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# The philosophy of communication in technology-based education: Study of research trends in the last three years assisted by NVivo 12 Pro

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## Abstract

*Communication as part of science will always be associated with philosophical studies which have three criteria, such as aspects of ontology, epistemology, and axiology. Some research studies that make communication the subject of discussion are very abundant in Indonesia, especially when aligned with the use of technology that accompanies it. Studies on communication science are also part of learning activities, starting from the level of early childhood education up to the tertiary level. Communication skills or abilities are needed in the learning process. This research aims to find patterns or trends in communication research in learning activities accompanied by the application of technology based on studies of the philosophy of communication. Literature was obtained through search with the assistance of PoP with a range of 2021-2023. The analysis was conducted with the assistance of NVivo 12 Pro after going through data reduction using the Prisma method. It eased to find connections between literature groups and the characteristics of the literature obtained. Each piece of literature reviewed was coded such as year, serial number, type of education, level of education or age, and the technology used. The results obtained based on an analysis of 20 kinds of literature showed that research studies on communication science in collaboration with other fields through the use of technology are starting to get a lot of attention, as can be seen from research that is dominated by 2023, where the era of globalization can no longer be dammed, but must be faced and implemented to achieve meaningful knowledge for life, especially through learning activities. The research trend of communication science in the field of education that applies technology, when viewed from the aspect of philosophy, is dominantly in the ontology group. This is followed by the epistemology category, and the least is the axiology category.*

## Article History:

Received, 2023-10-02.  
Revised, 2023-12-06,  
Accepted, 2024-01-27,  
Published 2024-01-29.

## Keywords:

Ontology, Epistemology,  
Axiology, Communication  
Philosophy.

## Introduction

Communication as part of science will always be associated with philosophical studies (Arnett, 2010). The study of the philosophy of science has at least three criteria, namely aspects of ontology, epistemology, and axiology (Aang Ridwan, 2013). The

aspect of ontology in the study of philosophy is the process of how knowledge is formed. Thus, from the study of communication science, it can be revealed that ontology is the process of developing the science of communication through a process of scientific study. The epistemological aspect is how science develops, including the way it is applied in justifying a study as a science. If it is related to the study of communication science, the epistemological aspect of communication science is how communication can become part of other sciences whose truth has also been stated. (Gil-Fuentetaja & Economou, 2019). The last aspect is axiology. In the study of philosophy, the axiological aspect is about the value of science. In terms of axiology, the development of communication science in Indonesia has been widely used to solve social life problems. Hence, it can be concluded that the study of axiology in the science of communication is how communication can give meaning to one's life.

In simple terms, it can be said that the philosophy of communication science is the basis that animates the dynamics of the process of communication science activities in acquiring scientific knowledge. These activities are closely related to research. Various research studies that make communication the subject of discussion are very abundant in Indonesia, especially when aligned with the use of technology that accompanies it. (Anwar et al., 2016; Jelahun et al., 2021; Sukri et al., 2023). Studies on communication science are also part of learning activities, starting from the level of early childhood education up to the tertiary level. Communication skills or abilities are needed in the learning process. Furthermore, the ability to communicate can have various impacts on learning activities, such as learning outcomes and student motivation while participating in learning (Novita Maulidya Jalal et al., 2022; Yuliastuti, 2021). This is because of the era of globalization. Thus, individuals, especially students, should be obliged to improve their communication skills, be it symbolic, oral, or written communication. In addition, communication skills become provisions for career advancement and competence to be accepted in the world of work.

According to various studies of communication science in various learning activities and the application of technology, the author tries to analyze every research that adopts communication science. The application of communication science that is analyzed specifically focuses on learning activities accompanied by the application of technology. As communication is a science that has criteria of ontology, epistemology, and axiology. Thus, this study would be analyzed and mapped various literature that explicitly or implicitly applies these aspects as a study of the philosophy of communication. The research findings are expected to become valuable information for academics in the field of communication to seek research opportunities, especially in the study of the philosophy of communication. Mapping analysis was carried out with the help of NVivo 12 Pro, making it easier to find connections between literature groups and the characteristics of the literature obtained (Giordan et al., 2022).

## **Method**

### **Research Design**

The research was carried out through a literature review which was described qualitatively. The literature review was carried out by examining various studies over the past three years (2021-2023). The literature obtained was the result of research that had been carried out with a focus on communication science. The literature search was carried out on the Publish or Perish platform or popularly known as the PoP abbreviation, with the selected source being Google Scholar. Searching for PoP includes criteria 1) sourced from journals (in the form of articles) and not in the form of books, papers, or final assignments;

and 2) search process with the title “communication”, and keywords include “philosophy”, “learning”, and “technology”. The search results with the PoP program obtained metadata of 130 articles (Figure 1).

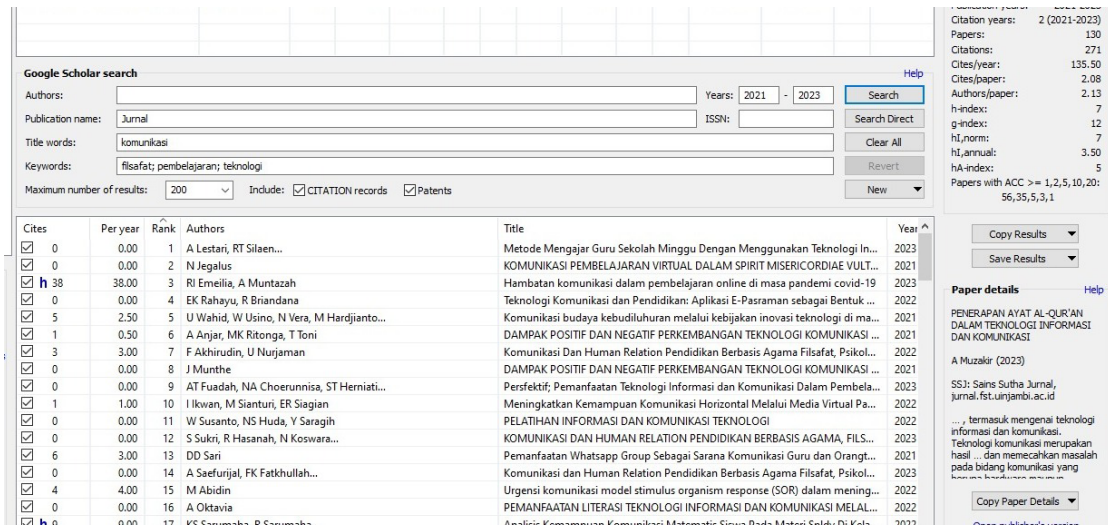


Figure 1. The Display of PoP in literature search

### Research Analysis

The results of the metadata from the search for the PoP program were stored in the form of “ris”, henceforth through the Mendeley program, a selection is made for each title obtained based on the needs of the researcher. The selection process was carried out after the researcher read the entire contents of each piece of literature that had been obtained. Various criteria are applied to the data reduction process, namely the Prism method (Valverde-Berrocso et al., 2022) (figure 2).

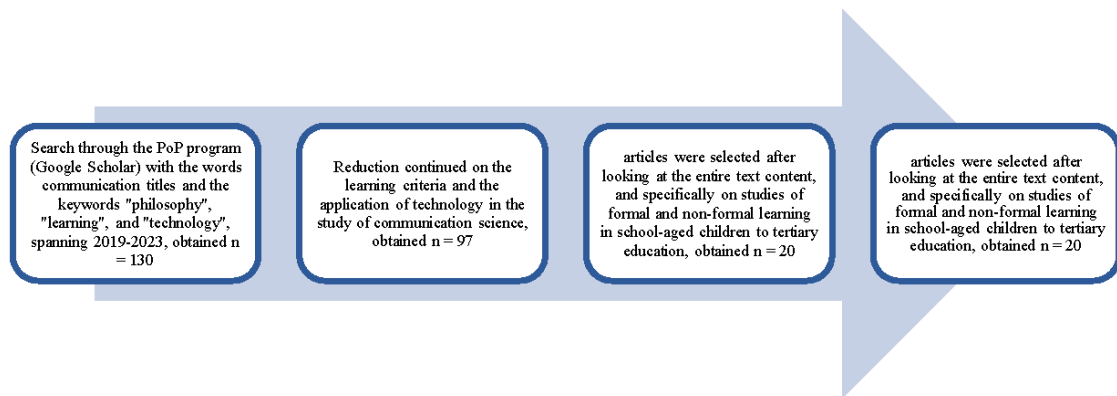


Figure 2. Stages of literature reduction with the Prisma method

The selected literature was then codified and mapped through the NVivo Pro 12 program. The initial mapping of the NVivo 12 Pro program is shown in Figure 3. In NVivo, the role of parent nodes was the study of the philosophy of communication, while child nodes (branching) were components of the study. philosophy of communication science, such as ontology, epistemology, and axiology (Alanazi, 2021; Jelahun et al., 2021). Each piece of literature reviewed was coded including year, serial number, type of education, level of education or age, and the technology used. In detail, the following is an explanation of each reviewed literature code:

- a. Education consists of codes F (formal education) and N (non-formal education).
- b. Levels of education are such as basic education such as Elementary School and Early Childhood Education (PAUD) (code D), secondary education such as junior high and high school with code M, and tertiary education (code U).
- c. The technology used includes social media (code S), Website/browser/e-learning with code W, and other applications that require downloading with code A.

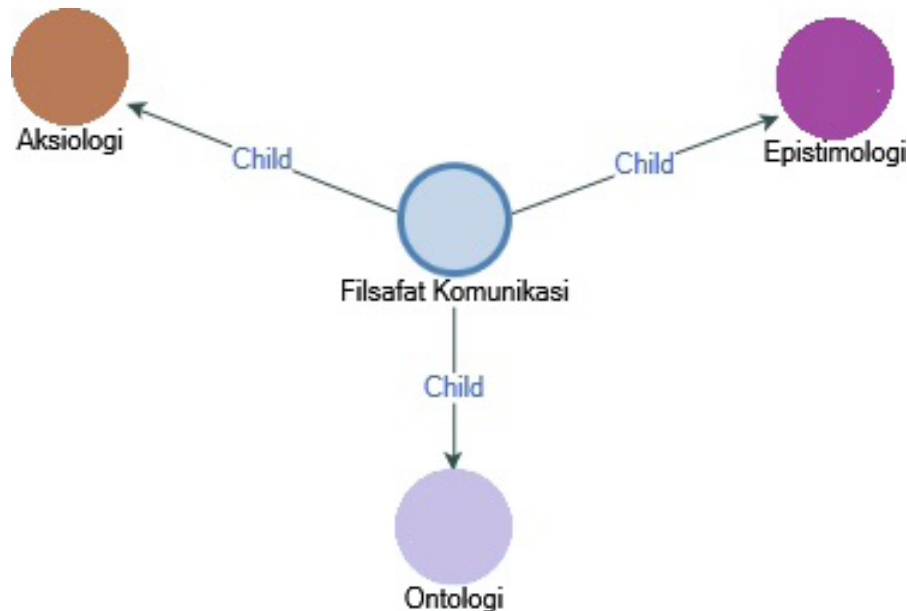


Figure 3. The Codification and mapping in the NVivo 12 Pro Program

## Result and Discussion

The philosophical study of science cannot be separated from the true meaning of science, either in its basic meaning, its application, and even how the science is formed. Likewise in the study of philosophy in the science of communication, it is always tied to and related to the study of other sciences. In this research, the author reviewed research or literature that raised the topic of discussion about communication in various ways. The study of communication science which is discussed as a separate science or study is grouped into the category of "Ontology" philosophical studies. Furthermore, the literature is grouped into the study of philosophy "Epistemology", if the literature discusses the science of communication-related to other fields of science. The last category is the study of philosophy "Axiology". If the study of communication science or one's communication skills has an impact on other abilities or the nature of other people.

The results of analysis and mapping with NVivo 12 Pro, each category has been associated with each literature that has been labeled according to the characteristics of the research studied in it. The research trend of communication science in the field of education that applies technology, when viewed from the aspect of philosophy, is dominantly in the ontology group. This is followed by the epistemology category, and the least is the axiology category. Specifically, the findings from the literature review are described in each category as follows:

### Ontology

In the study of communication science, ontology is the main material of communication science. The fundamental study of the basic meaning of communication becomes part of the ontology aspect of the philosophy of communication science (Aang Ridwan, 2013).



The ontology aspect also reinforces that communication is a science that always requires continuous study so that it continues to develop and evolve from time to time according to the times (Cathrin et al., 2020). In this discussion, the researcher chose literature that specifically raised the study of communication. Figure 4 shows that the ontology aspect in research studies related to communication science is the most numerous. There are 10 research articles.

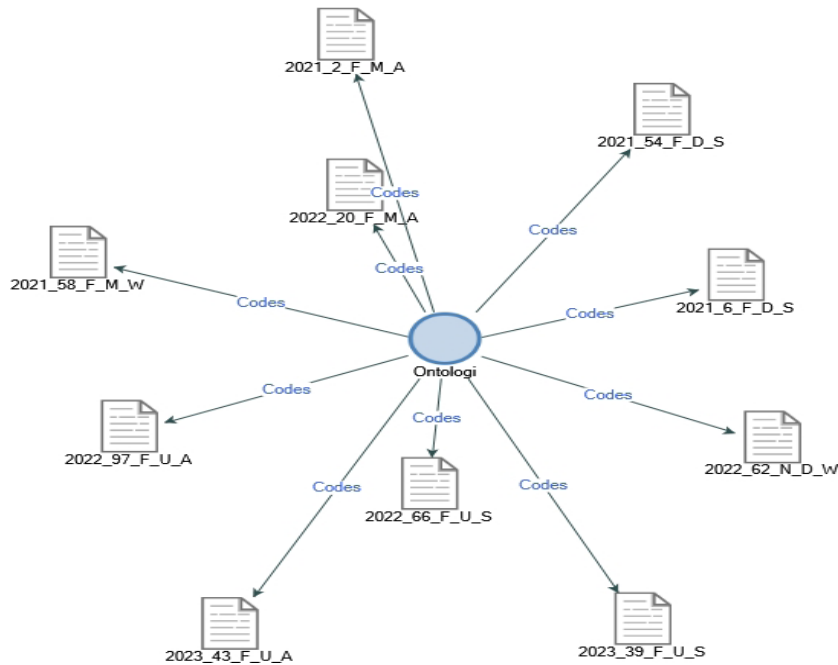


Figure 4. Mapping in the NVivo 12 Pro Program in the study of communication science based on the study of ontology philosophy.

During the last three years, the study of ontology aspects has become the focus of research, as seen from the literature code spread over the years of search. In 2021, four works of literature were obtained, including the codes 2021\_58\_F\_M\_W, 2021\_54\_F\_D\_S, 2021\_2\_F\_M\_A, and 2021\_6\_F\_D\_S. Literature acquired in 2022 includes code 2022\_62\_N\_D\_W, 2022\_66\_F\_U\_S, 2022\_97\_F\_U\_A, dan 2022\_20\_F\_M\_A. Literature acquired in 2023 includes code 2023\_39\_F\_U\_S, and 2023\_43\_F\_U\_A. Communication science research studies that fall into the ontological aspect category of the entire literature in 2021 are obtained from research studies that focus on formal education (code F). Based on the year, this period is when the pandemic is still ongoing. When the pandemic occurred, communication activities changed drastically. Everyone was required to be able to communicate through digital media without direct contact. This condition is in line with research studies from the literature obtained, namely changes in communication patterns between teachers and students both at the elementary school level (Sari, 2021; Wiratmo & Mardhiyani, 2021) as well as at the secondary school level (Emelia & Muntazah, 2021; Sihombing & Halawa, 2021). At the elementary school level, the application of communication technology was still limited to the use of social media, while at the secondary school level, the use of technology extends to websites or e-learning. It can be concluded that during the pandemic, the study of communication as a social activity became a research focus that was of considerable interest, as the nature of communication science is an activity that occurs between communicants and communicators.

In 2022 and 2023, studies of communication science started to focus on communication activities at the tertiary level, including the pattern of communication that occurs during online media-based learning (Malik, 2021). As there have been many studies regarding

online-based learning since the pandemic occurred (Jalal et al., 2022), In 2022, there was also a study of communication science in non-formal education (Yuliana et al., 2022). This research discusses communication in deaf children, especially in learning activities at home. The current communication media for deaf children are increasingly sophisticated, such as the use of Google Speech. Technological sophistication makes the communication activities of parents and children easier. Moreover, the role of parents in the development of deaf children is the most decisive, including when children start to receive learning material. The findings in this discussion encourage the conclusion that the study of communication science as the basic meaning of the existence of a communication process is a study that always exists every year and at various levels of education, especially with regard to the support of technological facilities. Furthermore, the ontology aspect for the study of philosophy of communication shows that it is of interest to researchers in the field of communication science, so that communication science will always develop and innovate along with increasingly advanced technological developments.

## Epistemology

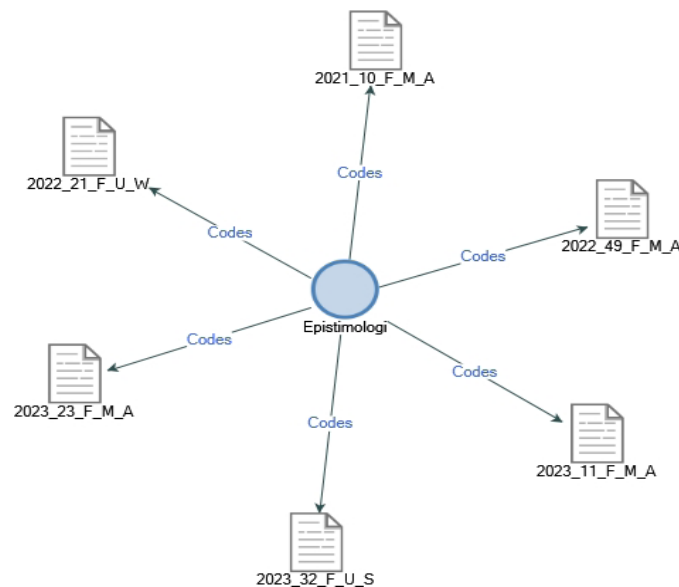


Figure 5. Mapping in the NVivo 12 Pro Program in the study of communication science based on the study of epistemology philosophy

Epistemology is part of the branch of philosophy that works to investigate the origins, methods, and limits of knowledge (Akhirudin & Nurjaman, 2022). Epistemology in educational studies is the process of asking how to build knowledge or theories (Sukri et al., 2023). This is manifested by questions such as what and how the science of communication develops with other sciences. In this discussion, the selected literature was the study of communication science which was related to the study of other sciences. Figure 5 shows only one piece of literature related to aspects of epistemology, with the code 2021\_10\_F\_M\_A. This research links the study of communication science with mathematics learning through the use of power director-based learning videos (Yuliastuti, 2021). This research showed that at the high school level, the study of communication has become the concern of educators so that communication skills are no longer considered to be only learned in college.

Research that also discusses the relationship between communication science and other fields will also be found in 2022 and 2023, including literature codes 2022\_21\_F\_U\_W,

2022\_49\_F\_M\_A, 2023\_23\_F\_M\_A, 2023\_32\_F\_U\_S, dan 2023\_11\_F\_M\_A. One of the studies in 2022 is a communication study related to art for maritime students, namely learning songs in foreign languages through the YouTube platform. The research showed that mastery of communication, especially in language, can be learned in a fun way, namely through repeated broadcasts on the internet media. In the end, collaboration between disciplines makes learning more creative and innovative (Oktavia, 2022). Another use of technological media that can also connect the study of communication science with other fields is the Microsoft Teams platform (Kumalahayati & Yusriyah, 2022)“ISSN”:"1412-7873",“abstract”:"Good interpersonal communication between teachers and students in the learning process is very necessary for the smooth running of effective learning, after the implementation of restrictions in the Covid19 era made schools implement blended learning so that the use of Microsoft Teams was used by schools as LMS to help teachers and students. students in the learning process. The purpose of this study is to determine the interpersonal communication of teachers and students in the use of Microsoft Teams, the supporting factors and barriers to interpersonal communication and how effective interpersonal communication is between teachers and students in the blended learning process of Senior High Schools in Bekasi City. The research method used is descriptive qualitative with a case study approach. Data was collected through observation, documentation, and interviews. The results show that interpersonal communication between teachers and students has been running quite effectively with the use of Microsoft Teams as a learning medium that helps teachers and students to be able to connect to online learning in the Covid19 pandemic era. There is openness, empathy, supportive attitude, positive attitude, and equality shown by teachers and students so that there is effectiveness of interpersonal communication. “,”author”:[{“dropping-particle”：“”,“family”：“Kumalahayati”,“given”：“Nurfatma”,“non-dropping-particle”：“”,“parse-names”：false,“suffix”：“”}],{“dropping-particle”：“”,“family”：“Yusriyah”,“given”：“Kiayati”,“non-dropping-particle”：“”,“parse-names”：false,“suffix”：“”}],“container-title”：“WACANA: Jurnal Ilmiah Ilmu Komunikasi”,“id”：“ITEM-1”,“issue”：“2”,“issued”：{“date-parts”：[[“2022”]],“page”：“265-276”,“title”：“Komunikasi Interpersonal Guru Dan Siswa Dalam Pemanfaatan Microsoft Teams Pada Blended Learning”,“type”：“article-journal”,“volume”：“21”,“uris”：[“http://www.mendeley.com/documents/?uuid=6a29ff3e-92bc-4868-9343-06711a41d434”]”,“mendeley”：{“formattedCitation”：“(Kumalahayati & Yusriyah, 2022.

The use of technology in learning has become a necessity to implement, as well as in research studies in the field of communication. Communication will occur if there is a medium used in conveying the contents of the communication message (Masse, 2017). This is also a study on research that applies internet facilities in integrating communication science with other fields, such as by using videos on the Nearpod application in social science learning activities.(Az-zahro & Panduwinata, 2023). It can be concluded that research studies on communication science that are collaborated with other fields through the use of technology are starting to get a lot of attention. It can be seen from the research that is dominated in 2023, where the era of globalization can no longer be dammed, but must be faced and implemented to achieve meaningful knowledge for life. especially through learning activities.

## Axiology

The term axiology has its origins in the Greek words “*Axios*” and also “*Logos*”. *Axios* means value or is considered something valuable. *Logos* means theory or reason. Axiology means a theory of value(Rahayu, 2015). Communication science when viewed from an axiological aspect will focus on the function of communication (Karisna, 2019). Axiological

studies in the field of communication science are the impacts that occur from one's activities or ability to communicate (Rahmawati et al., 2019). Axiology in the study of communication relates to questions about the value of a theory, or how a theory of communication benefits or impacts other people (Rorong, 2019). Axiological assumptions in a study are seen from how a person's knowledge or communication process influences knowledge, responses, motivation, or other skills in himself or others.

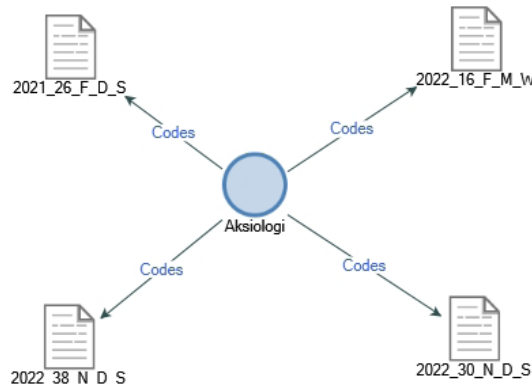


Figure 6. Mapping in the NVivo 12 Pro Program in the study of communication science based on the study of axiological philosophy

In this discussion, the selected literature is a study that discusses the benefits of a person's communication skills or processes. The axiological aspect is the least of the studies based on the searches that the researchers did. Four literatures show this, including the codes 2021\_26\_F\_D\_S, 2022\_16\_F\_M\_W, 2022\_38\_N\_D\_S, and 2022\_30\_N\_D\_S (Figure 6). There is an interesting pattern, namely the literature obtained is dominated by research conducted at the elementary school level (3 literatures). Even though all three, the application of technology is still in the form of social media such as Whatsapp, this is information that is quite interesting, because, at the elementary school level, communication is considered important in having an impact on the abilities of other people. One of the literatures is code 2021\_26\_F\_D\_S, which discusses changes in student behavior through teacher interpersonal communication (Latifah, 2021).

The research states that good teacher behavior towards students can lead to changes in several behaviors, including interactive involvement, interaction management, behavioral flexibility, listening, social style, and communication anxiety. These changes can overcome the fear, confusion of mind, body tremors, and stage fright that appear in communication. The findings at this stage indicated that communication skills should be taught from the elementary school level, because they can have an impact on children's attitudes, especially in communicating with others when in front of many people. The low focus of research on studies that discuss the impact of a person's communication skills shows a huge opportunity for academics and researchers in the field of communication to choose the study of the philosophy of communication, especially on the axiological aspect.

## Conclusion

20 literatures have been analyzed and mapped with the help of the NVivo 12 Pro program. Literature is categorized into the categories of ontology, epistemology, and axiology. The conclusion shows that research studies on communication science in collaboration with other fields through the use of technology are starting to get a lot of attention, as can be seen from the research that is dominated in 2023, where the era of globalization can no longer be stopped, but must be faced and implemented to achieve



meaningful knowledge for life. especially through learning activities. The research trend of communication science in the field of education that applies technology, when viewed from the aspect of philosophy, is dominantly in the ontology group. This is followed by the epistemology category. The least is the axiology category.

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