

# Effectiveness of understanding prior child learning for teaching



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Essay question: Critically explain how an understanding of children's prior learning and experience underpins effective teaching and learning.

### Introduction

Ausubel asserted that "the most important single factor influencing learning is what the learner already knows" and teachers should understand and appreciate this in order to teach effectively (Ausubel, 1968 cited in Biser, 1984, p. 115). This thinking is mirrored in TLRP PRINCIPLE 3:

*"Effective pedagogy recognises the importance of prior experience and learning. Pedagogy should take account of what the learner knows already in order for them, and those who support their learning, to plan their next steps. This includes building on prior learning but also taking account of the personal and cultural experiences of different groups of learners." (Pollard, 2014, p. 99)*

Effective teaching and learning can only be achieved through the acknowledgment of where the child is with their learning. Additionally, understanding what they have already learnt and experienced outside of the school setting can prove highly valuable in a child's understanding of new concepts. I agree with Ausubel's argument that the recognition of prior learning can be one of the most influential and important factors in shaping how a child learns and also how they process and understand new information (Biser, 1984, p. 115). It is a teacher's role to scaffold the children to make connections and links between the knowledge that they already possess and new content in order to ensure the children engage in higher order thinking and metacognitive processes. Encouraging children to recall

and infer from their previous experiences, prior to the presentation of new knowledge allows for effective and meaningful learning can take place (Howard-Jone et al., 2018).

Jonassen and Gabrowski (1993) defined prior knowledge as “ the knowledge, skills, or ability that students bring to the learning process” (p. 417). Every child has experienced differing and contrasting upbringings and exposure to information. The results of this are that prior knowledge can vary greatly inside one classroom. Ensuring that every child is supported in the process of recalling and then applying their prior knowledge should be a key focus for all teaching lessons. Guaranteeing that children are exposed to any links and connections between concepts can result in more meaningful learning in the classroom (Novak, 1978).

The importance of prior knowledge has been well researched in the field of reading comprehension. Strategies that children employ to try and decode and understand new words find their success in the elicitation of prior knowledge and children actively seeking connections and links to what they already understand and know (READING COMP LINK). Additionally, Anderson and Pearson cite the findings of Nicholson and Imlach (1981: cited from Schuh, 2017, p, 32) that “ when children are given texts about familiar topics, they often resorted to prior knowledge to answer the inference question even when the text provided explicit information that could have been used” (This point of anchoring and structure was evident in my Destination reader lessons in my SE1 placement. A Hackney Learning Trust scheme it encourages children to infer and predict what may happen in the story, as well as encouraging discussion about connections that could be <https://assignbuster.com/effectiveness-of-understanding-prior-child-learning-for-teaching/>

made through. Children are expected to make these connections with previous reading and their life experiences.

### Making meaning through making connections

The importance of children being aware of and connecting to prior knowledge is also highlighted by Piaget in his concept of schemas. Piaget theory of cognitive development suggested that humans are unable to automatically understand and use information that they have been given because they need to construct their prior knowledge through prior personal experiences to enable them to create mental images. He says that humans learn by constructing their own knowledge. The primary role of teacher should be to motivate the children to create their own knowledge through their personal experiences. Teachers are merely facilitators who support learners in the learning process. Learners should take control in making decisions in line with their needs and cognitive state. Piaget advocated non-intervention saying that everything one teaches a child prevents him from inventing or discovering. He believed that children develop knowledge through active participation in their learning. Learners will build their own knowledge through experience. This experience will help them build mental models which they will further develop through assimilation and accommodation. These are called schemas.

Schematic knowledge relates and reminds us of what we already know and fits into our exemplars and prototypes (Doherty and Hughes, 2014). As an individual makes sense of the world these schemes are constantly changing and adapting based on experiences that contradict the existing scheme.

They are unique to an individual and provide a “ viable interpretation of the evidence at hand” (Schuh, 2017 p. 33). Much like Vygotsky he saw children as active learners who make connections and understanding through interaction and exploration of the world. Cognitive development occurs when children can fit these new events, ideas and objects with previously discovered and understood prototypes and exemplars and organized into a set of related concepts. Learning is not so much a process of acquiring new knowledge, but of reconstructing our existing schemas. Children are active and motivated learners (Crowley, 2014). Through their action, they construct schemas (mental concept). Every Schema is coordinated with other schemata. New information is integrated and interrelated with the knowledge structure that already exists in the mind of child.

Learning occurs not by passive reception of transmitted information, but by active interaction with objects and ideas. The nature of this interaction is an adaptation involving three mental processes described by Piaget.

1. Assimilation - integrating new information with existing knowledge is a cognitive process(making information to fit)
2. accommodation- the change that occurs in the mental structure of the child (changing information to fit). The process of cognitive development is the result of a series of related assimilations and accommodations.
3. Equilibrium - mental balance of information

Much like in the study of mathematics, children can estimate that  $123 + 987$  would be 1000 due to their early acquisition of number bonds. Schema

theory therefore reinforces the notion that prior knowledge and the organization of it provides memory aids that a learner can hook and connect to (Merriam, Caffarella & Baumgartner, 2007). His model of child development and learning suggests that children, depending of their level of development, create mental maps or cognitive structures that enable them to understand their environment. If new information is presented that fits into existing structures, the child incorporates (assimilates) the information. If it does not fit into a structure, the child accommodates it, that is, constructs new mental structures into which it fits. In doing so, the child continually constructs his or her understanding of the world around him or her. In terms of learning, application of Piaget's theories requires, first, that educators teach content for which the child is developmentally ready and second, that educators use children's previous knowledge to help them assimilate or accommodate new information (Stofflett. and Stoddart, 1994).

#### Eliciting prior knowledge to scaffold

The Vygotskyian sociocultural thinking cites the importance of the outside world and how minds are "born in and shaped by society" (Sillock, 2013, p. 317). Vygotsky saw children as active explorers that use the environment and interactions with it as shaping how children engage with and understand the world. Children enter a Zone of proximal development (ZPD) as they are unable to engage interpedently and seek the assistance of others, namely a more knowledgeable other (MKO). TLRP 4 stresses the importance of teacher scaffolding to promote effective teaching and learning (James and Pollard, 2011, p. 284).

They move from one stage of development to another, the social plane to the psychological plane as they acquire higher mental functions (Crowley, 2014). In a school setting the MKO could be a teacher or peer, but both use the prior knowledge of the learner to guide him/her. As the Cambridge Primary Review (CPR) writes, 'the width of the zone is determined by how fast or how much the child is able to learn from the teacher (adult or peer)' (2011, p 95). Understanding the prior knowledge of the individual is at the heart of Vygotsky's theory of the ZPD. Bruner's (1983) notion of scaffolding provides the process whereby the MKO guides and assists the learner "beyond what they are currently capable of achieving on their own" (Crowley, 2014). Here the teacher's needs to understand the current level of attainment of the child, as well as their expected levels.

Tharp and Gallimore, while acknowledging the term scaffolding, prefer the idea of 'means of assisting'. For them: 'Teaching consists in assisting performance through the ZPD. Teaching can be said to occur when assistance is offered at points in the ZPD at which performance requires assistance' (1991, p. 46). The MKO may activate prior knowledge allowing new information to be added and understood. Through the elicitation of prior knowledge and understanding of a child's prior experience this is possible. Providing guidance through a zone which adequately challenges and extends the learning of the child, can only be effectively achieved through a gradual process. children are able to create a network of interconnected ideas as they are built on a transferred through the ZPD based on an acceptance of what is already known (Sillock, 2011, p. 320). In the science classroom this can be a specific skill though making predictions. During my SE1B I encouraged my

class to make predictions about shadows and where they thought they would be in relation to an object. Asking “ where have you seen shadows before?” and “ what do you think is needed to create a shadow?” made children think back to what they had seen previously but may have not connected as being related to light. The children’s ideas of light and dark as well as a general knowledge of shadows was used to bridge the new knowledge being learnt.

### Creating the basis for meaningful learning

Ausubel (1998) was influenced by the teachings of Piaget in relation to how learners acquire knowledge. Much like the schema model his theory focused on how context and new knowledge can be interpreted and understood by incorporating this new material into an already established cognitive structure. Ausubel himself highlighted how vital prior knowledge can be in shaping how a child learns and teachers should take time and care in connecting this with the new information being taught. He believed that recognizing what the learner already knows is the one principle that all of educational psychology could be reduced down to (Novak, 1990). He defined this as “ all the knowledge we have acquired as well as the relationships among the facts, concepts, and principles that makes up that knowledge” (cited in: Al Tamimi, 2017, p. 283 ). This foundation of knowledge is organized hierarchically and subsumption allows for previously unknown and unfamiliar concepts to be incorporated into already established structures (Lee, 2012) Once a child has related unfamiliar concepts to what is already known, relationships between concepts and ideas can be seen. This creates the opportunity for meaningful learning. The new information needs a stable cognitive structure to already be established for it to be hierarchically



ordered allowing for the opportunity to create meaning and higher order thinking. The recognition of links and relationships is only possible through anchoring and integrating with the prior cognitive knowledge structure. Effective learning can now take place as it isn't isolated from any context, but instead internalized and stored in long term memory alongside examples and experience from the past. Ausubel places responsibility on the teacher to guide the learners through this process. Teaching should follow a deductive order of five logical steps. These are outlined below:

*1) Assess what prior knowledge the student already possesses relevant to their cognitive structure.*

*2) Provide a context and organizer which the children can then use to anchor new material to within their already established cognitive structure.*

*3) The presentation of organized and clear new information. Continued assessment of learning (AFL) should ensure that the new material is being subsumed and integrated into the structures.*

*4) Sufficient practice and drill to ensure that the material is being thoroughly learned and understood. AFL here should ensure it's not being rote-learned but instead is being integrated and understood at a deeper level.*

*5) Finally, the teacher should guide the student through a problem solving activity whereby the new knowledge can be applied. This should engage higher order thinking skills.*

(Ivie, 1998, p. 41)

These five steps, if successfully executed should guarantee that a secure foundation has been laid to move learning forward. He additionally outlines three variables that influence meaningful verbal learning: (1) the availability of relevant and inclusive subsuming concepts, (2) the degree that subsumers can be discriminated, and (3) the stability and clarity of subsuming concepts (Ausubel, 1962, pp. 219-220). One can assume that the role of the teacher and educator is to consider these variables by investigating and providing the appropriate subsumers to facilitate meaningful verbal learning (Kumagai, 2013). The teacher must scaffold and support the children to extend the sufficient sphere of knowledge.

The structures here allow for a child once they have internalized and implemented this new information amongst his or her prior knowledge, it can then be applied in a problem solving activity which promotes higher order thinking and meaningful learning. Much like the revised Taxonomy it has a broader understanding of how children can apply knowledge to a variety of situations, not simply the acquisition of knowledge (Mayer, 2002). This process promotes the retention of knowledge, whereby the learner can remember what they have learned, but more importantly the transfer of this knowledge. Transfer requires the ability to make sense of what they have learned and to apply it and use it. It promotes and emphasizes the future of learning. Understand, apply, analyse, evaluate and create were revised in the taxonomy to reflect the cognitive dimension of the learning process (Anderson and Krathwohl, 2001, p. 46.)

Higher order thinking relies on a child understanding a concept after they have made connections and integrated it. It is only once this has happened <https://assignbuster.com/effectiveness-of-understanding-prior-child-learning-for-teaching/>

that the new internalized concepts can be applied and used in other ways. The child should be able to then change the form of representation to another with ease through seeing connections and links.

These five stages are in contrast to rote learning which is simply the recalling and memorization of facts, the Remember of Bloom's taxonomy. In order for higher order thinking to happen amongst children, teaching needs to avoid being arbitrary and isolated. Not integrating and anchoring to prior knowledge may serve a short-term purpose, but pupils may struggle to see the relevance and deep meaning behind these new concepts. This is common in mathematics as it involves the memorization of many individual facts and routines making it susceptible to simply being remembered rather than understood at a deeper level (Haylock and Thangata, 2007). Because rote learning does not always rely on anchoring new knowledge to prior knowledge it can only simply recall and retain information, rather than seeing context and purpose. This helps to explain why meaningful learning is retained longer than rote learning. Children may struggle to see how new information could be applied in context or real-world settings as they have not had ample opportunity to explore it in relation to other forms of knowledge. Strengthening the cognitive structure with relevant and appropriate information helps ensure that the information is retained in long term memory as well as being understood with greater depth and clarity (Ivie, 1998). The most controversial and noteworthy method Ausubel has introduced is "advanced organizers." These are not merely previews of the subject material that is to be presented. Advanced organizers are more general, abstract concepts that will provide the great context to which the

new information can be subsumed and anchored (Ausubel, 1963). For example, before introducing a lesson on brown bears, a teacher might have his/her students read a history and geography of Admiralty Island. By providing this advanced organizer, students may have a better chance of organizing the information regarding the brown bear's habitat, territorial patterns, and nutrition.

Advance organizers are believed to have different results for good versus slow learners. Because most good learners already have the ability to organize new information, the organizers have little additional effect. However, for slow learners, Ausubel and Fitzgerald believe that organizers are extremely helpful as this group of students needs additional help structuring their thinking (Fitzgerald, 1962).

The role of the learner in this type of learning is not as significant as the teacher role. This is because this theory is more concerned about how the students meaningfully learn through verbal learning other than experimental learning. Discussion and prompt from a teacher is key to ensure that meaningful learning takes place. Therefore, the learning process depend on teachers significantly. Teachers have to enable learners to instruct new knowledge based on their existing knowledge (Kumagai, 2013)

#### Development of metacognitive thinking

Introduced by Flavell in the 1970's, the term metacognition refers to the ability to be self-reflexive and to know how to think about one's own learning. It is the ' the individual's own awareness and consideration of his or her cognitive processes and strategies' (Flavell 1979 cited in: Fisher, 1998 ).  
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Knowledge of cognition refers to what individuals know about own cognition or about cognition in general. It usually includes three different kinds of metacognitive awareness: declarative, procedural, and conditional knowledge (Brown, 1987; Jacobs and Paris, 1987). Declarative knowledge refers to knowing “ about” things. Procedural knowledge to knowing “ how” to do things. Conditional knowledge refers to the “ why” and “ when” aspects of cognition (Schraw, 1995).

Vygotsky (1962) was one of the first to realise that conscious reflective control and deliberate mastery were essential factors in school learning. He suggested there were two factors in the development of knowledge, first its automatic unconscious acquisition followed by a gradual increase in active conscious control over that knowledge, which essentially marked a separation between cognitive and metacognitive aspects of performance. Flavell argues that if we can bring the process of learning to a conscious level, we can help children to be more aware of their own thought processes and help them to gain control or mastery over the organization of their learning (Flavell *et al*, 1995). On this view effective learning is not just the manipulation of information so that it is integrated into an existing knowledge base, but also involves directing one’s attention to what has been assimilated, understanding the relationship between the new information and what is already known, understanding the processes which facilitated this, and being aware when something new has actually been learned.

One method used to promote engagement and support metacognitive processes is advance (orienting) questioning (Anderson & Biddle, 1975;

Andre, 1987; Andre & Thieman, 1988; Hamilton, 1985; King, 1992; Pressley, <https://assignbuster.com/effectiveness-of-understanding-prior-child-learning-for-teaching/>

Tenenbaum, McDaniel, & Wood, 1990). Orienting questions provide a perspective from which learners can selectively anticipate learning needs, identify relevant from irrelevant information, and monitor comprehension accordingly. The success of orienting questions is influenced by the availability of prior knowledge. Individuals with significant prior content knowledge can activate available schemata to both extend and modify existing representations, whereas those with little or no background knowledge have relatively few content-based resources to draw upon. However, even in relatively unfamiliar domains, individuals often possess *content relevant knowledge that* aids in their understanding of new concepts (Hannafin & Hooper, 1993). Orienting activities, especially those emphasizing concept-relevant knowledge over content-relevant knowledge, provide the means through which learners can identify, activate, and evaluate their own learning processes and integrate knowledge more completely. They prompt the learner to make associations with existing knowledge and provide an opportunity for learners select appropriate tools and strategies for the task (Schraw, 1995).

### Conclusion:

The primary classroom should not just be a place of memorization and recalling, but the establishment of meaningful learning. This in turn will allow individual to address how they can understand the relationships, processes and manipulation of new information. Separating cognition from metacognition is making the awareness of how we learn to a conscious level helping individuals master and gain control over how they learn and organize information (Fisher, 1998). Knowing about links made and relationships

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between schemes of knowledge should help children understand when to use and apply strategies. Additionally, metacognitive thinking, drawn out by understanding prior knowledge, allows for learners to be self-reflective and regulatory as they can monitor their own performance (Lai, 2011). Once children have made connections and links between information they are able to build relationships and a meaningful knowledge base. This base can then serve as a tool for metacognitive thinking as the children can think about what they know, but also what they do not know and would like to know. “Thinking about thinking” allows for children to address gaps and reflect critically on their own learning. Activating prior knowledge allows for metacognitive thinking as the individual can assess how much they already know, what strategies are needed and how they may need to adapt in order to solve a problem. It makes the learner aware of their self-knowledge in relation to strengths and weaknesses and will affect how a learner approaches new information (Pintrich, 2002).

That is to say, students need a personal connection to the material, whether that’s through engaging them emotionally or connecting the new information with previously acquired knowledge. In addition, making the information personally relevant can also improve the self-referent encoding of knowledge. Without this relevance, students may not only disengage and quickly forget, but they may also lose the motivation to try. (Bernard, 2010)

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