



Teachers' perceptions about constructivist learning in Afghan Schools

Mathematics teachers' perceptions and usage of question-answer,
individual and group work methods considering constructivism

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Points 15 ECTS

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Date November 2014

ABSTRACT

A special attention has been given to education system in Afghanistan after new government established in 2001. Initially in 2001, the ways of teaching and learning were mainly based on behaviorist approaches. This behaviorist approach to learning and teaching is gradually changed to cognitive and constructivist approaches which are mostly used in advanced education systems. These approaches to learning and teaching are mainly focused on learners themselves. Therefore, student-centered and active learning became the buzzwords in education system in Afghanistan. This study investigates constructivist learning in Afghan secondary schools. It is vast to investigate each and every aspect of constructivist learning. So, I have selected to investigate the mostly used methods (question-answer, individual and group-work) considering constructivism in Afghan secondary schools. The mentioned methods are investigated in the light of constructivism. I have investigated the methods considering four criteria of constructivist method given by Baviskar et.al, (2009). The criteria are: assessing student's prior knowledge, differentiating what is already known and what should be learnt, changing students pre-concept in the context of new knowledge and reflection on learning. Teachers' perceptions were found through questionnaires and their use of these methods was observed from classroom observation.

Findings show that, around half of the teachers perceive the mentioned methods in line with constructivism while remaining teachers still perceive to use these methods as a traditional way of teaching. Furthermore, teachers perception based on their answers is not similar to their teaching practices considering constructivism. It means teachers' responses in the questionnaires did not conform to their teaching practices from classroom observations. Moreover, generally teachers seem to be more constructivists in perception and applying individual work method as compared to group-work activities. In some cases, teachers who participated in pedagogical workshops answered questionnaire more in line with constructivism as compare to the teachers who did not participate in pedagogical workshops in the past.

ACKNOWLEDGEMENT

I would like to say thank you Dr. Amir Mohammad Mansory & Dr. Pia Karlsson who have coordinated the partnership between Afghan Ministry of Education and Swedish university of Karlstad. Without their efforts we would not be able to participate in such a master program. They have worked very much for Afghan teacher educators to enhance their teaching skills which consequently enhance the teaching skills of schools' teachers.

My special thanks go to my supervisor Dr. Ulrik Holmberg and Dr. Amir Mohammad Mansory who helped me very much in my thesis writing. Without their valuable feedback and comments I would not be able to complete my thesis writing. They did not hesitate to provide me with help whenever I had asked for.

Finally, I would like to thank all school principals who allowed me to collect data for my research. Similar thanks go to all the mathematics teachers who answered my questionnaire and allowed me to observe the classrooms during their teaching.

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ABRIVIATIONS

MoE	Ministry of Education
PPW	Participation in Pedagogical workshop
STAD	Student Team-Achievement Divisions
TED	Teacher Educator Directorate
TPPW	Teachers Participated in Pedagogical workshop

INTRODUCTION

Constructivism is one of the modern learning theories and it claims that knowledge is constructed by learners themselves. In constructivism, students explore learning environment in order to construct knowledge, they do not passively read or listen to the teacher (Schunk, 2012). So, active learning, where students are responsible for their learning and construct knowledge is effective learning in order to get knowledge and understanding the concepts (Powell & Kalina, 2009). Constructivist learning environment is defined by Uredi (2013) as “an environment where active participation of students to real-life experiences have been provided and problem-based situation have been created to improve conceptual change” (ibid, p.50). There are many methods and models which represent constructivist approach for learning. For example, discovery learning, inquiry-based teaching, peer-assisted learning, discussion and debates, reflective teaching, using feedback, and so on are the methods used in constructivist learning environment (Schunk, 2012). Based on constructivism, knowledge cannot be acquired as an external fact, but it is constructed internally by the help of pre-knowledge. Teachers in constructivist learning provide and facilitate learning environment. According to Baviskar (2009), the role of teacher is to motivate learner to learn. This motivation includes providing resources, posing appropriate problems, questioning at right time, and connecting these questions and resources with students’ prior knowledge. So, teachers take the responsibility of instruction for learning and students themselves try to learn using teacher’s instructions. For example, teacher asks question for which a direct answer is not available, teacher informs students that there is no grades for answer, students try to find out answer, and consequently knowledge is constructed.

Background

The school system for formal education was nearly destroyed in Afghanistan before the new government was established in 2001. The government of Afghanistan especially Ministry of Education (MoE) has made serious efforts since 2001 to reconstruct and develop the education system of Afghanistan. When the new education system was initiated, the new curriculum was designed and textbooks printed in 2002 there were not enough of expert teachers all over Afghanistan. Teachers who entered newly to education system had not participated in trainings where they could become familiar with advanced and effective methods of teaching. Initially, teachers used only behaviorist approaches for learning achievement, generally based on traditional methods. In these methods, students were not allowed to actively participate in the learning process. This problem is still somehow seen in the remote areas. However, efforts are going on to familiarize teachers with active and constructive approach to learning in Afghanistan. As, constructivist way of learning require sufficient resources in order to achieve learning properly; that is why, new textbook which are printed in 2010 for schools are very much enriched regarding constructivist methods for teachers and activities of students. For example, teachers are given a teacher guide book where it is mentioned for him/ her the way of teaching. These books guide teachers to use question-answer, individual and group -work methods in their teaching. Also, students’ textbooks contain the activities (individual and group working) for students to perform during lessons. Similarly, many of the schools nowadays have laboratory for practical work. These are the opportunities for teachers to use constructivist methods as much as possible.

MoEhas made serious efforts since 2001 to train teachers in the field of didactics and pedagogy in order to increase learning achievement of students. According to Ministry of Education (2010), 60,000 existing teachers who have only completed school should complete two years more training (in-service teacher training) by 2014 in related subject field as well as teaching

techniques. Similarly, new curriculum which is designed for schools is based on constructivist approach and active learning. It further writes that “The new curriculum has been developed and revised based on Islamic principles and national and international standards particularly active learning principles”(ibid, p.74)and regarding learning “The focus will be on how students can use and apply the knowledge and skills learned” (ibid, p.74). Many materials have been written and printed through MoE with advice for active and student-centered learning. This itself promotes and contributes to the constructivist way of learning. Moreover, government of Afghanistan especially MoE sometimes conducts methodological workshops for teachers. Methods which are shown in these workshops are said to be based on constructivist learning. For example, peer learning, group working, group discussion and so on. The aim of these seminars is to familiarize teachers with active and constructive learning. The result might be the understanding of actual methods of constructivism or only a mechanical application of learned activities. This will be investigated in the scope of this study.

In spite of above efforts, the mechanism of constructive learning might not be clear for many of the teachers and very little research is done in this area. According to Karlsson and Mansory (2005), teachers are not good enough in pedagogical knowledge. They teach the way they have learnt in school or institution long time before. Students in this case are passive in the class and do not actively participate in learning activities. Shulman, (1986) defined pedagogical knowledge as a knowledge by which content knowledge can be transferred. Moreover, lack of research is seen in the field of education especially for active and constructive learning. Karlsson and Mansory (2005; 2007) and few other writers, for example, Haidari, (2013) conducted their research in the field of active and constructivist learning. Thus, very little research is done in order to investigate the situation of active and constructive learning in Afghanistan. So, I felt the need to investigate and find out the teachers’ perceptions about and use of constructivist approach to learning.

Problem area

According to Karlsson & Mansory (2005), teachers who teach in schools are not sufficiently trained in the field of pedagogy. They are only trained in and have subject knowledge. It is because; there is no special pedagogy in school or university curriculum to be studied. However, recently the MoE has designed lots of workshops and seminars with the support of different governmental and non-governmental organizations to train Afghan teachers in pedagogical skills. Some teachers have trained or at least seen the printed materials about active and constructivist learning. Nevertheless, they may have some problems in application of constructivist way of learning because it is not easy to change one’s habit in a limited time. It needs more time to change teachers from teacher-centeredness to student-centeredness (constructivist way of learning). The Afghan teachers used to teach in a teacher-centered manner for a long time, so it would be hard for them to use constructivist way of learning in a proper way. Some of them may misinterpret the constructivist and active way of learning.

Furthermore, some of the teachers which I have observed in a field study that was part of our course ‘general didactics’ keep students like objects. They dominate the class and do not allow students to actively participate in learning process. For example, one student said that, “Once our teacher solved a problem wrongly”. Student reacted and told the teacher that it is not like that; it is wrong. Teacher replied that, “You are not allowed to show me anything and you should not speak in the class for ever when I am there in class”. So, this teacher might have heard about constructivist way of learning but do not use it in his/her class.

Finally, surface learning occurs when the methods of constructivist way of learning is not used by teachers in the class. The focus of constructivist way of learning is on the learners in order to avoid surface learning. Consequently, learning achievement of students will increase if teachers use the methods of constructivist way of learning (Boghossian, 2006). According to Økland (2012), many studies world-wide show that, by implementing constructive and active way of learning students learn more. He further writes that, “Increase in learning outcome among students may follow as a result of students being more actively engaged in the learning process” (p.121). However, this study is not conducted to find out the effectiveness and learning achievement of constructivist learning. So, the focus is about teachers’ perceptions and use of constructivist way of learning especially about the three mostly used methods (question-answer, individual and group working) in math subject of grades 7-9.

Aim

The main aim of this study is to explore math subject teachers’ perceptions and use of constructivist way of learning in Afghan schools. In order to explore the aim of the study following research questions has been put.

Research Questions

- 1- What is the perception of teachers about question-answer, group and individual work considering constructivist way of learning?
- 2- To what extent do teachers use question-answer, group and individual work according to constructivist way of learning?

LITERATURE REVIEW

This part will discuss mostly used constructivist methods (question-answer, individual and group working), according to Powell & Kalina et.al. (2009). However, before that, the theoretical base for these methods will be discussed in the light of different literature. Applying these methods with their constructivist criteria leads to constructivist learning environment in the classroom. That is the reason; a teacher should know and use the strategies of constructivism in order to have an effective constructivist classroom (ibid).

Constructivism, one of the modern learning theories

One of the modern learning theories is constructivism, which is mainly based on Piaget and Vygotsky theories. It is a learning theory because it concentrates on the question “how do learners acquire knowledge?” (Gigbels&Loyens, 2009, P.500).Loyens et.al, (2009) defined constructivism by four characteristics: knowledge construction, cooperative learning, metacognition and authentic learning task. Firstly, authentic learning task – students solve the problems which are relevant to their real-life situation. Secondly, cooperative learning – collaboration and interaction with others influence learner construct new knowledge. It is derived from the argument of Vygotsky; he argues that, knowledge is constructed through interaction with others in society. He further claims that ZPD (Zone of Proximal Development) is the important factor in human being that cause in an individual to construct new knowledge by some help of others. When knowledge is in the ZPD of an individual it is just above the understanding level of that individual and in order to construct knowledge there is need for a helper. Teacher or other fellow of student performs the role of helper in this case (ibid). So, teacher’s central task is to structure learning environment and maximize the learning outcomes of students which is in the ZPD of students. Thirdly, metacognition – new knowledge is acquired through self-regulating processes which includes goal setting, self-regulation and self-assessment, where students become responsible for their own learning. Finally, knowledge construction – learner himself constructs knowledge by discovering, where pre-knowledge plays an important role. It means that, when a learner constructs new knowledge he/she should already have some idea about new knowledge to construct which help learner to learn cognitively. Likewise, it is written by (Schunk, 2012) that in constructivism knowledge is constructed inside an individual and it is not an external phenomenon to be achieved. Human mind does not copy the reality from outside; instead it constructs the reality; that is why, what is knowledge for one may not be knowledge for other (Boghossian, 2006).Wood (2007) has written the claim of Piaget that knowledge is presented in the form of schema (thinking) in mind and schema is constructed in mind based on pre-knowledge of an individual (Yilmaz, 2011). He further claims that, a child passes through certain stages and cognitive development occurs by equilibration (balancing knowledge for child) which is the result of assimilation (new knowledge comes to schema, but with conflict) and accommodation (new knowledge is associated and accepted to schema) (Powell & Kalina et.al, 2009; Schunk, 2012).

There are two perspectives to constructivism: cognitive or individual constructivism and social constructivism (Olsen, 2000; Powell & Kalina et.al, 2009). It means that, knowledge is constructed either by individually working or in group working. Individual constructivism is based on Piaget theory of cognitive development and mainly focuses on how an individual construct knowledge by him/herself through working individually and cognitively. This is perceived and can be called as individual work method in the school environment. On the other hand, social constructivism is based on Vygotsky theory of social interaction of an individual with society

where culture and language are the key elements of interaction. This is perceived and can be called as group-working method in the school environment. Both of the methods (individual and group work) are achieved and enhanced by another method of question-answer (ibid).

According to Piaget a child passes through four different stages of cognitive development where s/he will be ready for different level of understanding and constructing knowledge (Powell & Kalina et.al, 2009; Schunk, 2012). First is sensorimotor stage, which is in the age interval 0-2 years. In this stage child can only sense physical tools and environment which is seen able to him. Second one is the pre-operational stage which is in the age range (2-7) years. In this stage child develop his/her language skills, but still cannot grasp others' ideas and thoughts. Third one is the concrete operational stage which is in the age range (7-11) years. In this stage children's thinking is developed and they provide logical reasoning for their activities. Finally, is the formal operational stage which is in the age range (11- adulthood). In this stage high level and abstract thinking of student is developed and student use these abstract thinking in problem solving. So, child or student is passes through different cognitive stages and become ready to get knowledge accordingly. Teacher has to be aware of these stages and facilitate appropriate learning environment for students in order to achieve sufficient knowledge intellectually (ibid). Hence, individual or cognitive constructivism is the base for individual-work method.

Social constructivism is described by Vygotsky and he has claimed that, knowledge is constructed through the interaction with others i.e. teacher-student or student-student (Powell & Kalina et.al, 2009; Tenenbaum et.al, 2001). According to Vygotsky, knowledge is constructed in ZPD by scaffolding. Scaffolding is the process of teacher's or student's helping with other student in order to construct new knowledge. This process is performed in such a way that, student is given a task to which he/she has some familiarity to perform with a support system from teacher. This support system will help student to complete the task. Cooperative learning which is performed among students is a suitable way of learning in social constructivism. Through cooperative learning knowledge is constructed and internalization take place when there is social interaction. In conclusion, social constructivism is the base for group-working method.

Both of the above constructivist approaches to learning (individual constructivism and social constructivism) value for inquiry teaching method which leads to using question-answer in the class (Powell & Kalina et.al, 2009).

Constructivist learning environment: a classroom where constructivist methods are used

Constructivist learning environment is that where students actively participate in learning process, connect their real-life experiences with knowledge and through problem posing change their conceptual understanding (Uredi, 2013). Schunk (2012) has written the difference between constructivist and traditional classrooms in his book as: constructivist classroom is one in which the teacher interacts with students by seeking their point of view; assessment is related to the teaching; students often work in groups and interact with each other; and the key focus is on the student constructing knowledge. Conversely, traditional classroom is the one in which focus is on the basic skills; teachers find the information and correct answer to the question; assessment of student is separated from teaching and generally done by test; and student often work alone without two way interaction with teacher or other student (Schunk, 2012). Furthermore, constructivist learning environment can also be called as new learning environment or the learning environment that enhances meaningful learning. On the other hand, lecture can also be meaningful learning process which leads to constructing knowledge, but constructivist learning environment is the

educational application of constructivism. It means that, it is an environment where instructions are designed in a way that students actively participate in a sense-making knowledge construction by applying the tools and criteria of constructivism (Gigbels & Loyens, 2009). So, considering the above explanation mathematics classes will be observed for constructivist learning.

Mostly used constructivist methods

Cooperative learning, discovery learning and inquiry teaching are among the methods used in constructivist learning environment (Schunk, 2012). Additionally, these are the methods many Afghan teachers use in their teaching practices when they teach mathematics. However, Baviskar et.al, (2009) has written that, a lesson can be constructivist when there is great opportunity for students to learn regardless of the methods used. Similarly, he has written four criteria that can be examined for any method to understand whether it is constructivist or not which will be discussed later on.

Group work method

Group work which is based on cooperative learning is a constructivist way of learning and it is connected to social constructivist perspective of constructivism (Powell & Kalina, 2009). According to Vygotsky social interaction and collaboration are the main factors for construction of knowledge (ibid). Schunk (2012) writes that, it is mostly used constructivist method and its purpose is to develop student ability to work collaboratively. He further writes some points which have to be considered in cooperative learning: it is used for the task which will be time consuming for one person. Task should have parts and everyone in the group has to complete a task and finally merge their results. The members of the group are better to be those who work well and develop & practice cooperative skills. Teacher should ensure that each group has reasonable result of success in their work. Group needs the guidance too - what to achieve and how to behave while working together. Finally, each member of the group should be accountable in group working (ibid). On the other hand, Schreiber and Valle (2013) has written that, constructivist group-work is the one in which members are assigned carefully where number of members will be 5-7 and should not switch among groups; members of the groups have to be as diverse as possible; grade of the members depends on the activities he/she performs in the group; members are tested individually and in group and; members are assigned a project to perform in group collectively. According to Schunk (2012), there are two methods mostly used in cooperative learning as a group-work: jigsaw and STAD (student-teams-achievement-divisions). Jigsaw method is used when the topic has many subparts. Firstly, each group takes one part, and then the group members are exchanged with other group members and describe their own parts in new group. Here everyone has the responsibility of explaining own part and understanding others' parts. STAD is better when a topic has clear answers and results. However, members of the group work together while they are tested individually and the score of each individual will be added to the group. So, every individual is motivated to achieve scores for his/her group by responding correctly and winning the competition (ibid).

Individual work method

Discovery learning is generally performed individually because by discovery, knowledge is obtained for oneself; it is based on cognitive constructivism. It is also called as problem solving, experimental and constructivist learning (Schunk, 2012). In discovery learning students perform examples and solve problems in order to achieve a general rule. So, discovery learning is a type of inductive reasoning and involves students in higher-level thinking which implies that, learners not

only acquire factual information but also develop his/her analytical skill (ibid; Yilmaz, 2011). Discovery learning is not letting students do what they want to do. Instead, teacher arranges the activities and students investigate and explore the situation through problem solving. Additionally, Mayer (2004) has written that guided discovery learning has positive and effective learning result than pure discovery learning. He has examined students' learning results for discovery of programming language, and discovery of conservation strategies where guided discovery had better result as compare to pure discovery.

However, Carrijo et.al, (2009) has explained the constructivist individual learning differently. They have written that when a mathematical procedure is learnt by a learner the knowledge is constructed through exploratory actions or experiences of an individual. This is done through three different ways: first, physical where individual learner practically experiences problem solving, second logical-mathematical where learner coordinates mathematical facts and properties of objects by writing on a paper or in computer and third social where learner interacts with other people for problem solving activities in order to construct new knowledge. Though the task has to be performed individually it is still the nature of human to interact with others in order to perform individual task constructively. Since guided discovery always uses the interaction between students and teachers where sometimes question-answer also takes place so, question-answer is another strategy used in constructivist learning environment.

Question-answer method

Inquiry teaching is based on Socratic teaching methods, where a teacher guides the process by asking general principles and applies them to a new situation (ibid; Baviskar et. al, 2009; Powell & Kalina et.al, 2009). The process of asking gradually goes from known to "misleading question" and "question a prediction made without enough information" (Schunk, 2012, p.286). It is used for testing hypothesis, making prediction, differentiating necessary from sufficient conditions. Though it is designed for one-to-one interaction it is also used for small group interaction with teacher. Teacher in this case should have sufficient knowledge in order to answer what is students' level of thinking. Similarly, student should have basic knowledge of what is going to be discussed in this process. Change (2009) has written that, question-answer which uses challenge, reveals and leads to new knowledge is powerful tool for teaching.

Questions have a significant role in learning and teaching, but it mainly depends on teacher how he/she formulates the questions. Question-answer will be important for students' learning when teacher use it by considering the following conditions. First, there should be a hint for student what to learn. Secondly, it should affect students who learnt and how much they learnt. Finally, consider wait time according to different situations (Mauigoa-Tekene, 2006). According to Black et.al, (2003) wait time in question-answer gives each student the opportunity to actively participate in learning process and answer for the posed question. Conversely, in traditional teaching question-answer are used for evaluating students' level of education not for learning purposes (Kawalkar & Vijapurkar, 2011).

Characteristics of constructivist method

Schunk (2012) has written that above methods are constructivist ways of teaching. However, Baviskar et.al, (2009), claims that, group work or other methods may or may not be constructivist methods. It depends on the way it is implemented. They further write that, a method will be

designated as constructivist if it meets the following four criteria. “The first criterion is eliciting prior knowledge” (ibid, p.543). It means that, educator has to be informed the prior knowledge of the student. Otherwise, new knowledge will not incorporate to the construct of student. There are different ways by which teacher can determine or find out about students’ prior knowledge. For example, formal tests, asking informal questions, formal interviews, and concept-mapping where student’s skills and knowledge can be showed. “The second criterion is creating cognitive dissonance”. It means that, students should be informed about the difference between prior knowledge and new knowledge. New knowledge has to be challenged for the student and will have some relation to prior knowledge. “The third criterion is application of the knowledge with feedback”. It means that, learner has to alter his prior knowledge in the context of new knowledge. Otherwise, misinterpretation or rejection will occur. “The forth criterion is reflection on learning” (ibid, p.544). It means that, when students acquired new knowledge they would be able to express what they have learnt. This could be done through different techniques of assessment. Another criterion that is given by Schunk (2012) to constructivist method is students’ outcomes and involvement. Considering above explanations a real constructivist method can be differentiated from a simple activity that is performed by teachers in the classroom.

Teacher’s principles for constructivist learning environment

According to Powell & Kalina et.al (2009), in constructivist learning environment teachers play the role of “facilitator and guide, and not of a director or dictator” (p.7). They have written further that teachers from any subject-area have to understand and promote psychological or strategic tools based on Piaget and Vygotsky theories in order to provide constructivist learning environment for students. A constructivist teacher uses effective tools and strategies like conversation, discussion and inquiry in order to involve students in communication and thinking. Teachers can develop individual learning methods like discovery learning and social interactive activities like collaborative learning by understanding communicating tools and strategies. Conversely, Fall (2010) has written that, there is no common agreement about constructivist principles. However, there are some principles that are accepted by many as constructivist principles.

Olsen (2000) and Fall (2010) have written some common principles which are applied by constructivist teachers. The first principle is to encourage students’ freedom and leadership. Before sharing information about a concept, one should take students’ views about the mentioned concept. It means that giving students the opportunity to drive lesson. Allow students to have dialogue with teacher and among students. Encourage students to elaborate their ideas and anticipate its result. Use wait time after asking question from students. Promote inquiry among students to exchange information before understanding the concept. Encourage students’ reflections and considering these reflections curriculum is designed. Search for students’ misconceptions & alternatives and prepare lesson accordingly. However, Olsen has written some extra principles for constructivist teacher. According to him, a constructivist teacher uses the terms of cognitive science like predict, analyze and develop for students’ activities. He challenge student thinking by providing conflicting ideas not for demeaning students. Sometimes, students are grouped based on their intellectual ability. Similarly, Phye (1997) cited in Olsen (2000) showed some general principles of constructivist teacher as motivating students for learning, valuing students’ prior knowledge, posing problem situation for students and, the environment of learning is such that, students learn how to learn and not what to learn. As a result, considering the above explanation teachers’ views can be found whether the learning environment he/she prepares for student is constructivist or not.

METHOD

This study is based on quantitative research strategy where questionnaires and structured observations were used as data collection tools. Bryman (2010) has written that, quantitative research is used when theory and concept are tested in a research. Additionally, Cohen et.al, (2010) advised that, quantitative approach to research deals with numbers and uses the tools like questionnaires and structured observations for collecting the data. So, this study is based on quantitative research strategy because it used questionnaire and structured-observation. If I had used unstructured or participant type of observation the study would have considered as qualitative research strategy, but now it is considered as quantitative. Questionnaire is useful to obtain the factual information from people about an issue and better to be of different types (ibid). So, different types of questions were used in questionnaire in order to find out views of teachers about question-answer, individual and group working methods considering constructivism. I have used dichotomous types of questions with yes and no answers. Additionally, multiple-choice questions where respondent could select one or more than one answer are used. Moreover, likert scales were used in questions to find out teachers' level of agreement with the given statements. In order to find out the actual practice of question-answer, individual and group working methods based on constructivism, I used classroom observations. It was used to collect systematic observation data for quantitative research in a mathematics teaching classroom.

This study was done in two provinces of Afghanistan (Paktia and Paktika) where three districts and center of Paktika were selected based on pragmatic sampling technique. I could easily get access to secondary schools of the selected area considering resources available with me. Similarly, classrooms' observation was done by convenience type of sampling. It means that, I observed the classes, which were easy for me to observe. During distributing questionnaires in the school I had looked through if there is any mathematics class ready to be observed in the school where I have been to. So, I observed the classes which were ready on the time I was present there.

As a rule of ethic in research, I had informed the principal of schools and teachers by showing them a letter issued by ministry of education and verified by provincial directorate of Paktia and Paktika provinces. The letter had information about our master program and recommended principals of the schools to allow the owner of the letter to their school. Similarly, I had informed them about the purpose of study by explaining them that, "it is for my thesis completion and not for your evaluation" before I distributed the questionnaire or set in the class for observing. This leads to another important ethical rule i.e. inform respondents about the purposes of study (Bell, 2010; Bryman, 2010; Cohen et.al, 2010).

Teachers in Afghanistan either graduated from grade 12th or above. Teachers who teach in schools at least should have graduated from grade 12th. These teachers have only passed high school. There are another category of teachers who after completing high school completed two years of training as a teacher who are known as graduated from grade 14th and will be given a teacher diploma. Finally, those who get admitted to university for studying four years after completing high school are called bachelors. However, teachers participated in pedagogical workshops for different durations. Mainly pedagogical workshops are conducted through Teacher Education Directorate (TED) for Afghan teachers. These workshops are designed as INSET 1, 2, 3, 4 where each of them can be conducted in two weeks periods. So, teachers who participated in all, they participated for 2 months in pedagogical workshops. Therefore, in some cases I design cohorts for ≥ 2 months or ≤ 1 month considering teachers participation in pedagogical workshop.

Data collection and analysis

Data collection for this study is done in September 2014. A questionnaire was made considering two theoretical areas (characteristics of constructivism and criteria of constructivist methods). First, characteristics of constructivism, these are taken from Loyens et.al, (2009) which are mentioned above in the literature review (authentic learning task, cooperative learning, metacognition and knowledge construction). Second, criteria of constructivist methods are taken from Baviskare et.al, (2009). They are also mentioned in the literature review (eliciting prior knowledge, creating cognitive dissonance, application of knowledge with feedback and reflection on learning). Considering above characteristics, questions were prepared. For example, do you assess students' prior knowledge when you teach a topic? Then, questionnaire was translated into Pashto language, the mother tongue of the teachers. After that, a pilot study for the questionnaire was conducted by giving questionnaires to two teachers. As a result of pilot, some unclear and not understandable questions have been changed to understandable ones and became easier for respondents to reply which is one of the purposes of a pilot study (Cohen, et.al, 2010). For instance, 'students take the responsibility of his learning changed to 'student himself perform a task and consequently learn'. Another example, 'a student introduces himself with his behavioral characteristics to group members' changed to 'student introduce himself with his habits, behavior and abilities to his group members'. Moreover, some directions have been added before different types of questions. Finally, questionnaires were distributed to mathematics teachers while around 30% of those teachers who answered the questionnaire were observed in their classroom teaching too. After taking a month on above procedures, data by questionnaires has been collected from 55 teachers where 20 of them have been observed too in their teaching practices.

I visited 17 secondary schools and gave questionnaires to mathematics teachers personally. Some teachers took the questionnaire with them and completed them on their own in their home which according to Cohen et.al, (2010), is good for respondents to avoid potential pressure and answer the questions confidently without any influence of researcher. Response rate for this study was 95%. Only 3 out of 55 questionnaires were not returned by teachers. During observing the lesson, I would sit at the back in the classroom and systematically noting the activities teachers performed from question-answer, individual and group working methods considering constructivism.

After data collection I have inserted raw data to a program called MS-Excel which was used to analyze and perform mathematical operation (number of occurrences, percentage...) on data. Answers of all the questions were labeled by a code (number) which were easy to be analyzed. Tables were made based on the answers respondents have given in both numbers and percentage. After preparing the tables, it was imported to MS-Word program.

Limitation

There are some limitations for this research. Firstly, 6 out of 55 teachers who were not verbally guided for questionnaire, how to answer, misunderstood the way of answering for some questions. The questions which have both individual and group working methods were misunderstood. I have overcome this problem by selecting the last option among all they chose for answer. For example, for some questions, teachers must have selected one out of many options fetches their views, but 6 teachers have selected two or three. So, when I analyzed I considered their last selection in the series of options. If I have used interview instead of questionnaire it would be even better, because there would not be any ambiguity for teachers in answering. Secondly, due to resource and time limitations I cannot generalize the result of this research to all part of Afghanistan. It can only be

generalized to two provinces of Afghanistan (Paktia and Paktika). All math teachers who teach to 7-9 grades of 3 districts out of 30 districts of both provinces were taken as sample. So, sample size 3 can be generalized to population size 30 in quantitative research strategy. Thirdly, since I have selected the convenience sampling strategy for my research which is non-probability sampling strategy. So, the area I have selected for sampling does not include any female teachers to include their views also in the study. Only male teachers teach in the selected areas and there is no female teacher. However, female teachers and students were presented in other district and center of Paktia which were not selected in this study considering lack of resources and time with me. Fourthly, I have submitted questionnaire to more than one teacher in every school based on number of math teachers. Some schools' teachers filled questionnaire exactly similar. So, they might have consulted each other during filling questionnaire. Finally, from this study we cannot derive effectiveness of question-answer, individual and group working methods in learning achievement of students.

FINDINGS

This chapter presents major findings of the study. Firstly, short information of participants and their views about constructivist learning is presented considering four characteristics of constructivism. Secondly, teachers' perceptions about individual and group work methods are presented based on constructivist method criteria. Also, their views are reflected about question-answer method. Thirdly, findings based on classroom observation are presented from which it can be understood how much teachers use and apply constructivist criteria for learning and above mentioned methods.

Background of research participants

Participants in this research were 55 teachers who taught mathematics in grades 7, 8 and 9. Around half of them (25) had graduated from grade 14th were 20 and 10 were bachelor and graduated from

grade 12th respectively. Percentage of teachers participated in pedagogical workshops are 2, 4, 7, 40, 18, 4 and 5 for the periods of 3 days, 10 days, 15 days, 1 month, 2 months, 3 months and 4 months respectively while 20 % teachers did not participate at any pedagogical workshop at all. To conclude, 40 of the teachers participated for less than or equal to one month where 15 of them participated for more than or equal to two months. Majority (78%) of them had age less than 30 years while 16% of them were above 35. Percentage of teaching experience of the teachers were 9, 44, 27 and 18 for the year ranges 0-1, 2-5, 6-10 and 11-20 respectively while 1 of them had more than 34 years teaching experience. Half of them taught in the classes that have average students less than 30 while 25% taught in classes where the number of students is more than 30.

Part I: Teachers' views on learning, considering constructivism

In the following section four characteristics or tools of constructivism (authentic leaning task, metacognition, cooperative learning and knowledge construction) are presented.

Authentic learning task

Almost half (49%) of the teachers answered that task given to students individually should have close relationship with students' real-life. While, the same percentage for group-work said that, the task should be from textbook and its relationship with real-life is not so important; see table 1 bellow. It indicates that, in individual work method almost half of the teachers connect the task to students' real-life. While, for group work method, very few teachers relate the task to students' real-life.

Table 1. Relationship of task with student's real-life

What kind of relation should an individual and group work task have with students' real-life?				
Options	Individual work		Group-work	
	Number	%	Number	%
The task should have close relationship with real-life.	27	49	16	29
The task may or may not have relationship with real-life.	10	18	12	22
The task should be from the book and no matter if it has relationship with real-life or not.	18	33	27	49
Total	55	100	55	100

Metacognition and cooperative learning

Considering self-regulation of the task, almost half (49%) of all the teachers answered that, when students complete their work, they themselves have to regulate their work. After regulating their work, students can interact with fellow students to complete the task; see Table 2. So, nearly half of all the teachers perceive that, students themselves should have control on their learning and they can interact socially with others too. This way of students' learning is partly related to metacognition.

Table 2. Regulation of student task

15. How should a student perform his individual task?				
Options			Number	%

He should collaboratively work with fellow students and together complete the task.	16	29
He should individually complete his work without any interaction with others.	12	22
Student's personal experience is important; he personally regulates the way he performs the task; still he may interact with fellow student to complete his individual task.	27	49
Total	55	100

Knowledge construction

Except 9% of the teachers who disagreed with the statement that, “knowledge is constructed by performing individual work”, all of the teachers agreed that, “new knowledge is constructed during individual and group work”. Also, all of the teachers are agreed that by performing group work activities student construct new knowledge; see table 3. It indicates that, nearly all of the teachers believe that knowledge is constructed as a result of performing individual and group work activities.

Table 3. Teachers' view about knowledge construction.

By performing an individual and group work activities students construct new knowledge.				
Options	Individual work		Group-work	
	Number	%	Number	%
strongly disagree	1	2	0	0
Disagree	4	7	0	0
I do not know	3	5	0	0
Agree	31	56	21	38
strongly agree	16	30	34	62
Total	55	100	55	100

Part II: Teachers' perceptions about question-answer individual and group work methods

Teachers' perceptions about individual and group-work methods

In the following section four criteria of constructivist method which are shown in literature review is presented from teachers answers about individual and group working methods. Additionally, some other constructivist learning principles are presented. The first criterion of constructivist method is:

Relationship between new and prior knowledge

Majority of the teachers (85%) seem to perceive according to their answers that, when students perform tasks individually, their prior-knowledge should have close relationship with new knowledge. While this percentage decreases to 67 in the case of group work; see table 4. It indicates that, most of the teachers consider this constructivist method criterion for their teaching. Majority of the teachers give importance to relationship between prior and new knowledge in the

case of individual work method. However, for group work method, the number of teachers is less as compared to individual work method who considers this relationship.

Table 4. Relationship between new and prior knowledge in learning

27. Should there be any relationship between new and prior knowledge?				
Options	Individual work		Group-work	
	Number	%	Number	%
New knowledge should be totally new and not have any relationship with prior knowledge.	8	15	18	33
New knowledge should alter students' prior knowledge.	47	85	37	67
Total	55	100	55	100

The second criterion of constructivist method is:

Learning result, for both individual and group working methods

In all of the above tables the perceptions (based on answers for questionnaire) of all the teachers, regardless of the periods participated in pedagogical workshop were the same. However, there is some difference in the following section of the findings between the Teachers Participated in Pedagogical Workshops (TPPW) for more than or equal to 2 months and those who only participated for a month or shorter.

Those teachers whose Participation in Pedagogical Workshops (PPW) is less than or equal to a month, 60% of them answered that, as a result of individual work method students will alter their prior knowledge in the context of new knowledge. While for group working this percentage decreased to 50%. However, those teachers whose PPW is more than or equal to 2 months, 67% of them said that student will alter their prior knowledge in the context of new knowledge while this percentage for group-work was 60; see table 5. In conclusion, in this criterion teacher who participated in pedagogical workshop for more than two months are more likely to consider above criterion based on their answers as compare to those who participated less than one month or not at all.

Table 5. Result of learning in both individual and group work methods

25. What will be the result when a student performs task by individual and group-work?								
Options	TPPW ≤ 1 month				TPPW ≥ 2 months			
	Individual work		group work		Individual work		group work	
	#	%	#	%	#	%	#	%
Student will learn new knowledge to which he was not familiar before.	16	40	20	50	5	33	6	40
Student will alter his prior knowledge in the	24	60	20	50	10	67	9	60

context of new knowledge.								
Total	40	100	40	100	15	100	15	100

Third criterion of constructivist learning is:

Students' reflection on learning, how student can express what they learnt

When teachers were asked about students' reflection on their learning, almost half (49%) of them replied that, after performing group-work activity students must be able to express what they have learnt in group work. Nevertheless, for individual work method, this idea was with 35% of all the teachers. Conversely, nearly half (45%) of the teachers answered that, "students will not be able to express what they have learnt" by individual work method. Whereas, 20% of all the teachers perceived that, by performing group work activities students will not be able to express what they have learnt; see table 6. This idea of teachers is also supported by classroom observation when teachers asked students to reflect what they learnt. No student could express their learning by performing individual work method. However, 35% of students could express their learning performed by group-work activity. From above results it is derived that many of the teachers believe that students learning results will be very much immediate in group work as compared to individual work activities.

Table 6. Students' reflection on learning in both individual and group work methods

After your student performed individual and group work on a task he/she will reflect as:				
Options	Individual work		Group-work	
	Number	%	Number	%
He should be able to express what he has learnt.	19	35	27	49
He may or may not be able to express what he has learnt.	11	20	17	31
He will not be able to express what he has learnt immediately.	25	45	11	20
Total	55	100	55	100

The fourth criterion i.e. explaining the difference between what students know and what they learn as a new knowledge is analyzed in the observation part of this chapter. Teachers were also asked, "How do you implement individual and group working methods"?

How do teachers apply individual and group working methods?

More than half (53%) of the teachers said that, during group work activities, the group as a whole should achieve the result. Conversely, 47% answered that every member should be accountable and contribute to group work activity for achieving the result. Additionally, 49% of all the teachers answered that, students have to regulate the work when they perform their individual work; see Figure 1. Cooperative learning, where every member of the group is accountable for achieving group working result is very essential in constructivism. However, less than half of the teachers believe they implement group working in such a way that every student have to be accounted for achieving group working result. Similarly, around half of the teachers

thought they implement individual work method in such a way that students regulate their work and take the responsibility of their learning.

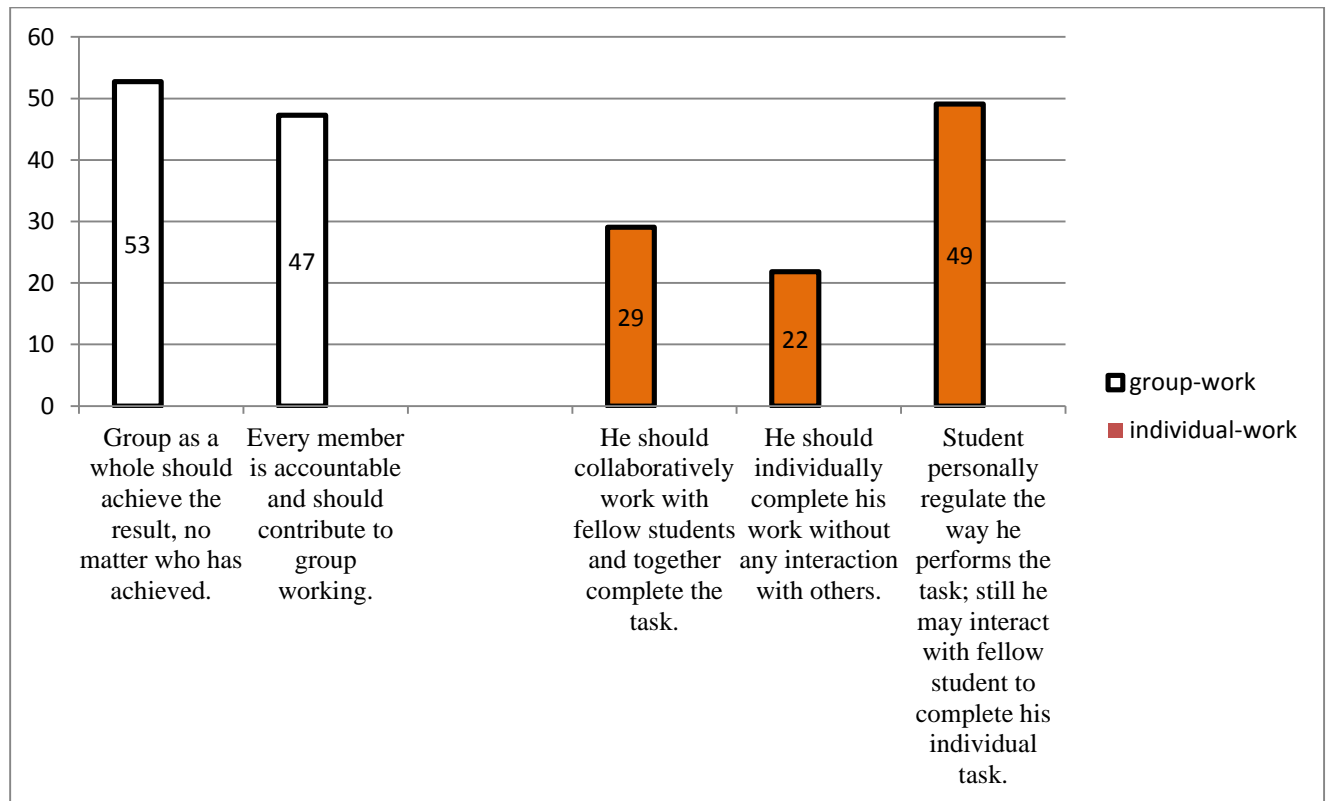


Figure 1. How to implement individual and group work methods

Teachers’ perceptions about Question-answer method

Question-answer method is also checked for the criteria of constructivist method as it has been done for individual and group work methods.

Topics and result for question-answer method

Majority (89%) of all the teachers agreed that, the topic which is used in question-answer session should be related to the real-life of students. Similar percentage of all the teachers also agreed that, as a result of implementing question-answer method students should be able to express what they have learnt in question-answer session. However, 33% of teachers were disagree with the statement that, question-answer sessions should be challenging and related to the prior knowledge of the students; see table 7. It indicates that, most of the teachers seem to perceive based on their answers that, what they ask in question-answer must be connected or have relevant connection with students’ real-life. Similarly, they thought that, question-answer should be used in such a way that, students must be able to express what they have learnt. Also, many of the teachers (64%) believed that they ask question in such a way that it is challenging for students and related to their prior knowledge. These ways of teachers’ thinking fetch the criteria of constructivist method for question-answer method.

Table 7. Topics and result in question-answer session; percentage

Statements		Level of agreement (%)					Total
		strongly disagree	Disagree	I do not know	Agree	strongly agree	
33	The topic which is used in question-answer session should be related to the real life situation of the student.	0	7	4	76	13	100
34	As a result of question-answer session students should be able to express what he/she has learnt from question-answer session.	0	11	0	58	31	100
35	Question-answer session should be challenging for students and be related to their prior knowledge.	0	33	4	62	2	100

Outcomes of question-answer for students and teachers

48% of those teachers whose PPW is less than or equal to one month answered that, by implementing question-answer students recall what they have learnt in previous lessons. Additionally, 30% of them replied that, it is used to assess students' prior knowledge. Conversely, almost half (47%) of teachers whose PPW is more than or equal to 2 months said that, question-answer has to be used to assess students' prior knowledge about the topic. Whereas, 33% of them answered that, it is used for students to recall what they have learnt; see table 8. As a result, most of the TPPW for more than 2 months implemented question-answer to assess students' prior knowledge about new topic which is one of the criteria of constructivist method. Conversely, most of the TPPW for less than one month, implement question-answer method for recalling students' knowledge.

Table 8. What is question-answer method used for

29. Main reason teacher implement question-answer method				
B Options	TPPW ≤ 1 month		TPPW ≥ 2 months	
	Number	%	Number	%
Students recall what they have learnt.	19	48	5	33
To assess my students' pre-knowledge about a topic.	12	30	7	47
To control the classroom.	7	18	3	20
Other	2	5	0	0
Total	40	100	15	100

Part III: Findings from classroom observation

Observation of the classrooms was done based on occurrence of the activity. I have not observe the classes to see the frequencies of the activities but I have looked to see whether occurring activity is according to the criteria mentioned in literature review or not.

Around 30% of all the teachers considered and implemented two constructivist criteria in their teaching practices. According to my observed classes, 35% of the teachers assessed students' prior knowledge before starting lesson. While almost the same percentage (30%), of the teachers

used the task that is related to the real-life of the students. These teachers relate the topic of the lesson to students' real-life. For example, teacher taught metric system for weight measuring simultaneously they compare and relate to the units of weight students use in Afghan society like Mun, Charak...; see table 9. It shows that, there is a big difference between what teachers replied for questionnaire and what they actually apply in their teaching practices.

Table 9. Result of classroom observation about constructivism

criteria of constructivism in classroom observation	not seen	seen	total
Teacher assessed students' prior knowledge using different tools.	65	35	100
The tasks assigned to the students are closely related to real-life situations.	70	30	100

Group work activity

When I observed math classes, only 35% of the teachers used the group work method in such a way that, their students are able to express what they have learnt. Moreover, only 10% of all the teachers implemented the group work method in such a way that all the students contributed to achieve the final result of the group work. While rests of the teachers just assigned the topic in group working to the students and did not facilitate students to actively involve in group work activity and achieve the result. Similarly, (10%) facilitated and gave feedback to the students during their group working. Finally, neither a single teacher used the group work constructivist methods like STAD, Jigsaw etc nor did they use the number of students in group working 5-7. Conversely, 90% of teachers in questionnaires replied that, they use the methods (jigsaw, STAD) in group working with number of students 5-7. See table 10. They implemented group working differently. For example, during my observation a teacher made two groups in the class each with 9 members and assigned task (for example, discuss the rules of Quantities and solve a problem at the end considering their rules) for every group to find out the result. Consequently, one student as a representative of the group presented the result of group working in front of the class where other members did not contributed in achieving the result. Based on the result from the observation, it is known that, teachers' responses on the questionnaires did not conform to what they actually practiced in their teaching.

Table 10. Criteria of constructivist group work from classroom observation; percentage

criteria of constructivist method	not seen	seen	total
Members of the group contribute for achieving group-working result.	90	10	100
The method, teacher used was one of the constructivist methods like jigsaw, STAD, TGT and etc.	100	0	100
Student can express what they have learnt.	65	35	100
Number of students was 5-7.	100	0	100
Teacher facilitates group working of the students by giving feedback.	90	10	100

Individual work

According to my observed classes, most (70%) of the teachers assigned individual work to students. while majority (80%) of them gave the task related to the prior knowledge of the students. Moreover, 30% of the teachers related the task to students' real-life. At the same time no teacher

has implemented individual work method in such a way that, his students could able to explain what they have learnt from individual work, see table 11. So, two criteria of constructivist method (relating new knowledge to prior knowledge and relating task to the real-life of the students) were considered and used by teachers, but their students were not able to express what they had learnt. For example, a teacher in 8th class posed the problem of ‘discount’. Before he gave individual work to students he related the topic discount with their prior-knowledge (percentage). Also, he relate the topic with real-life (he showed students how to calculate discount when you buy something in the market).

Table 11. criteria of constructivist methods from classroom observation (individual work)

criteria of constructivist method	Not seen (%)	Seen (%)	total
Students were given individual work.	30	70	100
The task is related to the prior knowledge of students.	20	80	100
The task assign to the students are closely related to real-life situation.	70	30	100
Students can explain what they have learnt.	100	0	100

Question-answer

Most (75%) of the teachers did not give wait time for students in question-answer session; only 25% of all the teachers gave wait time for students to respond when I observed math classes. Almost half (55%) of all the teachers used question-answer method to find out students’ prior knowledge. Nearly one fourth (30%) of all the teachers implement question-answer method for negotiating the difference between what students know and what they should learn as a new knowledge which is one of the constructivist method criteria; see table 13. A unique result has found in all findings that, 55% of all the teachers used question-answer to assess students’ prior knowledge while this percentage was around 40 in questionnaire.

Table 12. criteria of constructivist question-answer method from classroom observation(%)

Criteria of constructivist method	not seen	seen	total
Wait time for question was given where cognitive processes were considered.	75	25	100
Teacher asks question to find out students’ prior knowledge.	45	55	100
Teacher explains for student what they already know and what they should learn as a new knowledge through question-answer.	70	30	100

Over all there is big difference between teachers’ views from questionnaire and actual usage of the mentioned methods from classroom observation which is discussed in the following chapter.

DISCUSSION

Constructivist learning

As it is mentioned in literature review, learning will be constructivist when it has four characteristics: connection of learning task with real-life, cooperative learning, taking responsibility of learning by students themselves and knowledge construction by students. Firstly, findings from teachers' answers illustrate that, almost half of the teachers relate the task with real-life when students are given individual work. However, nearly one fourth of them consider this tool of constructivism for students' learning in group-work activity while one third of teachers actually implement this tool of constructivism in their teaching practices. It indicates that, some of the teachers think, what students learn in school is important for their real-life. They understand that, learning mathematics in school is what students have to implement in their life. So, some teachers relate what students learn in school with their daily life. It is done by either teachers compare or make a connection between learning task and facts used in real-life. This is what other studies indicate that, when students cannot learn mathematics, it is because they do not relate the topics of mathematics to their real-life situation. Secondly, almost half of the teachers answered that, students have to regulate their learning by themselves and cooperation is also important for students to complete the task. This indicates that, half of the teachers give more responsibility to students in their learning. They perceive according to their answers to actively involve students in learning process. When students actively engage in their learning, they learn better and constructively (Økland, 2012). Similarly, it is one of the purposes of MoE to promote active learning in Afghan education system. MoE has explicitly stated in its strategic plan that, students should be actively involved in their learning in order to implement skills and knowledge they acquired in their life practically (Ministry of Education, 2010). Finally, nearly all of the teachers believe that knowledge is constructed in group and individual working while they give more preference to group working as compared to individual work. By knowledge construction teachers might mean knowledge gain because when student could express what they learnt, teachers think students constructed knowledge. Teachers perceive based on their answers that, students learn and construct knowledge when they teach, but the result from classroom observation shows that only around 40% of the students could express what they learn. Learning is constructivist if there is more opportunity for students to learn (Baviskar et.al, 2009). As finding from classroom observation shows, all the students cannot learn because they are not able to express their learning. As a result, learning in the school is not constructivist. Since some students could learn in the classroom there might be some other reasons behind it. For example, students might have learnt the task previously or any other. So, there is need for more research to investigate why some students can learn and others cannot.

In conclusion, considering four characteristics of constructivism, nearly half of all the teachers say they consider criteria and tools of constructivism for their teaching. However, not more than one fourth of all the teachers implement and consider characteristics of constructivist learning in their teaching practices. This implies that, though around half of the teachers believe to implement constructivist way of learning in their teaching, but they do not implement as much as they perceive. The reason behind the difference between their view and practices might be lack of enough resources in their schools. For example, teachers and students use only blackboard, chalk, book and notebook in their classes. Conversely, constructivist learning environment need enough resources which are needed for practical work to enhance students' learning (Baviskar et.al, 2009).

Individual and group work methods

Individual and group working methods are seen considering four criteria of constructivist method. Firstly, there should be connection between prior and new knowledge. This is one of the criteria of constructivist method that, new knowledge has to be connected to students' prior knowledge. Similarly, it is very important for student to relate new knowledge with prior-knowledge when she/he learns mathematics. Mathematics is such a subject that, it cannot be learnt when there is no connection between prior and new knowledge. For example, to learn mathematical equations students must know arithmetic operations, because in learning equations students only use and implement arithmetic operations. Teachers have to equally consider this constructivist criterion for both individual and group-work methods. However, findings from questionnaire as well as classroom observations indicate that, many of the teachers implement individual work method more constructivist in the field of making connection between prior and new knowledge as compare to group work method.

Secondly, conceptual changes i.e. alter prior-knowledge in the context of new knowledge. This is also an essential criterion for constructivist method, especially in the field of mathematics. According to constructivism, knowledge cannot be constructed in the form of totally new phenomenon instead; it should have some relation with the prior knowledge of the learner. Only relation is not as effective if there is no alteration in prior knowledge. This criterion is important in all the subjects, but it is more effective for mathematics, because the concepts and principles of mathematics are very interrelated to each other. For example, if a student understands addition and subtraction he/she can easily understand the concept of credit and debit. In this case, addition is altered by credit where subtraction is altered to debit. So, student learns concepts and constructs new knowledge. Additionally, both of the teachers' categories (TPPW \leq 1 month and TPPW \geq 2 months) value more for individual work method as compared to group work activity considering constructivist method criterion (altering prior knowledge in the context of new knowledge).

Thirdly, assessing students' prior knowledge, most of the teachers (48% and 40% for often and always respectively) assess students' prior knowledge in both individual and group working methods. This idea is supported by Black et.al, (2003) who write that formative assessment has to be done in teaching. Formative assessment is assessment for learning i.e. assessment done, for example, to find out how much students know about the topic which is going to be taught (ibid). Findings from questionnaires show that, before teachers start new lesson or giving new topic to students they firstly understand students' prior knowledge about new topic. However, only 35% of the teachers implemented the above criterion in their teaching practices according to my observations.

Finally, students' reflection on learning criterion of constructivist method deals with the outcomes and result of learning. Knowledge is constructed when learner can express it. This is what the credit of education system is depending on. So, the method will be constructivist when it is implemented in such a way that, by the end students are able to express what they learnt. Findings indicate that, most of the teachers think by implementing group working method students will be more able to express what they learn as compared to applying individual work method. The result of findings which indicate that students learn better in the group activities as compare to individual working is supported by another study conducted by Kirschner et.al, in 2009. They argue based on cognitive load theory which says, working memory of an individual can process four plus minus one instructions of a task at a time where the instructions of the task are interrelated

to each other. So, complex task in group work is learnt better because the instructions of the task are distributed among many individuals' working memories to work on, and task is learnt by group members easily (ibid). This is what the teachers in my study may perceive and believe. Teachers in my study might not have the knowledge of cognitive load theory, but their perception is same as it is considered based on cognitive load theory. However, they do not consider the type of task whether to be simple or complex for group work activities. They prefer the group working activities as compare to individual work.

In conclusion, considering four criteria of constructivist methods, teachers tend to perceive individual work constructivist than group work to students in the fields of connecting students' prior knowledge with their new knowledge, and think that, "prior knowledge will be altered in the context of new knowledge". Conversely, teachers do not concentrate more on above two criteria for group work. In case of third criterion i.e. reflection of students on their learning, teachers think that, "students can learn more in group work as compared to individual work". So, teachers are more constructivists for group working in this case as compared to individual work method. Lastly, majority of the teachers are constructivist for fourth criterion i.e. assessing students' prior knowledge for both individual and group working methods but, their teaching practices are not in line with how they think.

To reflect, there is a contradiction between teachers' views and theory of constructivism. According to teachers' views they consider most of the constructivist method's criteria for individual work method, but learning occurs better in group work method. In Afghan context, this conflict might be because of not enough time and resources with Afghan students to perform task individually as homework. The area where I have conducted the research majority of the students beside attending four hours school they also work with their parents in order to be economical support for their family. So, they might not find enough time with them to perform their individual work task constructively. Similarly, constructivist individual work activity needs enough resources like library or any other source of information (Baviskar et.al, 2009). These are not available with a majority of Afghan students and this might be another reason why students cannot learn as a result of individual work activity. Conversely, though teachers do not consider and implement criteria of constructivist method in group work as compare to individual work method still students can learn better by group work method. In this case, the reason might be better interaction and sharing views among students for an issue. Also, in this case there is not matter of time and many resources as compare to individual work activity. In group work activity students perform their task through interaction among each other immediately during lesson session. They exchange their thoughts and experiences with each other. Consequently, students are able to express what they learn in group work activity as compare to individual work activity.

Question-answer

Similar to individual and group working methods question-answer can also be used by teachers as a constructivist method for learning. Opposite to individual and group working methods, most of the teachers use question-answer as a constructivist method. Majority of the teachers agreed that, what we ask in question-answer is related to the students' real-life which is one of the criteria of constructivism, but they do not wait for students' answer.

What teachers say and what they apply in real teaching are different. Teachers claim that they ask in question-answer what is challenging and related to prior knowledge of the students. Findings from classroom observation indicate that, only (30%) of teachers implement what they claim they do.

Considering criteria of constructivist method, majority of the teachers do agree that, in the result of question-answer session students should be able to express what they have learnt from question-answer. Most of the teachers implement question-answer method in their teaching in order to determine students' misconceptions about an issue. This is in the form of a debate or explanation. Additionally, nearly half of the teachers whose PPW is more than two months use question-answer as a tool for assessing students' prior knowledge. However, only 30% of teachers whose PPW is less than or equal to one month implement question-answer to assess students' prior knowledge. So based on teachers' answers, teachers who attended pedagogical workshops for more than two months are seem to be more constructivist in question-answer method as compared to those who attended pedagogical workshops for less than one month.

When teachers were asked about why they implement question-answer method in their teaching, the response was different according to their participation in pedagogical workshops. Teachers who participated in pedagogical workshops longer perceived to use question-answer for assessing students' prior-knowledge which is one of the criteria of constructivist method. However, those teachers who did not participated on pedagogical workshop or participated for a short time perceived to use question-answer for recalling students' prior knowledge which is not in line with constructivism. So, pedagogical workshops are also useful and help teachers understand and apply teaching methods more constructivist as compare to the teachers they did not participated in pedagogical workshops.

Though, some of the constructivist method criteria are considered and implemented by teachers still it cannot be said that teachers use these methods as constructivist method. According to Bavisar (2009), a method will be constructivist when all four criteria of constructivist method simultaneously applied and seen in the method. So, considering all four criteria of constructivist method, findings show that there is very little chance for teachers to simultaneously consider all constructivist method criteria in any of the three mentioned methods because, a teacher might consider one or two criteria and may not consider three or two others.

Overall, findings show that there is a big difference between what teachers perceive about constructivist learning and their teaching practices. It implies that, learning environment in Afghan schools is still traditional. According to Schunk, (2012), traditional classroom is the one in which focus is on basic skills, teacher find correct answer for question and, assessment is separated from teaching and generally done by test. Findings from classroom observation indicate that, in Afghan schools' classroom teachers take the responsibility of transferring knowledge by focusing on facts. Similarly, teacher is a good teacher who can solve any type of problems in mathematics classroom. So, students do not involve in their learning process as it should be based on constructivism. Finally, teacher is given the authority to assess his/her students by giving exam but, the exams giving by teachers are not standard. Teacher can give exam without considering goal required for a specific level of education. For example, there are some students who passed 12th grade but, they cannot perform arithmetic operations on fractions. These are common factors which do not allow teachers implement constructivist way of teaching which leads to constructivist learning in Afghan schools. Still, there are some teachers who participated in pedagogical workshop are better in perception and implement constructivist way of learning in their teaching practices where possible.

In my point of view, to have constructivist learning in Afghan schools, firstly teachers have to be theoretically aware of constructivist way of learning. Secondly, learning environment has to be changed from traditional to constructivist. Nowadays, nearly all school teachers can have access to Teacher Training College (TTC) where they can get theoretical information about constructivist learning. Likewise, the most important for constructivist learning is that teachers implement

constructivist way of learning in their teaching practices. It can be done when students take the responsibility of their learning and they are given more opportunity to actively involve in their learning process through interaction with other student in the class.

CONCLUSION

This study is done to investigate teachers' views and use of question-answer, individual and group working methods considering constructivism when teaching math in Afghan secondary schools. The teachers varied in terms of participation in pedagogical workshops. There were some differences in their views about mentioned methods, but they were mostly similar in their views. Data from their answers was analyzed according to their different ideas, but the areas where their ideas were similar data were generally analyzed for all the teachers.

Maximally half of the teachers perceive the mentioned methods in line with constructivism, but the implementation of these methods are not as much according to constructivism as they think of. However, teachers implement most of the constructivist criteria for individual work method as compared to group work. For example, half of the teachers connect the topic to real-life situations in individual work activities while 30% of all the teachers related the topic to real life situation in group work activities. Similarly, most of the constructivist method criteria are selected for individual work method which are not selected for group work activity by teachers through questionnaire. For instance, connecting new knowledge of the students with their prior knowledge is 85% for individual working while for group work it is 67%. Present study shows that, teachers mostly think by group working students can learn what is assigned to them. Also, considering group work activity, they think social constructivism where students learn cooperatively is the powerful way of learning. Conversely, they perceive to consider all the constructivist criteria for individual work method. So, they think they should be careful and consider most of the constructivist method criteria in implementing cognitive or individual constructivism where students learn individually. Finally, question-answer, the study indicates that teachers generally have constructivist perceptions about this method. Also, teachers implement this method more constructivist than that of individual and group working activities. Nevertheless, results from classroom observations indicate that, they do not implement criteria and tools of constructivism in their teaching to the extent they perceive and think to be used.

In some areas of learning, teachers whose PPW is more than 2 months seem to be more constructivists in their views and implementing the mentioned methods as compared to the teachers whose PPW is less than one month. For example, around 65% of teachers whose PPW is more than 2 months claim that students should alter their prior knowledge in the context of new knowledge. Whereas, around 55% of teachers whose PPW is less than one month do agree with above idea. Many similar examples can be found in the findings of this study which show that teachers who participated longer in pedagogical workshop are better in perception of question-answer, individual and group work methods based on constructivism.

To conclude the study, based on teachers' answers and classrooms' observation neither learning is completely constructivist in Afghan schools considering characteristics of constructivism nor three mentioned methods are completely perceived and implemented as constructivist methods considering constructivist method criteria. Teachers' views are varied for different aspects of constructivism. Teachers mostly consider constructivist method's criteria for individual work method as compare to group-work method. However, classroom observation

indicates that teachers do not implement characteristics of constructivism and criteria of constructivist method in their teaching practices as they think based on their answers to be used. In some aspects of constructivism TPPW longer seems to be more constructivist based on their answers than TPPW shorter or not at all.

Findings of this study indicate that, teachers' perception about and use of question-answer, individual and group work methods are achieved in the area where the study takes place. So, the reliability of the study can be guaranteed if it is conducted in similar place and under similar conditions. Also, as it is mentioned in method chapter, study can be generalized to two provinces of Afghanistan where it took place. For further studies I would suggest to investigate the learning outcomes and effectiveness of question-answer, individual and group work methods considering their constructivist criteria.

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ANNEXES

Annex 1: Teachers questionnaire

Questionnaire for Mathematics Teacher

Dear respected teacher! I kindly request you to patiently answer this questionnaire. This questionnaire is part of my research thesis and not for your evaluation. Your personal information will be kept safe. I thank you in advance for your 20-30 minutes valuable time to help me in completing my research thesis. Once again I mention that, your accurate and honest answers will help me complete my thesis authentically. Questions are about three mostly used methods (question-answer, individual and group working) and do not have correct or wrong answers only teachers' thinking and activities about mentioned methods are considered.

Background of Mathematics Teacher

Sex: Male Female

Age: _____ years.

Highest level of Education:

- a) Less than 12 grade b) 12 grade c) 14 grade d) Bachelor e) Master

Teaching Experience in school: _____ years.

Average numbers of students in your classrooms:

- a) less than 20 b) 20-29 d) 30-40 e) more than 40

Have you participated in any pedagogical workshop or training where the methods of question-answer, group and individual work were introduced?

- a) Yes b) No

If YES, how many days or months? Please specify: _____

First part, Group work

1. What do you think the group work is? You can choose more than one options.
 - a) It is a method where the students work in groups.
 - b) Group work is a way of active learning.
 - c) It is method where poor student learn from talent student.
 - d) It is a method where students enhance their communicative skills.
 - e) It is a method where students work and teacher wait for their results.
 - f) It is method where poor students find the opportunity to participate in activities.
 - g) Other?specify your own: _____

2. Which method of group work do you use when you teach mathematics?
 - a) I divide the topic into subparts and each part is given to a group. After they learnt their part, they exchange in groups and learn other part of the topic from other's group members.
 - b) I explain the topic and then divide students into group to discuss what I have explained. Then I ask each group member to answer my question where correct answer will have a credit mark for their group and finally one group will win the competition.
 - c) same as above (b) with one difference, instead of asking and competition at the end of lesson the competition will be done at the end of the week between two members of the different group while each will try to win the reward for his/her group.
 - d) Other?Specify your own: _____

3. What is the main reason you implement group-work in the classroom?
 - a) I heard in seminars that group-work is an effective method for student learning.
 - b) Teacher's task becomes easier student learn from each other.
 - c) When student interact with each other they learn effectively.
 - d) Other? Please specify _____

4. Number of the group members should be:
 - a) 2-4.
 - b) 5-7.
 - c) 8-10.
 - d) More than 10.
5. In group working:
 - a) Group as a whole should achieve one result, no matter who has achieved.
 - b) Every member is accountable and should contribute to group working.
6. What kind of resources should be provided for students during group work?

- a) No extra resources are needed i.e. what is needed for lecture is sufficient.
- b) Extra and sufficient materials are needed

Direction: from the following types of charts read each statement/sentence and respond honestly according to your perception and understanding. Circle the number which is best for your understanding and practices of the group-working method which you may apply in your class (s). Remember that there is no correct or wrong answer; there is only the matter of your perception and way of implementation of the group-working.

Keys:

1= strongly disagree, 2= disagree, 3= I do not know 4= agree, 5= strongly agree

No	Do you agree or disagree with the following statements when a teacher gives group work to students.	Strongly disagree	Disagree	I do not know	Agree	Strongly Agree
7	Group members should not exchange from their group to any other group.	1	2	3	4	5
8	Group members should be as diverse as possible.	1	2	3	4	5
9	Every member should introduce his/her self to other group members with their behaviors, abilities and habits.	1	2	3	4	5
10	Students' exam marks should be influenced by their group working.	1	2	3	4	5
11	One of the purposes of group work is developing students' communicative skill.	1	2	3	4	5
12	During group work knowledge is constructed through interaction with others.	1	2	3	4	5

Second part, Individual work

13. If you use individual work method, then specify why do you use individual work method in the classroom?
 - a. It is tolled to me in teacher guide to use individual work. So, I use it.
 - b. When student perform a task by him/her self, learning occur better
 - c. The job of teacher becomes easier and work is mostly done by student.
 - d. Other? Please specify _____
14. How do you help students in their individual work?

- a. When I give them a task I do not help them, they themselves have to complete it.
- b. Through some examples I help them understand preliminary steps.

15. How should a student perform his individual task?

- a. He should collaboratively work with fellow students and together complete the task.
- b. He should individually complete his work without any interaction with others.
- c. Student's personal experience is important; he personally regulate the way he performs the task; still he may interact with fellow student to complete his individual task.
- d. Other? Specify_____

Keys:

1= strongly disagree, 2= disagree, 3= I do not know 4= agree, 5= strongly agree

No	Do you agree or disagree with the following statements when a teacher gives individual work to students.	Strongly disagree	Disagree	I do not know	Agree	Strongly Agree
16	Teacher has to give individual work to students to perform in appropriate time.		1 2	3 4		5
17	By performing an individual work students construct new knowledge.	1	2	3	4	5
18	When students perform an individual work his/her prior knowledge plays key role.	1	2	3	4	5
19	Teacher has to respect student idea in performing individual task, even though if it is wrong.	1	2	3	4	5
20	Teacher should understand and know the prior-knowledge of students.	1	2	3	4	5
21	The task which is given to students should be challenged for students.	1	2	3	4	5
22	Teacher has to play the role of facilitator than lecturing. Guides and directs students for understanding the lesson.	1	2	3	4	5

Direction: Following questions have multiple choices for both individual and group working methods. Please read the questions carefully and tick mark only one blank space for the answer

which best suite according to your perception and understanding for both the methods. Remember that there is no matter of write or wrong, the matter is only your perception and implementation of the methods.

23. What kind of relation should an individual and group work task have with students' real-life?

Options	Individual work	Group-work
The task should have close relationship with real-life.		
The task may or may not have relationship with real-life.		
The task should be from the book and no matter if it has relationship with real-life or not.		

24. What kind of task do you give to your students to perform in both individual and group working methods?

Options	Individual work	Group-work
Task that is totally new for students.		
Task should be selected from textbook and no matter whether it is easy or hard.		
Task to which student is somehow familiar with.		
The task that is very easy for student to performed.		

25. What will be the result when a student performs task by individual and group-work?

Options	Individual work	Group-work
He will learn new knowledge to which he was not familiar before.		
He will alter his prior knowledge in the context of new knowledge.		
Other? Please write		

26. After your student performed individual and group work on a task he/she will reflect as follows.

Options	Individual work	Group-work
He must be able to express what he has learnt.		
He may or may not be able to express what he has learnt.		
He will not be able to express what he has learnt immediately.		

27. Should there be any relationship between new and prior knowledge?

Options	Individual work	Group-work
New knowledge should be totally new and not have any relationship with prior knowledge.		
New knowledge should alter students' prior knowledge.		

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28. Error in individual and group working will be dealt as a:

Options	Individual work	Group-work
Fault which should not occur in the future.		
Tool for giving feedback to the student.		

Third part, Question-answer method

29. If you ask questions in the class, specify what is the main reason for asking questions?

- Students recall what they have learnt.
- To assess my students' pre-knowledge about a topic.
- To control the classroom.
- Other? Please specify_____

30. What do you ask in question-answer session?

- I ask what is easy for students.
- I ask what I taught in previous lesson no matter whether it is easy or hard.
- I ask what is challenged for students and usually start from known to unknown.

31. What is the main advantage of question-answer for student?

- Increase confidentiality.
- Students recall what they have learnt.
- They actively participate in learning process.

Keys:

1= strongly disagree, 2= disagree, 3= I do not know, 4= agree, 5= strongly agree

		Strongly disagree	Disagree	I do not know	Agree	Strongly Agree
No	Do you agree or disagree with the following statements when a teacher implements question-answer session in the class.					
32	Question-answer challenges the students pre-concept.	1	2	3	4	5
33	The topic which is used in question-answer session should be related to the real life situation of the student.	1	2	3	4	5

34	At the result of question-answer session Student should be able to express what he/she has learnt from question-answer session.	1	2	3	4	5
35	Question-answer session should be challenged for student and be related with their prior knowledge.	1	2	3	4	5
36	Asking questions explores student's thinking.	1	2	3	4	5

Direction: State the level of frequencies that occur in your classroom for the following activities. Circle only one number in each row which best suited for your practice in the classroom.

Keys:

1= Never, 2= Rarely, 3= Sometimes, 4= Often, 5= Always,

No	How often do you implement the following activities in your classroom?	Never	Rarely	Sometimes	Often	Always
37	Group-work method should be used in mathematics class.	1	2	3	4	5
38	How often do you facilitate the classroom environment for students' discussion during group work?	1	2	3	4	5
39	Teacher should continuously follow and see student task and give feedback.	1	2	3	4	5
40	Teacher has to ask questions in the classroom.	1	2	3	4	5
41	I often show student through question-answer session what is known to them and what should be learnt.	1	2	3	4	5
42	Through question-answer session student get oh-ha experience which indicates that their prior knowledge is altered by new knowledge.	1	2	3	4	5
43	I often give appropriate time to my students to provide thoughtful answer to questions.	1	2	3	4	5
44	How often do you describe the difference between what is already known to students and what to learn as a new topic?	1	2	3	4	5

Thank you very much from your contribution.

Annex 2: classroom observation

I. BACKGROUND INFORMATION

Name of teacher _____ Announced Observation? _____ (yes, no)

Location of class (province, district, school) _____

Class observed _____ Date of observation _____

II. CONTEXTUAL BACKGROUND AND ACTIVITIES

Space: Seating of students: Arrangement:
--

No	Items that has to be observed in the class	Comments	Not at all	To some	To high
III. group-work method's design and implementation					
1	Teacher assessed students' prior knowledge using different tools.				
2	The instructional strategies and activities respected students' prior knowledge and preconceptions.				
	Students are given group-work.				
3	The method, teacher used was one of the constructivist methods like jigsaw, STAD, TGT and etc.				
4	The task for group work was known and challenged for students.				
5	Student can express what they have learnt.				
6	Numbers of students were 5-7.				
7	The members of the group were heterogonous.				
8	Members of the group contribute for achieving group-working result.				

9	Teacher facilitates group working of the students by giving feedback.				
V. Individual work implementation					
10	Students were given individual work.				
11	The task is related to the prior knowledge of students.				
12	Each student was given the task according to their educational level.				
13	The task assign to the students are closely related to real-life situation.				
14	Students can explain what they have learnt.				
15	Teacher helps each student while they work on their tasks.				
16	Task is challenged for student.				
IV. Using question-answer method in the class					
17	Teacher put thoughtful question like how do you think. OR Teacher's question triggered students' thinking.				
18	Wait time for question was given where cognitive processes were considered.				
19	Teacher asks question to find out students' prior knowledge.				
20	Teacher pose question which is challenged for students.				
21	Student's answer was wrong, but teacher encouraged him/her.				
22	Students' prior knowledge is altered through question-answer session.				
23	In question-answer student get oh-ha experience which shows that student's prior knowledge is altered.				
24	Teacher explains for student what they already know and what they should learn as a new knowledge through question-answer.				

Annex 3: translated questionnaire

د ریاضي د معلم لپاره پوښتنلیک

گران او قدرمن معلم صاحب! له تا څخه محترمانه هیله کیري چي دا پوښتنلیک په غور او صبر سره جواب کړي. دا پوښتنلیک زما د ماستري د تکمیل او تیسيز د لیکلو په خاطر ترسره کیري نه ستاسو د ارزیا بي په

خاطر. ستاسو شخصي معلومات كاملاً محفوظ دي. زه ستا له ۲۰-۳۰ دقيقې با ارزښته وخت په نيولو سره مخکې له مخکې مننه کوم چې له ما سره د تحقيق په تکميلولو کې مرسته کوي. يو ځلي بيا ليکم چې ستا صحيح او ريښتوني معلومات له ما سره د يوه واقعي تيسيز په ليکلو کې مرسته کوي. دا پوښتنليک په عمومي ډول د دريو زياتو استعماليدونکو ميتودونو (سوال-او-ځواب، يو کسيز او گروپي کار) په اړه پوښتنې لري او پوښتنې صحيح او غلط ځوابونه نلري يوازي د معلم نظر او عمل د يادو ميتودونو په اړه پکې غوښتل شويده.

د معلم شخصي معلومات

مکتب يا هغه ايسه چې دنده پکې اجرا کوي:

عمر: کاله. جنس: نارينه ښځينه.

د تعليم لوړه درجه:

الف- له ۱۲م ټولگي ښکته ب- ۱۲م ټولگي ج- ۱۴م ټولگي د- ليسانس ه- ماسټر
په مکتب کې د تدريس تجربه: کاله.

ستاسو په ټولگي کې په اوسط ډول د شاگردانو تعداد:

الف- له ۲۰ ښکته ب- له ۲۰ - ۲۹ ج- له ۳۰ - ۴۰ د- له ۴۰ پورته

آيا په کوم سمينار يا ورکشاپ کې مو برخه اخيستي ده چې د سوال-ځواب، يوکسيز او گروپي کار ميتودونو په اړه يې معلومات در کړي وي؟

الف- هو ب- نه

که هو، وليکه چې څو ورځي او يا مياشتي.....

لومړی برخه، گروپي کار

۱- څه فکر کوي گروپي کار څه شی ده ؟ (ته کولای شي له يوې نه زياتي نقطې انتخاب کړي)

الف- دا يو ميتود ده چې شاگردان په ډلو يا گروپونو کې کار کوي.

ب- گروپي کار د فعالې زده کړې يوه طريقه ده.

ج- دا يو ميتود ده چې کمزوري شاگردان له تکړه شاگردانو څخه زده کړه کوي.

د- دا يو ميتود ده چې شاگردان پکې د مفاهمي هنر قوي کوي.

ه- دا يو ميتود ده چې شاگردان کار کوي او معلم د هغوی نتيجه ته انتظار کوي.

و- دا يو ميتود ده چې په هغه کې کمزوري شاگردان دا موقع پيدا کوي چې په فعاليتونو کې برخه واخلي.

ز- که بل نظر لري دلته يې وليکه.....

۲- کله چې ته رياضي تدريسوي له کوم ډول گروپي کار څخه استفاده کوي؟

الف- زه موضوع په برخو وېشم او هره برخه يوه يوه گروپ ته ورکوم. کله چې گروپونه موضوع خپلي برخي زده کړي د گروپونو غړي په ټولو گروپونو کې له يوه بل سره بدليږي او د خپل گروپ په نمايندگي د موضوع خپله برخه تشریح کوي چې په نتيجه کې ټوله موضوع د گروپونو پواسطه تشریح او زده کېږي.

ب- زه موضوع تشریح کوم او بيا شاگردان په گروپونو وېشم ترڅو موضوع په خپلو گروپونو کې سره زده کړي. بيا د گروپونو له هر غړي څخه د موضوع په اړه پوښتنې کوم چې ځواب يې د خپل گروپ لپاره يو امتياز حسابل کېږي چې د ډيرو ځوابونو په ورکولو سره د گروپ د امتيازاتو مجموعه زياتيږي. چې په پايله کې د زياتو امتيازاتو لرونکي گروپ د مسابقي وړونکی بلل کېږي.

ج- په پورته ډول (د ب پشان) يوازي له يوه فرق سره هغه داڅي ددې پرځای چې د درس په آخر کې مسابقه وشي د هفتې په آخر کې مسابقه کېږي.

د- آیا کوم بل ډول گروپي کار استعمالوی؟ ويې ليکئ.....

.....

۳- په ټولگي کې د گروپي کار له استعمالولو څخه د لوی مقصد څه شی ده؟

الف - په سمینارونو کې مې اورېدلي دي چې گروپي کار د شاگردانو د زده کړي لپاره يوه مؤثره طريقه ده.
ب - د معلم کار آسانېږي او شاگردان له يوه بل څخه زده کړه کوي.
ج - کله چې شاگردان له يوه بل سره په ارتباط او مفاهمه کې شي نو زده کړه ښه منځ ته راځي.
د - آیا د کوم بل مقصد لپاره؟ ويې ليکه.....

۴- په گروپي کار کې د شاگردانو تعداد بايد څومره وي؟

الف - ۲ - ۴ ب - ۵ - ۷ ج - ۸ - ۱۰ د - له ۱۰ څخه زيات.

۵ - په گروپي کار کې:

الف - ټول گروپ په مجموعي ډول بايد نتيجه لاسته راوړي يعنې دا مهمه نده چې چا لاسته راوړه.
ب - د هر شاگرد ونډه بايد په گروپي کار کې معلومه او د نتيجه په لاسته راوړلو کې همکار وي.

۶ - په گروپي کار کې د شاگردانو لپاره بايد کوم ډول لوازم تيار کړاي شي:

الف - زياتو لوازمو ته ضرورت نشته، څه چې د ليکچر لپاره پکارېږي کافي دي.
ب - زيات او کافي موادو ته ضرورت ده چې گروپي کار اجرا کړاي شي.

لارښوونه: له لاندې ډول جدول څخه هره اصطلاح ولولئ او د خپل برداشت او پوهې سره سم په ايمانداري سره جوابونه ورکړه. هغه نمبر حلقه کړه کوم چې ستا د نظر او ډټولگي له عملي کار سره برابر وي. په ياد ولره چې ځوابونه صحيح او غلط نلري.

خوابونه:

۱= كاملا مخالف ۲= مخالف ۳=نه پوهيرم ۴= موافق ۵=كاملا موافق

کاملا موافق	موافق	نه پوهيرم	مخالف	کاملا مخالف	له لاندي اصطلاحاتو سره خپل نظر څرگند کړئ	نومبره
۵	۴	۳	۲	۱	يوځل چي شاگردان په گروپونو ووېشل شي بايد په هيڅ صورت کي له خپل گروپ څخه بل گروپ ته تبديل نشي.	۷
۵	۴	۳	۲	۱	د يوه گروپ شاگردان بايد د امکان تر حده سره مختلف وي.	۸
۵	۴	۳	۲	۱	په گروپ کي هر شاگرد بايد خپل ځان نورو شاگردانو ته له خپلو خصوصياتو، وړتياوو او عاداتو سره معرفي کړي.	۹
۵	۴	۳	۲	۱	د شاگرد د امتحان نمرې د هغه د گروپي کار له فعاليت سره بايد مستقيمه اړيکه ولري.	۱۰
۵	۴	۳	۲	۱	د گروپي کار له مقاصدو څخه يو داده چي د شاگرد د مفاهيمي هنر پرې قوي کيږي.	۱۱
۵	۴	۳	۲	۱	په گروپي کار کي پوهه د نورو سره د ارتباط په نتيجه کي را منځ ته کيږي.	۱۲

دوهمه برخه، يو کسيز کار

۱۳- که ته په ټولگي کي په شاگردانو يو کسيز کار کوي، نو ووايه چي د څه په خاطر يي کوي؟

الف - ما ته د معلم لارښود په کتاب کي ويل شوي دي، نو ځکه په شاگردانو يو کسيز کار اجراً کوم.

الف - کله چي شاگرد په خپله يو کار اجراً کوي، نو زده کړه ښه منځ ته راځي.

ب - د معلم کار اسانيزي او زيات کار شاگرد اجراً کوي.

ج - آيا د کوم بل مقصد لپاره وي لیکه.....

۱۴- ته له شاگردانو سره ددوی په يو کسيز کار کي څنگه مرسته کوي؟

الف - کله چي دوی ته ددوی وظيفه ورکړم زه له دوی سره مرسته نکوم دوی يي بايد پخپله اجراً کړي.

ب - د مثالونو په وړاندي کولو سره زه دوی ته لومړني کارونه وربښم چي اجراً يي کړي.

۱۵- شاگرد بايد يو کسيز کار څنگه اجراً کړي؟

الف - شاگرد بايد له ټولگيو سره يوځاي خپل يوکسيز کار اجراً کړي.

ب - شاگرد بايد يوازې خپل کار اجراً کړي او نور څوک ورسره پکي برخه وانه خلي.

ج - د شاگرد شخصي تجربه په يو كسيز كار كې مهمه ده، سره لدې له ټولگيوالو سره هم د موضوع په اجراء كې اړيکه ساتلي شي.

لارښوونه: په لاندي جدول كې هغه نمبر حلقه كړه كوم چي ستا د نظر اودټولگي له عملي كار سره برابر وي. په ياد ولره چي ځوابونه صحيح او غلط نلري.

ځوابونه:						
۱ = كاملا مخالف ۲ = مخالف ۳ = نه پوهيږم ۴ = موافق ۵ = كاملا موافق						
نمبره	له لاندي اصطلا حاتو سره خپل نظر څرگند كړئ	كاملا مخالف	مخالف	نه پوهيږم	موافق	كاملا موافق
۱۶	معلم بايد شاگردانو ته په مناسب وخت كې يو كسيز كار هم وركړي.	۲	۳	۱	۴	۵
۱۷	د يو كسيز كار په اجراء سره شاگرد له ځان سره نوي زده كړه كوي.	۲	۳	۱	۴	۵
۱۸	د يو كسيز كار په اجراء كې د شاگرد مخكيني پوهه يو مهم رول لري.	۲	۳	۱	۴	۵
۱۹	معلم بايد د شاگرد نظريي ته احترام ولري، كه څه هم چي غلطه وي.	۲	۳	۱	۴	۵
۲۰	معلم بايد د شاگرد مخكيني پوهه ځان ته معلومه كړي	۲	۳	۱	۴	۵
۲۱	هغه موضوع چي شاگردانو ته وركول كيږي بايد ورته مشكله وي.	۲	۳	۱	۴	۵
۲۲	معلم د ليكچر وركوونكي پر ځاي بايد درس ته د زده كړي د زميني برابر وركوي رول اجراء كړي.	۲	۳	۱	۴	۵

د يو كسيز او گروپي كار په اړه عمومي پوښتني:

لارښوونه: لاندي سوالونه د يو كسيز او گروپي كار ميتودونو په اړه څو ځوابونه لري. تاسو مهرباني وكړئ د دواړو ميتودونو لپاره يوازي په يوه تشه خانه كې له خپلي خوښي سره سم د صحيح علامه (✓) وكړئ! په ياد ولره چي ځوابونه صحيح او غلط نلري.

۲۳- د يو كسيز او گروپي كار موضوعات بايد د شاگرد له روزمره ژوند سره څه ډول رابطه ولري؟

خوابونه	يو كسيز كار	گروپي كار
موضوع بايد له روزمره ژوند سره نژدې رابطه ولري		
له روزمره ژوند سره د موضوع ارتباط كوم اهميت نلري.		
موضوع بايد له كتاب څخه وي، له روزمره ژوند سره يې ارتباط لرل يا نه لري كوم ارزښت نلري.		

۲۴- د يو كسيز او گروپي كار د اجرا كولو لپاره شاگردانو ته څه ډول موضوعات وركوي؟

خوابونه	يو كسيز كار	گروپي كار
داسي موضوع چي د شاگرد لپاره نوي وي.		
موضوع بايد له كتاب څخه وي، كه د شاگرد لپاره نوي وي يا زره.		
له موضوع سره شاگرد بايد يو څه بلد تيا ولري.		
موضوع بايد د شاگرد لپاره ډيره آسانه وي چي اجرا يې كړي.		

۲۵- كله چي شاگرد يو كسيز او گروپي كار اجرا كړي نو پايله به يې څه وي؟

خوابونه	يو كسيز كار	گروپي كار
هغه به يوه داسي نوي پوهه حاصله كړي له كومي سره چي مخكي هيڅ بلد نه وه.		
شاگرد به د نوي پوهي په رڼا كې زره پوهه تغيير كړي.		
آيا كومه بله پايله؟ ويي ليكه:		

۲۶- كله چي ستا شاگردان په يوه موضوع، يو كسيز او يا گروپي كار اجرا كړي نو په لاندي ډول ځواب به وركولاي شي؟

خوابونه	يو كسيز كار	گروپي كار
شاگرد به د نوي زده كړي په بيانولو قادر وي.		
كيداي شي هغه څه چي شاگرد نوي زده كړي نورو ته بيان نشي كړاي.		
شاگرد به پدې قادر نوي چي نوي زده كړه يې نورو ته بيان كړي .		

۲۷- شاگرد د نوي او مخكينی پوهي ترمنځ بايد كوم ډول ارتباط موجود وي؟

خوابونه	يو كسيز كار	گروپي كار
نوي پوهه چي شاگرد يې حاصلوي بايد د ده لپاره په مكمل ډول نوي وي او د هغه له مخكينی پوهي سره كومه رابطه ونلري		
نوي پوهه چي شاگرد يې حاصلوي په حقيقت كې د هغه په مخكينی پوهه كې تغيير ده، نو نوي پوهه له مخكينی پوهي سره ټينگه رابطه لري.		

۲۸- په يو كسيز او گروپي كار كې تيروتنه بايد په لاندي ډول وكارول شي:

خوابونه	يو كسيز كار	گروپي كار
د غلطي په ډول، په شاگرد فشار واچول شي چي بايد په راتلونكي كې بيا دا ډول غلطي تكرار نشي.		

	د یوې داسې وسیلې په ډول وکارول شي چې د اصلاحي نظر ورکولو لپاره مهمه وي.
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دریمه برخه، سوال-خواب

۲۹- که چیرې ته په ټولګي کې له شاگردانو څخه پوښتنې کوي نو ووايه چې ته د سوال-خواب میتود د څه پخاطر استعمالوي؟
 الف - څه چې شاگردانو زده کړي دي د هغو د بیا تکرار پخاطر.
 ب - ددې لپاره چې د یوې موضوع په اړه د شاگردانو مخکینی پوهه معلومه کړم.
 ج - د شاگردانو د کنترول په خاطر.
 د - آیا د کوم بل مقصد لپاره؟ دلته یې ولیکه.....

۳۰- ته د سوال-او-خواب په وخت کې د څه شي په اړه پوښتنې کوي؟
 الف - هغه څه چې شاگرد ته اسانه وي.
 ب - د هغه څه په اړه چې په تیر درس کې می شاگردانو ته تدریس کړي وي.
 ب - د هغه څه په اړه چې شاگرد ته مشکل وي، او عموماً له اسانه څخه یې شروع کوم.

۳۱- د شاگرد لپاره به د سوال-او-خواب د میتود تر ټولو لویه فایده څه وي؟
 الف - د شاگرد جرأت زیاتوي.
 ب - شاگرد چې څه زده کړي هغه تکرار پېري.
 ج - شاگرد د زده کړې په پروسه کې فعاله ونډه اخلي.
 لارښوونه: په لاندې جدول کې هغه نمبر حلقه کړه کوم چې ستا د نظر او ټولګي له عملي کار سره برابر وي. په یاد ولره چې ځوابونه صحیح او غلط نلري.

ځوابونه:
 ۱=کاملاً مخالف ۲=مخالف ۳=نه پوهیږم ۴=موافق ۵=کاملاً موافق

تیماره	له لاندې اصطلاحتو سره خپل نظر څرګند کړی	کاملاً مخالف	مخالف	نه پوهیږم	موافق	کاملاً موافق
۳۲	سوال-او-خواب د شاگرد مخکینی نظر تر پوښتنې لاندې راولي.	۲	۳	۱	۴	۵
۳۳	هغه موضوع چې په سوال-او-خواب کې استعمالیږي باید د شاگرد له روزمره ژوند سره ارتباط ولري.	۲	۳	۱	۴	۵

۳۴	د سوال او ځواب په نتیجه کې شاگرد باید د هغه څه په بیانولو قادر وي چې د سوال-او-ځواب په دوران کې یې زده کړي دي	۲	۳	۴	۵
۳۵	سوال-او-ځواب باید د شاگرد لپاره مشکل، او د هغه له مخکینۍ پوهې سره ارتباط ولري.	۲	۳	۴	۵
۳۶	پوښتنه کول د شاگرد فکر ته انکشاف ورکوي.	۲	۳	۴	۵

لارښوونه: له لاندې فعالیتونو څخه کوم یو چې په هره اندازه ستاسو په ټولګي کې استعمالیږي، مناسب نمبر حلقه کړئ!

ځوابونه:					
۱ = هیڅکله نه ۲ = ډیر کم وخت ۳ = ځینې وخت ۴ = زیاتره وخت ۵ = همیشه					
نمبر	تاسو په خپل ټولګي کې له لاندې فعالیتونو څخه څومره استفاده کوئ!	هیڅکله نه	ډیر کم وخت	ځینې وخت	زیاتره وخت همیشه
۳۷	د ګروپي کار میتود باید د ریاضي په تدریس کې استعمال شي.	۲	۳	۴	۵
۳۸	په څومره وخت کې ته شاگردانو ته دا زمینه براروي چې په ټولګي کې د ګروپي کار په وخت کې مباحثه وکړي؟	۲	۳	۴	۵
۳۹	ته په څومره وخت کې د اصلاحي نظر ورکونې پخاطر د شاگرد کار ګوري؟	۲	۳	۴	۵
۴۰	آیا په ټولګي کې له شاگردانو څخه پوښتنې کوئ.	۲	۳	۴	۵
۴۱	زه زیاتره وخت د سوال-او-ځواب پواسطه شاگردان پدې پوهوم چې څه موزده دي او څه باید زده کړي.	۲	۳	۴	۵
۴۲	په څومره وخت کې ستا شاگرد د سوال-او-ځواب پواسطه د “اوه” په ویلو سره تعجبیږي، کوم چې د نوي زده کړي څرګندونه کوي.	۲	۳	۴	۵
۴۳	په څومره وخت کې شاگردانو ته دا موقع ورکوي چې د پوښتنې لپاره د یو څه وخت په نیولو سره بافکره ځواب در کړي؟	۲	۳	۴	۵
۴۴	په څومره وخت کې شاگردانو ته هغه څه چې شاگردان پرې پوهیږي او هغه څه چې شاگردان یې باید نوي زده کړي فرق واضح کوي؟	۲	۳	۴	۵

ستاله همكاري خخه يوه نړۍ مننه!