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Breaking the Myth of Rote Memorization: Balancing Expository Teaching and Discovery Learning for Enhanced Educational Effectiveness

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Abstract

Expository teaching is frequently criticized for promoting passive learning, where students merely receive information without actively engaging in the material, making it difficult to grasp and retain concepts. They often limit interaction between teachers and students, reducing opportunities for questions, discussions, or clarifications. Additionally, lectures tend to focus on surface-level content delivery, enhancing rote memorization rather than fostering a deep understanding of the subject. The criticism that verbal lectures promote passive learning and fail to engage students is valid because, in many classrooms, teachers do not effectively deliver content in ways that foster deep understanding and active involvement. The exaggerated reaction to these issues led to the belief that all verbal learning is merely superficial and repetitive, lacking real substance. As a result, there is an overemphasis on the act of discovery learning and learning by doing, Practically, using learning by discovery as the main method for teaching is not feasible because it requires too much time and cost. But combining the expository approach with the discovery method can enhance the effectiveness of teaching and learning. Each approach compensates for the weaknesses of the other.

Introduction

The real benefits of discovery learning are sometimes wrongly extended to all educational purposes, different stages of intellectual development, complex topics, and various levels of thinking, even though it may not be suitable for all these areas. This misapplication is often based on rigid, unchanging beliefs rather than evidence. Some talented teachers struggle with effectively conveying ideas through verbal communication, which can lead to expository teaching becoming a mere memorization process, which does not feel meaningful to learners. Many have tried to generalize this incompetence among teachers and started placing discovery method over expository approach.

Discovery method and learning by doing is a highly effective approach in many fields, particularly those that involve hands-on skills, practical applications, and problem-solving, such as engineering, medicine, art, and vocational training. However, it's not always the best method in every discipline (Philosophy, pure mathematics etc..). Because it is inappropriate, time consuming and expensive. According to Ausubel (1968), "Some discovery enthusiasts (Bruner, 1960; Suchman, 1961) grudgingly admit that there is not sufficient time for pupils to discover everything" (p. 482). Ausubel's observation underscores the difficulty that, despite the theoretical attractiveness of discovery learning where students gain knowledge through exploration and problem-solving there are practical constraints in implementing this approach fully in classroom environments. The recognition by Bruner and Suchman highlights the need for structured guidance and the integration of discovery with other teaching strategies to ensure that essential content is thoroughly covered.

The expository approach is not just a simple verbal transmission of content; it involves several key components that enhance its effectiveness. Key components of the expository approach include:

Anchoring Ideas: This involves presenting fundamental concepts that students can relate to and build upon. Anchoring ideas provide a foundation for understanding more complex material. For example, introducing a new science topic by relating it to familiar experiences or prior knowledge helps students connect new information to what they already know (Ausubel, 1968).

Advanced Organizers: These tools help students structure and integrate new information. Two types of advanced organizers are:

- **Expository Advance Organizers**: These provide a structured overview of the upcoming content, helping students anticipate and organize new information. are used when learners are completely unfamiliar with the material. These organizers introduce broad concepts (proximate subsumers) that are related to the new content but still familiar to the learner. They help by providing a conceptual "anchor" that makes the new material easier to understand. For example, a concept map outlining the main topics of a lesson can help students grasp how different pieces of information are related and prepare them for more detailed exploration (Ausubel, 1968).

- **Comparative Advance Organizers:** These highlight similarities and differences between new and existing concepts, aiding in the assimilation of new information by connecting it to known concepts. Comparative organizer (tool used before learning) are more effective than comparisons made within the material itself for variety of reasonable reasons. First these materials offer a mental framework in advance, which helps students organize and understand the new information. Second these organizers give learners broad overview of main similarities and differences between two sets of ideas before they due to detail specifics. Lastly these organizers prepare the learner to notice and think about the similarities and differences between the idea. By not being too explicit, they encourage learners to actively figure out the distinction by their own, helping them resolve their own points of confusion. For instance, A Comparative Advance Organizer can be used to help students understand the similarities and differences between classical conditioning and operant conditioning before diving into the specifics of each. (Ausubel, 1968).

Additionally, advanced organizers are used to introduce and structure new information, helping students integrate it with their existing knowledge and facilitating a deeper understanding. Ausubel believed that knowledge is organized in the mind in a hierarchical way. When learning new information, it is best retained if it can be linked to pre-existing knowledge, making it more meaningful. For instance, using a concept map to outline the main topics of a lesson can assist students in organizing their thoughts and seeing how different pieces of information fit together (Ausubel, 1968).

Expository and Discovery Approaches in Education: A Level-Wise Overview

In Elementary stage, the discovery method can significantly benefit children by providing hands-on experiences that enhance their understanding of concrete concepts and refining schemas. Young children in elementary education are in the concrete operational stage of cognitive development, as identified by Piaget (1952). At this stage, they benefit more from hands-on, experiential learning that allows them to interact directly with materials and concepts. Discovery learning supports this by enabling students to explore and experiment, which helps solidify their understanding of concrete concepts through practical application (Bruner, 1960).

Especially Pre-primary and kindergarten settings benefit greatly from discovery learning because it creates an atmosphere in which young children may actively explore and interact with their surroundings. With the help of this method, which fosters natural curiosity and active engagement, kids can engage meaningfully with materials and ideas. In addition to cognitive development, discovery learning enhances social and emotional growth by promoting collaboration and communication. When children work together on discovery-based activities, such as building structures with blocks or engaging in role-play, they learn to share ideas, negotiate, and support one another. This interaction helps them develop important social skills and emotional resilience. Moreover, discovery learning allows for personalized experiences tailored to each child's interests and developmental needs, making learning more relevant and engaging. By integrating these hands-on, exploratory activities into early childhood education, educators can create a rich learning environment that supports both the intellectual and social-emotional development of young learners (Piaget, 1952; Hattie & Yates, 2014).

In primary stage also discovery method is practical. Combining the discovery method with the expository approach in the primary stage can create a robust learning environment that enhances students' understanding and application of knowledge. The expository approach complements discovery learning by providing structured information and clear explanations. This method helps students organize and integrate new knowledge effectively. The expository approach complements discovery learning by providing structured information and clear explanations. Hattie and Yates highlight the importance of clear, structured teaching for effective learning. The expository approach provides this clarity through systematic presentation of content, which helps students understand and organize new information. This structured approach aligns with their emphasis on the need for clarity and organization in teaching (Hattie & Yates, 2014). For example, the teacher begins with a brief lecture or presentation explaining the basic needs of plants (light, water, soil, etc.), their parts (roots, stems, leaves), and how they grow by anchoring ideas and in well organised manner. After the initial instruction, students conduct experiments where they plant seeds in different conditions (e.g., varying light levels, types of soil) and observe the results. They record their observations and discuss their findings, drawing conclusions based on their own experiments. Kilpatrick, Swafford, and Findell (2001) presented research and offered recommendations for teaching mathematics at the elementary and middle school levels. Their findings, along with other studies published by the U.S. National Academy of Sciences, provide substantial evidence against the effectiveness of unguided instructional approaches. These studies emphasize that when students are left to explore mathematical concepts without sufficient guidance, they often struggle to grasp and apply the material effectively.

Ausubel (1968) stated, "If secondary school and university students were obliged to discover for themselves every concept and principle in the syllabus, they would never get much beyond the rudiments of any discipline" (p. 482). Sweller and others (Mayer, 2001; Paas, Renkl, & Sweller, 2003, 2004; Sweller, 1999, 2004; Winn, 2003) noted that despite the alleged advantages of unguided environments to help students to derive meaning from learning materials, cognitive load theory suggests that the free exploration of a highly complex environment may generate a heavy working memory load that is detrimental to learning. In an unguided learning environment, students are often tasked with exploring a large amount of information without clear instructions or structured guidance. This requires them to not only engage with the content but also figure out how to process it, organize it, and relate it to prior knowledge, which can be overwhelming for the brain. Based on their interests and professional aspirations, students in higher education select various disciplines, and the teaching strategies that work best for each subject can differ.

For a successful learning strategy:

Dick and Carey (1996) view learning strategy as an explanation of the general components of a variety of learning materials and procedures that will be used together with these materials, to produce a particular learning outcome for students. Components of the learning strategy, namely pre-learning activities, presentation of information, student participation, tests, and follow-up. Meanwhile, according to Miarso (2004), components or elements commonly found in learning strategy include general objective learning, techniques, organizing learning activities, learning events, learning sequences, assessments, management of learning activities / classes, place or setting, and time. In the interim, according to Ausubel, before the presentation of lessons in the expository learning strategy the advanced organizer was used (Tomei, 2004). Advanced organizer is a preliminary statement by explaining the overall organizational scheme of knowledge or material to be presented. An advanced organizer usually includes the main ideas and concepts from the lesson and shows how these ideas and concepts are related to each other (Ormrod, 2000). The main function of an advance organizer is to bridge the gap between what students already know and what students need to know before students can learn about tasks that are meaningful (Ausubel, Novak, and Hanesian, 1978). This is in line with the opinion of Ormrod (2000) which states that the advance organizer serves to provide support for new information and optimize learning.

Drawing from the viewpoints of Dick and Carey (1996), Miarso (2004), and Ausubel (1978), we can deduce that the fundamental function of a learning strategy is to arrange, structure, and direct the process of learning in order to attain particular learning objectives. An effective learning strategy incorporates a number of different elements, including pre-learning exercises, informational presentations, student involvement, evaluations, and follow-up. Together, these elements produce a valuable and successful learning environment. As previously said, the discovery approach is probably more effective when used in conjunction with advanced organizers. By offering structure and support and promoting active investigation, this combination can improve student learning. By providing a conceptual framework that enables students to comprehend the connections between new material and prior knowledge, advanced organizers help students get ready for discovery-based learning activities. Pure discovery learning frequently faces difficulties with confusion or cognitive overload, which this support helps to lessen. Instead of struggling with new or unorganized material, students can concentrate on finding specific facts when they have a basic comprehension of the topic's structure.

Conclusion

Effective education requires a well-balanced strategy that incorporates both "expository teaching" and "discovery learning." Even while discovery learning encourages active participation, critical thinking, and real-world application, it is not a practical way to teach, especially for complicated subjects and higher learning levels, due to its time-consuming nature and potential for cognitive overload. Conversely, expository instruction gives students the underlying knowledge, structure, and clarity they need to understand important concepts, theories, and facts. If not presented well, it is frequently criticized for encouraging memorization and passive learning.

Combining the expository approach with the discovery method in education creates a rich learning experience that significantly improves both comprehension and retention. The expository approach delivers organized, clear information and employs techniques like “anchoring” and “advanced organizers” to facilitate effective learning. Anchoring presents essential concepts and frameworks that help students relate new information to their existing knowledge, while advanced organizers provide a structured overview that shows how new content integrates into the overall subject. This groundwork establishes a solid cognitive base for students. The discovery method complements this by encouraging active participation and exploration, enabling students to use their foundational knowledge in practical, hands-on activities. By blending structured instruction with exploratory learning, students not only gain a deeper understanding but also better retain the material as they engage with and apply the concepts in meaningful ways. The interactive elements of discovery learning often enhance student motivation and engagement, making the learning experience more relevant and dynamic. By integrating discovery learning with the structured coverage of the expository approach, this method addresses various learning styles and needs. This combination creates a well-rounded educational experience that not only deepens understanding and retention but also fosters critical thinking and a passion for learning.

Different disciplines and educational stages require varying blends of these approaches. While discovery learning is particularly beneficial in early education and fields that emphasize hands-on experience, expository teaching remains crucial in subjects that demand a deep understanding of theoretical content, such as philosophy and pure sciences. In sum, the most effective learning environment is one where educators judiciously combine both methods to create a comprehensive and dynamic learning experience.

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