

Synthesizing Sociocultural and Behaviorist Approaches for Developing Higher Order Thinking Skills

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ABSTRACT

Effective development of students' higher order thinking skills (HOTS) has always been the focal point of teaching-learning activities. Pedagogical researchers have been focusing on finding out the ways for effective development of HOTS of students. The study explores the Vygotsky's scaffolding and Skinner's operant conditioning concepts in order to synthesize them for improved development of HOTS of students. The researchers have opted for a limited scale meta-analysis of the researches related to scaffolding and operant conditioning to find the possibility of a synthesized model for improved students learning. Using logical positivism the study tried to answer that How Vygotsky's concept of scaffolding and Operant conditioning can be synthesized to promote higher order thinking skills and what type of scaffolding activities can be used in the class. The study has suggested a theoretical model and activities using Vygotsky's scaffolding and Skinner's operant conditioning model to develop higher order thinking skills among students.

Keywords: Scaffolding, Operant conditioning, Higher Order Thinking Skills

INTRODUCTION

For humans the concept of learning is very important. Learning is not just associated with school, the process of learning starts from birth to death. Learning is a natural process that occurs in all living species, including humans and animals. Learning is the essential part of human life. Learning has an impact on a child's development. Through the process of learning and imitation of traditions and interaction with society the child acquire new habits. Learning helps in strengthening the intellectual abilities. Learning develops good and bad decisions, conceptions of justice and aesthetic sense, and so forth.

This learning process continues throughout one's life. Maturity is built on the foundation of learning.

Now in educational settings learning is connected with exam or accomplishment scores, some measurable consequence, or some measure of cognitive capacity or academic aptitude. This means that a teacher's responsibility to increase the mental ability of the students he/she has to offer curriculum and then adopt the method to deliver the knowledge to the students, where errors may have occurred, and this thing can affect the students' develop and also build a pressure to gain knowledge rather than gain the knowledge. There are several factors that can influence our ability to learn (Nagel & Scholes, 2016). Teachers should build more than fundamental abilities in their classrooms for the mental growth of their students. Teachers' should develop the objectives to create Teachers should focus on students' higher order thinking skill, critical thinking, problem solving ability and logical reasoning by developing the objectives and plan the teaching methodologies according to them (Lewis & Smith, 1993).

Higher Order Thinking Skills is a talent that seems to be difficult for students to be master in it due to the lack of help and practice with the skills provided by teachers. Sometimes the teachers' efficiency in using a variety of strategies and tactics in teaching and learning sessions has increased the difficulty for students in mastering higher order thinking skills. As a result, teachers must acquire and practice a variety of approaches and methods for conducting teaching and learning sessions in order to develop these skills among the students. Through this students' minds are transformed to correspond with their educational goals (Abosalem, 2016).

Scaffolding is a constructional term that refers to the supports that help the students to reach higher order thinking. It refers to a multiple instructional approaches used in education to assist students get a better comprehension of what they're studying and more freedom in their own learning and development. Educational scaffolds, or supports, can be added, adjusted, and removed according to the needs of the group that an educator is working with, much like a building scaffold supports a construction worker while they build. Scaffolding assists students in mastering a variety of activities that contribute to learning goals and outcomes, and it can help students become more self sufficient in their learning (Reiser, 2004).

Students' learning is can't be done without teaching. Learning is a multifaceted that has been explained in a variety of ways. Operant conditioning is a type of learning in which the consequences of behavior influence and change with the behavior occurring. The students' reward or punishment is determined by their actions (Dad, Ali, Janjua, Shahzad, & Khan, 2010). The use of right behavior is essential for the teacher; teacher can develop the higher order thinking skill in students by guiding them through scaffolding and strengthen their skills by using reinforcement. Teacher is responsible for the effective classroom in developing the higher order thinking skills among the students. For this teachers use reinforcement to motivates the students to improve their learning.

Statement of the problem

Due to the traditional teaching and learning strategies students are not expert in higher order thinking skills that's the reason they would not enable to achieve their educational

objectives. It is a major hurdle for that the students are facing during learning. Teachers are facing problems while teaching to their students, to develop the higher order thinking skills in students is also a big challenge for teacher. It is suggested that combining the concept of Scaffolding from the theory of Socio-cultural theory of Vygotsky and Reinforcement from Operant Conditioning to improving the Higher order thinking skills as per Blooms Taxonomy may work better.

Rational of the Study

Teachers have to effectively fulfill all the responsibilities that are given to them. Selection of the appropriate teaching method for the students' development and improvement in their learning skills is still a question mark. Efficiency of rewards and punishments impact on students' learning. Teacher as a facilitator can improve the students learning by guiding and using reinforcement.

Significance of the Study

Due to the lack of knowledge, nonprofessional teachers, frequently pick and utilize improper teaching methods, reinforcement techniques for the students. As a result instructional process doesn't have contribution in improving the students learning abilities. Teacher by using systematic scaffolding methods can improve the students' higher order thinking skills. Through the use of various scaffolding tactics can be resulted in student products, reflections, and observations. To improve the student's critical thinking ability and to motivate them, to give their best teacher can incorporate the Skinner's Operant Conditioning, which have two key characteristics (1) positive reinforcement (2) negative reinforcement techniques. It works as effective aid to improve the students learning process.

The importance and significance of scaffolding and reinforcements shown in the learning process, and the synthesis of these two theories is very help fill in effective learning of the students in building this higher order thinking skills. Because they lack awareness of current teaching practices, teachers frequently used unsuitable teaching methods and reinforcement technique in class. If the teachers' modify their teaching methods it can be helpful in developing the students' abilities and affect change in students' behavior towards their studies.

- **Research Questions:**
- How Vygotsky's concept of scaffolding and Operant conditioning can be synthesized to promote higher order thinking skills
- What type of scaffolding activities can be used in the class?

Learning Theory

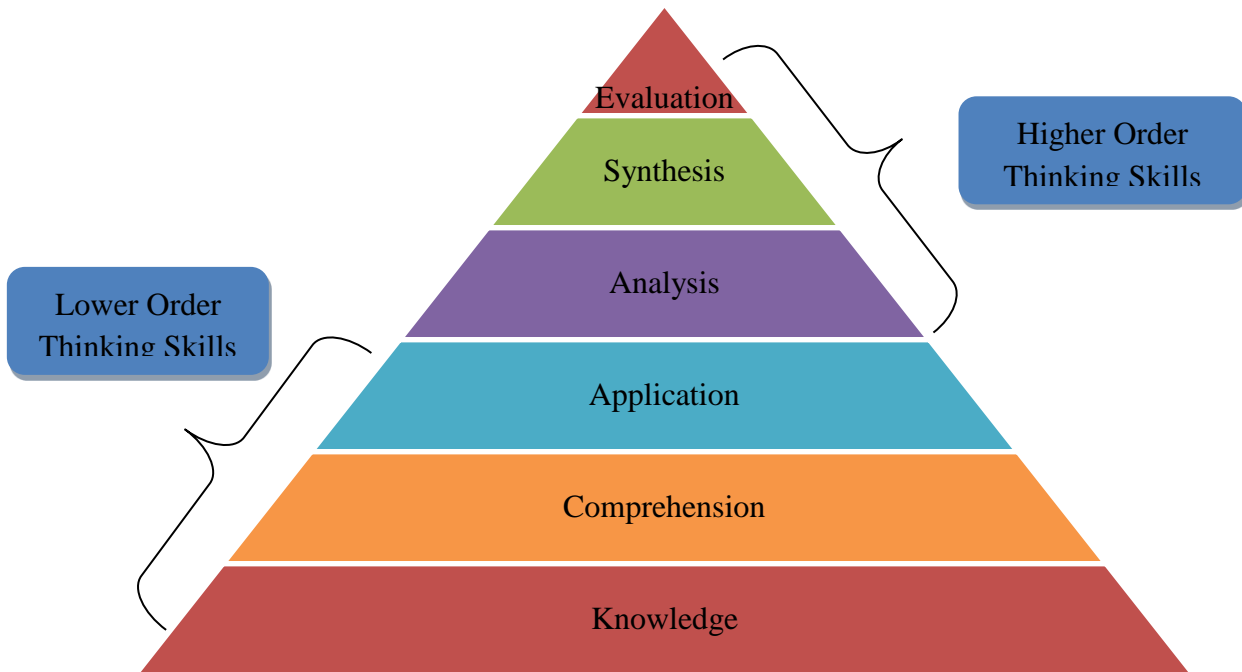
Learning is a multi phase process that allows a person to change in behavior and experience, knowledge, skills and attitudes. There are many learning theories exist that help us to explain the way humans learn. The learning theories are used to try to describe how adults and children learn so through this we can understand the multiple processes involved in learning. There are several teaching strategies that are supporting these learning theories and have been proved to have effects on a persons' learning. Teachers' have many responsibilities and they have to value each one; each responsibility play its important part in achieving learning objectives. Many teachers adopt a wide range of teaching styles, while others teachers stick to tried only traditional methods. The most successful teaching approach is to use the multiple strategies to improve the students' learning according to the environment and individual needs (Strauch & Al Omar, 2014).

Higher Order Thinking Skills

The concept of higher order thinking skills among the students are today considered a ability that every student must have these expertise in order to be prepared to meet the current needs. The term higher order thinking skills represent the students who are actively growing understanding through the process of linking existing information and new knowledge (Kadir, Abdullah, & Alias, 2019).

There are two kinds of thinking skills lower thinking skills and higher thinking skills. Simply understand and application of the actions is required for lower cognitive skills. Students must use higher level thinking abilities to comprehend, analyze, and develop new knowledge. The terms of higher and lower thinking skills are close to each other. Splitting thinking skills into two groups will help the teachers in creating exercises so that the students who have lower thinking skill can be able to move to the higher order thinking skills (Abosalem, 2016).

Teachers describe the lower thinking skills as the remembering, understanding and application skills whereas higher order thinking skills as the skills that develop when a student acquires new knowledge and stores it in his memory and then he/she can easily correlates, organizes, or evaluates that knowledge to accomplish a specific goal. These higher order thinking skills must include sub skills like analysis, synthesis, and evaluation, which are at higher level of the Bloom's Taxonomy (Anderson & Krathwohl, 2001).



Blooms' Taxonomy Hierarchy

Due to the casual attitudes of certain teachers who teach with the intention of spoon feeding of the students and didn't allow them to move from their set pattern, the process effect the development process of higher order thinking skills. The teachers' main intention is to guarantee that the students pass the examination while also ensuring that the syllabus is finished within the stipulated time period, ignoring the students' mental transformation (Abosalem, 2016).

Now today curriculum developer, teachers and examiners use the Bloom's Taxonomy while setting the educational objectives that clearly indicates the development of higher order thinking skills among the students.

Scaffolding

According to Vygotsky's sociocultural theory child's social interactions not only impact cognitive development, but also mold and shape the child's schemas and thought processes. Children's understandings of the world are formed when they participate in activities in their social contexts. Culture is basic and essential component for the cognitive development of the child because it enables the child to go above his/her physical and mental domains.

Vygotsky gave the basic term of zone of proximal development in his theory. Vygotsky believes that it's a child real development when his/her cognitive level reach at that level that they are competent enough that they can solve their problems independently. The zone of proximal development is the cognitive level at which children can solve issues with the help of a more skilled person (Moreno, 2010).

Lev Vygotsky did not use the term of scaffolding in his writings, it is often recognized to be derived from his concepts and point of views on development, learning, and education (Moreno, 2010). In education Jerome Bruner was the first who used the term of

scaffolding to characterize and explain the interaction that happens inside the Zone of Proximal Development. It is attached with the concept of Lev Vygotsky's work (Reiser, 2004).

Scaffolding is when a teacher, any adult (parents, siblings or any person from society), or a classmate gives temporary assistance to a student. Scaffolding is a teaching strategy in which teacher gives support to the student at the early stage of the learning during the process of zone of proximal development. When the students start taking the responsibility for their own learning, the support of the teacher may be gradually reduced throughout the latter phases of learning (Reiser, 2004).

Scaffolding and Higher Order Learning Skills

Teachers must have to incorporate the teaching techniques in their teaching to inspire students and make the teaching learning process more interesting. Scaffolding is a temporary structured support made up for the students to help them in their learning. Today this idea is widely adapted to the educational setting, to enhance the students' higher order thinking skills. As a result, scaffolding may be defined as an instructional procedure in which an adult or expert assists a less skilled individual in achieving his or her objective.

It's a student centered strategy that allows the students to take an active part in their learning, when the student start organizing the content, developing knowledge and evaluation the teachers' support has gradually removed. Basic aim of the scaffolding is to increase student involvement and engagement, which will help them in developing the critical thinking abilities and problem solving abilities. Scaffolding is to provide supports in order to ensure that students obtain information through productive learning environments. The value of a supporting element in a Teaching and Learning session was demonstrated by the instructors' creation of a systematic framework to monitor the students' progress in gaining information (Reiser, 2004).

Scaffolding involves the teacher's consistent which focus on the students' mental development that is not simple. Instructor focus on the complexity f the task instead of makes it easier for pupils to understand throughout the learning process. Critical thinking, project based learning, collaborating learning problem solving techniques are the few cue cards to provide analogical scaffolding for boosting student retention and scaffolding for higher order thinking (Kapolo, Shaimemanya, Shihomeka, & Nghuumbwa, 2017).

Reinforcement

Operant behavior is defined by a behavior that is controlled by its results. This is the study of changeable behavior that is controlled by the reinforcement is known as operant conditioning. Skinner first time introduced the term of operant conditioning in 1937 in the context of involuntary reactions to distinguish what he was interested in behavior that affects the environment from the Pavlovians' reflex. Although it was a new term but idea that was given was not new. B. F Skinner defines operant conditioning as behavior that is controlled by its consequences; it is in fact very similar to what was previously referred to as instrumental learning and what most people would refer to as habit (Schunk, 2016).

According to the Skinner reinforcements or rewards are the source through which behavior can be sustained rather than a person's free will. In operant conditioning

reinforcement is followed by the reaction. It's all about reinforcement or feedback. It involves the change in behavior through the use of reward delivered following a desired response. It's sometimes referred to as "trial and error" learning (Woolfolk, Winne, & Perry, 2006).

Skinner gave the new term of Operant Conditioning and describe its process by the experiments on animals (rats, pigeons) how animals modified their behavior through reinforcement and punishment. According to the Skinner's theory of operant conditioning behavior is repeated if it is rewarded on the other hand behavior that is punished will be avoided.

Reinforcement is the act of using reinforcers to improve the possibility of a repeating behavior, while reinforcement is the process of using reinforcers to increase the required behavior. The student is encouraged by the teacher when she raises her hand to answer a teacher's question, teachers positive response to listens her with attention and respond on her answer and praises her to keep her involve in the activity. In the future, she will be more activities and willing to raise her hand in class.

Skinner used two terms in his theory:

Positive Reinforcement: Any occasion that strengthens or increases the chance of a behavior is referred to as positive reinforcement. It improves a reaction by adding something good after it.

Negative Reinforcement: Any ocean that weakens or reduces the likelihood of a behavior is referred to as a punishment. It strengthens a response by diminishing or eliminating something unpleasant.

Reinforcement and Students' Higher Order Thinking Skills

To establish the relation between the students' higher order thinking skills and the reinforcements in the classroom for the student is an interesting activity for the educational experts. One of the most important issues is the development of higher order thinking skills in students through the effective pedagogical strategies for according to their needs. The teacher use the effective reinforcement techniques in the classroom on students to achieve the required results from the students.

Students try to give their best for things that make them feel good and they get appreciation from the teachers, this thing indicates that the change in the behavior happens for a cause. They repeat their behavior in order to fulfill the goals they have learned to value. Students used to avoid actions that are associated with discomfort and establish habitual behavior from those that are repeated often. If a behavior can be learnt, it can be unlearned or relearned as well, it's depend on the situation and need. A behavior that is not rewarded by the other will be eventually eliminated.

Teacher through the using appropriate reinforcements strategies in the classroom can effectively manage both for the students' behaviors and for developing the students higher order thinking skills, It leave impact on children attention and motivation toward their learning.

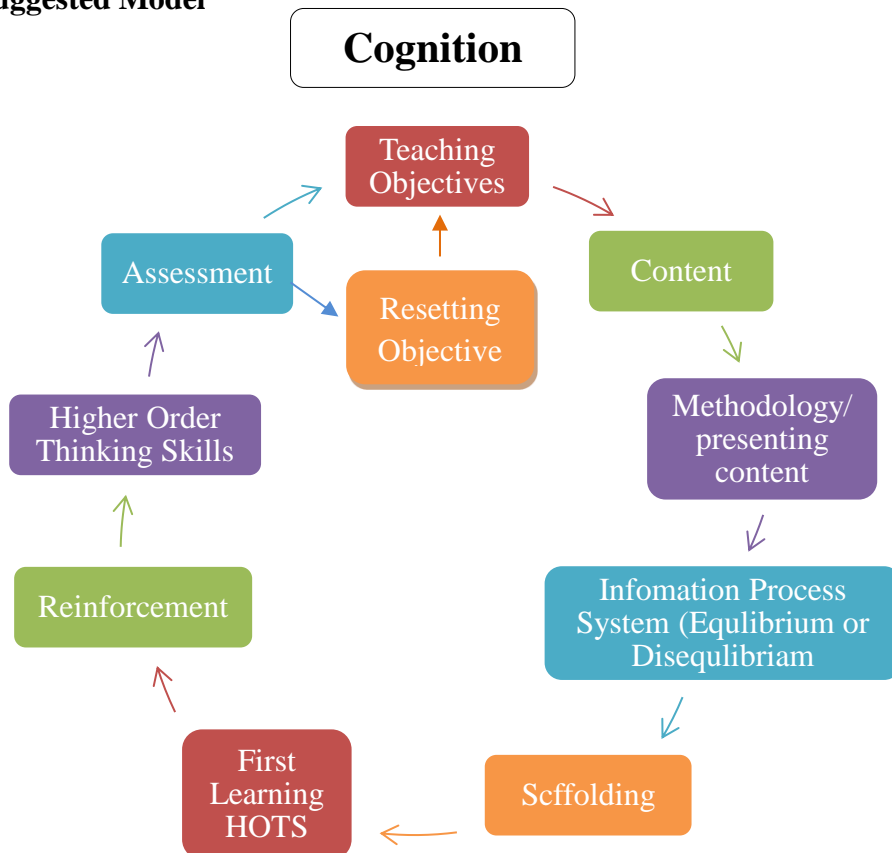
Project based Learning

Project based learning is a learning strategy that is the central point of the projects. Project based learning is a complex tasks based on creative questions or problems that involve students to design, solve the problem, decision making, or analytical activities; allow students to work independently in a given periods of time; and conclude on a realistic products or presentations.

Project based learning is a teaching method that focuses on the learner and has three constructive principles: Learning is context-specific, learners take an active role in the learning process, and they attain their objectives via social interactions and knowledge and understanding exchange. It is related to the inquiry-based learning in which the learning context is given by actual questions and difficulties from the real world activities that lead to meaningful learning experiences (Aksela & Haatainen, 2019).

Problem based learning is a methodology that transform teacher centered classroom into constructivist oriented education through active student centered classroom activity that indirectly incorporates real world issues and experience. Project based learning offer the students potential that is integrated and inclusive, problem based learning and it give the platform to students' to achieve the higher level cognitive learning. Teacher can play his/her role as a facilitators who develop the engagement and convert students' minds to a higher level (Robinson, 2013). Scaffolding refers to the proximal zone in Vygotsky's theory, and it relates to the students' mind transformation process that incorporates the teachers' intervention.

Suggested Model



Teaching Activities

Environment

Scaffolding

These scaffolding activities will attribute in developing the higher order thinking skills among the students. Although these activities are time taking but it teacher plan and arrange them, these will be beneficial for cognition development of the students:

Critical thinking: Critical thinking is known as to what extent student's synthesis and applies existing knowledge to new situations in order to solve issues, make decisions, or make critical assessments. High scores need that a student must be more reliant in their critical thinking abilities.

Teacher will challenge the students to identify and fix a real problem in their classrooms. You may control the settings, such as the time limit, the materials used, and the physical bounds.

Metacognitive self regulation: This strategy consist of three key learning tasks: planning, monitoring, and regulating. Objectives and task analysis are used in planning to find the students' past knowledge that is related to current issue or activity. Teacher as a facilitator will monitoring and keeping track of a student's attention while he or she reads, as well as self-testing and questioning. These regulating activities modify the students' task progress to enhance their performance. High scores suggest a stronger dependence on metacognitive self-control abilities.

Teacher will ask the students to bring a notebook in class. Pose a question at the outset of each class or conversation and allow them five minutes to respond in writing. For example: "What are your objectives for today's activity?" or "How did today's readings change or improve your skill?"

Collaborative learning: The small group structure aids in the distribution of cognitive burden among group members; students divide the learning task and become "experts" in specific area according to their cognition. Small group discussions and debates in the classroom encourage the students' higher-order thinking and the creation of shared knowledge.

In class teacher will allow the students to think about a subject on their own, then make their pairs and allow them to discuss their ideas, then make their small groups and ask them share their ideas and lastly with the entire class. The type of the questions presented determines the success of such initiatives.

Reinforcement

Social reinforcement: Social reinforcement involves the interpersonal relations with teachers, parents, other adults, peers. There appraises are the source of change in a persons' behavior. In school teachers and peers comment are valuable for the students. Teacher will use praises or positive expression to motivate the students for their learning.

Activity reinforcement: Teacher will allow the students to participate in their favorite activities if they behave properly. This is especially helpful if they are given the option of choose a classmate with whom they may play a game or spend internet time.

Token reinforcement: Teacher will announce in the class on the acceptable behavior the student will be rewarded with points or tokens. The awards may be not too costly, but it must have great importance for students that can be further the source of motivation for student to give their best in the class.

Conclusion

The review of scaffolding and operant containing reveals that both theories can be help for students to acquire higher order thinking skills. Cognitivist and behaviorist both school of thoughts are helpful in providing the student and realistic learning environment. According to the both school of thoughts students' motivation and past experience are important. The basic distinction in behaviorist school of thought assume that human behavior is predictable, whereas cognitive approaches take into account the significance of unobservable mental processes and introspection, which are both elements of human behavior. Blending to these theories can strengthen each other and the integration of both these theories can work for the long time for the developing the higher order thinking skill among the students. As the instructional leaders play important role in improving students learning by implementing new ways (Bashir and Usman, 2017; Bashir et al, 2016) so the model needs careful implementation by the school leaders for developing higher order thinking skills among students.

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