IMPLEMENTATION OF ACTIVITY BASED TEACHING AT PRIMARY LEVEL: A THEORETICAL PERSPECTIVE

Khalid Mehmood
Research Scholar,
Department of Education, University of Wah,
Punjab, Pakistan
Email: kmehmood.dte1@gmail.com

Wajiha Kanwal
Assistant Professor,
Department of Education, University of Wah,
Punjab, Pakistan
Email: dr.wajihakanwal@uow.edu.pk

Muhammad Naqeeb ul Khalil Shaheen
Lecturer,
Department of Education, University of Kotli,
AJ&K, Pakistan
Email: naqeeb.shaheen@gmail.com

ABSTRACT

Activity-based teaching is a method of teaching in which the learners are active rather than passive. It is a student-centered teaching method in which the students show their involvement in self-learning and activities. These activities are based on learning strategies designed to increase the self-learning practices and to develop higher cognitive skills among the students and teacher. The major purpose of this study was to review the activity based in the educational settings in terms of its background, examples of its implications in the classrooms, and barriers to its application in the educational settings. The study concluded that the work of John Dewey and Kolb and many other scholars are of worth for the development of activity-based teaching in the world, especially for young children. Moreover, activity-based teaching has been practiced in many forms like dramatization, gamification/quizzes, brainstorming, experimentation, concept mapping, group discussion, role-play, and simulation, etc. Besides, lack of technology and resources in educational institutions in third world countries like Pakistan are major barriers for the implementation of activity-based

teaching in addition to discipline issues, lack of trained teaching faculty, of time and money, etc.

KEYWORDS
Activity-Based Teaching, Barriers, Implementation, Literature, Theoretical Framework

INTRODUCTION

Activity-based teaching is one of the most important teaching methods in our education system. This method has many foundations and focuses on teaching activities. The students can learn through the senses. Consequently, the students can use their senses to learn through personal behavior and experience and can develop their thoughts. Students can understand things based on their thoughts and experience. Activity-based teaching methods can help them enrich their knowledge. According to Rillero's research, the best way to learn how to swim is to let children learn to swim in the water. Therefore, the activity-based teaching method includes a large number of activities that involve students in doing things and thinking about what they are doing (Bonwell & Eison, 1991). In activity-based teaching, learners can do something at the same time without listening to the lectures, such as discovering, processing, and applying information, etc. Activity-based teaching methods require students to find opportunities for meaningful conversations and to listen, write, read and reflect on the content, ideas, problems, and concerns of academic topics. Activity-based teaching is an educational method whose focus is on involving students in action. In activity-based teaching, teachers act as facilitators, helping students to complete the learning process and providing guidance for them. Various actions and tasks can be used in such programs to enable students to participate in the learning process instead of remaining passive (Bonwell & Eison, 1991).

In this connection, Singh (2015) states that using this method one can easily teach a concept, and students' learning is enhanced and concrete learning occurs. Different scholars suggest that Activity Based Learning (ABL) techniques have a very long-lasting and positive influence on students. Many scholars stated that the students who want active learning strategies prefer to learn through activity-based teaching instead of traditional methods. For instance, Shaheen and Kayani (2017) reported in their research that there are significant differences between activity-based learning methods and lecture methods. Besides, Rama (1998) suggested that teachers should adopt active learning methods. They should not treat students as empty jars rather filled with learning materials. Activity-based teaching strategies provide the right direction and the right environment to produce an educational environment. In an activity-based

teaching-learning environment, students can work together, learn by doing, learn by playing, and use cooperative learning, etc. (Rama, 1998).

From above, the importance of activity-based teaching is evident, but here the questions arise: What is the theory behind activity-based teaching? Why are our schools still lagging in activity-based teaching? Is there any barrier to the implementation of activity-based teaching?

RESEARCH OBJECTIVES

This study aims to highlight the theoretical aspects of activity-based teaching. The following major areas were reviewed during this study.

1. Background of activity-based teaching
2. Common examples of using activity-based teaching in the classroom
3. Barriers in implementing activity-based teaching in the classrooms

RESEARCH METHODOLOGY

The study was qualitative in nature and the researchers reviewed existing literature related to activity-based teaching and learning. For this purpose, the researchers reviewed research articles, conference papers, books, periodicals, and internet resources.

LITERATURE REVIEW

Active learning is based on the premise that students learn best when they are actively involved in the learning process. Following are the conclusions based on the review of the related literature.

Background of Activity-based Teaching

Activity-based teaching has a long history. However, until 1920 this approach was not very popular in use although Dewey presented the idea of learning by doing in 1897 in a parent's teachers meeting at his laboratory school in Chicago (U.S.A.). Activity is the natural urge of the child as he wants to do things by himself. But the idea did not become popular. In the mid of twentieth century, David Horsburgh was the first educationist who introduced activity-based teaching. He opened a school in Kolar in 1944. The name of his school was Neel Bagh. This school has a variety of curriculum which included music, sewing, gardening, carpentry, pottery, and many other subjects. He planned systematically all the things through sketches and drawing (Murray, Donohoe & Goodhew, 2004). Hence, the concept of activity-based teaching emerged on the surface of curricula. Here, it is important to highlight the work of Dewey and Kolb for promoting activity-based teaching, especially at the primary level.

John Dewey's Learning by Doing

John Dewey is a great scholar, known for his learning theory called "learning by doing", which is conceptualized as experiential learning (Griffin, 1992). This theory is closely related to William James' pragmatic philosophy (Shaheen, Ullah & Shah, 2019). William James' thinking became famous and now it is called "constructivism". Constructivist thinking has influenced activity-based teaching. According to the learning ideas of constructivism, anyone can "build" his/her knowledge and learning process. This process is based on his/her previous experience. The theory holds that learning occurs when an individual's mental environment interacts with specific structures. For students, various activities must be carried out in active classrooms (Abdelhamid, 2003).

Dewey's learning by doing gives us a direction towards activity-based teaching. Theoretical development of educational activities can be summarized in the form of an overarching exploration, this is for the search for identification of him/herself. John Deweyian pragmatism worked for a long time over a sort of "quest for certainty" in terms of bounding and operationalizing the term "experiential education." There are many concerns on the definition of experiential education. Further, there are many new terms mixed in it like, "outdoor education," "adventure education," "environmental education" and "challenge education" (Adkins & Simmons, 2002; Robert, 2014). All these have a concept that students must be allowed to learn by doing or themselves. This implies a child-centered approach to the teaching-learning process.

Kolb's Experiential Learning Model

An ancient Chinese proverb is "I hear, and I forget. I see, and I remember. I do, and I understand". In this regard, David Kolb proposed his four stages model. Later, he established a learning style. According to the research of Robert (2014), in Kolb's experiential learning cycle the learner touches following basics:

1. Specific experience: This experience can be obtained by encountering new experience or situations or reinterpreting existing experience.
2. Reflective observation of new experience: It includes any inconsistency between experience and understanding.
3. Abstract conceptualization: Reflective observation of new experiences provides new concepts or remodeling of existing abstract concepts that people learn from experience.
4. Active experiment: Learners apply their ideas to the world around them and see what happens.

According to McLeod (2017), effective learning is seen when a person goes through

these four stages of learning. These stages of Kolb's Experiential Learning Model are briefly described below.

1. First Stage: A person has concrete knowledge or experience, and this will lead to the next level.
2. Second Stage: One can observe and have a reflection on those experiences which will lead to the third domain.
3. Third Stage: In this stage formation took place. Now concepts build through analysis and conclusions and finally, it moved towards the last stage.
4. Fourth Stage: At this stage, concepts are used to test a hypothesis in future situations and as a result, a new experience is gained.

For effective learning, it is necessary to follow all these stages. No the stage alone can be fruitful for learning (McLeod, 2017). Many scholars have hypothesized their studies to find out the effectiveness of activity-based teaching on the learning outcomes of a student. Educational activities emphasize the active role of learners now a day. This role focuses on individual involvement during the course; therefore, it needs to create awareness of how a learner can engage in the learning process and how they can affect the learning outcomes. It is necessary to aware educators how a learner's engagement in the learning process can change the success level. Today there is a severe need for new learning approaches. These approaches should be goal-oriented and clear. This will help the learner to involve in learning experiences with full commitment. Shaheen, Shah, and Naqeeb (2019) pointed out that when we use the experience-based learning framework, then our students become more active and progressive. They become more responsible towards their learning. They live in the real-life world and relate to things around them. This approach is considered much productive. Many types of research emphasized this learning approach. Now, after a long time, the educational institutions of Pakistan realized the importance of activity-based teaching and now the departments are developing activity-based learning material (Shaheen & Kayani, 2017). Hence, the application of activity-based teaching is now evident.

Application of Kolb's Theory in Activity-based Teaching

This theory may be applied in different fields of life. Learning is the process of creating knowledge through the transformation of experience (Dunlap, Dobrovolny & Young, 2008). Kolb suggests that each learner must go through all four stages to complete the learning experience. Through these four stages, a theme may be fully discovered. Different learning methods and activities can be applied to obtain learning results. Each learning method has certain variables. These are doing, watching, thinking, and feeling. You can observe these variables at each stage of Kolb's Experiential Learning

Cycle (ELC). Every student has his/her way of learning. This means that people can choose a style, but they must respond and need to stimulate. Kolb's Experiential Learning Cycle (ELC) provides opportunities to carry out activities in various ways of learning. In this particular learning cycle, the learner preferences can also be determined (McLeod, 2017).

Although, at the primary level, the majority of the educational managers and other stakeholders consider experiential learning theory, the most prominent and result-oriented, however, some of the scholars criticized the so-called experiential learning theory. Disapproval is on theoretical and empirical grounds (Kayes, 2002). For instance, some critics like Holman, Pavlica, and Thorpe (1997) criticized the experiential learning theory from the social point of view. From their point of view, the theory overemphasizes the role of the individual and takes the learning process out of context. The proposed social components of emotional learning activities counteract cognitive bias in experiential learning theory. In addition to these arguments, there is a big difference between the value of appreciation and the value of classroom practice. Many teachers prefer student-centered learning theories while practicing teacher-centered methods (Breunig, 2017). Hence, there is a split up between the experimental learning theory and the current classroom practices. Besides, some scholars believe that learning does not occur in a certain e order, so the steps overlap with each other, so it is impossible to build this model accordingly. ECL does not combine different learning aspects of culture, history, and society (Beard & Wilson, 2006).

Despite some criticism of Kolb, many benefits can be obtained through this theory. Although Kolb’s ELC cannot be applied sequentially to hands-on activities, however, Kolb’s ELC is often used to analyze differences in learning styles among various student groups (Kulturel-Konak, D’Allegro & Dickinson, 2011).

Some scholars also suggested using Kolb's ELC to improve classroom activities. Svinicki and Dixon (1987) are one of them. They recommended Kolb's ELC for classroom activities. They also pointed out some teaching activities that can support Kolb's ELC at different stages in a wide range of fields. Stice (1987) also described a series of different learning strategies, including all four stages of Kolb’s ELC. These strategies improve learning activities (Abdulwahed and Nagy, 2009). Kolb's ELC has many similarities with another teaching method (Conole, Dyke, Oliver & Seale, 2004) but there are some differences too. The first and main difference is that Kolb’s ELC claims that experience is the foundation of learning, while others are not. There are two other ways to focus on active learning. For instance, laboratory-centered teaching and process-oriented guided inquiry learning (POGIL) are examples of engaging

students in various activities (Titterton, Lewis & Clancy, 2010). In these methods, students are required to perform scheduled activities, and students are required to use their knowledge instead of listening to lectures. Laboratory-centric teaching uses different quizzes, discussion and reflection sessions, projects, and self-assessments. Process-oriented guided query learning (POGIL) uses query activities, which are usually designed based on research processes. Process-oriented guided query learning (POGIL) activities are designed around three stages:

1. In the exploration phase, students make assumptions using known data.
2. In the concept invention stage, students will acquire new knowledge and create new concepts.
3. At the application stage, students apply known data to new questions and verify the information.

Studies have shown that process-oriented query learning (POGIL) uses query activities, which are usually designed based on research processes. Process-oriented guided inquiry learning (POGIL) can be used very successfully in science education. However, it is needed to further refine the Process Oriented Guided Inquiry Learning (POGIL) uses inquiry activities, which are usually designed based on the process of research. Process Oriented Guided Inquiry Learning (POGIL) is used for other activities like skilled-based activities.

Different Examples of Activity-based Teaching at Primary Level

The basic goal of a primary teacher is to involve students in the learning process. These processes should be according to the Intended Learning Outcomes (ILOs). This should be remembered that this is more important what does the student do than what the teacher does (Shaheen, Ullah & Shah, 2019). However, the learning activity should be intentional, meaningful, and useful. Activities should build on previous knowledge. It should enable students to engage with and develop their skills, knowledge and comprehension through these activities. The activities should also be useful for other activities. The useful learning activities are those activities that can be used in other activities with a different context.

Activities that are used in educational setup are the following. These are by no mean an exhaustive list. Any activity can be used which can be the best fit according to the needs and ILOs.

1. Dramatization
2. Gamification / Quizzes
3. Group Discussion
4. Role Play and Simulation

6. Brain Storming
7. Problem-solving
8. Discovery Learning
9. Projects Based Learning
10. Experimentation
11. Concept Mapping

Dramatization

Drama plays a vital role in student learning, especially language learning. It has made important contributions to understanding and appreciating cultural diversity. It encourages students to learn and improve innovation skills. Drama can guide students to learn, and can also improve language level. It can also enhance creativity (Curtis, *et al*., 2013). Music in drama can also enhance and develop emotions. This also helps to build patriotism (Kuimova Uzunboylu, Startseva, & Devyatova, 2016). Participating in dramatization can enhance communication and writing skills (Curtis, *et al*., 2013).

A drama based on literary works is the source of students becoming creative writers and speakers. It helps to clear the understanding and imagination of literary works, because it involves the motives of the characters' actions, conveys tolerance and compassion. Besides, different scholars point out that the usage of drama in education is different. These areas under.

1. Promote learning motivation.
2. Enhance the motivation and enthusiasm for completing tasks.
3. It also reduces the pressure on language learning.
4. Develop auxiliary language communication (tone, pressure, speed, pause, etc.);
5. Develop voice control and the combination of body and language.
6. Enhance oral confidence in verbal and non-verbal communication;
7. Enrich language development.
8. Inspiration for language learning.
9. The drama also develops critical thinking and creativity.
10. Develop cooperation and teamwork skills.
11. It also increases real-world communication in the community (Ahmad & Aziz, 2009).

According to Ahmad and Aziz (2009), this is the most powerful teaching tool that can provide the best return for meeting international labor standards in any language study program.

Gamification / Quizzes

It is phenomena of today that there is a huge impact of the internet on the life of students. Internet is a strong factor which consumes a lot of time of students. Many platforms consume a lot of time of students such as Online games, Facebook, YouTube, WhatsApp, and Twitter, etc. Mobile devices are consuming a lot of time for students. Hence, technology has brought many changes in the life of students. Online games and socializing put a dual impact on students. On one side, they give their valuable time to these sites on the other hand they also affect the students' pattern of learning (Biggs & Tang, 2011). These factors distract the students to engage fully in study.

This is a serious fact that today online learning is introduced which got attention. Now online learning, discussion, and serious video games are played through the internet. These are considered more effective than traditional teaching. Many studies have been conducted in this regard. However, the result showed a mixed response (Kapp, 2012).

In this connection, a new trend has been introduced in education that influences the behavior of a person using games is called "gamification". Gamification can be described as "*the use of game design elements in non-game contexts*" (Deterding et al., 2011). The term gamification is introduced in the recent digital media and after that, it is adopted by the educationists in 2010. Today it is used at a large scale in different categories such as education, entertainment, commerce, health, marketing, mobile, and websites, etc.

Rejeski was the first one who launched a serious game in 2002. These games are dedicated educational games because they use pedagogy to incorporate instructions into the gaming experience. Creating a video game that can attract the attention of learners is a difficult task. The story in the game is carefully designed by the design team, which provides entertainment components, the art team develops the theme, and the programming team develops code that meets the needs of the story (Zyda, 2005). These methods can activate learners and impart knowledge and/or skills to learners.

The purpose of gamification activities is education. Although many researchers believe that serious games and gamification are effective for educational purposes, there is still a lack of high-quality empirical evidence to prove that they can improve learning outcomes (De Freitas & Jarvis, 2007). More rigorous evidence is needed to prove the effectiveness of gamification in improving learning and enhancing our understanding of the nature of the game.

De Freitas and Jarvis (2007) add that for student activities, including classroom

attendance, contributions to tutorial questions, high-standard work, completion of tests, group assignments, answers to exam review questions, and group introductions games are used. In this connection, the gamified quiz software tool, named Quick Quiz, was developed as a mobile web application. Quick Quiz was designed for instructional purpose which includes:

1. MCQs that did not need much thinking.
2. Limited time for answering a question.
3. Participation was voluntary.

Here, a question raised; are games sufficient for learning? There is consensus among educational researchers about this question. The consensus is that computer games are insufficient for general learning (Bransford, Brown, & Cocking, 2000). There is also an opinion that learner should be facilitated and also support should be given to the learner. Thus to motivate the students for learning, the activity should be fascinating. The students should be given feedback for further assistance and also facilitate them during the activity.

Group discussion

Classroom discussion is an important tool in education. Discussion and debates can enhance critical thinking. There are numerous techniques available for this tool. It can be applied in any kind of education. Students may be assigned a topic and asked to defend the said topic. There are different strategies used to find the learning outcomes. One of them is to promote such skills in students so that they may be able to see pro and con grids (Tomey, 2000). In this way, students were able to create grids with the pros and cons or advantages or disadvantages of a problem. After debating, students reported improvements in literature searching, weighing the risks and benefits of treatments, and making evidence-based decisions. There are many strategies and techniques for setting up discussion. Some steps should be kept in mind during the setting discussion in class.

In the first step, preparation is necessary for conducting a fruitful discussion. Enough time is necessary for creating an environment that enhances deliberative skills in students. It is necessary to create such an environment in which students feel safe enough to express their ideas. For this purpose, an ice breaker activity may be conducted.

In step two it should be ensured that all students are involved in discussion preparation. A teacher should understand his role especially in case of controversial issues. The discussion does not need an answer, but it shows a variety of viewpoints.

Brookfield (2005) claims that a teacher should always be a facilitator. So, in step three a teacher must facilitate the students. They should be engaged in discussion. Initially, take a start with a small group discussion. The teacher should not interfere when students are silent on a given topic but s/he should give them a chance to think about it. If the problem remains, then s/he should rephrase the question for understanding (Brookfield, 2005). Discussion may be opened with someone capable to speak with confidence. Avoid sensitive issues such as religious topics or sexual orientation.

In step four, a teacher should always conclude the debate in such a way that all unsaturated aspects are fulfilled. Discussion should close with a positive note. Appreciate and acknowledge the student's efforts and preparation in this regard.

Roleplay and Simulation

Role-playing is an unstructured situation, through which you can check the behavior of students and the beginning of their assigned role" (McKeachie, 1986). Roleplay is usually a spontaneous event, although sometimes they are products that students must prepare in advance (Bonwell & Eison, 1991). Simulations are similar to role play, but they are more structured than role play. Bonwell and Eison (1991) explained that simulation is more accurate than role-playing. It can guide principles, specific rules, and promotion relationships. But, sometimes it takes a lot of time (Bonwell & Eison, 1991). Role-playing requires a situation that never happens in real life, such as Aristotle's behavior on the nature of good and evil in the world. But, On the other hand, simulation usually attempts to model some real-life problems (McKeachie, 1986).

Brainstorming

The purpose of using various teaching methods in different situations is to promote students' learning. Brainstorming is a way for a group to try to find a solution to a problem. Brainstorming is nothing new. In the past four hundred years, a method very similar to brainstorming has been used. The brainstorming method was originally proposed by Osborn in 1938. He used brainstorming to organize thought-seeking ideas. There are some rules about brainstorming (MacKeracher, 2004). Teachers should keep these rules in mind before applying this method. The rules are as follows:

1. Criticism is not allowed under any circumstances. No one can criticize anyone's mistake. However, at the end of the meeting, opinions about different ideas can be discussed.
2. Dream flying: This means that during the meeting, all members should give up their restrictions. The logical and usual red lines should be crossed.
3. Focus on quantity: ideas can be easily classified.

4. Documents: Each idea should be recorded and provided if necessary.
5. Merge and improve ideas: ideas should be completed before discussion and evaluation. If necessary, it can be modified.

Therefore, it can be said that the brainstorming method can be used effectively by the teachers.

Problem Solving

This method allows the students to solve the problems skillfully. Problem-solving methods usually employ concepts rather than processes. Problem-solving techniques are mainly used while teaching school subjects that are mainly composed of structured concepts (Sutherland, 2002). The reason is that our students cannot solve problems outside the classroom. Students can only solve well-structured problems, only mentioned in textbooks (Johnson, 2011). Ulicsak and Wright (2010) strive to improve students' ability to solve this problem, and teachers should use this method by solving problems in daily life. The terms "situational learning" and "holistic learning" are used for real-life learning experiences (MacKeracher, 2004).

Discovery Learning

Discovery learning includes teaching models and strategies that focus on providing students with active hands-on learning opportunities. Bicknell-Holmes and Hoffman (2000) pointed out three main characteristics of discovery learning. these are:
1. Explore and solve problems to create, integrate and generalize knowledge.
2. Student-oriented, interest-based activities, the order, and frequency are determined by the students.
3. Encourage activities that integrate new knowledge into the learner's existing connections.

Through activities, students can build unique experience skills (Bicknell-Holmes & Hoffman, 2000). With this attribute, students can learn without a teacher. This attribute has changed the roles of teachers and students, and many teachers have no courage to face the new changes (Hooks, 1994). The second characteristic of learning is to encourage students to believe in their abilities and learn at their speed (Bicknell-Holmes & Hoffman, 2000). It is found that the third attribute of learning indicates that students can learn based on previous knowledge (Bicknell-Holmes & Hoffman, 2000).

The main goal is to solve problems while participating in learning activities (Mosca & Howard, 1997). The focus of learning is on the final product, materials, process, and

way of learning. This kind of learning not only solves problems but also focuses on analyzing and interpreting the knowledge learned (Bonwell, 1998).

Finding learning failure is considered a positive situation (Bonwell, 1998). Thomas Edison tried 1200 times to make light bulbs, but every time his design failed. Finally, he successfully made a perfect design (Mosca & Howard, 1997). According to Edison, he has learned several designs that do not work properly with the light bulb. Therefore, if the student does not fail in the learning process, then the student may not have learned something new.

Project-based Learning (PBL)

Project-based learning (PBL) is a teaching method in which the students can learn content through the project. Students are required to use their previous knowledge to work on their projects. Chen (2008) proposed the PBL procedure. According to him, as part of interdisciplinary research in Greek middle schools, students are required to choose a specific part of Greek life that is attractive to them. Students choose specific subject areas, such as performing arts, visual arts, science, military, daily life, government, etc. After the students choose the theme, they will conduct an independent inquiry. Each student conducts an independent survey and writes a separate thesis. Some students work on the project as a group. Students will use their multiple intelligences (Gardner, 2000) to prepare a 3-minute lecture as part of the Greek Life Museum. Lectures include theatrical performances of marathons, debates about the goddesses of Greek mythology in Athens mythology, Greek dance, art, and more. This is an example of how PBL works. The same projects may be used in other subjects too.

Experimentation

What is the value of laboratory work in a school? This is the question that is addressed in different studies. There are many findings of laboratory work in school. It sometimes achieves meaningful learning and sometimes not. There are many reasons for this failure but one major reason is that students don't know the purpose of the experiments.

There are so many studies conducted, which have focused on purposes, uses, and learning. These studies have concluded many significant things. Hodson (1990) stated that laboratory work is proved very dull practice. They have to learn and recall so many things. The student is directed by their instructors which shows a teacher-centered approach. The student cannot do any experiment with their own choice. While on the other hand, Gunstone and Champagne (1990) claimed that the laboratory is proved a more productive tool for learning. According to them, the student can learn the true

concept of content in true spirits through the laboratory. They can implement the gained knowledge in their practical life for solving daily problems.

The social sciences are not using the laboratory more frequently than the natural sciences. They are less willing to do experimentation in the laboratory. Therefore, social sciences are considered normally nonexperimental and the reason is that social sciences are, based on observations collected in naturally occurring situations (Morton & Williams, 2008). Many social scientists don't rely on laboratories. They have some objections to it. According to them student participants are unrepresentative, sample sizes are small, and the laboratory produces unrealistic data which is irrelevant to the real world. The idea is on this base that field data is taken superior then laboratory data.

It is also a fact that the lab provides controlled variation. Controlled variation is the basis of experimental scientific knowledge. The laboratory is given a tough environment to take accurate decisions.

Concept Mapping

Due to a large amount of information, our students must obtain a lot of information to understand the content. But obtaining information does not guarantee that knowledge will be created, because information and knowledge are two different things with two different attributes. Therefore, we cannot say that information can acquire knowledge. Information is regarded as raw data, while knowledge is the development of ideas. In other words, knowledge is produced by intellectuals. Concept maps prove the foundation of generative learning theory.

In generative learning, learners play an active role in concept mapping. According to the research of Wittrock (1994), the basis for generating learning models is personal thought. Information resources are not the basis for generating learning models. Concept mapping occurs in two ways. By connecting different parts of external information in a meaningful way, it can develop patterns and create new knowledge. Wittrock (1994) pointed out that the activities involved in concept mapping are classified as generative learning strategies. Learners can develop their concept maps and build meaningful learning. The relationship between concepts is the key to knowledge generation. Concept mapping is the process of giving meaning to content or information.

Concept mapping strategies can help individuals describe the original data in the graph in detail (Novak & Gowin, 1984). Novak's conceptual graph theory consists of ideas. In the construction of concept maps, learners should actively participate in the

classification of basic concepts. It connects individuals in a meaningful way. Novak pointed out that concept maps can influence learning strategies. Some researchers claim that the concept map is a positive tool to improve individual academic level (Gobert & Clement, 1999). Besides, some other studies on concept maps describe different perspectives related to concept-based activities. Grabowski (2004) studied who developed the concept map. Concept maps are developed by learners, experts, or lecturers. The learner's concept map supports the construction of knowledge. Expert concept maps support the transfer of expert understanding. Grabowski (2004) turned his attention to the support provided to learners. However, some scholars lead us to the completion strategy. In this way, learners can gain knowledge of lost information. Novak and Gowin (1984) tell us the step-by-step process of the phenomenon, which enables scholars to create concept maps. In this way, the concept mapping strategy has proved to be an effective tool to enable learners to participate more actively.

Barriers in Implementing Activity Based Teaching

As discussed above, many methods involve activity-based teaching in classrooms. Hence, barriers in implementation vary concerning the type of activity given to the students. But many researchers have pointed out some common barriers that hinder activity-based teaching in primary schools. For instance, Bransford, Brown, and Cocking (2000) stated that weak arguments spoiled discussion, and assumptions are presented instead of facts by the students. Furthermore, a personal attack is seen while the students are engaged in some sort of activity. It is also noted that the group activity usually gives the impression that there are only two possibilities when there may be more. At the time the students attempt emotional blackmailing (Bransford, Brown, & Cocking 2000). Similarly, Fournier-Sylvester (2013) pointed out that controversial issues are raised in the class hence unpredictable situation is developed. Moreover, teachers face problems to establish an environment conducive to activity-based teaching hence the students feel uneasy in the classrooms instead of enjoying the activities.

In this connection, Pivec and Pivec (2011) pointed out that there is a lack of knowledge to conduct such activity in proper format by the teachers. Knowledge of different stages about various activities is essential for gaining fruitful results but there is a lack of such knowledge hence the essence of activity-based teaching is spoiled. Another thing they pointed out that documentation about activities is rather difficult to manage by the teachers at the primary level.

Although several studies concluded that games provided the learner useful skills which are beneficial for their course contents and also transferred the business world. Some

scholars, on the other hand, think that there is a need to temper the games for the intrinsic value (Pivec & Pivec, 2011). The reasons for this phenomena are:
1. Recently applications of educational games are applied in the education sector.
2. The education sector is unaware of the use of serious games (Ulicsak & Wright, 2010).

Pivec and Pivec (2011) further indicated that activity-based teaching is also a threat to the discipline of the class. The students may quarrel resulting in insecurity of the students. During the activates uneven situations may exist and someone may react negatively. Body gestures and veins may angry the other member which will lead to an uneven situation. Moreover, some activities are time-consuming which need a lot of time and money. Moreover, every student is not a performer so they may reluctant to perform such activities. Social status also a hurdle in role-playing. If the students belong to different backgrounds and statuses, they may be reluctant to perform activities together.

Besides, resources are limited in educational institutions in third-world countries like Pakistan, so it is difficult to manage and hold such activities. Furthermore, some activities require the use of technology which is also a barrier in conducting such activities in the primary schools of Pakistan

REFERENCES

Abdelhamid, T. S. (2003). Evaluation of teacher-student learning style the disparity in construction management education. *Journal of Construction Education, 8*(3), 124-145.

Abdulwahed, M., & Nagy, Z. K. (2009). Applying Kolb's experiential learning cycle for laboratory education. *Journal of engineering education, 98*(3), 283-294.

Adkins, C, & Simmons, B. (2002). Outdoor experimental & Environmental education: Converging or diverging approaches? ERIC Clearinghouse on Rural Education and Small Schools, AEL.

Ahmad, F., & Aziz, J. (2009). Students' perception of the teachers' teaching of literature communicating and understanding through the eyes of the audience. *European Journal of social sciences, 7*(3), 17-26.

Beard, C. M., & Wilson, J. P. (2006). *Experiential learning: A best practice handbook for educators and trainers.* Kogan Page Publishers.

Bicknell- Holmes, T., & Hoffman, P. S. (2000). Elicit, engage, experience, explore: Discovery learning in library instruction. *Reference Services Review.*

Biggs, J., & Tang, C. (2011). Train-the-trainers: Implementing outcomes-based teaching and learning in Malaysian higher education. *Malaysian Journal of Learning and Instruction,*

8, 1-19.

Bonwell, C. C. (1998). *Active learning: Energizing the classroom.* In Green Mountain Falls, CO: Active Learning Workshops.

Bonwell, C. C., & Eison, J. A. (1991). *Active Learning: Creating Excitement in the Classroom*. 1991 ASHE-ERIC Higher Education Reports. ERIC Clearinghouse on Higher Education, The George Washington University, One Dupont Circle, Suite 630, Washington, DC 20036-1183.

Bransford, J. D., Brown, A. L., & Cocking, R. (2000). *How people learn*. Washington, DC: National academy press.

Breunig, M. (2017). Experientially learning and teaching in a student-directed classroom. *Journal of Experiential Education, 40*(3), 213-230.

Brookfield, S. D. (2005). The power of critical theory for adult learning and teaching. *The adult learner, 85*.

Chen, N. C. (2008). An educational approach to problem-based learning. *The Kaohsiung journal of medical sciences, 24*, S23-S30.

Conole, G., Dyke, M., Oliver, M., & Seale, J. (2004). Mapping pedagogy and tools for effective learning design. *Computers & Education, 43*(1-2), 17-33.

Curtis, D. J., Howden, M., Curtis, F., McColm, I., Scrine, J., Blomfield, T.,... & Ryan, T. (2013). *Drama and environment: joining forces to engage children and young people in and its critics.* London: Paul Chapman.

De Freitas, S., & Jarvis, S. (2007). Serious games-engaging training solutions: A research and development project for supporting training needs. *British Journal of Educational Technology, 38*(3), 523.

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). *From game design Elements to gratefulness: defining" gamification*". In Proceedings of the 15th international academic MindTrek conference: Envisioning future media environments (pp. 9-15).

Dunlap, J., Dobrovolny, J., & Young, D. (2008). Preparing e-learning designers using Kolb's model of experiential learning. *Innovate: Journal of Online Education, 4*(4).

Fournier-Sylvester, N. (2013). Daring to Debate: Strategies for Teaching Controversial Issues in the Classroom. *College Quarterly, 16*(3), 3.

Gardner,H. E. (2000). *Intelligence reframed: Multiple intelligences for the 21st century.* Hachette UK.

Gobert J. D., & Clement, J. J. (1999). Effects of student-generated diagrams versus student-generated summaries on conceptual understanding of causal and dynamic knowledge in plate tectonics. *Journal of Research in Science Teaching: The Official Journal of the National Association for Research in Science Teaching, 36*(1), 39-53.

Grabowski, B. L. (2004). Generative learning contributions to the design of instruction and learning. *Handbook of research on educational communications and technology, 2*, 719-743.

Griffin, C. (1992). Absorbing experiential learning. In J. Mulligan & C. Griffin (Eds.), *Empowerment through experiential learning* (pp. 31-36). London: Kogan Page.

Gunstone, R. F., & Champagne, A. B. (1990). Promoting conceptual change in the laboratory. *The student laboratory and the science curriculum*, 159-182.

Holman, D., Pavlica, K., & Thorpe, R. (1997). Rethinking Kolb's theory of experiential learning in management education: The contribution of social constructionism and activity theory. *Management Learning, 28*(2), 135-148.

Johnson, P. A. (2011). Problem-based, cooperative learning in the engineering classroom. *Journal of professional issues in engineering education and practice, 125*(1), 8-11.

Kapp, K. M. (2012). *The gamification of learning and instruction: game-based methods and strategies for training and education.* John Wiley & Sons.

Kayes, D. C. (2002). Experiential learning and its critics: Preserving the role of experience in management learning and education. *Academy of Management Learning & Education, 1*(2), 137-149.

Kuimova, M. V., Uzunboylu, H., Startseva, D. A., & Devyatova, K. P. (2016). Advantages of extracurricular drama activities in foreign language teaching. *Ponte, 72*(6), 5.

Kulturel-Konak, S., D'Allegro, M. L., & Dickinson, S. (2011). Review of gender differences in learning styles: Suggestions for STEM education. *Contemporary Issues in Education Research (CIER), 4*(3), 9-18.

MacKeracher, D. (2004). *Making sense of adult learning.* University of Toronto Press.

McKeachie, W. J.(1986). *Teaching and learning in the college classroom: A review of the esearch literature*. University of Michigan Press.

McLeod, S. (2017). Kolb's learning styles and experiential learning cycle. *Simply psychology*.

Morton, R. B., & Williams, K. C. (2008). *Experimentation in political science.* The Oxford handbook of political methodology, 339-356.

Mosca, J. B., & Howard, L. W. (1997). Grounded learning: Breathing life into business education. *Journal of Education for Business, 73*(2), 90-93.

Murray, P., Donohoe, S., and Goodhew, S. (2004). Flexible learning in construction education: a building pathology case study. *Structural Survey, 22*(5) 242-250.

Novak, J. D., & Gowin, D. B. (1984). Learning how tolearn. cambridge University press.

Pivec, P; Pivec, M (2011): Digital Games: Changing Education, One Raid at a time. *International Journal of Game-Based Learning, 1*(1).

Rama, D. V. (1998). *Learning by doing: Concepts and models for service-learning in accounting*. Stylus Publishing, LLC.

Roberts, J. W. (2014). *Beyond learning by doing: Theoretical currents in experiential education.* Routledge.

Shaheen, M. N. K. S. and Kayani, M. M. (2017). Improving Students' Attitudes towards Biology as a School Subject: Do the Instructional Models really work? *Journal of Applied Environmental and Biological Sciences (JAEBS), 7*(1), pp. 170-179.

Shaheen, M. N. K., Shah, N. H., Naqeeb, H. (2019). The Use of ICT for Assessment and Evaluation. *International Journal of Distance Education and E- Learning (IJDEEL), 5*(1), 17-28

Shaheen, M. N. K., Ullah, S. & Shah, N. H. (2019). Perceptions of Science Teachers Regarding Capacity Building Teacher Training Programme in Khyber Pakhtunkhwa. *International Journal of Innovation in Teaching and Learning (IJITL), 5*(2), 79-90.

Singh, G. (2015). *Need and Strategy of Active Learning in India.* Group of Colleges, Gurgaon.

Stice, J. E. (1987). Using Kolb's Learning Cycle to Improve Student Learning. *Engineering education, 77*(5), 291-96.

Sutherland, L. (2002). Developing problem solving expertise: the impact of instruction in a question analysis strategy. *Learning and Instruction, 12*(2), 155-187.

Svinicki, M. D., & Dixon, N. M. (1987). The Kolb model modified for classroom activities. *College Teaching, 35*(4), 141-146.

Titterton, N., Lewis, C. M., & Clancy, M. J. (2010). Experiences with lab-centric instruction. *Computer Science Education, 20*(2), 79-102.

Tomey, A. M. (2000). Problem-solving and critical thinking assessment. *Nurse Educator, 25*(1), 9-11.

Ulicsak, M., & Wright, M. (2010). *Games in education: Serious games* Bristol, UK: Futurelab.

Wittrock, M.C. (1994). The content of science: A constructivist approach to its teaching and learning, *Generative science teaching*, 29-38.

Zyda, M. (2005). From visual simulation to virtual reality to games. *Computer, 38*(9), 25-32.