



Three dimensions of metaphor in education

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Abstract

Metaphor serves as a powerful tool to reveal the intrinsic relationship between language and human thought, as well as between language use and individual cognition. Despite extensive research on metaphor in general linguistics, its specific roles in the context of education remain underexplored, particularly regarding its multidimensional functions in human activity. This study aims to examine the roles of metaphor in educational practice through a combination of diachronic and horizontal approaches. It focuses on three dimensions: dissemination of thought, clarification of thought, and research on thought. The methodology involves a detailed analysis of these dimensions, supported by theoretical principles and relevant scientific literature, illustrated with concrete examples. Findings indicate that metaphor has long been integral to educational practice, enhancing understanding, communication, and knowledge construction. Its enduring use underscores its effectiveness in facilitating social interaction and cognitive development. The study highlights the importance of integrating metaphorical analysis in educational research and practice to foster a more nuanced understanding of teaching and learning processes.

Keywords: Cognition; education; human thought; metaphor; language.

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1. INTRODUCTION

In recent stages of cultural evolution, education has progressed through the extensive use of language. Within this framework, metaphor functions as a mediating tool between language and thought, facilitating the construction of meaning in educational interactions both inside and outside the classroom. The contexts, conditions, and purposes of meaning-making through metaphor vary considerably, as does its role in communicative acts within educational settings. The present discussion examines three primary functions of metaphor in education: the dissemination of thought, the clarification of thought, and the exploration of thought. These functions are explored through a systematic analysis of the historical and contextual applications of metaphor in the educational domain. For example, classroom-based studies demonstrate that metaphors can serve as shared semiotic resources mediating understanding in science education (Pettersson et al., 2025).

The application of metaphor aligns with specific educational objectives rooted in the development of the sciences. Educational contexts have evolved from rhetorical acts aimed at the public to institutionalized classroom instruction, and ultimately to expert-level academic discourse. This progression has enabled the exploitation of metaphor's functional range from decorative and illustrative to illuminative, interpretative, and informative, moving along the continuum between affect and cognition (Su et al., 2024).

Metaphors also play a significant role in shaping teacher identity formation. Professional identity development has been shown to benefit from the use of metaphorical narratives among student teachers, supporting reflective engagement with teaching roles and responsibilities (Schellings et al., 2024). In this way, metaphor supports the development of societal, individual, and professional domains.

A meta-analysis of the literature elucidates the functions of metaphor in education over time. Metaphors influence inclusive education discourse through conceptual frames such as "journey," "building," and "war," which shape policy interpretation and practice (Nacey, 2025). Critical perspectives underscore metaphor's dual potential to both illuminate and constrain thought by framing it within particular conceptual domains (McCandless et al., 2025). Furthermore, empirical evidence confirms that metaphor-based instructional interventions enhance metaphorical competence in second language learners. Such findings demonstrate the pedagogical value of deliberate and purposeful metaphor application in the classroom (Zhou et al., 2022).

1.1. Purpose of study

The purpose of this study is to investigate the multidimensional roles of metaphor in educational practice by examining its functions in the dissemination, clarification, and research of thought. Using both diachronic and horizontal perspectives, the study analyzes how metaphor facilitates understanding, communication, and knowledge construction across varying educational contexts. The findings aim to highlight the significance of integrating metaphorical analysis into educational research and practice to enhance cognitive development and social interaction.

2. MATERIALS AND METHOD

This study employed a qualitative research design integrating both diachronic and horizontal approaches to examine the functions of metaphor in educational practice. The diachronic approach traced the historical evolution of metaphor use in education, from early rhetorical applications targeting the public to contemporary implementations in formal classroom settings and academic research. The horizontal approach analyzed metaphor use across different educational contexts and participant groups, including learners, teachers, and policy actors.

Data for the study were obtained through a systematic review of scholarly literature from databases such as Scopus, Web of Science, and ERIC, focusing on peer-reviewed articles, books, and conference proceedings published between 2000 and 2025. Selection criteria included relevance to metaphor use in education, explicit discussion of its functions in thought dissemination, clarification, or research, and empirical or theoretical

grounding. Studies related solely to figurative language in general discourse without an educational focus were excluded.

The analysis involved thematic coding to identify and categorize metaphor functions, supported by constant comparison across historical and contextual domains. Findings were synthesized with reference to theoretical models of metaphor in cognitive linguistics, educational psychology, and discourse analysis. Selected case examples from the reviewed literature were incorporated to illustrate the identified functions in practice.

3. RESULTS

3.1. Dimension one: Dissemination of thought

The intentional application of metaphor as figurative language in speech has a long history, which dates back to the times of the ancient Greek and Roman empires around the fifth century B.C. Building on the power of words, Isocrates and Aristotle in Greece, and Cicero and Quintilian in Rome, became distinguished representatives of the classical rhetoric of their times. Their principles of the science of rhetoric are based on the description of the virtuous orator, of the eloquence of artistic language use, and of principled argumentation, which often served the very practical purpose of persuasion in the formal setting of political, legislative, instructive, or informal contexts (Griffin, 2006).

3.1.1. Supporting science: communication

Since a metaphor carries the potential of connecting two elements of reality based on their shared features, it can be used to help the audience understand a new idea by relating it to the knowledge that they already possess. Metaphor became an important element as an artful linguistic means of oratory. Based on the meticulous study of the principles of the science of oratory, rhetoric soon became the cornerstone of classical education. What is more, modern theories of mass communication remain heavily influenced by the basic rhetorical principles of a good speech and writing.

Speaking to and educating large groups is found to be more successful when following the principles of the science of rhetoric and of the development of quality thoughts wrapped in quality language.

3.1.2. Function of metaphor: decorative and illustrative

The appeal of the competencies of a good speaker using metaphor is generally appreciated by the listeners, and it often evokes affective responses. In the oratory, the emphasis was mostly on the effect the metaphor had on the audience, how feelings and thoughts were evoked by the use of the figurative language in the discourse.

Similarly, the students in the contemporary classroom recognize that a particular word or phrase conveys metaphorical meaning, and thus are stimulated to be concerned or motivated to explore the meaning behind the metaphor, so a better understanding of the new knowledge can be expected.

3.1.3. Contemporary applications

Contemporary educational contexts have taken advantage of the potential of metaphor as a vehicle for connecting familiar and unfamiliar professional information, both in oral and in written communication. This applies to professional communication, as well. To illustrate this, we will look at the concept of 'language teacher role' and the metaphors applied in written professional work.

Due to the complexity of the language teacher role concept (Fábián 2021), education theorists have made efforts to create their metaphors to clarify the distinctive features of language teacher classroom behavioral patterns. Harmer (2001) identifies the role of the language teacher as the controller, organizer, assessor, prompter, participant, and resource based on the amount of the teacher's control or power over the learning processes of the language learner in the classroom. The above types of the language teacher role are completed with the tutor, or observer, in the later editions of his book, taking the new aspect of the authoritative-democratic cline of the teacher's behavioral attitudes to language learning. Besides the author's efforts to provide a more comprehensive explanation of the typical variants of language teacher classroom

behavior, his decision to extend the domain of the language teacher role in his works will also draw attention to a crucial feature of linguistic metaphor. The versatility of the features of reality allows the language user to create and select the principle for the specific feature they would like to emphasize and apply in their metaphor construction. This fundamental feature of the metaphor, which structures certain domains of thought, has only gained more attention due to the impact of the development of cognitive linguistics, which we will discuss in the next part of the paper.

3.2. Dimension two: Clarification of thought

In the long history of metaphorical speech, there was no concern about where metaphor came from, or how metaphor is formed and processed in the mind, which question was only raised a few decades ago with the impact of the development of cognitive science.

3.2.1. Supporting science: cognitive linguistics and social sciences

The evolution of cognitive linguistic research in the early 1980s brought a significant change in the focus of metaphor studies in real life. Johnson and Lakoff's (1980) theory broke the ground for cognitive linguistic approaches to metaphor, and, at the same time, revealed some unexpected facts concerning metaphoric thinking. Among others, they claim that the application of metaphor is a natural part of everyday life, and it is unrelated to intelligence. What is more, speakers might not be aware of their use of the artful technique. They conclude, metaphor is not a decorative means of language expression; in contrast, it is indispensable in thinking and comprehension of the real world.

By now, the importance of metaphor in the process of knowledge construction is widely recognized in cognitive science, more specifically in cognitive linguistics. Metaphors are claimed to build bridges between thinking and abstraction on one hand, and perception of physical reality on the other. The original idea (Johnson and Lakoff, 1980) clarifies how language is rooted in the way we structure our bodily experience and conceptualize reality, which is named 'embodiment', about the physical, material basis of cognition and language. The theory has further inspired cognitive linguistic theories to identify a large body of universalities among 'mappings' between a physical domain of reality and an abstract domain through cognition, which mappings, or correspondences, are reflected in language. The theory is referred to as conceptual metaphor theory (CMT).

According to the theory, lexical items or words are organized in domains according to semantic properties. During the process of creating a metaphor, an item from one semantic domain is transferred into another semantic domain, a process referred to as mapping. Mapping is grounded in the identification of similarity between two items by the language user. In theory, the bodily domain from which the item originates is designated as the source domain, whereas the domain of abstraction that incorporates the new item is identified as the target domain. The mapping of two domains is frequently illustrated in scholarly literature with examples such as "the foot of the hill" or "the eye of the hurricane." Source domains are not single units; rather, they are composed of multiple elements.

Due to the complexity of source domains, their constituent elements may interact in various ways within metaphorical mappings. Consequently, natural discourse often contains metaphors that present greater analytical challenges. In order to interpret the metaphors in the examples provided by Fábíán (2013), a more detailed analysis of the mappings is required, for which the framework of standard conceptual metaphor theory (CMT) is applied.

This field draws extensively on cognitive psychology. The theory of metaphors is grounded in principles of cognitive psychology. The research is founded on the assumption that within standard CMT, the highlighted lexical items are used to refer to processes associated with constructing a building or creating the framework of an establishment. In the cited metaphoric expressions, the source domain element corresponds to the concept of "structure," whereas the abstract target domain corresponds to "science." Standard CMT analysis of the metaphor yields the following conceptualization: *science is a structure*. This example demonstrates that

the source domain of “building” enables the conceptualization of structure-related aspects of complex abstract systems (Kövecses, 2010).

3.2.2. Function of metaphor: mediation between individual interpretations

While CMT analysis can apply to mappings on a generic level (domain level), and they are offline structures of the long-term memory, they may not account for the emergence of the unique metaphoric linguistic utterances in online communication instances. The forms of natural communication involve online cognitive processes, which allow a high versatility of metaphors to occur in a variety of contexts, including education. Metaphors emerging in natural communication have been found to lend themselves to an analysis at a mental space level, where structures are activated online in the working memory.

It is primarily the above feature of metaphor theory that has contributed to the interdisciplinary approach to metaphor, including attempts to discover the hidden workings of the minds of the participants in teaching and learning processes. While from a cognitive linguistic perspective, metaphor is a mental operation from reality to language where you map your physical understanding of the world onto unknown domains, from the socio-cultural perspective of metaphor, in the classroom, it is considered to be a language phenomenon for mental and interpersonal action.

While conceptual metaphor theory (CMT) analysis primarily focuses on universal conceptual structures and the linguistic features of metaphor, educational research increasingly values metaphor for its capacity to reveal the attitudes, beliefs, and interpretations of complex phenomena held by participating teachers and students. Low (2017) emphasizes that elicited metaphor studies often aim to facilitate change in education by addressing counterproductive beliefs or attitudes, enhancing skills, or supporting the decision-making process of participants.

Metaphors elicited from participants are generally obtained in two distinct forms. The first is the simple A is B structure, which participants are asked to produce about a specific topic. The second consists of written or oral discourse in which metaphors or similar figurative expressions emerge spontaneously within the given context. These two forms are frequently integrated or complemented by other media, such as visual representations, as well as by alternative procedural innovations in metaphor interpretation in empirical research. The integration of multiple modalities and interpretive contexts results in the following variants for employing elicited metaphor to conceptualize complex educational concepts:

A = B visual image interpreted by external experts

A = B visual image interpreted by the participant in oral communication

A = B visual image interpreted by the participant in written communication

A = B visual image interpreted by a group of participants in oral communication

A = B visual image interpreted by the participant in oral communication, combined with group discussion

A = B linguistic form interpreted by external experts

A = B linguistic form interpreted by the participant in oral communication

A = B linguistic form interpreted by the participant in written communication

A = B linguistic form interpreted by a group of participants in oral communication

A = B linguistic form interpreted by the participant in oral communication, combined with group discussion.

The combination of modalities and interpretation contexts is likely to enhance the validity and efficiency of interpreting complex concepts. Furthermore, shared processes of metaphoric conceptualization and collective understanding of a concept may foster affective and emotional dimensions of the learning process, thereby improving the social dynamics of both the individual learner and the learning group (Fábián, 2013).

Since meaning-making is completed through deliberate reflection, such practices also promote deeper awareness of both individual and collective interpretive processes.

3.2.3. Contemporary applications

This latter benefit is taken advantage of by contemporary teaching practices. A variety of education contexts will support the application of metaphor due to the fact that it enhances learning and understanding concepts in a variety of ways. Metaphors are often used by teachers and experts to introduce students and learners to the concepts of the disciplines. They induct students into various learning communities focusing on a particular discipline or disciplinary area. Metaphor-based learning processes help understand concepts, facilitate the development of structures of concepts, and stimulate the interaction between thinking and discussing, which gradually brings students and teachers' understanding of concepts closer (Cameron, 2003).

On the other hand, this is not true for learners of a foreign or second language. While language learners need to operate in real-world contexts, their literal language competencies might not make them capable of handling situations where figurative language carries meanings they are unfamiliar with. Still, course materials teaching linguistic metaphors are hard to find, while the reasons are unclear. Littlemore and Low (2006) point out some benefits of teaching linguistic metaphors of cultural significance, and demonstrate the power of conceptual metaphors in some phrases in English, which may help learners in adopting a systematic approach to some cultural features of operating elements in the language.

Still, the venue of language teaching may not be that dark any longer. The universal features of conceptual metaphors have been proven to be valid across languages, which means, language learners can often 'translate' their conceptual thinking into their foreign language performance. In addition, there is a high probability that experienced teachers and teachers with advanced metaphoric competencies intentionally share their findings of the culturally significant conceptual traditions of the foreign language context to facilitate language acquisition in their classrooms. Furthermore, recent advancement in the study of conceptual metaphor in terms of its cultural, contextual, individual aspects and intercultural features are hoped to inspire applied linguists, language assessment experts, language course book writers and language teachers alike to integrate some theoretic, conceptual, cultural and intercultural aspects of the foreign language into the practicum of both language teaching and language performance assessment in the future.

3.3. Dimension three: Research on thought

The findings of cognitive linguistics on metaphor have contributed to a better understanding of human thought and, as a result, inspired research into participants' conceptualizations of complex phenomena in education. The popularity of the metaphor analysis research method in education is mainly due to the richness of the variety of procedural aspects it offers. Some of these aspects are related to the modalities of data collection, the convenience of conducting the research procedure, or the creativity involved in the data and data processing.

3.3.1. Supporting sciences: research in education and applied linguistics

Metaphor in education provides researchers with new opportunities, approaches, methods, and techniques to gain information about participants' attitudes, beliefs, and knowledge. Data collection procedures offer a wide scope of modalities, including linguistic, visual, behavioral, or other. In addition, recent decades seem to have brought a growing interest in a shift from objective to subjective methods of education research, together with a focus on understanding individual thought rather than universal human thinking or general features of learners.

3.3.2. Function of metaphor: informative

Researchers are required to gather valid and reliable information on thought and to employ objective data analysis techniques to inform professionals properly. However, there still seems to be a heated debate over

the merits and drawbacks of objective and subjective approaches to education research. Some of the debated issues related to metaphor analysis research will be discussed below.

During the process of metaphor analysis, research data collection can take various forms, which either employ existing conventional metaphors to reveal the subjects' related attitudes, beliefs, or mental conceptions, or just the opposite, elicit the participants' metaphors, which are believed to reflect their attitudes, beliefs, or mental conceptions. Application or eliciting metaphor both have some benefits and drawbacks.

Applying metaphor for collecting data seems to be less complicated for researchers, since one can rely on a selection from a package, and can find the perfect fit to the research purpose more easily. The methodology allows hypotheses to be set, while less control of data collection is necessary. In addition, the method lends itself to more objective techniques of data collection (questionnaire) and analysis (statistical analysis) techniques. On the other hand, the procedure is more controlled and does not allow creativity. Another drawback is that there is less possibility for deeper insight into the mental processes of the participants.

On the other hand, eliciting a metaphor is a context-sensitive and situational procedure. Eliciting metaphors from subjects requires the creation of a well-designed, inspiring, and sensitive research environment for the participant to be productive. Free production allows a wider scope of data, provides more valid data, and allows a deeper insight into the research problem. On the other hand, a less controlled framework of data collection might threaten the validity of research.

4. DISCUSSION

The meta-analysis reveals a consistent pattern across the reviewed literature: while metaphor analysis continues to be valued as a tool for exploring conceptual structures in education, its methodological limitations remain a recurring theme. The findings across Gibbs (2010), Fábíán (2016, 2021), Low (2015), and Steen (2011) converge on several core concerns, particularly regarding the validity of data collection and the reliability of analytical procedures. Across studies, eliciting metaphors is neither method-neutral nor free from participant bias, with many participants defaulting to readily available conventional metaphors. This pattern supports Low's (2015) assertion that such tendencies may lead to repetitive, unoriginal, or even misleading data, thereby constraining the analytical value of the method.

Across the body of work, there is also broad agreement that metaphor production is influenced by participant-specific variables, including cultural context, linguistic intuition, and creative ability, which are seldom controlled for in research design (Fábíán, 2016, 2021). This complicates cross-study comparability and echoes Steen's (2011) call for more rigorous metaphor identification and coding procedures. The reviewed studies similarly highlight the challenge of capturing non-linguistic metaphor forms, such as visual or behavioral metaphors, due to the lack of fully developed theoretical and methodological frameworks for multi-modal analysis. This limitation, while acknowledged in earlier research, appears to persist despite the growing recognition of multi-modal communication in educational settings.

However, divergences also emerged. While some scholars (Low, 2015; Gibbs, 2010) caution against the use of researcher intuition in metaphor interpretation, citing risks to objectivity, others (particularly in more recent studies) suggest that with transparent documentation and inter-rater checks, expert interpretation can enrich the depth of analysis. This methodological divide points to an unresolved tension between maintaining strict coding protocols and leveraging professional insight to address complex metaphorical data.

Another recurring theme in the reviewed literature is the need for stronger theoretical alignment when linking metaphors to educational constructs. Steen (2011) and Low (2015) stress that without explicit theoretical grounding, metaphor analysis risks overgeneralization. Our synthesis confirms that in many studies, the connection between metaphor use and its educational implications is insufficiently justified, supporting calls for more disciplined integration of linguistic, cognitive, and educational theory.

Taken together, the findings of this meta-analysis corroborate prior warnings about the methodological fragility of metaphor analysis in education while also identifying areas of gradual methodological innovation,

particularly in multi-modal approaches and reflexive, expert-informed coding. Nonetheless, the persistence of validity and reliability concerns across more than a decade of research underscores the need for a multi-disciplinary, rigorously standardized framework capable of accommodating both linguistic and non-linguistic data..

5. CONCLUSION

Metaphor has been present for centuries and continues to function as a conceptual, linguistic, visual, and behavioral phenomenon in the service of participants in education, including teachers, learners, education professionals, and researchers. The clarification of thought at the level of the individual, groups, and wider communities has been increasingly refined through the application of metaphor, which operates as a vehicle between language and thought. With the advancement of human culture and related sciences, metaphor has assumed a range of roles in education, progressing from decorative or illustrative functions, through the clarification of thought, to a means of providing information to education specialists concerning participants' interpretations of complex educational phenomena and concepts.

Although contemporary metaphor analysis requires further development to ensure valid and reliable procedures for data collection and analysis, the integration of insights from multiple disciplines can provide new perspectives on the interplay of the social, psychological, and linguistic properties and functions of metaphor, thereby contributing to a deeper understanding of both the human condition and the nature of reality.

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