TECHNICAL IMMERSION ON LEARNING BASIC LIGHTING IN VIRTUAL REALITY FILM *CAHAYA CINTA PERLAHAN MENYILAUKAN*

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ABSTRACT

The film Cahaya Cinta Perlahan Menyilaukan was developed as an alternative way of learning vocational skills, especially in a film production environment. The purpose of this research was to find how the technical immersion which includes visual cues, audio cues, orientation cues, and disorientation cues associated with the competencies in SKKNI No. 154/2020 for national competence of film lighting operator, including key functions, main functions, and basic functions in the delivery of lighting learning materials through virtual reality media which is also a contemporary media that is currently widely used. Immersion in practice itself is an attempt to involve the audience so that they can go in depth and be able to absorb. This film has two episodes and three different interactive levels in order to learn the basics of film lighting. The research uses qualitative characteristics which are applied through analysis of the technical immersion. The material of interactivity, visual and audio show that technical immersion provides direction in learning and attracts the attention of the audience without reduce the substance of the learning content based on competencies in SKKNI No. 154/2020.

Keywords: Virtual Reality; Interactive Film; Immersiveness; Basic Lighting; Skkni

ABSTRAK

Film Cahaya Cinta Perlahan Menyilaukan dikembangkan sebagai salah satu cara alternatif pembelajaran keterampilan kejuruan, khususnya dilingkup produksi film. Tujuan dari penelitian ini adalah untuk mengetahui bagaimana teknik perendaman yang meliputi isyarat visual, isyarat audio, isyarat orientasi, dan isyarat disorientasi dikaitkan dengan

kompetensi dalam SKKNI No. 154/2020 untuk kompetensi nasional operator lighting film, meliputi fungsi pokok, utama fungsi, dan fungsi dasar dalam penyampaian materi pembelajaran pencahayaan melalui media virtual reality yang juga merupakan media kekinian yang saat ini banyak digunakan. Immersion dalam praktek sendiri merupakan upaya untuk melibatkan penonton agar dapat mendalami dan mampu menyerap. Film ini memiliki dua episode dan tiga level interaktif berbeda untuk mempelajari dasar-dasar pencahayaan film. Penelitian ini menggunakan karakteristik kualitatif yang diterapkan melalui analisis teknis imersif. Materi interaktivitas, visual dan audio menunjukkan bahwa teknis imersif memberikan arahan dalam pembelajaran dan menarik perhatian penonton tanpa mengurangi substansi isi pembelajaran berdasarkan kompetensi pada SKKNI No.154/2020.

Kata kunci: Realitas Maya, Film Interaktif, Imersif, Tata Cahaya Dasar, Skkni

INTRODUCTION

Virtual Reality (VR) is now a common thing that is transitioning from a luxury laboratory instrument that only available to technical elite people, to a mainstream content consumption pattern. VR is not a currently designed technology and only has the potential to change the extensive world of fiction but also change the real life of people today.

VR is a new reality and one of its important developments today is the remediation process that is redefining the digital world. This remediation process has become an integral part of media progress, which now revolves around constant fussing over reproduction, and things that ultimately replace the media themselves. (Bolter & Grusin, 2000b).

The film *Cahaya Cinta Perlahan Menyilaukan* was recorded using a 360-degree camera as a tool to help creates the immersion, as a VR experience in addition to the interactivity contained in it. This is the first virtual reality based interactive film produced by the Film and Animation Department of Multimedia Nusantara University. This film was developed as an alternative way of learning vocational skills, especially in a film production environment. This film has two episodes and three different interactive levels in order to learn the basics of film lighting based on SKKNI No. 154/2020 for national competence of film lighting operator.

The Film Development Center, Ministry of Education and Culture of the Republic of Indonesia pays special attention to building national character through the film industry. SKKNI No. 154/2020 was issued as a work competency standard for film workers, especially in the field of film lighting. The aim is to increase quality and competitive professionalism which includes the positions of Key Gaffer, Gaffer, Electrical Technician, Generator Operator, and Assistant Lights Man.

Immersive material is still in its early stages, VR in the mainstream aspect is starting to move forward with completely new developments. VR is capable and has been defined in a variety of mediums. Dialectical experts believe that panoramic painting is an early way of creating the illusion that the viewer is in a place where they are not at that time while simultaneously filling the entire field with vision (Bucher, 2017). Immersion is the objective level, how VR systems and applications enter in a way that is extensive, matching, surrounding, vivid, interactive, while providing plot information in projecting stimuli up to the sensory part, the receptors of the audience (Jerald, 2016).

Immersion is a technological objective that has the quality of involving the audience in the experience. However, immersion is only part of the VR experience, requiring human involvement to understand and interpret the stimuli presented. Immersion can indeed lead the mind but immersion cannot control the mind (p.46).

Technical immersion is how the audience interacts with the film. The audience have the ability to see in all directions through the cues. The initial analysis of general cues is used to find aspects of 360 film that are very immersive, while specific cues are used to observe how immersive is realized in 360-degree film (Elmezeny, Edenhofer, & Wimmer, 2018).

The technical aspects of immersion in film, both beneficial and disruptive elements were coded to build atmosphere in the storyline, this can create a narratively immersive experience. In this case, the audience, whom is able to see in all directions because the immersive film has a 360-degree characteristics. The audience needs clues to be able to follow the story world and the objectives of the film. This deictic cues are used to emphasize the presence of the audience character within the story world. By involving the audience in the virtual environment and the narrative of other characters, it creates its own spatio-temporal immersion (Elmezeny, Edenhofer, & Wimmer, 2018).

Some of the tools that are generally used to navigate the audience throughout the film, the first is visual cues. Visual cues include movement of objects or characters, body movements, object alignment, character gaze, lighting, extreme contrast, semantic opposites, picture in picture, text, graphics, special effects, and camera movement. The next are audio cues which include character conversations, screams, picture in picture, sound effects and music. Then there are Orientation cues which can motivate the audience to follow certain movements, see the source of movement or sound, explore the virtual surroundings, or to be alert. And Disorientation cues which can leave the audience in darkness or use unnatural camera positions and montages. When multiple cues are combined, they can highlight details within the panoramic view, or distract the audience from a secondary storyline in another field of view that can be changed by movement of the head or device (Elmezeny, Edenhofer, & Wimmer, 2018).

Elaboration of competencies in SKKNI No. 154/2020 and immersiveness in

VR makes This research seeks to answer the following questions, how VR-based technical immersion can be an alternative way of learning vocational skills for the field of lighting in films and how technical immersion through the medium of VR provide knowledge based on competencies in SKKNI No. 154/2020 for film competency participants, especially in the field of lighting in films.

METHODOLOGY

The virtual worlds are now a major theme in new media culture. The concept is closely related to other existing concepts, especially simulation and immersion. At the same time, other even older concepts related to the study of images, representation, illusion, mimesis, picture, copy, and fiction were drawn into the scope of the virtual world (Lister, Dovey, Giddings, Kelly, & Grant, 2003).

The research method of learning basic lighting in the VR film *Cahaya Cinta Perlahan Menyilaukan* will be using the technical immersion which includes visual cues, audio cues, orientation cues, and disorientation cues associated with the implementation of SKKNI No. 154/2020, including key functions, main functions, and basic functions. Technical immersion is manifest in 360-degree films through these cues in the context of directing the viewer's attention as well as cues to acknowledge the audience as part of the virtual environment.

This research uses a qualitative research type with a case study research method. Qualitative research activities often portray and describe the way subjects interact with their surroundings related to the research theme. That way, all movement activities, behavior, attitudes, verbal and non-verbal expressions become the focus of research (Idrus, 2007). Qualitative research data is obtained from what the researcher observes, hears, feels and thinks. This information is related to the focus of the research (Idrus, 2007).

The case study research method produces data which is then analyzed. As with the procedures for obtaining qualitative research data, case study data is obtained from interviews, observations and archives. The author tries to be thorough in various ways to study as closely as possible an individual, a group, or an event. The researcher aims to provide a complete and in-depth description of the subject under study (Kriyantono, 2006).

Data collection techniques are systematic and standard procedures for obtaining the required data. There is always a relationship between data collection techniques and the formulation of research problems, and data collection techniques are used to obtain data using certain observation channels. Determining the data collection method depends on the research problem raised so that the researcher can determine the appropriate data collection technique to be used in the research (Nasir, 2005).

The data collection techniques used by researchers include primary data, namely data directly obtained from the first source, then accompanying data is secondary data which is useful for adding

data so that it is in line with the researcher's expectations (Samsu, 2017). The main data was obtained from the film *Cahaya Cinta Perlahan Menyilaukan* and secondary data used to complete and expedite the research process was obtained through existing literature.

The characteristic of the research is descriptive, namely an in-depth depiction of the situation or process being studied. Qualitative methodology as a research procedure produces descriptive data in the form of written or spoken words from the people or symptoms observed. The qualitative-interpretive approach is directed at the symptom background in a holistic and natural way so that the qualitative methodology does not isolate symptoms into variables. However, examine the object according to its natural setting. Therefore, it is also commonly called naturalistic research (Vardiansyah, 2008).

A paradigm is a basic belief system or way of looking at the world that guides the writer not only in choosing methods but also fundamental methods that are ontological and epistemological (Denzin & Lincoln, 2017). The paradigm used in this research is the constructivist paradigm, namely the view that social reality is not a natural reality, but is formed from the results of construction. Therefore, the concentration of analysis in the constructivist paradigm is to discover how the event or reality is constructed, in what way the construction is formed.

Constructivist paradigm is often referred to as the meaning production and exchange paradigm. In the constructivist paradigm, the consequences of the writer must use epistemological, ontological and axiological assumptions that are in line with the constructivist paradigm. Ontological refers to the nature of what is studied, about existence, epistemological refers to how to obtain true knowledge (how you know), while axiological refers to the value of use (what for) (p.88-91).

RESULT AND DISCUSSION

A challenge if we create 360-degree stereoscopic content technically. The camera that captures the content will only be from a limited number of views. Actually, this content can work quite well with VR, especially when the viewer starts sitting in a fixed position and then only makes head movements from left to right or from right to left. However, if the viewer tilts their head to look down or rolls their head to twist their head while still looking straight ahead, then the perception of presenting stereoscopic cues no longer applies and the viewer will experience a different result.

The aspect of technical immersion that is the initial analysis is visual cues, which is something that is the dominant modality for perceiving travel, especially in terms of navigation. Navigation is determining and maintaining a direction or trajectory towards something you are aiming for. Navigation tasks can be divided into exploration tasks and search tasks (Jerald, 2016). The cue is for the audience to make interactive choices about what to watch.

Figure 1: Menu options and movie titles
(Source: *Cahaya Cinta Perlahan Menyilaukan, 2022*)

This is an early scene in the film before any other cues appear. It would stand to reason that the audience will have the opportunity to become familiar with the virtual environment, and that the audience's attention will be captured and ideally retained.

The visual cue of the character's presence in the story while also engaging with the camera and how they interact with the audience provides another immersive context. Visual cues also include movement of objects, characters, behavior, location of objects, character's gaze, lighting, clear contrast, text, images, special effects, and camera movements.

The audience's recognition of the character can be shown through the appearance, gestures and words the actor directs towards the camera. The cue is for the audience following the character's journey. There is a strong expectation that the audience will become more immersed in the content, and enjoy it more as the audience begins to identify with the characters in the scene. The technique of making the character directly refer to the direction of the camera, highlighting the audience as another character, makes it effective, but even just pointing or making eye contact with the camera without a verbal reference, it's already creating a real effect.

Figure 2: Character talking to the camera
(Source: *Cahaya Cinta Perlahan Menyilaukan, 2022*)

The next visual cues are design to explore as a deepening of the previous learning that the user has gone through. The in-depth study was carried out through several interactive questions for the audience whose answers were chosen from one of the three correct questions regarding the practices of the safety and installing lighting equipment and so on.

Each scene will display its own visual cue according to the plot. The visual cues also associated with the implementation of SKKNI No. 154/2020, including key functions, main functions, and basic functions.

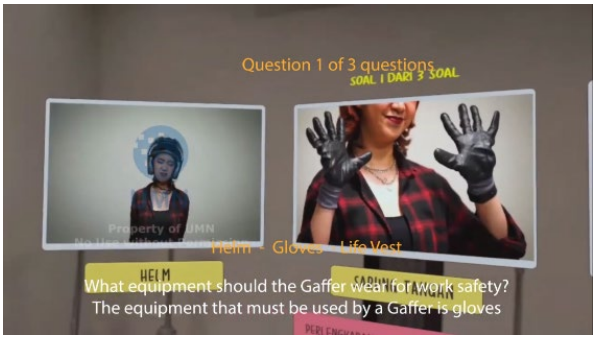

Figure 3: Interactive questions about safety
(Source: *Cahaya Cinta Perlahan Menyilaukan, 2022*)

This is a competency unit related to the knowledge and skills as well as work attitudes required in the concept of lighting for cinematography direction. The key function is carrying out lighting preparation and the main function is planning the implementation of the lighting concept based on the direction of the cinematography director, while the basic function of the competency element is implementing occupational safety and health in the workplace and applying professional ethics, manners and responsibility profession.

Figure 4: Interactive questions about installments
(Source: *Cahaya Cinta Perlahan Menyilaukan, 2022*)

This competency unit is used as a reference to ensure the availability and function of lighting equipment. In order to get the perfect lighting device. The related key function is carrying out preparation of the lighting system and the main function is developing the concept of the lighting system, while the basic function of the competency element is ensuring the lighting equipment that will be used and checking the mechanism of the lighting equipment that will be used through performance criteria, namely the lighting equipment is classified according to procedures and lighting support devices are ensured to function properly.

Figure 5: Text visual effects of the list
(Source: *Cahaya Cinta Perlahan Menyilaukan, 2022*)

Visual effects appear according to the atmosphere in the scene. Visual cues in the form of text are in the retrieval of lighting equipment objects. This competency unit applies to preparing a lighting work plan according to the visual concept needs of the cinematography director in determining the number and type of lighting devices to be used.

The key function in this case is to carry out lighting preparation and the main function is to plan the implementation of the lighting concept based on the direction of the cinematography director, while the basic function is to apply the lighting concept based on the floor plan. Through performance criteria, namely lighting techniques and characteristics, are identified according to procedures and the

number and type of lighting devices are classified according to procedures.

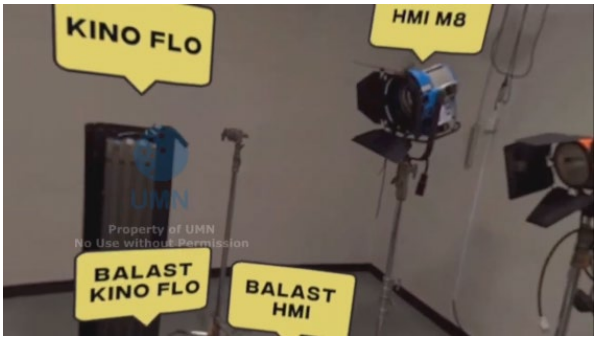

Figure 6: Text visual effects of equipments
(Source: *Cahaya Cinta Perlahan Menyilaukan, 2022*)

The key function in this case is to manage the implementation of lighting support facilities and the main function is to prepare lighting support facilities, while the basic function of the competency element is selecting lighting equipment to be used with performance criteria, namely lighting equipment is identified according to procedures. This competency unit acts as a checking tool in listing the lighting devices that will be used.

Immersiveness can also be felt in the space between the characters in each scene. This space can give the audience a sense of involvement and like they are in it to participate because the alignment of the characters' views is parallel to the audience's view.

Figure 7: Space between the characters
(Source: *Cahaya Cinta Perlahan Menyilaukan, 2022*)

This competency unit is a reference for skills, knowledge and work attitudes in installing lighting equipment accurately. The key function in this case is to manage the implementation of lighting support facilities and the main function is to implement lighting support facilities, while the basic function is to check and ensure the placement of light points with performance criteria, namely the lighting devices are placed based on the visual concept of the cinematography director.

In terms of audio cues, which can also be called spatial audio, it is something that can be used to direct the audience's gaze. Even though the difference in audio may sound small, spatial audio has the ability to amplify other interactive elements so that it can direct the audience's gaze. Some sound elements that can be used include conversations between characters, screams, sound effects and background music.

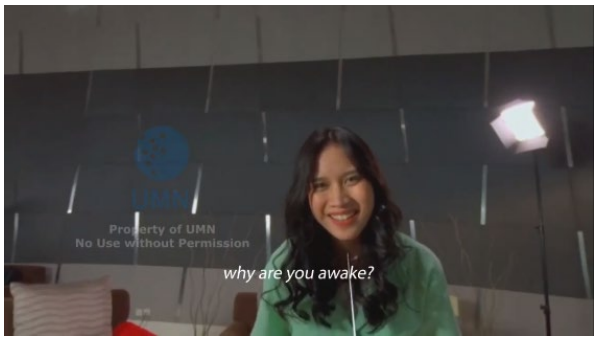

Figure 8: The character dialogue
(Source: *Cahaya Cinta Perlahan Menyilaukan, 2022*)

The characters can be seen having a conversation in the scene. The sound of conversation between characters will only be limited to the viewer's choice of view when they can hear the sound loud and

clear through the front view or the part that is most dominant in their view. Especially as if the characters are talking to the audience.

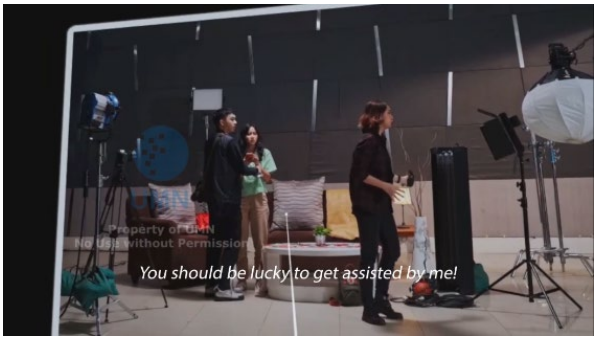

Figure 9: The crew is arranging the set
(Source: *Cahaya Cinta Perlahan Menyilaukan, 2022*)

The next Audio Cue analysis is the scene where the crew prepares the area for shooting. Sounds out of sight in the front dominant area can only be seen clearly if the audience turns their head around the area so they can see where the sound is coming from, what sound it is and who it is from.

Figure 10: Musical illustration and Sound Effects
(Source: *Cahaya Cinta Perlahan Menyilaukan, 2022*)

Other audio cues come from musical illustrations and sound effects that appear as part of the location information while adding to the dramatic value of the scene. The sounds produced by musical illustrations and sound effects are able to maintain the audience's focus. The learning process becomes more enjoyable because this film has entertainment elements through musical illustrations and sound effects. The learning process becomes less monotonous and rigid.

In the aspect of orientation cues, it is something that is present both visual and audio which makes it possible to invite the audience to follow movements in a certain direction to look towards the source of the movement or sound source so that the immersion is able to explore the world of the story virtually or become alert to certain causes.

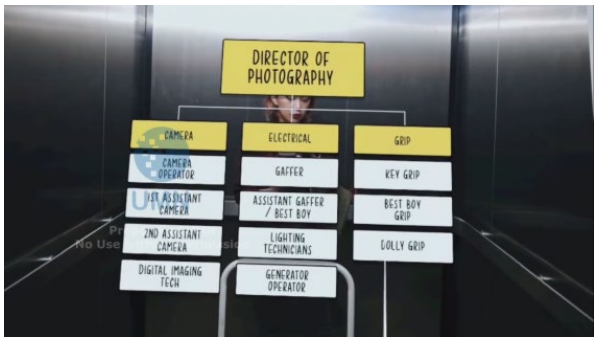

Figure 11: Interactive options
(Source: *Cahaya Cinta Perlahan Menyilaukan, 2022*)

The choices of which part of the lighting technique to study first is one form of how the user is oriented. These choices are designed in the form of written boxes. Audiences can choose among the eleven options which one they like to watch and learn first.

The technical immersion is able to provide depth because it not only displays the material but also tests the user as a measure of their understanding to the competencies in SKKNI No. 154/2020 for

film competency participants. The interactive tests and visual texts also made the learning process more interesting and dynamic. Users can personally understand and have the freedom to choose which material they might want to study first. This virtual reality interactive film enables them to have this freedom unlike the general learning process which is often one-way.

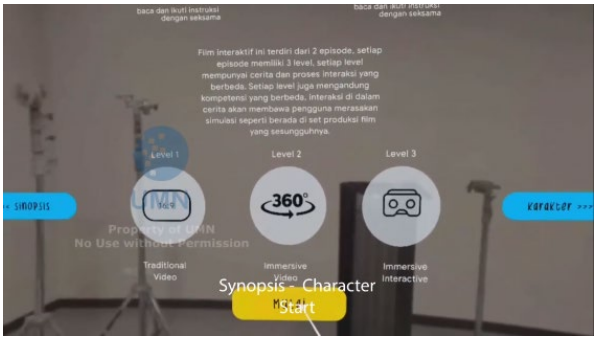

Figure 12: Format and viewing directions
(Source: *Cahaya Cinta Perlahan Menyilaukan, 2022*)

Orientation cues can also be text or images shown to the audience to indicate the format of the film and other directions. This directly tells the audience that the format being watched is 360-degree Virtual Reality films.

In the aspect of disorientation cues, which are cues that can make the audience lose focus and become confused when watching this film. This can happen with image movement because the user's head is always moving lightly so that the image composition becomes unbalanced because information that is too fast like this will only make the audience confused.

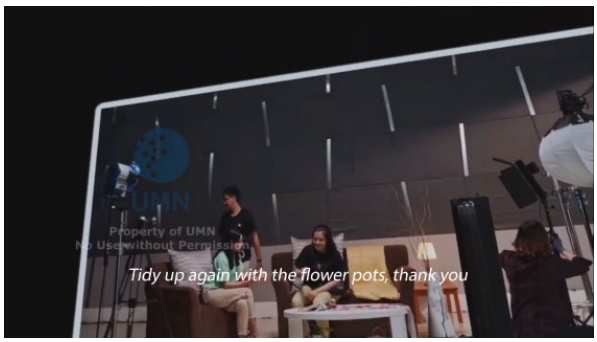

Figure 13: Moving display
(Source: *Cahaya Cinta Perlahan Menyilaukan, 2022*)

Another thing that might cause disorientation is the position of the audience which seems to be at a height while the objects in front of them are very large so they seem too tall and unnatural. The integrity of this film also has several things that need attention, namely the position of the audience which seems to be at a height and the shape of the object is unnatural because it is too big so it can create a bias towards users who may be seeing the lighting equipment for the first time.

Figure 14: Object looks unnatural
(Source: *Cahaya Cinta Perlahan Menyilaukan, 2022*)

The technical immersion which includes visual cues, audio cues, orientation

cues, and disorientation cues which are manifested in 360-degree VR films shows that the instructions directed as an immersive form are intended to maintain the focus of the user who is watching because of the text and images for lighting equipment materials. It combines effectively with the scene displayed according to its proportions.

CONCLUSION

Performing images in the medium of VR and 360-degree films with the aim of learning vocational skills based on SKKNI No. 154/2020 for national competence of film lighting operator turns out to be able to act as an alternative medium that does not reduce the substance of the learning content. The material presented also becomes more personal because each user will use their own tools when watching this learning film.

The presentation of an interactive directory mechanism and an adequate display will create more immersive value for users because they will feel like they are truly being there in the place and are studying the light arrangement so that mentally and thought it will be a new personal learning experience.

REFERENCES

Bolter, J. D., & Grusin, R. (2000b). *Remediation: Understanding New Media*. MIT Press.

Bucher, J. (2017). *Storytelling for virtual reality: Methods and Principles for Crafting Immersive Narratives*. Taylor & Francis.

Denzin, N. K., & Lincoln, Y. S. (2017). *The SAGE Handbook of Qualitative Research*. SAGE Publications.

Depita, Natalia. 2022. *Cahaya Cinta Perlahan Menyilaukan*. Prodi Film UMN. Indonesia.

Elmezeny, A., Edenhofer, N., & Wimmer, J. (2018). Immersive storytelling in 360-Degree videos: an analysis of interplay between narrative and technical immersion. *Journal of Virtual Worlds Research*, *11*(1). https://doi.org/10.4101/jvwr.v11i1.7298

https://filmfreeway.com/CahayaCintaPerlahanMenyilaukan

Idrus, Muhammad. (2007). *Metode Penelitian Ilmu-Ilmu Sosial*. Yogyakarta: UII Press.

Jerald, J. (2016). *The VR Book: Human-centered Design for Virtual Reality*. Morgan & Claypool.

Kriyantono, Rahmat. (2006). *Teknik Praktis Riset Komunikasi*. Jakarta: Kencana Prenada Media Group.

Lister, M., Dovey, J., Giddings, S., Kelly, K., & Grant, I. (2003). *New media: A Critical Introduction*. Psychology Press.

Nasir, Moh. (2005). *Metodologi Penelitian*. Jakarta: Gramedia.

Samsu, S. (2017). *Metode penelitian: Teori dan Aplikasi Penelitian Kualitatif, Kuantitatif, Mixed Methods, serta Research dan Development*. Jambi: Pusaka.

Vardiansyah, Dani. (2008). *Filsafat Ilmu Komunikasi: Suatu Pengantar*. Jakarta: Indeks.