the Computer Graphics Studio Course Based on Activity Theory and Semiotic Theory

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ABSTRACT

The growth of the graphic design industry plays an important role in the transmission of messages using visual communication design presentations. Thus, the lack of exposure among students to the creative and aesthetic aspects leads to problems in producing high-quality graphic works. This study discusses the application of activity and semiotic theories in analyzing graphic production creative ideas in line with the current pedagogy. Based on the literature review conducted, an assumption framework based on a combination of semiotic and activity theories was developed after the reflection was done. This study used the action research approach on the MSG3023- Computer Graphics Studio course. A total of 53 Bachelor of Art Education students participated in this study from the first semester of the 2017/2018 session to the second semester of the 2018/2019 session. Meaningful learning will be achieved when the pedagogy implementation for IPTA courses is varied according to students' learning styles. Thus, in terms of graphics, creativity in visual communication plays a key role in establishing clearer and more effective interactional relationships in society through accurate pedagogical approaches. Graphics student, in general, need to find ways to address this issue in order to provide clear and accurate information to the public. In conclusions, the assumption framework is more suitable as a teaching model because it touches on almost all aspects of an individual's activities that involve all of the specified elements and fit with the socio-culture. The use of semiotic and activity theory is more concerned with the meaning and how messages are conveyed through sign to community in critical aspects of producing quality work or products and refining the aesthetic understanding of art.

Keywords: *Graphic design; Activity theory; Semiotic theory; creative, pedagogy*

1. INTRODUCTION

Graphics are crucial visual materials for conveying messages clearly. The 21st-century educators need to possess basic graphics knowledge to prepare the teaching aids. A basic understanding of graphics enables one to produce effective teaching aids. Graphic objects have the advantage of being easily understood by the general public despite the obstacle of different communication languages. Effective graphic materials encourage active interactions in the classroom and lectures while creating a fun and challenging learning environment [23]. Graphics consist of visual materials that summarise particular descriptions and assessments through a combination of drawings, words, symbols, and pictures [25]. Children are usually drawn to the graphic materials presented, which can create a positive learning environment. Adults are no exception either as they too are more likely to be drawn to conspicuous, concise, and easy-to-understand visual communication.

Graphic design is a creative process that combines the elements of art and technology. The combination of these two elements will create communication through the use of various appropriate media, processes, and techniques [17]; [19]; [21]. This communication method has changed from the traditional frontier to a new era with the use of motion graphics, environmental communication, and new media [5]. Students have the opportunity to learn manual skills and explore conventional and contemporary media in communication design. Students will develop designs that reflect the elements of innovation and creativity and are eligible to work in the graphic design industry both in Malaysia and abroad [19]; [21]. The expansion of creative ideas is in proportion to students' knowledge in applying the concepts of elements and principles in graphic design. However, the lack of exposure to the creative and aesthetic aspects of graphics has hindered the creative graphic design process and prevented it from being expanded properly and appealingly [5]; [23]. Creative ideas are crucial in the graphic design field and involve several critical and systematic processes in ensuring the high quality and value of a visual product [23]. Besides, students lack an understanding of the fundamentals of art and design, rendering them incapable of producing creative and outstanding artworks [11].

Currently, graphic design has various latest trends in line with the technology revolution and the needs and wants of society. These involve the fields of advertising and marketing, corporate identity, publishing design, packaging design, typography, illustration, computer graphics and photography in visual communication design. In tandem with current technological advancements, students pursuing basic graphic design, computer graphics studio, and multimedia courses need to learn critical thinking design as well as creative and innovative design that will prepare them for a future in the creative industry. Emphasis will be given on cultural, economic, and social sensitivity and awareness. This study aims to propose an assumption model framework through a combination of activity and semiotic theories using action research conducted on the Computer Graphics Studio course. Based on these identified problems, this study was conducted based on two objectives, which are:

- i. To see how the integration of activity and semiotic theories can enhance students' experience in terms of creativity.
- ii. To see the extent that the use of semiotic theory in graphic design can produce appealing and easy-to-understand graphic works.

1.2 The Design Process

The word 'design' is used in two senses, which are (i) design as a noun meaning artefact, entity or image that has meanings in terms of beauty (aesthetics), function or purpose (teleology) or meaning (semiotics) and (ii) design as a verb denoting the activities of making the artefact or bringing such entity or image into its production. The design process involves multiple levels of creative and non-creative phases. Therefore, apart from creative capabilities, designers need to develop other capabilities such as observation, research, coordination and management, technical knowledge, and persuasive capabilities. In general, the practised design process can be divided into the following phases: (i) Phase 1- Description of design and creativity, (ii) Phase 2- Planning / Implementation, (iii) Phase 3-Prototype / Work Outcome and (iv) Phase 4- Assessment. Although the phases are described in a certain sequence in this study, some phases may occur simultaneously or recursively depending on the situation [4].

The most crucial fact about design is its visual composition, whether in print or new media. Visual appearance and feel are crucial to the success of the graphic design. To achieve this level, a designer need to plan and implement a balanced visual composition for graphic design. All visual and textual assets need to be properly arranged until the overall design can produce an outstanding impact. Images or illustrations that are chosen selectively can produce a substantial visual impact on graphic design. Designers need to adhere to design principles to create graphics that are appealing and easily understood by the public. Therefore, a graphic designer should start work by preparing a thumbnail sketch or rough key sketch for the visual design based on three essential elements, namely (i) Aesthetics, (ii) Theology and (iii) Semiotics.

These three elements are closely related to the creative factor. A creative design process should go through (i) a briefing process to identify the needs, (ii) making the specifications for the criteria, (iii) doing research on products, materials, and processes, (iv) generating the design ideas, (v) thinking outside the box on design possibilities, (vi) development which is finding ways and making the best choice, (vii) final design, (viii) planning and (ix) the evaluation process involving testing whether the design produced fulfils the specifications. All of these processes can help graphic designers and students become more creative and innovative as they gain experience through the designing process [8].

The process of expanding creative ideas is a thinking art that involves the ability of humans to focus on any effort to make creative decisions and solutions [19]; [21]. According to scholars in the creative thinking discipline, the art of creative thinking involves the elements of using creative thinking techniques, repetitive exercises, the existence of extrinsic and intrinsic motivation in expanding creative ideas, clear about the objectives to be achieved, possessing specialised knowledge in the field and the ability to solve problems [13]. Therefore, this action research was conducted to identify the integration of activity and semiotic theories in enhancing students' experience in terms of creativity and to see the extent that the use of semiotic theory in graphic design can produce appealing and easy-to-understand graphic works. Problems faced by visual arts education students taking the Computer Graphics Studio course were seen through observation and assignments produced by students. Based on these issues, a creativity model will be developed as a reference for lecturers, graphic designers, graphic students, and graphic facilitators to tailor the assignments to obtain more creative and meaningful designs.

1.3 Theoretical Approach

The theoretical approach in this study is divided into two, which are (i) Activity Theory and (ii) Semiotic Theory.

1.3.1 Activity Theory

Activity theory (AT) is a major psychological paradigm in the study of human activities. AT was originally discovered by a Russian scholar named Lev Vygotsky in 1978 who introduced the idea that human interactions with the environment do not happen naturally but are aided by the use of tools and signs. This idea is expressed in the form of Intermediary Model or known as the Mediation Model, as shown in Figure 1, which depicts human interactions with the environment [16]. This model emphasises the idea that the relationship between a subject and an object does not occur directly but through an 'intermediary' or 'tool' [18].

Leont'ev continued to recognise the theory introduced by Vygotsky and further expanded the idea of social and cultural needs in human activities [12]. Figure 2 shows the Activity Triangle Model by Engeström, inspired by Vygotsky's original idea. Engeström expanded the Mediation Model to incorporate Leont'ev's ideas on social and cultural needs in human activities [7]. Thus, a human activity model known as the Activity Triangle Model (ATM) was produced from the collaborative relationships in human activities, as shown in Figure 2.

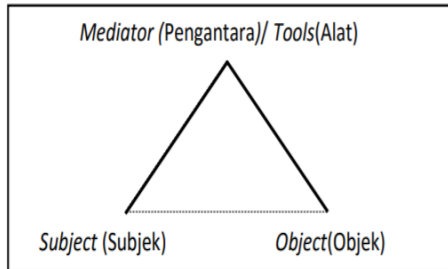


Figure 1. Basic activity theory Mediation Model (Vygotsky, 1978)

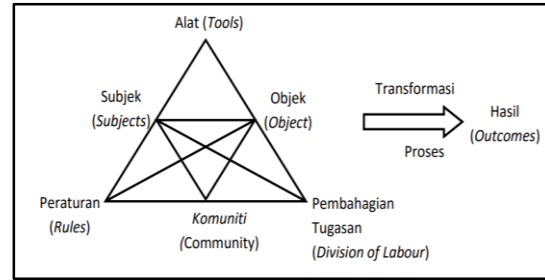


Figure 2. Activity Triangle Model (Engeström, 1987)

This model combines the main components in human activities, namely, Subject, Object and Community, as well as the intermediary components consisting of Tools, Rules, and Division of Labour. Table 1 provides a brief description of each component.

Table 1. Component Description of ‘Activity Triangle Model’

Component	Description
Object	The Object Components refer to the intended human nature and motivated in that particular activity and allowed the person to control his behavior. Indirectly, this component to the objective of the activity.
Subject	The Subject Component refers to the social nature of human activities through collaboration to achieve the objectives of an activity. The relationship between a Subject and an Object occurs through Tools as an intermediary.
Tools	The Tools Component is an intermediary aspect in human activities through the use of physical and conceptual materials. Physical tools are used to manipulate Objects while conceptual tools are used to influence behaviour and the relationship between the Object and the Subject.
Community	The Community Component encompasses the cultural and social contexts of the environment where the Subject acts within the activity environment.
Rules	The Rules Component emphasises that a Community has rules and controls that affect and bring meaning to the activities undertaken. Rules can be explicit or implicit.

Source: Nur Sakinah Mohd Isa and Mohd Nihra Haruzuan Mohamad (2016)

The ‘subject’ component in this model refers to the individual or group of individuals engaged in an activity. Activities are collective and subjects use or manipulate tools in the social context to achieve an objective. The ‘object’ component usually refers to the ‘objective’ or motive of an activity that provides the direction of the activity with the mediation of a tool. For example, students or teachers use the Learning Management System (LMS) platform for group discussions to achieve the learning objectives. ‘Intermediaries’ in this context include the LMS itself, computer network, blogs and discourses generated in the discussion activities through the LMS. The ‘intermediary tool’ component in this model emphasises that human activities cannot be separated from the aid of tools, whether physical or conceptual [9].

The ‘rules’ component encompasses a shared understanding of the procedure for carrying out activities. These include explicit and implicit rules, such as the cultural norms of a community. Examples are the principles of ‘for every action, there is a reaction’ and ‘feedback’ where a delivered message will usually get a response. However, as emphasised previously, the social practices of a community depend on the socio-culture of that community. Thus, it is not surprising that Malaysian students would ‘wait and see’ the actions of their teachers or lecturers to solve a problem raised in a forum, rather than taking action by themselves to help solve the problem. Such an attitude may be influenced by the culture of the eastern society such as ‘respecting the elders or the more knowledgeable’ (as in Confucian practice) or preferring to keep one’s opinions to oneself or be reserved [13]. As such, the ‘rules’ component is different for different community groups or societies [9].

The 'community' component encompasses the individuals involved in the activities of the 'subjects'. From the perspective of this model, 'community' emphasises that the activity of a 'subject' needs to be viewed in the local social and cultural contexts in which the activity takes place [2]. For example, course or programme coordinators, administrators, staff who monitor online teaching, teachers and students are the communities involved in online teaching and learning activities of a university course. These differences also affect the 'rules' component, where the 'shared rules' in these communities are different. Activities generated in the first community are more objective than those of the second community, and hence, the first community's rules are clearer than those of the second community. In other words, the 'rules' of these two communities are different because of the different 'objects' and nature of the 'communities' [9].

The 'division of labour' component represents the division of responsibilities and the variety of tasks among the 'subjects' and 'communities' in the activity carried out. For example, teachers assume the task of monitoring or facilitating student activities while the support staff are responsible for ensuring that any complaints regarding technical issues are addressed promptly. Meanwhile, student leaders need to ensure that other students get the allocated tasks to ensure the smooth and correct implementation of the tasks [9]. Therefore, the activities in this action research are inclined towards student-centred learning and in line with the current heutagogical pedagogy with lecturers becoming instructors in the learning activities.

1.3.2 Semiotic Theory

This theory, known as Semiotic theory, explains the sign language. In its expansion, the Semiotic theory encompasses the knowledge of signs, functions of signs, and meanings of signs. These signs convey information to the extent of becoming communicative [20]. Thus, the use of semiotic theory has expanded to various knowledge disciplines, making scholarly contributions to the diverse knowledge in the education field. The application of Semiotic theory began to expand in the Language field, followed by the fields of visual arts and visual communication design. Saussure, Peirce (1839-1914) and Roland Barthes expanded semiotics according to their ideas and applied them to various knowledge disciplines such that semiotic theory has become widely used.

In this regard, semiotic knowledge is more concerned with the meaning of messages and how messages are conveyed through signs [6]. The influence of Semiotic theory helps in exploring structures to help society understand the meanings embedded in a design work produced according to various cultures. It is public knowledge that humans communicate through signs presented in the forms of gestures, signals, sounds, writings, pictures, and various ways of presentation. The semiotic theory also helps graphic students and designers consider the selection of appropriate design elements and principles to produce a design that is easily understood by society. Figure 3 below shows the structure of the semiotic theory.

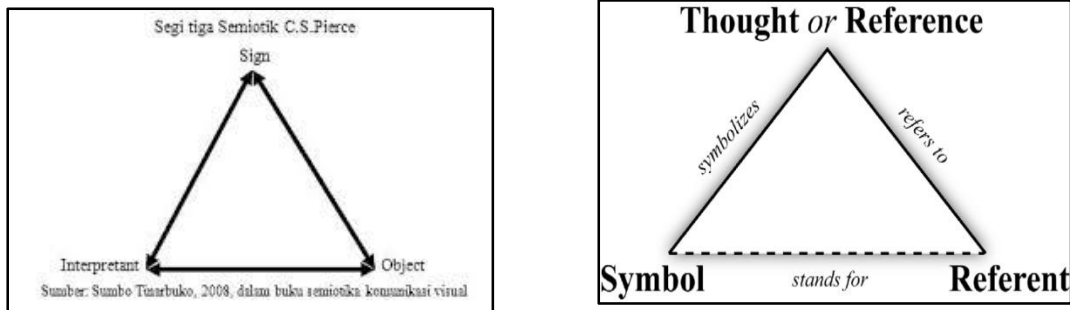


Figure 3. The structure of the semiotic theory

From a semiotic perspective, signs are the integration of concepts, sounds, and images, as well as the medium, to convey and deliver information. Besides, signs can be used to facilitate various objects. Visual design techniques can be used to transform the details observed in the world into different signs, elements that can be processed and integrated to create the designer's thinking. The Saussure sign system is a single entity with two distinct aspects. Besides, the three types of signs (icon, symbol, and index) proposed by Peirce can be used to represent humans' living environment and cultural history. Graphic designers can combine and change the meaning of the signs displayed in their creations. Peirce's semiotic theory (1839-1914) provides the basis for conducting this action research in giving assignments to students. The visual communication language semiotics about logos, advertising, branding and graphic movements can have an impact on industry and product image. The researcher will present a basic overview of this theory that is linked to communication research, especially in the visual communication language field.

2. METHODOLOGY

This study was conducted in the form of action research using a qualitative approach and involved 53 Visual Arts Education students who took the Computer Graphics Studio course. Purposive sampling was used in this study. The respondents were determined to be suitable for the study and to obtain immediate feedback. Action research has a systematic design, takes place in the educational environment, focuses on the teaching by the researcher, and practical and relevant. This study followed the four-stage procedure of action research proposed by [15] namely, (i) planning the findings after identifying the problems, (ii) acting by collecting and analysing data, (iii) developing change, and (iv)

reflecting by formulating an action plan. Action research is a process of education improvement by incorporating some changes in learning and teaching that involve educators working together to improve their teaching practices. The researchers who conducted this study worked in collaboration and used the results to make teaching changes in classrooms and lecture rooms. The action research approach is more flexible because the discussion of the research questions in the theoretical context can be done either before or after the research has been conducted [14].

3. RESEARCH FINDINGS

The findings of this study are based on the four-step process of action research by Mertler and Charles [15].

i. Step 1: Planning

The first step is identifying the problems and in this phase, the requirement specifications are created to address the problems identified in the feasibility phase. In this phase, the researchers have identified the form of the instruction material to be developed and subsequently identified what is needed to achieve the purpose and objectives of the study. This phase involves the activities to identify the problems and reference materials as well as the interview process on students' needs. Among the things that need to be determined in this phase are the goals, objectives, target users, theories, learning and facilitating strategies and techniques, the method for using ICT during teaching and learning (TnL), and critical analysis of the literature reviewed. Through observations and face-to-face interviews, conversations were recorded using a tape recorder and by taking notes. The interview session started with asking general, basic and easy questions, followed by more focused questions.

ii. Step 2: Acting

Figure 4 below shows the analysis of acting process.

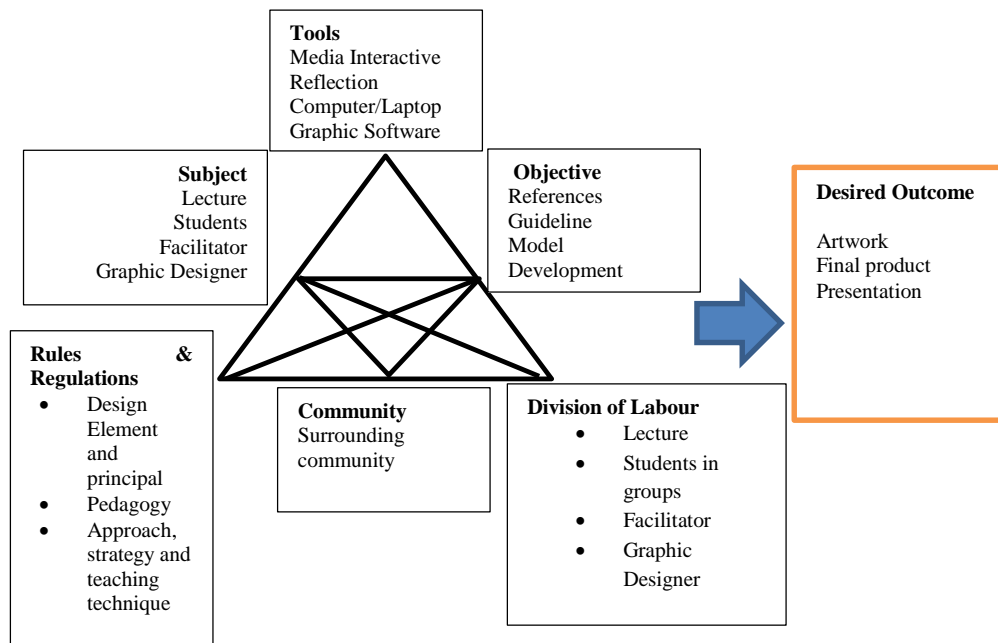


Figure 4. Analysis of Acting Process

iii. Developing

This section describes the collection and analysis techniques for action research data through observation and document analysis.

Qualitative Study Tools

Observation

Critical observations of situations were done in this study where observations were made on behaviour, the ways things are done, and the condition of the learning environment. The observation technique was performed systematically by making video recordings. The data collection method of this study was done through structured observations where the aspects to be observed were identified first. The researchers observed, listened, and recorded information based on a set of activities that were identified before class began. A checklist was prepared in advance to facilitate observation and evaluation. An observation table was used to record the codes of the activities performed

by students during the teaching and learning process in the lecture room. A checklist was used to evaluate group presentations and video production creativity that promoted the products sold by their companies.

Document Analysis

Documents can provide relevant information on the issues and problems being studied. Documents are also the easiest, cheapest and fastest source of data available. Examples of the types of documents used in this action research are individual learning reflections on the BlogSpot platform, assignments produced by the students, and indexed and refereed journals. In this study, the researchers only needed to filter the required information. Journals were used to analyse and synthesise the required themes.

iv. Reflection

Based on the first objective, the integration of activity and semiotic theories can improve students' creativity by providing them with various graphic design elements and techniques. The most critical aspects of producing quality work or products are attention to detail and refining the aesthetic understanding of art. The aesthetic concept is not restricted to the fields of fine art and craft but is also essential in all the art fields, including visual communication and design. To obtain an answer for the second objective, the use of semiotic theory in graphic design can produce appealing and easy-to-understand graphic works by first gaining a profound understanding of the basics of semiotic theory. The emphasis on semiotics in art and language should be aligned to ensure that the society understands the information conveyed on signboards, packaging, digital advertising and other platforms (Figure 5).

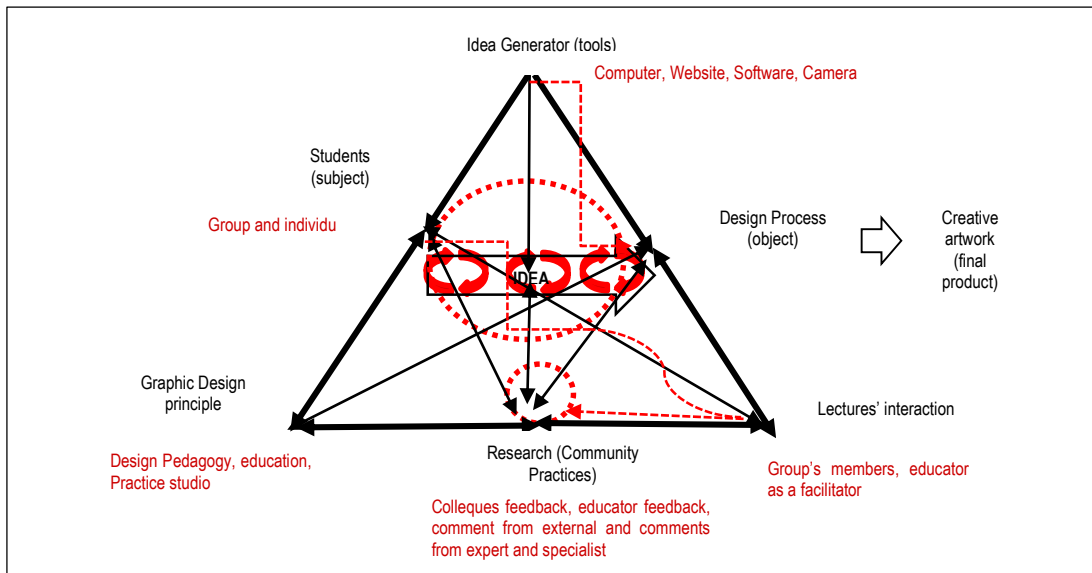


Figure 5. Reflection

4. DISCUSSION

Typically, the semiotic method can be applied as the knowledge that elaborates the meaning of signs or symbols. In a semiotic approach, visual messages or information presented through pictures, signs or symbols can be easily interpreted through the same system of signs, symbols and meanings by everyone as the recipient of that message or information. Several previous studies have been conducted by western scholars on the visual communication language semiotics. Product marketing semiotics stated that in marketing a product, tools to promote the product such as brand, slogan, icon, logo, and advertisements need to be created [22]; [1]. Elements such as brand, slogan, icon, logo, and advertisements should lend the product representation of mythical or cultural elements intended to be created by the industry based on the prevailing popular culture. Product illustration in the visual or non-visual advertising form is a strength that will determine the visual semiotics market — for example, introducing a product through visual ads, flyers, brochures and billboards. He explained that an advertisement design can influence consumer behaviour in product purchasing [22]. Visual stimulation is an important marketing strategy in advertising to introduce a product. This is because the visual communication language can have a significant impact on cognition, affect, and behaviour of the audience [10].

5. CONCLUSION

The use of a semiotic theory that has expanded to various knowledge disciplines makes scholarly contributions to the diverse knowledge in the education field. In this regard, semiotic knowledge is more concerned with the meaning of messages and how messages are conveyed through signs [6]. Therefore, the results of this study support the semiotic theory assumptions in visual communication language design

works, while semiotics provides researchers with the opportunity to emphasise on letters to facilitate the ease of reading with appropriate typography usage. In this modern age of globalisation, many logo designing, product rebranding, industry advertising, fast graphic element composition, suitable colour combination selection, appealing and appropriate use of pictures, as well as good typography selection with the size and thickness of the letters used will provide more value to the graphic design used. The selection of a graphic product for a global industry should be universal and not represent a specific culture. This approach should be taken because it can help create a positive image in inter-cultural markets. Besides, industry behaviour related to service, facilities, and roles from the corporate social responsibility (CSR) aspect will also add value to the formation of a positive image if they are taken into account in an industry. In applying the Activity Theory for any study, the unit of analysis of the study is the 'activity' itself. Therefore, in practice, this theory is difficult to apply as a research method due to the difficulty in measuring all the elements in the model. Instead, this model is more suitable as a descriptive tool because it touches on almost all aspects of an individual's activities that involve all of the specified elements and fit with the socio-culture.

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