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INVESTIGATING SCHOOL TEACHERS' PERCEPTIONS OF CONSTRUCTIVIST THEORY: A MULTIPLE CASE STUDY IN LEBANON

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Abstract

The purpose of this study is to investigate teachers' perception and application of constructivist theory in schools. This study followed a qualitative approach. Teaching strategies used in class were observed, and schoolteachers and coordinators after each class observation were interviewed. Main findings indicate that the schoolteachers lacked comprehensible perception of the real application and meaning of constructivist theory. These results indicate a negative perception of constructivist theory. Four main limitations have influenced the efficacy of this study. Schools' pedagogy should be enhanced, and in order to overcome the gap found by this study and enhance schoolteachers' perception of several teaching methodologies, which will help them shift to student-centeredness, a concerted effort and coordination between the Ministry of Education and Center of Education and Research Development, education makers in the education field, school administrators and schoolteachers, and students and their parents would be highly beneficial and important. A new culture is suggested to be built where capacity building programs should be introduced to educational sectors in Lebanon. This study encourages schoolteachers to enhance their knowledge on constructivist theory in order to engage, motivate and improve the quality of education.

Keywords

Lebanon, Teaching Methodology, Constructivist Theory, Teachers' Perception

1. Introduction

All subject matters are considered to be major subject matters in the academic life of any student. When students transfer from one cycle to another, they undergo reversibility and dedication. There is an urge nowadays to help students in this transition and this is related to constructivism (Piaget 1969-1975). Whatsoever the subject matter taught or learned, educators seek to adopt the best strategy of teaching to improve students' learning. In order to help students acquire higher order thinking skills, both the teachers and students are concerned in the learning process (Vygotsky, 1978). Teachers' knowledge of different teaching methodologies allows them to use different active verbs while writing lesson objectives, which lead to higher order thinking. One of the main issues some Lebanese schools are facing is that even though the curriculum is designed to help teachers adopt constructivist theory while teaching, teachers' perception of this theory is not fully comprehensible (Hajal, 2018). In Lebanon, there is need to move away from traditional teacher-centeredness when it comes to the teaching strategies used in Lebanese public and private schools. Research shows that there is a lack of availability of integrating ICT into the classrooms, lack of using active teaching, lack of using a variety of teaching methodology, lack of classroom management skills, and lack of integrating activities in classroom instruction (LAES vision document, 2006).

The government of Lebanon, through the Ministry of Education and Higher Education in Lebanon (MEHE), has been trying to enhance teachers' knowledge and perception of several teaching methodologies, which are based on constructivist theories, through changing the curriculum and introducing several long-series workshops. (Hajal, 2018). The Center of Education and Research Development (CERD) shows that students' achievement and performance on tests are low. The reasons behind this might be several, yet it is important to investigate the teaching methodologies adapted by the teachers in this case (Nayak, 2013). In order to improve students' learning, teachers' perception of different teaching methodologies, specifically constructivist, should be examined.

There isn't much research in Lebanon that studies, examines and investigates teachers' perception of constructivist theory when applied in the classroom. Therefore, the purpose of this

study is to investigate the teachers' perception and application of the constructivist theory in schools.

2. Brief Literature Review on Constructivist Theory

In order to understand the recent methodologies of teaching, one should fully understand the importance of constructivist theory. Constructivist pedagogy focuses on strategies used in classrooms that help students depend and rely on themselves and think using higher order skills (Richardson, 2003). As a result, constructivist teaching requires more challenging methods for students (Hajal, 2018).

Educators must understand the difference between the two schools of thought in order to decide which one best suits the lesson taught. These are the behaviourist school, which studies the mind focusing on humans modelled on computers (Bredo, 1997), and the constructivist school, which focuses on the student building new knowledge from that previously acquired (Vygotsky, 1978; Piaget 1969-1975). According to Hajal (2018), behaviourist views of teaching and learning do not encourage the process of higher order thinking skills, instead focussing on learning outcomes rather than the process of teaching. Behaviourism is a theory that affects the learning of students where the only aim behind the learning process is achieving learning outcomes. However, the constructivist theory focuses on the cognitive sense of the students. Learning occurs in a constructive way where new knowledge is based on old knowledge. As shown in Hajal (2018), as the students construct their knowledge, the teacher coaches them in order to help them build on previous knowledge (Ranelhort, 1980; Enck, 2011). In a constructivist classroom, students learn new information and ideas through many learning activities and the teachers' role is to help foster these kinds of classrooms. In addition, Hussain (2012) explained that effective learning can be acquired through group work and social interaction based on Vygotsky's (1978) social constructivism to learn new things and ideas and boost intellectual development.

The main concepts of constructivism theory can be summarised as follows: learning is based on child-centered strategy; students have background knowledge of the content; students build on previous background to construct new knowledge; knowledge is acquired only if the person is ready to acquire it; knowledge is shaped by cultural influences; children learn through social activities; learning is mediated; learning appears twice: first on the social level, and later, on the individual level; higher mental functioning is related to culture; language is a very

important tool for children to learn a new concept; the zone of proximal development is where the learner constructs their new knowledge based on old knowledge; teaching responsiveness to the needs of learning is scaffolding; and reciprocal teaching is used to improve a student's ability to learn from text through the practice of the four skills (Hajal, 2018).

2.1 Teachers' Perception of Constructivist Theory

Classrooms have changed today from traditional to non-traditional methodologies in order to enhance students' learning in general. Yet, not all teachers know or realize the importance of this. Constructive teaching and learning strategies require effort from both students and teachers. Thus, it is important to investigate the teaching methodologies adapted by the teachers in this case (Nayak, 2013). Thus, in order to improve the students' learning, the teachers' perception of different teaching methodologies specifically the constructivist should be examined. It is true that there isn't much research in Lebanon that studies, examines and investigates the teachers' perception of the constructivist theory when applied in the classroom, yet this section will summarize the main research that deals with this topic.

Constructivist learning is active and interactive in nature for all subject matters (Yackel, Cobb, & Wood, 1992; Oliva, 2009; Rowe, 2006). Kim (2005) believes that students and teachers are partners in the learning-teaching process. The way the schoolteacher teaches is of great importance when it comes to education (Kim, 2005). The role and perception of teachers to different teaching methodologies is essential when evaluating constructivist teaching strategies (Novak & Gowin, 1984). According to Moore (2009), teachers in the constructivist theory, should be aware that they are facilitators and guiders rather than the only source of information (as cited in Hajal, 2018). Daouk, Bahous and Bacha (2016) discussed in their research that teachers should be advised not to use traditional methods in order to motivate students and enhance learning and teaching process. They mentioned that, through using active learning methodologies, teachers maintain students' concentration for longer periods of time. Soltanzadeh et al. (2013) discussed that some teachers avoid any new teaching strategies since when they start using new methods of teaching, they face feelings of discomfort. Therefore, they rely on traditional ways of instruction and teaching. According to Cooperstein et al. (2004), the benefits of constructivist teaching and learning are not only in favour of the student, but also the teacher who can learn new information and develop more professional teaching methods. According to Daouk et al. (2016) teachers learn how to innovate their learning techniques because they transform from being the transmitters of information to the guide and facilitators of knowledge in

the learning process. In their article, Daouk et al. (2016) stated that instructors play the most important role because they can encourage students to engage in activities more often and they can do this by including these activities as part of grading. Hussain (2012) admitted that teachers can implement constructive learning through a physical activity break or by dividing the class into several groups. Similarly, teachers insist initiating a physical activity break because it increases student focus during sessions (Foran et al., 2017). According to Foran et al. (2017), teachers can develop new teaching methods that make students more productive and motivated while practicing active learning strategies. Oliva (2009) and Rowe (2006) concluded in their study that students are the main focus in the learning process. Teachers should motivate them and actively involve them in every learning process occurring. They should help students become independent and acquire enough prior information to build on new knowledge. As recommended in a study by Hajal (2018), learners should be engaged in every single learning process and they should be the center of the process. The teachers should know this fact, understand it very well, get trained to work on it, and apply it in their classes. Teachers should learn different strategies to guide, help and facilitate learning, and they should provide the learners with opportunities to build knowledge based on previous knowledge. Teachers should learn that direct teaching is old-fashioned and should be replaced by student-centeredness enquiry (Westwood, 1999). To achieve better learning, teachers should seek to change their teaching methodologies to a more active one (Grouws & Cebulla, 2000). Teachers should base their teaching on several outcomes after taking into consideration students' circumstances and context. In his study, Hussain (2012) demanded that teachers discover their students' abilities and help them in the learning process. Yager (1991) discussed in his research that constructivist schoolteachers should learn how to encourage students to ask questions and ideas. Teaching should be based on students' interests. Teachers should motivate new ideas and answers based on prior ones. Hussain (2012) and Yager (1991) explained that schoolteachers help their students to choose beneficial activities and view traditional educational strategies to be non-beneficial. The schoolteachers' role cannot be replaced since it guides the students in choosing the appropriate activity. Yager (1991) added that prediction, testing new ideas, and accepting others' ideas were highly recommended. In order to improve the effectiveness of learning, Fast and Hanks (2010) discussed in their study that classes should be directed towards higher order thinking skills strategies. Brooks and Brooks (1999) suggested that teachers should not give the answers to students, yet they are encouraged to direct them in one way or another to get the

answers on their own. Grouws and Cebulla (2000) concluded in their study that if students construct on their prior knowledge, learning will last longer and will be more effective. Finally, as cited in Hajal (2018,) Paparozzi (1998) explained that constructivist schoolteachers are asked to edit the students' way of thinking by trying to find new ways that fit their own thinking.

Overall, constructivist theory helps both the schoolteacher and the students acquire higher order thinking skills which boost independency in learning.

3. Research Methodology

The objectives of this study are: to identify main indicators based from the results of the study and from the classroom environment as excerpted from fieldwork; to examine the schoolteachers' knowledge of different constructivist theories; and to suggest a model for identifying teaching in elementary cycles taking each class as a case study.

To serve the purpose of this study, qualitative methodology was adopted. The qualitative approach was the most suitable option to study institutional structures, teachers' knowledge, and coordinators' understanding about constructivist theory as one vital option for engaging students with learning based on higher-order thinking. In order to answer the research questions for this study, multiple sources of evidence, and triangulation were used in analysing the data. The research questions of this study are:

- 1- How do school teachers perceive and associate constructivist theory with their teaching?
- 2- How can observation data yielded from fieldwork be used to identify the teaching environment?

The study was conducted in several schools in Lebanon where each class was a case study by itself. The first source of evidence was observation; the researcher observed the teaching strategies used in class. The second source of evidence was interviews; the researcher interviewed schoolteachers after each class observation in order not to give schoolteachers the chance to edit their teaching strategy after being interviewed. The third source of evidence was the interview with the subject matter coordinator.

4. Selection of the Participants

The sites of this study were three private schools in Lebanon. The three private schools were contacted a head of time in order to get their approval. Since this was a multiple case study,

each selected school was considered a case study by itself. The selection of the schools was not random because the researcher did not want to conduct the research in 'well-known' private schools, which followed the American system. Instead, the researcher wanted to delve into newly developing schools which were supposed to be following new methodologies of teaching. The researcher interviewed three coordinators, three schoolteachers, and observed three classrooms.

5. Phases of Data Collection

There were several steps taken collecting the data for this study:

Step 1: Observing classes in three private schools in Lebanon, considering each observed class a case study.

Step 2: Interviewing each schoolteacher teaching the observed class after the observation directly.

Step 3: Interviewing the coordinators of the classes observed.

During data analysis:

Step 4: The data from each individual classroom observation, teacher interview, and coordinator interview were analysed, and common and uncommon data and data were also analysed adapting the triangulation method. This confirmed the research findings and reliability of the research.

The schoolteachers' way of teaching observed in each classroom was compared with their feedback during the interview. Also, the schoolteachers' perceptions of constructivist teaching theory were compared to those of the coordinators.

6. Methods used to Collect and Analyse the Data

As mentioned earlier, an observation and interview method was adopted to collect the data. Multiple sources of evidences were used. The first source of evidence was the observation. The second source of evidence was the interviews with schoolteachers. The third source of evidence was the interviews with coordinators. The triangulation method was adopted, and that helped the researcher answer the research questions of this study.

6.1. Observations

Each observation was for around 50 minutes in which the schoolteacher explained a new concept or followed up a previous one. In the three observed classes, the researcher sat in a corner in the classroom where the students and the schoolteachers were clearly seen, but without

bothering them and being able to follow the interaction occurring between them. An observation rubric was filled out during each observation. The observed classes were taught by the same teachers the researcher interviewed in order to ensure that the results from different sources are coherent. The result was three observations rubrics.

6.2. Interviews

Before every interview, the researcher filled a form with specific components - date, place, and name of interviewee - to make sure that all interviews were performed. Before the interview, the researcher explained to the interviewee that the interview would be voice recorded.

The respondents had the chance to answer and express their ideas freely. The researcher tried not to be biased and not to interfere with the schoolteacher or coordinators' opinion or interrupt them. However, the researcher always had to guide the interview in order to stay on the right track during the short amount of time (20 minutes) that the interviews lasted. Due to this tight time, the researcher had to jump sometimes to other issues trying to lead the interview to a different question.

The data collected from the interviews were manually coded and categorized. The researcher started analysing the interviews from each schoolteacher and coordinator. Transcripts from the field notes in separate schools were thoroughly studied, and chunks of coded sections were grouped. Thus, the researcher coded all the common characteristics observed in the interview from each of the schoolteachers and coordinators.

7. Findings

Since this study is qualitative and bears the characteristics of a multiple case study, the participants' size could not be large and this was why the researcher chose three schools to start with. In the case of this study, after the interview with the last schoolteacher from the last school, the researcher was not learning any new information that might add any benefit to the data of the study. Therefore, the researcher had to stop collecting data after the third interview that was conducted with the schoolteacher and coordinator of the last school. The result was three interviews with each of the three coordinators and three observed schoolteachers.

In the first two observed classes and conducted interviews, the researcher observed a slight difference, but after the second observation and interview, no additional data could be

located and saturation had occurred, and the researcher thought that the data collected from observation should be stopped with the absence of any further useful data.

The main findings indicated that the schoolteachers lacked comprehensible perception of the real application and meaning of constructivist theory. These results indicate negative perception of the constructivist theory.

7.1. Cross-Sectional Analyses of Observations

To begin with cross-site analyses of the observations of the three classes, all the schoolteachers in the observed classes committed to the traditional and non-traditional teaching methodology in one way or another.

Two teachers put the students to work in groups, yet they did not apply the cooperative work intending to construct on students' prior knowledge. They were in one way or another following the behaviourist teaching strategy where they used a lot of reinforcement phrases such as "very good! I will give a bonus grade for your correct answer." The three observed classes indicated that the teaching methodologies used by the schoolteacher were traditional and this indicates that the teachers didn't have full knowledge of constructivist theory application in the classroom. Schoolteachers were playing a very big role in providing the students with the answers, yet this step should occur only in a later step when directing the students who failed to achieve the objectives of the lesson. When the schoolteachers gave the students an exercise to solve, the knowledge behind that exercise was already discussed with the students. The purpose of the exercise was only to apply what was taught by the schoolteacher. Schoolteachers did not pose problems that allowed students to use prior knowledge to understand new knowledge. They were not aware that the students' points of view were windows into their reasoning. They did not adapt the curriculum to address the students' suppositions and development of new knowledge. The schoolteachers did not have clear idea about constructivist teaching strategies, which were reflected in their teaching and later on throughout the interviews conducted with each of them.

7.2. Cross-Sectional Analyses of Interviews

The cross-sectional analysis of the three interviews conducted with the schoolteachers and the three coordinators indicated that the schoolteachers elaborated freely and stressed issues they faced while designing their daily lesson plans. These issues were the interference of the coordinators or some lack of facilities and supplies. Almost all of the schoolteachers agreed that they were not familiar with the constructivist theory. However, they agreed that they knew the difference between traditional and non-traditional teaching. Moreover, they agreed that the

schoolteacher was very important in the learning process and was the center of the teaching process. However, they approved that the classrooms should be designed in a student-centered strategy. The schoolteachers decided that they had to build an environment that would help students learn a specific learning by the end of every activity; however, they couldn't do it on their own. The schoolteacher could control the situations and every change that might occur. The schoolteacher's role was to control all the learning process to comply with deadlines. They all agreed that the students learn from society and that they might get some of these previous learned things to the classrooms, but they could not build on them or expand them except with the help of the teacher.

As for the coordinators, it is worth-mentioning that the coordinators' responses, in general, were short. They, unexpectedly, were not as supportive as the schoolteachers. They were more conservative in their answers and were not open to integrate new ideas into their teaching methodologies. They answered the questions very briefly. Therefore, the researcher needed to make extra effort to pull out some answers from them. It was noteworthy that all the coordinators in the schools almost agreed that their teaching methodologies were a mixture of non-traditional and traditional, depending on the purpose of the taught lessons. Also, they all agreed that asking the students to work in groups was a non-traditional strategy while to others, it was considered a constructivist theory. Even though it was clear from the interviews with the coordinators that they were unfamiliar with the constructivist theory, they welcomed the idea of training the schoolteachers to use different strategies in order to shift to non-traditional teaching strategies. Moreover, it was clear that the coordinators believed that the constructivist theory and non-traditional strategies were linked with group work and technology. When the coordinators were asked about their opinion about student-center strategy and the teacher-center strategy, they indicated that both are essential and that one could not be eliminated from the learning process. They agreed that without the teacher, learning does not occur. The schoolteacher should control the teaching situation and take the students into consideration as well. According to the coordinators, the schoolteachers should also be open and welcome new strategies offered by the school to improve their teaching skills.

7.3. Overall Findings

The data collected from the three sources showed consistency. Data collected from each of the observation matched the data collected from each of the interviews with the schoolteachers who taught the class. Their responses to questions about adapting a non-traditional strategy

versus traditional strategy were reflected in the strategy they used while teaching. The results from the observations and interviews showed that the schoolteachers and coordinators knew the difference between traditional and non-traditional teaching. Even though the schoolteachers agreed in their responses to the question related to considering the student as the center of the learning process along with the schoolteacher during the interviews, they did not reflect that in their teaching.

It was not observed that the schoolteacher gave a lot of importance to the students' background information. It was learned from the observations of the three classes that the aim of the teaching was to deliver the content and to have students apply it in a passive way even though almost all of them agreed in the conducted interviews that the students learned from society, and they might bring some of these previous learned things to the classrooms. Moreover, the schoolteachers' perceptions of constructivist theory were compared to those of the coordinators. Choosing the strategy depended on the purpose of the taught lesson and not the students' interests. They also all agreed that asking the students to work in groups was a non-traditional strategy, and some classified it under constructivist teaching methodology. Even though it was clear from the interviews with both the coordinators and the schoolteachers that they were not familiar with the constructivist theory, training the schoolteachers to use different strategies was beneficial in order to shift to non-traditional teaching strategies. Moreover, both the schoolteachers from almost all three schools and the coordinators agreed that the constructivist theory and the non-traditional strategies were linked with group works and technology. It was clear from the schoolteachers' and coordinators' responses that both agreed that the schoolteachers and the students were important in the learning process and completed each other. They settled that the schoolteacher's presence was very vital, and that learning did not occur without the schoolteachers' presence.

8. Discussion

The purpose of this study was to investigate the teachers' perception and application of constructivist theory. The discussion of the findings will be presented according to the research questions of the study.

Research Question 1: How do schoolteachers perceive and associate constructivism with their teaching?

As a summary of the findings related to research question 1, the observations and interviews showed that the schoolteachers and coordinators knew the difference between traditional and non-traditional teaching methodologies, yet did not apply them in their classes. Both believed that the teacher is the center of the teaching process and not only a facilitator. The analysis of the interviews showed that the teachers prepared lessons based on the purpose of the lesson taught and not on the students' needs. Results show that school teachers and coordinators did not have a clear idea of the several teaching methodology that lie under the constructivist teaching. This does not agree with Grady *et al.* (n.d.). They argue that teachers should depend on the students' prior knowledge and needs in order to prepare the lessons taught. Visiting the review of this study, Grady *et al.* (n.d.) argued that theorists had not been able to come up with one particular teaching strategy that should be adapted in order to promote learning.

As discussed in the findings of the study, all the schoolteachers observed in the classes indicated commitment to the traditional learning strategy in one way or another. Even though some tried to put the students to work in pairs, they did not apply the cooperation work intending to construct on the students' prior knowledge. This finding did not go in line with what was said by the teachers and coordinators when asked about the strategies they used while teaching. In this study, schoolteachers were not attentive that the students' prior knowledge leads them into reasoning. In general, the schoolteachers did not have clear ideas about constructivist teaching strategies, which was reflected in their teaching strategy. Both coordinators and schoolteachers welcomed the idea that training schoolteachers is effective in order to use different strategies and in order to shift to the non-traditional teaching strategies. The coordinators believed that the constructivist teaching strategy and the non-traditional strategies were linked to group works and technology. It was discussed in the theoretical framework of the study that Piaget (1954, 1973) and Vygotsky (1978) helped us understand that learners came to school with ideas and previous knowledge that could be blended within the environment. Researchers (Franke & Grows, 1997; Enck, 2011; Daouk *et al.*, 2016; Hajal, 2018) suggest that children should be told new information in order to understand new ideas and knowledge. They believe that children construct their own learning. As educators, we always argue and hear others assert that in order for children to learn, they should be engaged in the learning process. However, from the observations and interviews conducted in this study, schoolteachers and coordinators did not show full awareness of this fact. The finding showed that the schoolteacher was the center of the

teaching process. However, when interviewed, they agreed that the classrooms should be designed in a student-centered strategy.

In addition to this, the literature regarding the relationship between constructivist strategies and schoolteachers argue that classrooms today have advanced and are no longer a copy of traditional classrooms where the learning was teacher-centered and where the schoolteacher was responsible to transmit information. On the contrary, classrooms today are more active and are student-centered where the student is involved in the process of understanding new information. According to researchers (Cobb, Yackel, & Wood, 1992; Novak & Gowin, 1984; Moore, 2009; Cooperstein et al. 2004), learning in constructivist vision was active where the learning-teaching process was interactive in nature and needed negotiation of mathematics and other subject matter meaning. There were differences between the way knowledge was understood from both traditional and constructivist teaching strategies. It was essential to understand the teacher's constructivist role in education which is made up of creating, synthesizing, and interpreting information. This was not clearly shown in the findings of this study, even though Oliva (2009) and Hussain (2012) argued that a schoolteacher who facilitated learning and led class to a more student-centered, friendly, and relaxed environment followed a teaching skill that helped students build their knowledge.

Research question 2: How can observation data yielded from fieldwork be used to identify the teaching environment?

To answer research question 2, each criterion from the observation rubric was analysed. The teaching strategies of each observed teacher were classified under either of tradition or constructivist. From the findings of the study, several data yielded from the fieldwork helped in identifying teaching environment.

The observed teachers' teaching strategies in the selected schools indicated that schoolteachers did not rely on the students' prior knowledge. Visiting the review of this study, the constructivist theory emphasized on the idea that the teacher's role was to arrange situations to discover knowledge and then depersonalize it (Franke & Grows, 1997; Enck, 2011; Daouk *et al*, 2016; Hajal, 2018). The schoolteachers were only satisfied in giving the students the tools they needed and provided conditions that reproduce new knowledge, but they were in control of all knowledge the students were gaining since they were the only source of it. However, the role of the schoolteacher according to constructivist theory does not agree with the findings of this study. The teacher's role was rather to find out the problems or situations that would be given to

the students which contradicted the review of this study (Franke & Grows, 1997; Daouk *et al*, 2016; Hajal, 2018; Hussain, 2012). However, this was not the case in the findings of this study. In the observed classes, the schoolteacher was providing the students with answers, and the purpose of the solved problems was to practice and not to elicit new words that might open new discussion that lead to new knowledge.

As mentioned in the review of this study (Foran *et al.*, 2017, 1997; Westwood, 1999; Enck, 2011; Daouk *et al*, 2016; Hajal, 2018; Hussain, 2012), the role of the schoolteacher was to be responsible for the accomplished results, to provide students with all the necessary factors to learn and gain knowledge, and to build an environment that helps the students learn a specific learning outcome by the end of every activity. The literature argues that schoolteachers and students are considered in constructivist teaching strategy as active meaning-makers who continually gave contextually based meaning to each other's words and actions as they cooperated. Researchers explain that schoolteachers use the curriculum to help the students build mathematical understanding. Different schoolteachers could use the same curricula and filter them differently depending on their way of constructivist thinking. In addition, the curricula could play a role in helping schoolteachers decide what the students needed, and another role could be in providing activities and problems that help students understand new concepts. However, this was not shown from the observations conducted in the observed classes. The literature on the relationship between constructivism and students' learning suggests that students use what they know in order to learn new material. The schoolteacher coaches the students as they construct their knowledge and helps them build on previous knowledge (Franke & Grows, 1997; Enck, 2011; Daouk *et al*, 2016; Hajal, 2018).

9. Limitations

The study embraces a few limitations as follows:

- Only three schools participated in this study.
- The study did not include male schoolteachers. It was a coincidence that all the teachers were women. It would have been interesting to compare different gender's point of view towards different teaching strategies, and especially towards the school context and facilities available in order to check for any change in the findings.
- There was likely bias introduced by the subjectivity of the researcher. In this multiple-case study, the researcher was the primary source of data collection and

analysis. This might lead to the fact that some of the incidents might have been overlooked while others were overemphasized.

10. Conclusion

As a synthesis, even though the findings of this study are not intended to be generalized to all schools across Lebanon, it can be deduced that Lebanon can be placed under the market-based approach since the findings of this study showed that the teachers and coordinators focused more on the importance of standardized teaching and learning, literacy and numeracy, teaching a prescribed curriculum, devolution of budgetary and managerial responsibility to school level, and test-based accountability and control (Hajal, 2018). The Lebanese schoolteachers and coordinators participated in this study did not focus on teach-centeredness as a basis for student learning.

There are several important issues concerning education, but one of the most important ones in schools is how to improve students' comprehension of the subject taught and their learning process. Whatever the subject matter is, it is worth finding ways to enhance students' learning. In order for the students to acquire higher-order thinking and be able to think independently, the schoolteacher should be prepared and ready to facilitate this process and introduce students to different teaching strategies.

The purpose of this study was to investigate schoolteachers' knowledge and perception of different teaching methodologies, especially the constructivist theory, which helps the students promote their level of thinking higher and help them be independent. Whatever the subject-matter is, it is essential to find the best way to improve the students' learning, and this way may be eye opener to schoolteachers regarding different teaching methodologies such as the constructivist teaching strategy. It is concluded from the findings and discussion of this study that schoolteachers and coordinators knew the difference between traditional and non-traditional teaching. However, this was not applied by the teachers in the classrooms. The teaching methodologies observed underlie traditional ones. In addition, several data yielded from the fieldwork helped in identifying the teaching environment where teaching in the Lebanese school was informed, and no clear pedagogical models were excerpted from the observations and the interviews. Teachers did not seem to have an overarching teaching philosophy that accents constructivism. As such, it is worth reconsidering the way these subject-matters are being taught

by schoolteachers. The responsibility here does not lie only on schoolteachers since they are one partner from several ones responsible in the education sector.

10.1. List of Indicators for Identifying the Classroom Environment as Excerpted from Fieldwork

A key primacy within the evaluation teaching strategies applied for better teaching in Lebanon is to develop indicators that permit a good understanding of how well schooling is being delivered. Using these indicators, policymakers can analyse performance and identify priority areas for better teaching strategies in all subject matters in general and in mathematics in particular. Table 1 characterizes a list of indicators for identifying the classroom environment as excerpted from fieldwork conducted for this study (Hajal, 2018).

Table 1: *List of Indicators for Identifying the Classroom Environment as Excerpted from Fieldwork*

Indicators	Characteristics
Physical and Technological Resources	Availability and use of: -Equipment -Materials -Technology -Facilities
Non-Cognitive Indicators	Motivation of teachers Attitude of teachers Students' number in each classroom
Cognitive Indicators	Skills Knowledge of the theory Competencies
Teaching Indicators	Assessment Evaluation Teaching strategies Professionalism capacity building Strong commitment to training

Source: Hajal, P. (2018). Towards a conceptual framework for effective mathematics teaching in Lebanon: a multiple case-study. PhD Dissertation. Saint Joseph University, Beirut.

11. Recommendations and Implications

To begin with, it is not easy for the students to adapt to constructivist teaching theory. They should be trained to do so. As for schoolteachers, if they are not trained to guide the students to be independent and to search for the new knowledge, then they cannot do the job in an outstanding way.

11.1. Implications for a Better School Environment

In order to improve the quality of education in Lebanon, schools' pedagogy should be enhanced and in order to overcome the gap of the findings of this study and enhance the schoolteachers' perception of several teaching methodologies which help them shift to student-centeredness, a concerted effort and coordination between MEHE and CERD, education makers in the education field, school administrators and schoolteachers, and students and their parents are highly beneficial and important. Surely, such a challenge needs strategical plans and needs to be comprehensive. Guidelines should be developed in order to work on the liaison between all the parties mentioned, especially between the MEHE and the CERD since each governmental institution plays a certain role in the development of the pedagogy process.

11.2. Implications for Improving

A new culture is suggested to be built where capacity building programs such as seminars should be introduced to both educational sectors in Lebanon taking into consideration that not all schools in Lebanon are subject to follow up on such trainings and seminars. Schoolteachers are encouraged to learn new teaching methodologies and should be introduced to constructivist teaching strategies which will help them shift from the teacher-centered methodology to student-centered teaching. To close the gap between theory and practice, it is recommended that the capacity building programs be introduced to all schools where the schoolteachers' knowledge of new methodology is always updated. Finally, it is suggested that the schoolteachers and coordinators understand the nature of knowledge required both to seek a long-life professional improvement in order to build an understanding of student-centered education based on constructivist teaching theory, and to be role models for their students. This is why it is suggested to enrol in continuing educational programs that introduce them to new methodologies.

11.3. Implications for Future Research

In Lebanon, there is still little research on examining schoolteachers' knowledge and perception of different constructivist theories. This is why it is suggested that more qualitative research in different school cycles and in higher education be conducted in order to examine the extent of schoolteachers' knowledge of different constructivist theories. The results of this study should not be viewed as an end in themselves. More in-depth research should be conducted to examine schoolteachers' knowledge and perception of different constructivist theories.

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