Teachers' Perception and Implementation of Constructivist Learning: In the case of Ethiopian Higher Education

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Abstract:After the implementation of Educational Sector Development Program (ESDP I, 2003) special attention has been given to education system in Ethiopia especially in the Ethiopian Institute of Textile and Fashion Technology (EiTEX), Bahir Dar University. Before ESDP I, the ways of teaching and learning were mainly based on behaviourist approaches. These approaches are mainly focused on learners themselves. Therefore, student-centred and active learning became the slogans in the education system in Ethiopia. This study investigates constructivist learning implementation in Ethiopia specifically in EiTEX, Bahir Dar University. So, the researcher selected to investigate the mostly used methods (question-answer, individual and group-work) considering constructivism in EiTEX. This paper applies descriptive quantitative research method and an explorative design is used to address the research questions. The study interpreted the quantitative findings to provide a comprehensive understanding of assessing student's prior knowledge, differentiating what is already known and what should be learnt, changing student's pre-concept in the context of new knowledge and reflection on learning. Findings from this research show that around half of the teachers implement perceive the mentioned methods in line with constructivism while remaining teachers still implement perceive to use these methods as a traditional way of teaching. Moreover, teachers seem to be more constructivists in perception and applying individual work method as compared to group-work activities. The result in this study also shows that 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.

Keywords:Behaviourist; constructivism; EiTEX; Student-cantered; teacher's perception

1. INTRODUCTION

Education grips the process of the development and learning of the child on various dimensions, facilitated by the teacher, who is directed by a curriculum. Effective education is a process where the teacher, children and the schools engaged and took part actively (Behar, 2014). However the present education system gave emphasis to prepare students for tests and don't cultivate deep learning and is in the midst of a crisis of quality-starting from primary schools to universities. The central view is that our students are not learning as much as they ideally ought to and what is more worrying is that rote learning and memorization seems to be the leading model at all levels. Traditional teaching approach (lecture method) commonly implemented by teachers in Ethiopian schools (primary to University) occupy coverage of the context and rote memorization on the part of the students and does not involve students in inventive thinking and involvement in the creative part of activities.

Most of the time, throughout teaching-learning process, instruction vestigesindependent which is considered to be an orthodox activity. The

future trends in education changed the present scenario and agreed to the constructivist approach, which is moral, and more focused on innovative activities and knowledge acquisition and therefore, the academic results of the students of constructivist classrooms are better than traditional classrooms. It was found that constructivist instructed students had higher scores than the students who were exposed to the conventional method of teaching. The problem lies in the learning environment in a conventional classroom; the classroom environment is teacher-centred which makes the learning process boring for less competent students. Student's attention wanes frequently and they are not able to retain the information for a long time period and are often caught daydreaming, talking and pestering other students. The individual differences existing between learners, their background knowledge and learning styles are often ignored in conventional classrooms.

The present educational system provides a unique and standardized teaching material to all learners which tend to benefit those whose learning style and background knowledge fit well with the teaching material. If the teaching style closely matches the students' preferred style of acquiring knowledge, learning becomes easier and more natural, results improve and learning time is reduced. In a few words, traditional teaching material and strategies generally tend to benefit some students more than others (Franconia, 2009). The improvement in learning outcomes is possible by shifting the focus of the teaching-learning process on concept development and deep understanding. Till now, most of the focus has been to ensure access to education. Therefore, a question arises on the philosophical underpinnings of the long-dominant pre-test-teach-post teach a model of education. Despite completing all their tests, too many students simply are not learning (Brooks, 1999).

There arises a need to adopt a new pedagogy which encourages the learner to construct a sense of her own self, the development of her autonomy, alongside her progress within the group for interpersonal growth. Pedagogy is a vehicle of articulating learning goals and identifying the forms of activities that promote development toward those goals. Constructivist pedagogy is one such approach where activities are proposed to students that are meaningful for them and the learner reflects, searches, uses her capacity for taking initiatives and for being creative. Constructivist pedagogy in which activity supplements lecture, learners are provided opportunities to construct their own understanding on the basis of an interaction between what they already know. The need for constructivist approach arises when behaviourism falls short of producing positive effects within the complex context of the classroom and left teachers feeling short changed and cheated by a system that placed the guilt for students' failure to learn in their hands.

The school system for formal education was nearly destroyed in Ethiopia before the new government was established in 2003. The government of Ethiopia especially the Ministry of Education (MoE) has made serious efforts since ESDP-I, 2003 to reconstruct and develop the education system of Ethiopia. When the new education system was initiated ESDP I, the new curriculum was designed there were not enough of expert teachers all over Ethiopia. Teachers who entered newly to the education system had not participated in pieces of training where they could become familiar with advanced and effective methods of teaching. Initially, teachers used only behaviourist 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 seen in the

Institutions, Colleges and Universities. However, efforts are going on to familiarize teachers with an active and constructive approach to learning in Ethiopia by designing and implementing a Higher Diploma program (HDP). As, constructivist way of learning requires sufficient resources in order to achieve learning properly; that is why new textbook and new laboratory buildings and equipment are very much enriched regarding constructivist methods for teachers and activities of students. Similarly, many of the Institutes including EiTEX nowadays have a laboratory for practical work. These are the opportunities for teachers to use constructivist methods as much as possible.

MoE/EiTEXhas made serious efforts to train teachers in the field of didactics and pedagogy by designing higher diploma program in order to boostthe learning achievement of students. Similarly, the curriculum is designed for the Institute based on the constructivist approach and active learning. Thecurriculum focushas been on how students implement the knowledge and skills learned. Government of Ethiopia especially, Ministry of Education of Ethiopia,EiTEX and Bar Dar University (BDU) sometimes carry out methodological training for teachers. Methods which are shown in these training are based on constructivist learning. For example, Active learning, peer learning, group working, group discussion and so on. The purpose of these seminars or training is to make acquainted teachers with active and constructive learning. The result might be the understanding of actual methods of constructivism or only a mechanical application of learning activities.

In spite of the 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 Carlson and Masonry (2005), teachers are not good enough in pedagogical knowledge. They teach the way they have learnt in school or institution a long time before. Students, in this case, are passive in the class and do not actively participate in learning activities. Schulman, (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. Carlson and Masonry (2005; 2007) and a few other writers, for example, Handrail, (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 Ethiopia special reference to Ethiopian Institute of Textile and Fashion Technology, Bahia Dar University (BDU). So, the researcher felt the need to investigate and find out the teachers' perceptions /views and Implementation about and use of constructivist approach to learning.

Teachers who teach in the Ethiopian Institute of Textile and Fashion Technology are not sufficiently trained in the field of pedagogy. They are only trained in Textile major and related subjects and have subject knowledge. It is because; there is no special pedagogy in the Institute curriculum to be studied. However, recently the MoE/Bahr Dar University (BDU) has designed lots of Trainings, workshops and seminars with the support of different governmental and non-governmental organizations like HDP, PGDT etc. programs to train Ethiopian including Entex 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 the application of a 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 Institute teachers used to teach in a teacher-centred manner for a long time, so it would be hard for them to use a 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 dominate the class and do not allow students to actively participate in the learning process.

Surface learning occurs when the methods of the constructivist way of learning is not used by teachers in the class. The focus of the 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 the constructivist way of learning (Boghossian, 2006).According to Økland (2012), many studies worldwide show that, by implementing a 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' implementation and use of constructivist way of learning especially about the three most used methods (question-answer, individual and group working) in Garment engineering, Textile engineering and leaser technology and General courses of 2nd year and above. The main objective of this study is to explore Ethiopian Institute of Textile and Fashion design teachers'implementation or use of constructivist way of learning in the institute of Textile and Fashion design, Bahir Dar University. In order to explore the aim of the study following research questions has been put:

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

2. RESEARCH ETHODOLOGY

This quantitative study used prevalence study techniques and exploratory research designs to examine Teachers' Perceptions about Constructivist Learning in Ethiopia. The flow of this study begins with research problem at hand and after understanding the research problems the follow up are the research questions. Once the questions have been formulated, data were collected via a two-step process namely a primary and secondary process. The primary data collection consists of questionnaire. The analysing of data was conducted to examining the data collected, ensuring all information is true and correct and free from errors for example: duplication, unanswered question and void questionnaires. Application of knowledge is applied and the analytics of the data is performed to provide precise information, which will be used for the presentation of all information collected. Based on the interpretation of the data analysis, the presentation is formed together with a discussion to supplement the presentation. Once discussed, the research is summarized and concluded with recommendations provided.

2.1. Research methodology and sampling methods

This study was based on quantitative research strategy with aid of quantitative survey where questionnaires were used as data collection tools. Bryman (2010) has written that quantitative research is used when theory and concept are tested in 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. The questionnaire is useful to obtain factual information from people about an issue and better to be of different types (ibid). So, different types of questions were used in the questionnaire in order to find out views of teachers about question-answer, individual and group working methods considering constructivism. The researcher has used dichotomous types of questions with yes and no answers. Additionally, multiple-choice questions where the respondent could select one or more than one answer are used. Moreover, Lakers 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.

As a rule of ethics in research, the researcher had informed the Program Heads of the Institute and teachers by showing them a letter issued by the Institute Scientific Director. Similarly, the researcher informed them about the purpose of the study by explaining to them that, it is my research paper and not for their evaluation. A total of 85 study respondents were sampled, teachers were selected by systematic random sampling method. Teachers in the Institute either graduated from bachelors or above. However, teachers participated in pedagogical workshops for different durations. Mainly pedagogical workshops, higher diploma program are conducted by Bahir Dar University for the institute teachers. This workshop is designed for one year. Some teachers also attend short pedagogical training prepared by the Institute.

Research design and the method of data collection

Data collection for this study was done in the Academic year of 2019 where all teachers were available for regular teaching activities in the Institute for one semester. 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 were authentic learning task, cooperative learning, metacognition and knowledge construction. Second, criteria of constructivist methods were taken from Baviskare et.al, (2009). They were eliciting prior knowledge, creating cognitive dissonance, application of knowledge with feedback and reflection on learning. Considering the above characteristics, questions were prepared. Questionnaires were distributed to teachers, which are in the three programs. The data by questionnaires have been collected from 85 teachers.

The researcher gave questionnaires to teachers personally in hand. 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. The response rate for this study was 95%. Only 3 out of 85 questionnaires were not returned by teachers.

2.2. Study location

The selected study locations were the Federal Democratic Republic of Ethiopia (FDRE), referring to the very ancient country located in Africa, commonly recognised as the Horn of Africa. The research was conducted in the Federal Democratic Republic of Ethiopia, Bahir Dar specifically Ethiopian Institute of Textile and Fashion Technology, Bahir Dar University. The study was carried out in three programs teachers (Textile production, Leather

Technology and Fashion design) selected based on random sampling technique in each program.

2.3. Delimitation of the study

All teachers who teach 2nd year and above from the three programs in the Ethiopian Textile and Fashion Technology Bahir Dar University, Ethiopia (Textile engineering, Garment Engineering and Leaser Technology programs) were taken as a sample. Secondly since the researcher selected the convenience sampling strategy for this research which is non-probability sampling strategy. So, the areas of the researcher selected for sampling include female and male teachers to include their views in the study. Thirdly, the researcher submitted a questionnaire to more than one teacher in every program based on a number of course teachers.

2.4. Method of Data Analysis

Data was analysed on both descriptive and inferential statistics after the collected data was edited, coded and cleaned before it was entered into a computer. Information from the completed questionnaires was entered into a computer and analysed using MS-Excel software packages. The data was analysed by logistic regression of MS-Excel, number of occurrence, percentage associated with Teachers' Perceptions about Constructivist Learning in Ethiopia.

3. FINDINGS

The result of this study is on based on question and answer outcomes using MS-Excel to determine the perception of teachers about constructivist learning considering four characteristics of constructivism and perception of individual and group work method based on constructivist method criteria. 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 have been discussed briefly from the findings of the study.

3.1. Background of research participants

Participants in this research were 85 teachers who taught Garment, Textile, Leather Technology and other general courses in 2ndyear and above. Around one-third of them (17) were bachelor, (62) of them have MSc degree in Textile engineering, Leather Technology Fashion Technology and other general courses.

To conclude, 10.97% of the teachers participated for less than one month where 69.51% of them participated for more than or equal to two months. The majority (57.31.9%) of them had age less than or equal to 30 years while % of 46.34 % them were above 30. Percentages of teaching experience of the teachers were 10, 37, 22 and 12 for the year ranges 0-1, 2-5, 6-10 and 11-20 respectively while 1 of them had more 22 years teaching experience. 21..95 of them taught in the classes that have average students less than 30 while 78.04% taught in classes where the number of students is more than 30.

3.2. Teachers' views on learning, considering constructivism

3.2.1. Authentic learning task

Table 1 represents the relationship of task with student's real life. About 48.79% of the respondents answered that; tasks given to students individually should have a close relationship with students' real-life. While, 48.79% of the respondents for group work answered that; the task should be from the reference book (textbook)and its relationship with real-life is not so important; (Table 1). 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	40	48.79	24	29.26
The task may or may not have relationship with real-life	15	18.29	18	21.95
The task should be from the book and no matter if it has relationship with real-life or not	27	32.92	40	48.79
Total	**82**	100		

3.2.2. Metacognition and cooperative learning

Table 2 demonstrates the frequency distribution of responses on regulation of student task. As it is clearly seen in Table 2, out of 85 respondents, about 49% of the respondents believed that; student's personal experience is important; he/she personally regulates the way he/she performs the task; still, he/she may interact with a fellow student to complete his/her individual task. This way of students' learning is partly related to metacognition.

Table 2. Regulation of student task

How should a student perform his individual task?		
Options	**Number**	**%**
He should collaboratively work with fellow students and together complete the task	24	29
He should individually complete his work without any interaction with others	18	22
Student's personal experience is important; he personally regulates the way he performs the task; still, he may interact with a fellow student to complete his individual task	40	49
Total	82	100

3.2.3. Knowledge construction

Table 3 represents the frequency distribution of responses on teachers' view of knowledge construction. Except for 9.74 % 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". All of the teachers

are agreed that by performing group work activities student constructs new knowledge. 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 of knowledge construction

By performing individual and group work activities students construct new knowledge				
Options	**Individual work**		**Group-work**	
	Number	**%**	**Number**	**%**
Strongly disagree	2	2.43	1	
Disagree	6	7.31	2	
I do not know	4	4.87	1	
Agree	46	56.09	30	
Strongly agree	24		48	
Total	**82**	**100**	**82**	**100**

3.3. Teachers' view about question-answer using individual and group work methods.

3.3.1. Relationship between new and prior knowledge

Relationship between new and prior knowledge is measured and the result is presented in Table 3. Majority of the teachers (82.93%) seem to perceive according to their answers that, when students perform tasks individually, their prior-knowledge should have a close relationship with new knowledge. While this percentage decreases to 69.52% in the case of group work (Table 4). It indicates that most of the teachers consider this constructivist method criterion for their teaching. Majority of the teachers give importance to the 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

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	14	17.07	25	30.48
New knowledge should alter students' prior knowledge	68	82.93	57	69.52
Total	**82**	100	**82**	**100**

3.3.2. Learning result for both individual and group working methods

The perceptions of all the teachers, regardless of the periods participated in the pedagogical workshop were the same (Table 1-4). 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 who participated in Pedagogical Workshops (PPW) is less than or equal to a month, 62% 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, for those teachers whose PPW is more than or equal to 2 months, 67% of the respondents said that student will alter their prior knowledge in the context of new knowledge while this percentage for group-work was 60 (Table 5). In conclusion, in this criterion teacher who participated in the 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

What will be the result when a student performs task by individual and group-work?								
Options	**Pedagogy Training<1 month**				**Pedagogy Training>=2 months**			
	Individual work		**Group work**		**Individual work**		**Group work**	
	#	**%**	**#**	**%**	**#**	**%**	**#**	**%**
Student will learn new knowledge to which he was not familiar before	3	38	11	50	8	33	23	40
The student will alter his prior knowledge in the context of new knowledge	5	62	10	50	16	67	34	60
Total	**8**	**100**	**21**	**100**	**24**	**100**	**57**	**100**

3.3.3. How do teachers apply individual and group working methods?

About 43 of the teachers said that, during group work activities, the group as a whole should achieve the result. Conversely, 39 answered that every member should be accountable and contribute to group work activity for achieving the result. Additionally, 40 of all the teachers answered that, students have to regulate the work when they perform their individual work (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.

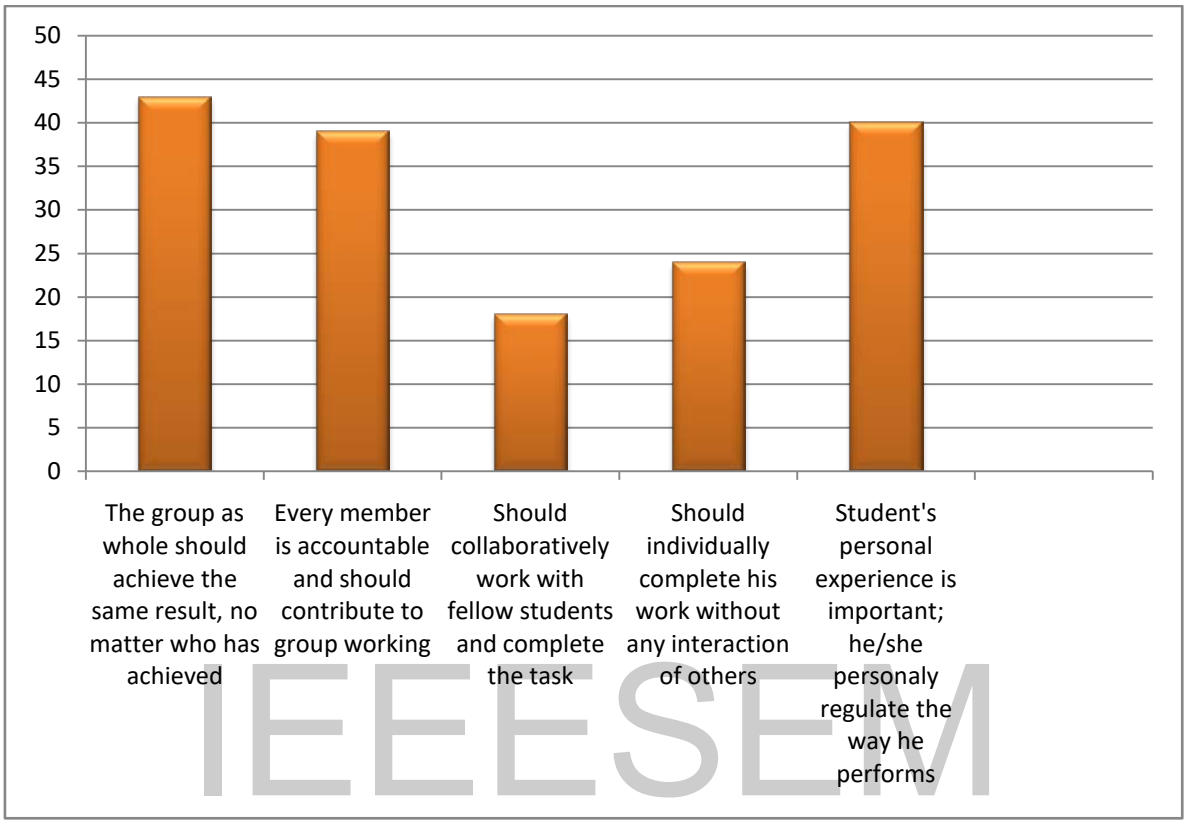

Figure 1. How to implement individual and group work methods

3.4. Teachers' perceptions about Question-answer method

3.4.1. Topics and result for the question-answer method

The 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. A 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 the question-answer session. However, 33% of teachers disagreed with the statement that, question-answer sessions should be challenging and related to the prior knowledge of the students (Table 6). 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 a 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 (67%) believed that they ask the 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 the constructivist method for question-answer method.

Table 6. Topics and result in question-answer session

	Level of agreement (%)					
	Strongly disagree	**Disagree**	**I do not know**	**Agree**	**Strongly agree**	**Total**
The topic which is used in the question-answer session should be related to the real-life situation of the student	0	7	4	76	13	100
As a result of question-answer session students should be able to express what he/she has learnt from question-answer session	1	8	2	56	33	100
Question-answer session should be challenging for students and be related to their prior knowledge	3	30	7	62	5	100

3.4.2. Outcomes of question-answer for teachers

Table 7 represents what is the question-answer method used for in the study area? From 58 teachers who have participated pedagogical workshop 54% (7 teachers among 13 teachers)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, 38 % (5 teachers among 13teachers) of them replied that it is used to assess students' prior knowledge. Conversely, more than half 57% (26 teachers among 26 teachers) 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, 31 (14 teachers among 45 teachers) of them answered that it is used for students to recall what they have learnt (Table 7). As a result, most of the TPPW for more than 2 months implemented question-answer to assess students' prior knowledge about a new topic, which is one of the criteria of the constructivist method. Conversely, most of the TPPW for less than one month, implement a question-answer method for recalling students' knowledge.

Table 7. What is the question-answer method used for?

Main reason teacher implement the question-answer method				
Options	**Pedagogy Training<= 1 month**		**pedagogy>= 2months**	
	Number	**%**	**Number**	**%**
Students recall what they have learnt.	7	54	14	31
To assess my students' pre-knowledge about a topic.	5	38	26	57
To control the classroom.	1	8	5	12
Other	0		0	0
Total	**13**	**100**	**45**	**100**

4. DISCUSSION

4.1. Constructivist learning

As it is mentioned in the 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 in the institute 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 teacher 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 the courses, it is because they do not relate the topics of courses 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 the 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 Ethiopia 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 the group working as compared to individual work. By knowledge construction, teachers might mean knowledge gain because when the 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. Learning is constructivist if there is more opportunity for students to learn (Baviskar et.al, 2009).

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 the characteristics of constructivist learning in their teaching practices. This implies that, though around half of the teachers believe to implement the constructivist way of learning in their teaching, they do not implement as much as they perceive. The reason behind the difference between their view and practices might be the lake of enough resources in their schools. For example, teachers and students use only blackboard, chalk, book and notebook in their classes. Conversely, a constructivist-learning environment needs enough resources which are needed for practical work to enhance students' learning (Baviskar et.al, 2009)

4.2. Individual and group work methods

Individual and group working methods are seen considering four criteria of the constructivist method. Firstly, there should be a connection between prior and new knowledge. This is one of the criteria of the constructivist method that, new knowledge has to be connected to students' prior knowledge. Similarly, it is very important

for the student to relate new knowledge with prior-knowledge when she/he learns the courses. Teachers have to equally consider this constructivist criterion for both individual and group-work methods. However, findings from the questionnaire as well as classroom observations indicate that many of the teachers implement individual work method more constructivist in the field of making the 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 the constructivist method. According to constructivism, knowledge cannot be constructed in the form of a totally new phenomenon instead; it should have some relation with the prior knowledge of the learner. The only relation is not as effective if there is no alteration in prior knowledge. This criterion is important in all subjects. Additionally, both of the teachers' categories (TPPW<= 1 month and Pedagogy Training>= 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 a new lesson or giving a new topic to students they firstly understand students' prior knowledge about the new topic. However, only 35% of the teachers implemented the above criterion in their teaching practices according to my observations.

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 instruction 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 the task is learnt by group members easily (ibid). This is what the teachers in the researcher's study may perceive and believe. Teachers in the researcher's study might not have the knowledge of cognitive load theory, but their perception is the 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 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 the above two criteria for group work. Lastly, the 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 the 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 the Ethiopian contextespecially in EiTEX context, this conflict might be because of not enough time and resources with students to perform task individually as homework. Similarly, constructivist individual work activity needs enough resources like workshop materials like pattern paper sewing threads and libraries like for leaser technology programs or any other source of information (Baviskar et.al, 2009). 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 a matter of time and many resources as compared 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 ingroup work activity as compared to individual work activity.

4.3. 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.

Considering the criteria of the constructivist method, the 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 the 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 38 % 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 seem to be more constructivists in the 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 the constructivist method. However, those teachers who did not participate on the 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 participate 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 a constructivist method. According to Baviscar (2009), a method will be constructivist when all four criteria of the constructivist method simultaneously applied and seen in the method. So, considering all four criteria of the 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 the EiTEX is still traditional. According to Schunk, (2012), the traditional classroom is the one in which focus is on basic skills, teacher find the correct answer for the question and, assessment is separated from teaching and generally done by test. Findings from classroom observation indicate that in EiTEX classroom teachers take the responsibility of transferring knowledge by focusing on facts. Similarly, the teacher is a good teacher who can solve any type of problems in the classroom.

In the researchers' point of view, to have constructivist learning in the EiTEX, firstly teachers have to be theoretically aware of the constructivist way of learning. Secondly, the learning environment has to be changed from traditional to constructivist. Nowadays, nearly all 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 the 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 involved in their learning process through interaction with other students in the class.

5. CONCLUSIONS

This study was done to investigate teachers' implementation and views on the use of question-answer, individual and group working methods considering constructivism when teaching in EiTEX in the three programs. Hence, to conclude the study, based on teachers' answers neither learning is completely constructivist in the EiTEX 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 the constructivist method's criteria for individual work method as compare to group-work method. 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' views 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 a similar place and under similar conditions including using a classroom observation and students perception questioner research instruments. For further studies the researcher suggests investigating the learning outcomes and effectiveness of question-answer, individual and group work methods considering their constructivist criteria.

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