INVESTIGATING THE TEACHERS' PERCEPTION AND APPLICATION OF DIFFERENT CONSTRUCTIVIST LEARNING APPROACHES IN THE AMERICAN CONTEXT AND THE TECHNOLOGY USE IN CLASSROOMS: A MULTIPLE CASE STUDY

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Abstract

For the last two years, the researchers have been investigating the teachers' perception of different learning approaches in universities to construct a list of indicators for identifying the teachers' knowledge of different constructivist theories, to observe and examine the teachers' application of constructivist learning approaches, taking university classes as a case study, to observe and examine the teachers' use of technology as one of the methodologies, and to provide recommendations for future research in integrating different teaching methodologies in university classes in the United States of America. The sample of this study is a selected mid-sized and mid-eastern state university in America, and the participants are five university teachers teaching five different university classes of several levels.

Keywords: teaching methodology, andragogy, constructivist approaches, socio-constructivist approaches, prior knowledge, technology

Introduction of the Study

Throughout their teaching experience, the researchers have never thought of the difference between child education and adult education. They have always deemed that both are the same and the teacher should treat both students in the same way. However, after participating in the Fulbright program in one of the universities in the United State of America, the researchers got introduced to a new educational concept, which is Andragogy. Two basic questions led the researchers' readings: (a) Is teaching adults different from teaching children? (b) Should other teaching strategies be used/adapted in the classroom with adult learners than that with children learners?

For the last two years, the researchers have been investigating teachers' perception of different learning approaches in schools.

It has been taken for granted that university education is an extension of school education with students learning in the same way both at school and at the university. "Teaching is more than transmitting skills; it is a living act, and it involves preference and value, obligation and choice, trust and care, commitment and justification" (Ayers, 2010, p. 385). The purpose of this

study was to construct a list of indicators for identifying teachers' knowledge of different constructivist theories, to observe and examine teachers' application of constructivist learning approaches, taking university classes as a case study, to observe and examine the teachers' use of technology, and to provide recommendations for future research to integrate different teaching methodologies in university classes.

Brief Review of the Study

The movement of constructivist education has been the interest of many people (Hajal Chibani, 2017). Dewey, Piaget, and Vygotsky, major theorists of constructivism, have had a lot of impact on the educational practice. Constructivism, based on child-centered approach, is when the individual constructs his/her knowledge. Research shows that the classroom environment is studied, so the researchers assume that when the classroom learning is being studied, it is expected that the students have previous knowledge about the content and that they build on this understanding and construct new facts (Phye, 1997).

Constructivist Learning
In the constructivism education theories, learners do not only acquire information inertly, but also they get involved in the learning process and craft their new knowledge and new experiences based on prior ones. Constructivism is contrary to the traditional methods where learners acquire the information word- by-word from their teacher. The new constructivist teaching approaches have shifted the understanding of the learning process to essential formation where learners' use the fresh ideas they get with them to the classroom and share them with their classmates. In a constructivist learning environment, learners learn best by shaping their own knowledge. Constructivists believe that knowledge shouldn't be implanted in the learners' mind, but constructed through experiences and activities. Here, the teachers should inspire higher-level thinking where learners are encouraged to summarize concepts by analyzing, predicting, moderating, and preserving their ideas (Hajal Chibani, 2017).

In addition, while studying the learning process and its relation with the constructivist learning approach, two things should be kept in mind: the relation between constructivism and the student's learning, and constructivism and the teaching strategy. Hajal Chibani (2017) explains that learning occurs in a constructive way where new information is always built on and linked to previous knowledge. She also adds that as students construct their knowledge by using what they know to learn new material, the teacher coaches and helps them *constructing mental scaffolding* in the class to build new acquaintance. Moreover, regarding the relationship between constructivism and the teaching strategies, Hajal Chibani explains that the teachers are shifting today from the traditional classroom instruction to the non-traditional ones where the student is the center of the learning process. Learning with a constructivist vision is active where the learning-teaching process is interactive in nature and needs negotiation of Mathematics and other subject matter meaning (Hajal Chibani, 2017; Yackel, Cobb, & Wood, 1991). There is a difference between the

traditional understanding of knowledge and the constructivist understanding of knowledge (Novak & Gowin, 1984). The teachers' role in constructivist approaches is to facilitate, synthesize, and interpret. Constructivist approaches push the teachers to encourage the participation of students in the learning process (Moore, 2009). According to Hajal Chibani (2017), the subject matter taught eventually should be also reliable, interesting, and applicable. The students should be independent and motivated. They should acquire enough prior knowledge and skills to be engaged in the learning process in order to build on them (Rowe, 2006). Since the purpose of this study deals with the teachers' teaching approaches in adult education specifically related to constructivist strategies, it is of great importance to have a brief review of adult education and what is expected from them in the classroom.

Thus Hajal Chibani (2017) summarizes the main concepts of this theory as follows:

> As learning is based on child-centered approach, students have background knowledge of the content, and they build on previous background to construct new ones. knowledge is perceived only if the person is ready to acquire it as declarative based on tasks, concepts, vocabulary, and other information stored in the memory, procedural based on when the learner combine, incorporate or assimilate, and strategic based on when the learner knows how to use the first two knowledge. Remembering is very important in order for new knowledge to be acquired (p. 67).

Andragogy
As for adult education, Malcolm Knowles, the father of adult education theory, identifies that pedagogy is different from andragogy. Renowned adult educator Malcolm Knowles differentiated between pedagogy, an educational theory related to children, and andragogy, which he advocated for adults (Henschke & Henschke, 2016).

Knowles defined andragogy as the art and science of adult education and it refers to all forms of education: formal, informal, and non-formal (Kearsley, 2004-2007). Knowles states that the term andragogy "is based on the Greek word *aner* (with the stem *andr-*) meaning, 'man not boy.' Knowles had already begun building a comprehensive theory of adult learning that is anchored in the characteristics of adult learners. Knowles model of andragogy is based on five assumptions. The five assumptions about the characteristics of adult learning written by Knowles are:

- Self-concept
- Adult learning experience
- Readiness to learn
- Orientation to learning
- Motivation to learn.

Also according to Knowles (1984) there are four principles that are applied to adult learning:

1. Adults need to be involved in the planning and evaluation of their instruction.
2. Experience (including mistakes) provides the basis for learning activities.
3. Adults are most interested in learning subjects that have immediate relevance to their job or personal life.
4. Adult learning is problem-centered rather than content-oriented. (Kearsley, 2010).

To begin with, higher education should prepare students to come into the classroom with a highly critical thinking and analysis abilities. The definition of pedagogy seems to be different from Knowles, Tennant, and Brookfield's definition of andragogy in adult learning theories. Pedagogy is very much teacher-based and andragogy is more to do with SDL (self-directed learning) and is very much learner-focused with the teacher being the facilitator. Adult learners resist receiving any new education if they are forced to receive it (Fidishun, 2000). Based on his first principle, Knowles (1984) says, "Adults are internally motivated and self-directed" (p. 27).

As for the second principle of adult learning, which states that adults bring life experiences and knowledge to learning experience, Knowles (1984) suggests that adults like to be given responsibility, and this is why as educators, we should give them the chance to explore and feel responsible. They like to build on their previous knowledge and use what they know for developing new knowledge. This is why Knowles (1984) proposes to know more about the students' interest and facilitate the learning process for them rather than imposing it.

The third principle of adult learning states that adults are goal oriented. By this, Knowles (1984) means that in order for the adult learner to learn new knowledge, he/she should feel a need to learn it.

The fourth principle discusses the fact that adults are relevancy oriented. According to Knowles (1984), the adult learners need to find meaning of what they are learning. They do not like to grasp information and never be able to use it in the future. This is why Knowles suggests asking the students to reflect on everything they learn.

The fifth principle discusses the idea of adults being practical. Knowles (1984) states "adults are practical" (p. 29). As educators, we should make sure to explain clearly scientific reasoning when making choices about assessments, interferences and when prioritizing clients' scientific needs (Fidishun, 2000). The educators should be clear that how and what the adults are learning will be beneficial in the work in the future.

Educators teaching adult learners need to know the concepts of their learning theory and be able to incorporate them into their teaching style. Educators need to become *facilitators* of adult education, helping the adult learner to set and achieve goals, and guide them in choosing the subjects and courses

needed to fulfill these goals. They need to keep in mind that the adult learners need to know why the course is important to their learning and life situation. The adult learners bring into the continuing educational arena a rich array of experiences that will affect the learning styles and assimilation of knowledge and they need to be able to apply the knowledge into their life situations.

Objectives of the Study
In a previous lager study, the objectives were specifically trying to investigate and examine the school teachers' knowledge of constructivist teaching approaches; however, in this study, similar objectives were related directly to the university teachers dealing with adult education.

1. To construct a list of indicators for identifying the teachers' knowledge of different constructivist theories excerpted from fieldwork.
2. To examine the teachers' knowledge of different constructivist learning approaches.
3. To observe the teachers' application of constructivist learning approaches taking university classes as case study.
4. To provide recommendations for future research in integrating different teaching methodologies in university classes in the United States of America.

Research Questions of the Study
The data of this study was drawn from a larger study addressing all the below questions, but in this study, we focused only on questions 1 and 2:

1. How much are teachers aware of constructivist learning approaches?
2. How is ICT being used in the classes as a teaching tool?
3. What type of observations can be extracted from fieldwork for use in wider assessment for identifying the teachers' application of constructivist learning approaches taking university classes as a case study?
4. What are the obstacles and opportunities that would potentially enhance adult education?

Research Design of this Study
To serve the purpose of this study, qualitative methodology was used where the data collected was used to describe details, events, teachers, and observed classrooms. A multiple case study was used in this study since such a design follows replication logic, and helps enhance the validity of the study. The sample of this study was that of a mid-sized and mid-eastern state university in the United States of America. Since it is a multiple case study; each class was considered a case study by itself. The participants of this study were five university teachers teaching five different university classes on several levels. In order to be part of how the teacher teaches, two observations were conducted in each of the five university classes. The teachers' teaching methodology was observed and an observation rubric was used that basically identified what needed to be objectively observed.

Findings of the Study
During the observation of the classrooms, the teachers were not under stress because of the observer. From the observations of the five classes, almost all the teachers showed that they were not familiar with the constructivist learning approach. Only one teacher used a teaching strategy that depended on the students' prior knowledge and built on it. It was clearly shown that the teachers identified the difference between traditional and non-traditional teaching. Three teachers integrated technology in their method of teaching in terms of blackboard usage and communication through Google Docs. Moreover, it was observed in the classrooms, the teacher, as the center of the teaching process, was very important in the learning process. Yet, the teachers were engaging the students with some group work, and they integrated technology and PowerPoint presentations in the classrooms.

When asked after the observation about their philosophy of education, the teachers agreed that the classrooms should be designed based on a student-centered approach. Also, they all agreed that the students learned from the culture and they might bring some of these previous learned things to the classrooms. However, all five teachers asserted that students couldn't build new information based on their previous knowledge without their teachers' help. On the top of that, although some teachers assigned their students to work in pairs to answer some higher order thinking questions, the learning objective wasn't met because the teachers neglected applying the cooperative work as it was recommended by constructivism theory and thus they merged it with the traditional methods of teaching. As a summary, the teachers did not have a clear idea about constructivist learning approaches, and that was reflected in their teaching methodology. In that case, the teachers were limited in meeting one of the university goals, which was to provide the students with an environment full of problem and project-based learning.

Constraints/Limitations of the Study
The study had constraints and limitations, which should be avoided in similar future studies:

- This study bears the characteristics of a qualitative study where the researchers were the primary source of data collection and analysis.

- The present study is concerned with only one outcome of the learning and teaching process, which is the teachers' knowledge of the importance of adopting a constructivist teaching approach, not taking into consideration the students' performance.

- This study did not take into account the teaching effectiveness and teachers' job performance and teachers' qualifications.

Conclusion and Recommendations

As educators, we need to change our attitude towards our classrooms. We are invited to build a strong knowledge base and believe in the fact that the classroom decision-making is important. Teaching should be a passion. We live to the extent of always working on our capacity building. The classes should be based on active learning, related to all, from creating the syllabus to

assessing the learners. For example, adopting the new learning approaches such as the constructivist and socio-constructivist learning approaches is important. The teacher should accept the fact that the students have background and prior knowledge built on new knowledge with the guidance of the teacher. The teaching methodologies adapted by some teachers did not reflect their awareness of the importance of building on the students' prior learning. Thus, it is suggested that professional development programs be introduced to all schools where the teachers' knowledge of new methodologies are always up to date. Moreover, there should be training workshops and should include more constructivist learning activities, including student-centeredness, authentic problem-solving tasks, learning practices, and much more. The teacher should be introduced to authentic examples of teachers who adopt the constructivist learning approaches in their classes. Teachers should be aware that learners differ from each other and that constructivist learning approaches promote higher order thinking.

This study can be considered a pilot study for future studies about the learning process. A comparison between the American teachers' perception of different learning strategies can and that of teachers' of other nationalities can also be carried out.

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