

An Ontological Review of Instructional Media within the Context of Dale's Cone of Experience

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Abstract. Learning involves various factors, including educators, learners, materials, and learning media. One significant factor that can influence the effectiveness of learning is learning media. Dale's Cone of Experience theory provides a relevant framework for selecting appropriate learning media, categorizing learning experiences into seven levels ranging from the most concrete to the most abstract. Through a literature review, this research attempts to elucidate the ontological understanding of instructional media within the context of Dale's Cone of Experience. The ontology of Instructional media provides a systematic and structural conceptual foundation for various types of media used in learning. An educator who understands the ontology of instructional media can intelligently select and integrate media according to the desired level of learning complexity, which aligns with the principles of Dale's Cone of Experience. This ontological understanding has broad impacts, including providing a robust conceptual foundation, supporting innovation, and enhancing overall learning effectiveness. Therefore, educators need to develop a profound understanding of the ontology of instructional media to improve the quality of learning and learners' experiences.

Keywords: Instructional media, Dale's Cone of Experience, Ontological perspective, Educational effectiveness

1 Introduction

Education is an essential foundation for developing individuals and society, especially in the era of globalization and advances in information technology. In this context, instructional media are vital to supporting the teaching-learning process. One of the theories underpinning the instructional media's role is the concept of Dale's cone of experience, developed by Edgar Dale. Amid educational evolution, instructional media is increasingly integral to maximizing learning effectiveness. A deep understanding of the ontology of learning media, especially in the context of Dale's cone of experience, provides a new perspective that is very relevant in designing practical and development-oriented learning experiences.

The concept of Dale's cone of experience creates a foundation that describes the level of participation and complexity of experience in the learning process. From simple to complex

experiences, this theory emphasizes the role of instructional media in conveying information, stimulating imagination, and increasing student engagement. The ontological understanding of instructional media is crucial, as it provides a systematic and structured conceptual foundation for the various types of media used in learning. It allows for detailing the structure, classification, and relationship between media, enabling the development of more focused and integrated learning strategies. By understanding the ontology of instructional media in the context of Dale's cone of experience, educators can be more innovative in choosing and integrating media according to the desired level of learning complexity, which aligns with the principles of Dale's experience. Further research in this area is expected to significantly impact curriculum development, learning design, and teaching methods, opening the door for innovation in using technology and learning media and improving learning effectiveness at all levels of education.

The primary aim of media is to aid in communication within educational contexts [1]. The selection of instructional media is also increasingly challenging due to the rapid advancement of technology. The swift advancement of technology introduces a plethora of novel learning platforms. Consequently, educators are compelled to stay abreast of these advancements. Continuous endeavours are being made to introduce fresh learning resources to optimize learning outcomes. Apart from leveraging information technology-based instruments, the effectiveness of learning hinges on the compatibility of resources with diverse learning styles. It is imperative to assess students' learning preferences before selecting the instructional materials to be developed, as many educators and learners are dissatisfied with conventional teaching methods [2].

Each cohort possesses unique characteristics, and the educational journey is no exception to this rule. The current college students fall into the category of Generation Z, often referred to as digital natives, as they were born into the era of digital technology. This demographic spans the years between 1995 and 2010 [3]. Generation Z has been raised with convenient access to a plethora of information, making engaging with material that aligns differently from their preferences challenging. This presents a common issue where educators, predominantly digital immigrants, often struggle to bridge the gap in communication with digital natives due to differing linguistic and technological backgrounds [4].

The progress of information technology is swift; therefore, the process of adaptation and acquisition of technology to support and improve the quality of the learning process must continue [5], [6], [7]. An ontological understanding of instructional media allows students and educators to explore different types of instructional media that can stimulate creativity and improve short story writing skills. Engaging students in learning experiences that include literary texts, images, audiovisuals, and interactive technologies can motivate them more effectively. Understanding the ontology of instructional media can also accommodate the diversity of students' learning styles. With a deeper understanding of the relationship between media, level of complexity, and learning objectives of short story creative writing, educators can devise more adaptive and innovative strategies according to students' needs.

The concept of Dale's cone of experience, proposed by Edgar Dale, is a relevant theoretical foundation in the design and implementation of instructional media. This theory describes the level of participation and experience in learning, forming a hierarchy from the simplest to the most complex. An ontological understanding of instructional media can provide a solid conceptual foundation for studying and designing compelling learning experiences in learning the Indonesian language and literature. In an era of ever-evolving education, the use of instructional media is

becoming increasingly integral to supporting the effectiveness of the learning process. A deep understanding of the ontology of instructional media in the context of Dale's cone of experience offers a new perspective that is very relevant in designing learning experiences that are effective and oriented towards learner development.

Dale's cone of experience has been discussed in the article "Interesting Learning Media". The article's conclusion states that in choosing learning media, you should pay attention to the visual aspect, which consists of being visible, attractive, simple, practical, accurate, legitimate, and structured. Meanwhile, the types of media that can be used include non-projected visual media, projected visual media, audio media, and multimedia. The media will become more lively and entertaining by incorporating musical elements [8]. Another study titled "Learning Media: Investigating the Process of Media Selection and its Application in Education" summarized various factors to contemplate when selecting educational media. These factors include student needs, learning objectives, instructional strategies, media design and usability, costs, available facilities, infrastructure, efficiency, and effectiveness [9]. Thus, research on the ontological understanding of instructional media in the context of Dale's cone of experience is expected to make a real contribution to improving learning to write creative short stories. The alignment between the ontology of instructional media and student learning objectives is expected to positively impact the development of creative writing skills and literacy empowerment among students. Instructional media ontology systematically explains the structure, classification, and relationship between various types of media used in the learning process. By using an ontology, educators can better understand the essence of each learning medium and how it can be conceptualized and applied in Dale's cone of experience. Thus, instructional media ontology can be a helpful guide in designing an integrated learning strategy that suits the desired level of complexity of learning.

2 Methods

This type of library research or literature study involves a series of actions related to collecting data from written sources. Library research, often referred to as literature study, is carried out by reading, recording, and managing research materials [10], [11], [12]. This research method is relevant in the context of this study due to the broad scope of the research questions, which may be challenging to obtain through field research, especially with limited time constraints. Library research remains a reliable option due to the expertise of library researchers in utilizing various literature sources available through various media. With this ability, it is hoped that researchers can enrich existing research and make additional contributions to the repertoire of knowledge related to this research topic. While it may not entail on-site investigations, library research remains a potent avenue for delving into a comprehensive understanding of a research topic. This method involves meticulously gathering information and data from a wide array of literature, books, journals, magazines, and other reference materials, coupled with thorough analysis and comprehension of existing research findings [13].

3 Results and Discussion

Linguistically, ontology comes from the Greek language, whose origins are "ontos" and "logos.". Ontos is "that which exists," while logos is "science.". Simply put, ontology is the science that talks about the existing science of "existence about existence.". Ontology is a branch of philosophy that deals with the nature of life and its existence, including the existence of everything that may exist [14], [15]. The object of ontological study includes that there is an individual, there is a general, there is limited, there is unlimited, there is a universal, and there is an absolute—the almighty God. The term ontology is more widely used when discussing those in the context of philosophy [16]. From what has been described above, it can be understood that ontology is the essence of existence, which includes the existence of everything that exists and that may exist. The presence of ontology is used to clearly explain the nature and definition of instructional media. What is the relationship between instructional media and humans as learners? Moreover, various other fundamental questions must be addressed so that, in the future, the selection of a medium will have passed an empirical and systematic contemplation process so that it can be accounted for.

Media comes from Latin, namely "medius," which means "middle" or "introduction". In learning, *instructional media* is a tool educators use to convey information to students, facilitating understanding of learning concepts. In Arabic, media is an intermediary or messenger from the sender to the receiver. Instructional media includes everything that can be used to convey messages or material, functioning as a tool that stimulates students' attention, interests, thoughts, and feelings during learning activities. In learning activities, the relationship between learners and the environment and the role of the media can be recognized by the advantages, obstacles, or disadvantages that may arise in the learning process [17], [18], [19].

From the above definition, media is like a bridge that becomes a communication channel between education and students. Media is present as an effort to improve the interaction process between teachers, students, and the learning environment [20]. If this bridge can be passed well, the various information and material conveyed will arrive and can be received by students fully and completely. Conversely, if the information bridge is problematic, the information conveyed will also be reduced or incomplete, or misunderstandings or misconceptions will occur.

The function of instructional media can be broken down into four main aspects. First, instructional media has a significant role in changing the focus of formal education. This means that through the use of learning media, concepts that were initially abstract can be realized to be more concrete, and the learning process that was previously theoretical becomes more functional and practical. The second aspect is the ability of instructional media to generate learning motivation. In this case, the media drives learners' extrinsic motivation. Instructional media that attracts and focuses learners' attention can create additional motivation, making the learning process more exciting and fun. The third aspect is to provide clarity. Instructional media can clarify the concepts and experiences of learners, making knowledge more straightforward to understand. By presenting information through media, the complexity of learning materials can be explained better, providing the clarity needed for students' understanding to be more profound. Finally, the fourth aspect is stimulating learning, significantly stimulating learners' curiosity. Curiosity needs to be activated so that there is always a desire to know more, and instructional media have an essential role in fulfilling this need by excitingly presenting learning materials [21], [22].

According to Rowntree, media has six crucial functions in the context of the learning process. First, the media is used to arouse students' learning motivation, creating a more profound interest in the learning material. Second, the media function involves the repetition of material that has been learned, aiming to strengthen understanding and deepen student knowledge. Furthermore, the media is a learning stimulus, stimulating students' curiosity and interest in learning topics. Fourth, the media activates student responses, encouraging active participation through various forms such as questions, answers, and discussions. The fifth function is to provide immediate feedback, allowing for quick evaluation of student understanding. Finally, the media promotes systematic practice, helping students hone skills and knowledge through purposeful practice. Taken together, these six functions contribute significantly to enriching students' learning experiences [23].

Dale's cone experience is one of the concepts that can be a reference in choosing the suitable learning medium by predetermined learning objectives. According to Edgar Dale, a person's learning outcomes can be obtained through a diverse range of experiences, ranging from direct experience that is concrete, namely real experiences that occur in the individual's living environment, to the use of artificial objects to reach the level of abstraction through verbal symbols. Dale explains that the higher the cone, the more abstract the medium of conveying the message. The importance of this understanding lies in the understanding that the learning process and teaching interactions do not have to start from direct experience but can start from the type of experience that best suits the needs and abilities of the student group, considering the learning situation. Dale states that direct experience has a unique role because it involves various senses, such as sight, hearing, feeling, smelling, and touching. Direct experience is considered a rich source of information and ideas, which can significantly contribute to students' learning processes. Thus, this approach emphasizes that instructional media should be selected and adapted to the level of abstraction that suits the needs and characteristics of students and makes room for direct experience as a strong foundation in the learning process [24], [25].

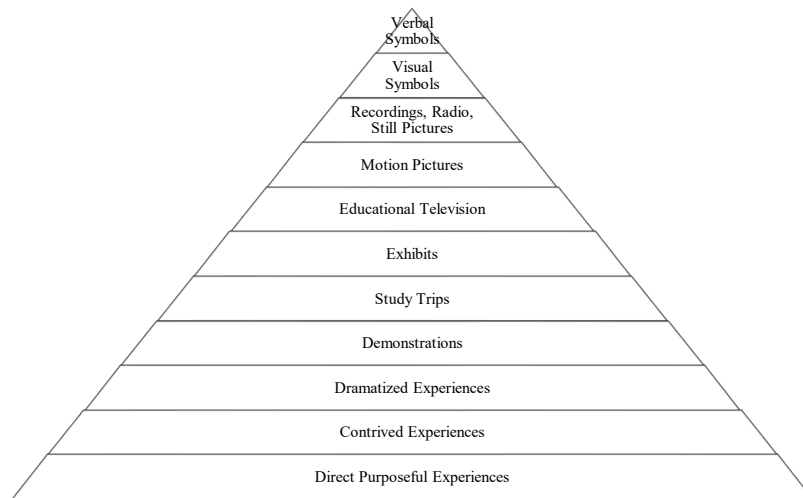


Fig. 1. Dale's Cone of Experience

Understanding the nature of each experience on Dale's cone of experience is necessary to carefully select instructional media in order to fulfill the purpose and desire of its use. At the top of Dale's cone of experience, word symbols are one of the classic forms of learning experience that is now starting to change into digital form [26]; even so, in its form, text still has various limitations in involving students directly. Because it is considered the most abstract, this form can only provide a 10% level of understanding. Visual symbols, as a more concrete form of learning experience, including various elements such as pictures, photos, and graphics, which are widely implemented in flipbook [27], [28] education can increase student understanding by 30% due to its ability to help students visualize information. This can be enhanced by the use of motion pictures even in the form of interactive videos [29], [30].

Exhibitions and field trips, as concrete learning experiences that involve direct student participation, can provide 50% of the learning materials. Demonstration, at the sixth level of the cone of experience, allows students to understand the material in a practical and applicable manner with an understanding level of 70%. Direct experience, as the most effective form of learning, can increase understanding to 90%, and practice, with an 80% comprehension rate, also contributes significantly to students' understanding of the material. Repeated hands-on experience can even achieve a 100% comprehension rate. Good instructional media must go through a thorough process, and attention must be paid to careful selection and proper preparation. The sincerity and seriousness in preparing instructional media will reflect a teacher's commitment to educating the nation's life through education.

Instructional media is an essential element in the learning process, and attention must be paid to the curriculum and other aspects that affect the achievement of learning objectives. In the modern era, instructional media makes learning more colourful than relying solely on teachers as the primary learning source. Instructional media becomes a complement to optimize the construction of knowledge formed from the interaction between teachers and learners. The rapid development of technology has affected various aspects of life, including the learning process. Technology, or ICT, changes the way the world and educational institutions are viewed and affects learners' interaction patterns and learning styles. Teachers must be wise in responding to this social change as a challenge. If not managed well, technological advances can become obstacles in the learning process. Innovative and effective instructional media have become integral to ideal learning in the modern era. The 21st century demands that learners have the knowledge and skills that support their success in the digital age. However, the positive aspects of the past should be noticed. The progress of the times must be well coordinated so that teachers and learners can feel comfortable in the learning process. The transition to the next level of instructional media is inevitable. Teachers must understand computing skills well to explore and fully utilize technological advances. The education process aims to prepare individuals to be good citizens and thrive in the future. Therefore, the preparation of basic skills that become the foundation of their development must be done in various ways, and this is the responsibility of the school, especially in the classroom.

Understanding and practising effective instructional media will undoubtedly support the development of skills needed for success during the Industrial Revolution. Instructional media designed by teachers serve at the forefront in achieving the goals of education through the 2013 curriculum under Law No. 20 of 2003, which states, "National education functions to develop capabilities and shape the character and civilization of the nation in order to enlighten the nation's life, aiming for the development of the potential of learners to become human beings who are faithful

and devoted to the One Almighty God, have noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens."

Instructional media must be addressed by their portion because, if observed, the way of learning has changed drastically over the past two decades. Changes need to be matched in the education or school systems. Educational institutions and aspects are changing more slowly than the internet and other information technologies offer [31]. Teachers, who were once burdened as the only source of information for students alongside textbooks, are no longer relevant if we talk about learning in the 21st century. Teachers must transform into facilitators of the mastery of knowledge. This is difficult because the breadth of available information makes it challenging for teachers to manage learning. How teachers master the text and choose the right technology when so many options are available, and no less important is how teachers create compelling learning experiences to ensure students can gain new skills and knowledge [32].

Teachers who can implement progressive and inclusive learning methodologies that harness the potential of every student can be regarded as true professionals in their field. Their proficiency and dedication are essential indicators of a quality education. Furthermore, beyond their role within the confines of the school, teachers hold a significant position within society at large. Often serving as the benchmark for societal ideals, teachers embody the essence of a well-rounded Indonesian citizen. They represent the frontline of national progress, shaping the dignity and future of the nation through education. Thus, being a teacher transcends mere profession; it signifies a noble duty in nation-building and character development.

4 Conclusions

Understanding the ontological aspects of instructional media within the context of Dale's Cone of Experience significantly contributes to learning development, particularly in enhancing the effectiveness of the learning process. Dale's Cone of Experience provides a framework that maps the levels of participation and complexity of learning experiences, ranging from simple to complex. The ontology of instructional media is crucial as it provides a systematic and structural conceptual foundation for various types of media used in learning. Understanding the ontology of instructional media is also related to the need for diverse media options, from print materials to digital technologies and interactive simulations. By comprehending this ontology, educators can intelligently select and integrate media according to the desired complexity level of learning, which aligns with the principles of Dale's Cone of Experience. Furthermore, understanding the ontological aspects of instructional media is relevant to the characteristics of Generation Z, who is growing up in the digital age. Educators need to understand students' diverse learning styles and use the ontology of instructional media as a guide to design adaptive and innovative teaching strategies tailored to their needs. Thus, understanding the ontological aspects of instructional media is critical to creating dynamic and effective learning environments for the present generation.

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