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## **The Acquisition and Development of EFL Pre-service Teachers' Pedagogical Content Knowledge about Classroom Management**

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### ***Abstract***

Classroom management is an important component of effective teaching. Despite its importance, little is known about how pre-service teachers acquire and develop pedagogical content knowledge about classroom management. This study explored the PCK about classroom management of 22 EFL student teachers enrolled in Dhahran Al-Janoub (K.S.A.) Faculty of Education for Girls. It also traced the development of this knowledge over a time span of a year of teacher education program using quantitative and qualitative techniques. A multi-method approach was used to allow triangulation of data and accessing the multifaceted nature of PCK. Results of the study revealed that PCK is a dynamic process of a developmental nature. Results also indicated an increase in the size and complexity of the knowledge about classroom management across the time span of a year of teacher education program. There was also a shift of interest in the classroom management themes under concern. Participants started with a simple conceptualization of classroom management as control/ discipline maintenance, moved to its conceptualization as classroom organization, use of nomination techniques, reward and punishment, preventing and reacting to problem behavior and ended with a more profound conceptualization of planning for learning, caring for students and teacher/ student relationship and responsibility for learning. Finally, the learners emphasized the role of direct teaching practice experiences and de-emphasized college classes in the acquisition and development of their PCK about classroom management.

### **Background of the study**

Classroom management has been reported as one of the most important and difficult areas of concern for pre-service, beginning and in-service teachers (Winitzky, Kauchak and Kelly, 1994; Jones and Vesilind, 1995 and Fenwick, 1998). According to Jones and Vesilind (1995), one difficulty in studying and teaching classroom management is the abstract and complex nature of the topic. Besides, it is a much broader concept than discipline since it includes the planning and organization of classroom instruction.

Classroom management is characterized by multidimensionality, simultaneity, immediacy, unpredictability, publicness and history (Doyle, 1986 cited in Jones and Vesilind, 1995:313) which make the process of

classroom management difficult to teachers. Multidimensionality refers to the variety of events and activities that take place simultaneously in the class while immediacy refers to the extremely rapid pace in which teachers must interact with large numbers of events. The unpredictability of classroom problems is a particular problem for student teachers, who lack the automaticity of action and thought in such situations. The public and historical context of classroom interactions increases the complexity of the process of classroom management.

Most research on classroom management had an exploratory nature. Studies have investigated the process-product nature of teaching and as a result a number of teacher behaviors have been correlated with effective classroom management and learners' outcomes. Abdul-Hak (1992) revealed a positive relationship between teachers' classroom management skills and students' achievement and attitudes towards English at the secondary level. Luo, Bellows and Grady (2000) explored the classroom management problems and concerns among teaching assistants. The problems and concerns were significantly related to experience in teaching and academic discipline. Victor (2005) identified effective classroom management behaviors in the early childhood classroom.

Though research on teaching has a long history, teacher knowledge research is relatively recent (Connelly, Clandinin and He, 1997). Based on the assumption that teacher cognition derives teacher behavior, recent research in teacher education has begun to focus less on observable teacher and student behaviors and more on teachers' thought processes. This research trend emphasizes the complex nature of the classroom and the cognitive demands made on the teachers' decision making processes before, during and after teaching. These decisions are usually derived from a system of knowledge gained from different sources such as teacher education programs, readings, practicum experiences, reflection, observations, etc. Shulman (1986) labeled this knowledge Pedagogical Content Knowledge (PCK).

### **Problem of the study**

Earlier studies of cognition in novice and expert teachers have explored the formation and development of teachers' PCK, the knowledge that teachers have about teaching that derives them to take decisions and actions in different contexts. Studies also identified the interrelationship between this knowledge and other variables such as study, experience, decision making, reflection, etc. (see Winitzky, Kauchak and Kelly, 1994; Fernandez-Balboa and Stiehl, 1995; Jones and Vesilind, 1995; Winitzky and Kauchak, 1995; Kettle and Sellars, 1996; Lundeberg and Scheurman, 1997; Connelly, Clandinin and He, 1997; Fenwick, 1998; Farrell, 1999; Meijer, Verloop and Beijaard, 1999; Black and Halliwell, 2000; Doecke, Brown and Loughran, 2000; Rowan, et. al., 2001; Sunfestri, 2001; El-Okda, 2004;

Martin, 2004, Jahin and Alexander (2006) and Mishra and Koehler, 2006). Yet, very few studies have focused on foreign language student teachers' knowledge about teaching, in general, and classroom management, in particular. This study attempted to investigate the PCK about classroom management that EFL pre-service teachers had. It also aimed at tracking the development of that knowledge across a two-semester academic year and investigating the variables underlying such development.

### Questions of the study

The present study attempted to answer the following questions:

1. What is the PCK that EFL pre-service teachers in Dhahran AlJanoub Faculty of Education for Girls have about classroom management?
2. How does EFL pre-service teachers' PCK about classroom management develop over the course of teacher education program and teaching practice?
3. What are the variables that EFL pre-service teachers perceive as influential in the development of their PCK about classroom management?

### Review of Literature

#### **Pedagogical Content Knowledge (PCK)**

In the 1980's, Shulman (1986) introduced the construct Pedagogical Content Knowledge (PCK) as a component of content knowledge and pedagogical knowledge. To him, content knowledge is one's understanding of the subject matter while pedagogical knowledge is one's understanding of teaching and learning processes independent of subject matter. Thus, PCK is *"knowledge about the teaching and learning of a particular subject matter, taking into account the particular demands inherent in the subject matter"*. PCK has been defined as *"a way of knowing that is unique to teachers whereby they take an aspect of subject matter and transform their understanding of it into instruction that their students can comprehend"* (Shulman, 1986: 8). It also has been defined as *"teachers' pedagogical decisions and strategies with regard to representing subject matter to their students"* (Fernandez-Balboa and Stiehl, 1995: 293). Thus PCK entails the ability to transfer the subject matter from one's own knowing to another's knowing.

Meijer, Verloop and Bejaard (1999: 60) envisioned PCK as *"the knowledge that teachers themselves generate as a result of their experiences as teachers and their reflections on these experiences"*. Hashweh (2005: 277) reconfigured the PCK construct defining it as "the set or repertoire of private and personal content-specific general event-based as well as story-based pedagogical constructions that the experienced

teacher has developed as a result of repeated planning and teaching of, and reflection on the teaching of, the most regularly taught topics".

Based on the aforementioned definitions, this study adopts the definition of PCK as the knowledge, beliefs and values that teachers themselves generate as result of their experiences as students and student- teachers in the educational system and their reflections on these experiences and that guides the process of decision making pre, during and after teaching and allows them to transfer that knowledge to others.

According to Fernandez-Balboa and Stiehl (1995), there are two kinds of PCK: specific PCK, which is particular to the instruction of a specific subject matter such as English and generic PCK, which is common to instruction across all subjects or content areas.

Literature on PCK reports that it is a personal construct which is continuously established in the individual through a series of diverse events such as study, readings, practical experience, observing other people's practices, etc. It is also characterized by its developmental nature, i.e. it changes as new experiences are gained (Kettle and Sellars, 1996:1). PCK is tacit (Kettle and Sellars, 1996 and Meijer, Verloop and Beijaard, 1999, El-Okda, 2004 and Jahin and Alexander, 2006): many teachers have a limited consciousness of the knowledge underlying their practices and find difficulty in articulating it; therefore. it is not accessible and difficult to measure. This difficulty renders it difficult to measure and makes researchers resort to indirect measures. Therefore, Kettle and Sellars (1996) recommend the use of multi-methods of assessing PCK that allows triangulation of data while allowing capturing the multifaceted nature of that knowledge. Winitzky, Kauchak and Kelly (1994) see that PCK can also be assessed through direct techniques such as semantic mapping where subjects construct graphic representation of the interconnections between the key concepts in a topic, describing the relationships between them.

Concept mapping exercises have been useful tools for investigating teacher knowledge among novice and/or experienced teachers. They also proved to be useful in measuring cognitive change and/or development. Concept mapping can be structured or unstructured. Whereas unstructured concept mapping tasks provide subjects with a general topic, ask them to brainstorm terms and categorize them in a concept map, structured concept mapping tasks provide subjects with a fixed list to draw upon, organize, and map. Since this study is an exploratory one, unstructured semantic mapping is used taking into account Winitzky, Kauchak and Kelly's (1994) recommendation.

Researchers in teacher education have used both direct and indirect measures to access subjects' knowledge in a variety of domains. Semantic mapping, interviews, observations, card sorting, surveys, stories, story

writing, conversations, drawings, metaphors, portfolios, journals, reflective analysis of case studies, field texts, vignettes and ordered tree techniques are examples of such techniques (see Winitzky, Kauchak and Kelly, 1994; Fernandez-Balboa and Stiehl, 1995; Jones and Vesilind, 1995; Winitzky and Kauchak, 1995; Kettle and Sellars, 1996; Lundeberg and Scheurman, 1997; Connelly, Clandinin and He, 1997; Fenwick, 1998; Farrell, 1999; Meijer, Verloop and Beijaard, 1999; Black and Halliwell, 2000; Doecke, Brown and Loughran, 2000; Rowan, et. al., 2001; Sunfestri, 2001; El-Okda, 2004 and Martin, 2004). Winitzky, Kauchak and Kelly (1994) concluded that both direct and indirect measures of PCK are equally significant in assessing PCK.

Some researchers developed measures to access PCK in different domains. For example, Rowan, et. al. (2001) developed surveys to measure PCK about Mathematics and reading of elementary teachers. Phelps, Schiling and Michigan (in press) also developed measures for assessing PCK about reading among elementary teachers.

A great number of researchers investigated the PCK that teachers have. Using 11 kinds of field texts, Connelly, Clandinin and He (1997) analyzed in-service teachers' personal practical knowledge about teaching. Fenwick (1998) explored the practical knowledge about space, energy and self (as components of classroom management) among junior high teachers using classroom observations and interviews. Using a multi-method approach, Doecke, Brown and Loughran (2000) found narrative enquiry useful in accessing the professional knowledge of beginning teachers. Besides, Warford and Leeves (2003) investigated the teaching conceptions of pre-service teachers of English using observations and interviews. In the area of reading, Meijer, Verloop and Beijaard (1999) investigated language teachers' practical knowledge about teaching reading using concept mapping and interviews. Black and Halliwell (2000) used alternative forms of representation including drawings, metaphors, conversations and story writing to access the practical knowledge of 14 child care teachers about classroom management. Using vignettes, El-Okda (2004) investigated the student teachers' tacit beliefs about reading. In a longitudinal study that used interviews, classroom observations, and portfolios, Martin (2004) investigated three beginning teachers' conceptions of classroom management. She also investigated how these conceptions affected the teachers' teaching practices.

A number of studies have shown that teachers' knowledge changes over time but they were incongruent concerning whether this change is towards an increase or decline of the concepts and their structure. Using concept mapping and ordered tree techniques, Winitzky, Kauchak and Kelly (1994) found that cognitive structure about classroom management increased over time among a sample of nine elementary teachers. Using

concept mapping and interviews with 23 intermediate language arts, Social Studies, Science and Mathematics teachers, Jones and Vesilind (1995) concluded that the participants had undergone conceptual change in classroom management as a result of practicum experience, university classes, readings and observations of others teaching. Similar results were gained by Kettle and Sellars (1996) in their longitudinal study to explore changes in the "practical theories" related to teaching of two student teachers over a time span of a year using concept maps, card sorting and interviews. Results also indicated an effect of reflective thinking on conceptual change.

Conversely, Winitzky and Kauchak (1995) indicated that participants' cognitive structure declined over time using concept maps and interviews. Participants attributed cognitive change to clinical experiences rather than to program experiences. Similar results were gained by Sunfstri (2001) who investigated pre-service Physical Education self-reported knowledge of classroom management among sophomores, juniors, seniors and graduates. Results indicated that sophomores had the highest self-reported scores followed by juniors, seniors and graduates.

The generic nature of PCK has been the main concern of Fernandez-Balboa and Stiehl (1995) and Connelly, Clandinin and He (1997) compared to the aforementioned studies that focused on PCK specific to certain domains.

Some researchers attempted to develop PCK using different techniques. Using reflection in teacher development groups, Farrell (1999) enhanced the development of teaching theory of three EFL teachers. Lundeberg and Scheurman (1997) used repeated reflective analysis of case studies with pre-service teachers to develop the PCK in an Educational Psychology course. They concluded that their technique positively affected the sample's PCK. Similar results were gained by Chen and Arbor (without date) who used the skill-theme approach to develop the PCK of pre-service Physical Education teachers.

Recently, researchers began to think of re-conceptualizing the concept of PCK. Suggesting a framework for teacher PCK was the main concern for Mishra and Koehler (2006) while reconfiguration of pedagogical content knowledge was Hashweh's (2005).

## **Method**

### **Participants**

The participants of this study were 22 EFL student- teachers enrolled in the third year of the academic year 2005-2006 at Dhahran Al-Janoub College of Education, K.S.A. All of them were females aging 20 to 22 years old. The participants start studying educational subjects at the third year of the college. Among these courses is a course on "Teaching English as a

Foreign Language" that lasts for the two semesters of the third year. The course specifications deal with classroom management as one item to be covered in one lecture in the first semester. The participants go for practicum practice two weeks after the beginning of the second semester. This is done once a week for six consecutive weeks followed by two complete weeks. During the first two weeks, their task is observing the regular teachers teaching their classes. After that, they start teaching. Two weeks after the beginning of the fourth year, the student teachers go teaching practice for the second time for a similar period.

## **Procedures**

### **Concept mapping**

The participants were asked to construct concept maps of their own conceptions of classroom management on three different occasions: once at the beginning of the first term of the third year before they formally studied classroom management. The purpose of this technique was to tap into the knowledge that learners had about classroom management before being formally introduced to the topic. The second was by the end of the first semester, i.e. after they were introduced to the topic classroom management in the Methodology course and before they went teaching practice. Three months later, by the end of the second semester, after the student teachers went teaching practice, they were asked to construct their third concept maps. This was intended to allow participants enough time to experiment in practice what they have theoretically covered in college and to allow them enough time for observation and peer teaching. In the case of the second and third maps, the previous map was introduced to the participants and they were asked to decide if they would add, delete, reorganize, or keep parts or all of it as it was. Since concept mapping was used regularly by the researcher during teaching the students, the student-teachers were given brief instruction in mapping.

### **Interviews**

Following the construction of the second concept maps, some student teachers (n=10) were selected for interviewing for more in-depth study because their maps exhibited the greatest change from map 1 to map 2. The researcher assumes that change in the concept map would signal significant change in the student-teacher PCK about classroom management and would provide valuable insights into the process of conceptual change and/ or development and the variables underlying this change.

Interviews were conducted on two separate occasions with each of the selected student-teachers. The first was at the end of the first term of the third year after they constructed their second maps. The second was after participants had constructed their third maps towards the end of the

third year. The purpose of these interviews was to discuss with the students their concept maps, the changes that occurred in the maps and the variables behind such change. The interviews with seven student- teachers were audio-recorded and transcribed. The remaining three students refused recording the interview; therefore, the researcher coded and transcribed the interview then gave the script to the students to read, add and/ or delete concepts and finally decide that the script exactly reflected what they said in the interview.

The concept maps were valuable tools used to elicit the PCK in the interviews. The interviews, used for triangulation purposes, provided another valuable source of information about the PCK, the changes in that PCK and the variables that lead to this change. The interviews were semi-structured, i.e. the questions were prepared by the researcher but allowed flexibility to be explained, illustrated or rephrased in the light of the participant's previous map.

### **Data Analysis**

The data of this study consisted of 66 concept maps (22 per time point) and 20 transcripts of the interviews (10 per time point). In analyzing the maps, Winitzky and Kauchak (1995) scoring system was followed. The variables used for analysis are:

- \*Items: number of items in each map
- \*Depth: number of levels in the map.
- \*Chunks: a chunk is one super-ordinate concept and its contiguous subordinate concepts.
- \*Width: number of chunks at widest point in the map.

The analysis of the concept maps involved a preliminary identification of categories and two stages of data analysis. Once the categories were established, they were used in the two stages of data analysis. The first stage included quantitative analysis of data and the second focused on the qualitative analysis of data.

### **The development of categories**

The goal of this stage was to establish categories that could be used to describe the data and to serve as the basis for their analysis. Costas (1992 cited in Farrell, 1999, 159) stresses the importance of using a priori frameworks in qualitative data analysis. According to him, categories are derived from statements and conclusions found in the literature of other researchers who investigated similar phenomenon. After the participants submitted their concept maps, a thorough study of the maps of the data followed. Then a set of categories and sub-categories was established. Then the data were analyzed in the light of the set categories.



## Results of the study

### Results related to construction and development of PCK about classroom management: a quantitative approach

The concepts and ideas presented in the maps and their sequence suggested that the EFL student- teachers experienced shared patterns of constructing and developing their PCK about classroom management. Because the construction of the PCK of the participants took a long time through their teacher education program, it was difficult to separate the results concerning the construction of the knowledge from its development. The following is a presentation of results of the quantitative and qualitative analysis of the maps.

Quantitative analysis of the three concept maps showed an increase in the complexity of the maps over the two semesters. Table (1) presents results of the quantitative analysis of the concept maps. Mean scores of the participants' responses were used.

Table (1): Quantitative analysis of the concept maps

Variable	1 <sup>st</sup> map	2 <sup>nd</sup> map	3 <sup>rd</sup> map
Items	3	17	20
Depth	1	5	6
Chunks	0	5	6
Width	0	3	5

The participants' responses to the first task of concept mapping were easy to analyze since the maps were very simple. The maps included few items related to classroom management and all of them were of only one level. Therefore no details were available for analysis in terms of chunk or width. The number of items included in the maps increased from map 1 (mean score=3) to map 2 (mean=17) and map 3 (mean=20). The depth of maps also increased from a mean score of 1 in map 1 to 5 and 6 in maps 2 and 3 consecutively, indicating gaining knowledge as a result of teacher education program represented by the methodology course in map 2 and teaching practice in map 3. The increase in knowledge is measured by the number of items presented in the maps. Not only was there an increase in the participants' knowledge, but there was also an increase in the complexity of the structure of the maps. As mentioned earlier, in map 1, the maps were of only one level, no details or sub-ideas were provided. In the second and third maps, the number of levels increased to 5 and 6 respectively, and details for the concepts were provided that the chunks increased from 0 in map 1 to 5 and 6 in map 2 and 3 respectively. The width also increased from 0 in map 1 to 3 and 5 in map 2 and 3 respectively.

The participants' responses to the concept mapping task were also analyzed in terms of categories, frequencies and percentages. Results of the three concept maps are presented in table (2).

**Table (2): Categories of classroom management concepts**

Category	Items	1 <sup>st</sup> map		2 <sup>nd</sup> map		3 <sup>rd</sup> map	
		n	%	n	%	n	%
Establishing rules and routines	Establishment of rules and routines by both teacher and students			5	22.7		
	Sticking to rules			10	45.5		
Planning for learning	Planning for diverse levels and individual differences			12	54.5	15	68.2
	Planning required materials			12	54.5	15	68.2
	Planning for expectations			10	45.5	15	68.2
Teacher's authoritarian role	Maintaining discipline in the classroom	22	100	5	22.7	12	54.5
	Controlling the class	20	90.9	8	36.4	12	54.5
	Keeping students silent/quiet	18	81.8	4	18.1		
	Using high voice	15	68.2	6	27.3		
Teacher/ student relationship	Feared by students	8	36.4				
	Being liked by the students			13	59.1	8	36.4
	Treating students fairly, friendly but firmly			20	90.9	12	54.5
	Respect for students			12	54.5	12	54.5
	Knowing and using students' names			19	86.4	12	54.5
	Being respected by the students					10	45.5
Responsibility for learning	Being responsible for learning			6	27.3	10	45.5
Using grouping techniques	Using pair and group work			18	81.8	20	90.9
Dealing with problem behavior	*Prevention (creating a code of conduct- being a model- acting as a professional- engage in task)			15	68.2	22	100

Category	Items	1 <sup>st</sup> map		2 <sup>nd</sup> map		3 <sup>rd</sup> map	
		n	%	n	%	n	%
	*Intervention (keep calm- act immediately – separate trouble makers- seek help from institution- use eye contact – punishment- focus on behavior not students – reprimand in private)			18	81.8	18	81.8
Creating an environment conducive to learning	Using variety of interesting activities			10	45.5	12	54.5
	Using cooperative learning			8	36.4	8	36.4
	Using games, songs and role play			8	36.4	18	81.8
	Using incentives of different types			10	45.5	10	45.5
	Engaging students in meaningful practice of the language					13	59.1
	Using different kinds of punishment					18	81.8
	Pacing activities correctly			6	27.3	10	45.5
	Giving clear instructions			14	63.6	18	81.8
	Being flexible			3	13.6	11	50
	Asking multi-level questions			10	45.5	10	45.5
Managing seating arrangements					11	50	

Table (2) indicates that based on the participants' experience in the school system, classroom management is mainly a process of maintaining discipline in the classroom (n=22, 100%) and controlling the class (n=20, 90.9%). Less participants, though still a great number, viewed classroom management as keeping students silent (n=18,81.8%), or using a high voice (n=15, 68.2%). Few participants envisioned classroom management as being feared by the students (n=8, 36.4%). The participants' authoritarian vision about classroom management was gained from their experience at the school system where the class should always be silent and the teachers exerted all the effort to control the class by raising their voice , threatening those who violate the rules , and punishing them to the extent that the students fear them.

By the end of the second term after the participants studied a unit about classroom management, observed regular teachers and their peers

and taught intermediate classes, the participants' concept maps showed an increase in their PCK of classroom management with each of them emphasizing items according to their importance from their own point of view. More and new items such as fairness, friendliness, physical environment, grouping techniques, respect, responsibility, eye contact, etc (which did not exist in the first map) appeared. The number of items included in the map increased. Elaborations were provided and relationships between ideas were drawn. Emphasis in the second maps was on issues related to treating students fairly, friendly but firmly (n=20, 90.9%), knowing and using students' names (n=19, 86.4%), handling problem behavior using prevention and intervention techniques (n=18 and 15, 81.8% and 68.2% respectively). Teachers' authoritarian roles received less concern in the second maps. Number of participants mentioning teachers' authoritarian roles declined from 22 to 5, 20 to 8, 18 to 4 and 15 to 6 on the items related to discipline and class control.

In their third maps, the participants modified their maps by additions, deletions, development, emphasizing or de-emphasizing concepts in the light of their teaching practice experiences at the secondary schools for a complete term. Issues of concern for the participants at this stage were related to giving clear instructions, dealing with problem behavior and planning for students' learning. Issue such as being liked by the students, using students' names received less emphasis in the participants' third maps. The participants' maps also increased in complexity indicating complex knowledge structures. Students whose maps exhibited the greatest changes and/ or development from map 2 to map 3 were chosen for qualitative analysis to get a clear picture concerning why they changed or modified their maps and the sources of such change and/ or development in concepts. The following section elaborates on the construction and development of PCK about classroom management from a qualitative point of view.

### **Qualitative analysis of the construction and development of PCK about classroom management**

Analysis of the concept maps suggested some patterns concerning conceptualization of classroom management and the development of the concepts among the participants. Over the time spent in the study, there was a marked increase in the participants' PCK of classroom management. By the beginning of the study, participants viewed classroom management from their own experience as students in the school system. They viewed it from an authoritarian point of view where the teachers are the only ones responsible for keeping control in the classroom. They viewed classroom management a process of maintaining discipline and setting rules which should be respected and never violated by the students. In this respect the

teachers raise their voices, keep the class silent and punish those who violate the rules.

After being exposed to a unit on classroom management in their methodology course, the participants constructed and developed their PCK about classroom management. This knowledge included most of the ideas they have studied. In the second maps, concepts such as grouping techniques, teachers'/ students' responsibility for learning, teacher/ student relationship, dealing with problem behavior and creating an environment conducive to learning were mentioned. It is worth-noting that the participants might have depended on their theoretical knowledge about classroom management while still experimenting with the concepts, examining their practical validity during teacher and peer observations and actual teaching during their teaching practice. They were examining their hypotheses about classroom management. During this period, the participants reached conclusions concerning accepting or refuting their hypotheses. This might interpret why about half of the participants dramatically changed and/ or developed their concept maps the third time they were asked to construct their maps.

Another pattern of change across all subjects was the adoption of classroom management terminology in the second and third maps. At the beginning, the participants used common words to describe classroom management terminology. After being formally introduced to classroom management, the participants became familiar with the terms and began to use them both in their maps and interviews.

A further pattern in the maps was the shift in the structure of the map. Some participants constructed their second maps in the form of a hierarchy in which they arranged their concepts according to their importance for classroom management. Some of those participants retained the same structure but rearranged the concepts according to the changed view about classroom management adding more details to the maps. Other participants believed that all the concepts of classroom management were equally important and that they all interchangeably interact to create conditions for good instruction. Consequently, the structure of the maps changed from a linear to a cyclical one with all concepts in the first level and details in the following ones. Depth of the maps which reflects depth in PCK was another pattern that appeared in the analysis. The number of chunks also increased from the first to the second and third one.

The most important pattern revealed in this study was the participants' shift of thematic emphasis from teachers' authoritarian role to more important and more profound concepts such as organization of the learning environment, planning for learning, teacher/ student responsibility, etc. The following sections presents more information on this shift of emphasis on themes. The discussion is based on the results of the interviews.

## Results of the interviews

Results of the interviews suggest that learning to manage one's classroom is an ongoing, developmental process influenced by different sources. They validated that the student-teachers had undergone conceptual change about classroom management as a result of teacher education program and teaching practice experiences. In the early stages, student-teachers experienced concerns about class control, enforcing rules and being the authority figure in the classroom. After gaining some experience, concern shifted towards understanding the different relationships between different variables in the teaching situation. In this stage, they focused on teacher-student relationship, the shared responsibility of both teacher and students in setting rules and sticking to them, the students' self-responsibility of the success or failure of the class activities, etc. The following section presents results of the interviews with some of the student-teachers who showed salient changes in their PCK of classroom management.

Wafa<sup>1</sup> explained that her ideas about classroom management had undergone a change during her experience in teaching practice where, according to her, she viewed classroom management through the eyes of the teacher rather than the student as she did in her first map. Wafa commented:

*"It's not what I visualized. I think it's much more difficult than it seemed to be during studying the Methodology course. I thought it's easy to deal with the students and their problems, do different grouping of the students, give instructions, handle interruptions, move smoothly from one activity to another, etc. But when you're a student, you can't realize how difficult it is to put theory into real practice, how much effort you have to exert."*

Therefore, in the second map, Wafa changed the order of the items to reflect her new conception of classroom management. Dealing with problem behavior which came in the middle of her second map changed to be the first in her third one. Remembering students' names which also came in the middle of the second map became at the bottom of the third one.

*"I know it's important but not as the others. Besides it takes time to remember students names and using something like a name tent may make it easier to call the students' names without remembering them. There're more important things."*

To Wafa, the most important thing which she re-ordered to put at the top of her third map, was maintaining discipline in the classroom. This is because:

*"Everything can be done if you maintain discipline in the classroom. If the class is noisy or if the students don't listen to what you say , or*

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<sup>1</sup> Pseudo names are used.

*don't follow what you say, nothing can be done. You can't explain and you keep shouting all the time. Therefore, I decided that setting ground rules together with the students may help. Using gestures to end activities and giving clear instructions can help. You see this is what we studied in college. I think it works but it needs practice."*

Thus, after facing the real situation as a teacher in teaching practice, Wafa admitted that what she learned in college would be useful and applicable in school but it needs practice and that is what teaching practice is for.

Amal expressed the same idea of classroom control and related it to the concepts of punishment and reward. Amal elaborated:

*"A teacher has to be able to manage the class before she will be able to teach. Sometimes you need to be supported by the school system, the principal and the regular teacher to be able to manage the class. You may need to punish or give rewards. Punishment does not work as rewards."*

Likewise, Summer started with a simple view of teaching where classroom management referred to teacher control. Summer has developed elaborated PCK about classroom management throughout her teacher education program and teaching practice. Summer was unable to articulate her thoughts concerning what made her change her second and third maps. She commented:

*"It is difficult to say why... It seemed to me that it is not that important and there are more important things...keeping students busy and engaged is important, also making the class fun and interesting, also, asking all the students not some of them."*

Amaal's main concern in classroom management was establishing a non-threatening atmosphere that relaxed students and allowed them to learn better. She mentioned remembering students' names and using them, praising and encouraging them, using different grouping techniques, etc. in her second map as ways of creating such an atmosphere. After teaching practice, like Wafa, Amaal realized how difficult it was, but not impossible, to create such an atmosphere. Amaal commented:

*"How difficult it is to be friendly with the students and at the same time be firm! I dreamt of being a teacher whom students loved and could approach at any time. But when students begin to love me, they begin to annoy me and not obey my instructions. Therefore, I had to change my belief. It is not necessary that they love me, I'm not here to be loved. What is necessary is that they accept me and do what I want them to do. I have to do everything to create conditions that facilitate their learning."*

Amaal also explained that giving students equal opportunities was important for classroom management. "I studied that the teacher shouldn't

be biased towards or against any of the students, to treat them equally and to give them equal opportunities."

Fatema's PCK consisted of a number of broad concepts which she had difficulty articulating like Summer. She was unable to elaborate or discuss why she included these concepts in her maps. " I don't know why...they are important... they should be there," Fatema answered when asked to elaborate on the concepts. Of greatest importance to her was the relationship she had with the students. She viewed her teaching practice as being of great influence on her.

Amany and Maha's experiences at the school where they were taught affected their views about classroom management. Amany believed that good lesson planning and keeping the students active were important components

of classroom management. In the first interview, Amany said:

*"I do my best to prepare myself very well so that I feel self-confident and secure in front of the students. I prepare my activities which are fun and interesting. If I do this, I think I can keep the students motivated and participating all the time. They don't have the time to cause me any trouble."*

In the second interview, Amany changed her concept about absolute teacher responsibility for the success of the class. She postulated:

*"I'm not the only one responsible for doing everything in the classroom, my students should also be responsible. My students should participate, help in taking attendance, cleaning the board, managing the time during pair and group work, carry out instructions, stick to the rules, finish on time... It's a bi-role where each of the teacher and students add to the failure or success of the classes."*

Maha explained that, in the first map, she had no idea about classroom management except teacher control which placed a great responsibility on her as a teacher. In the second and third maps, after being involved in the teacher education program, Maha began to think of student-centered teaching in which she directed her instruction to meet students' individual needs. But this called Maha's attention to enforcing rules.

*"The teacher is there for the students. Therefore, she has to prepare herself quite well to do so. She has to be flexible with so many strategies and activities so that if she is confronted with something, she can resort to them. She should vary the methods and techniques to meet the different kinds of students. I mean, be flexible but at the same time stick to rules and be consistent. If you aren't consistent with rules and punishment, students aren't going to do what they're supposed to do."*



Respecting students, treating them equally and creating an interesting atmosphere for learning were Sarah's addition to the second map. Sarah believed that:

*"If the teacher respects students and treats them equally, they will like her and do what she asks them to do. But this is not all. The teaching situation should encourage the students to be engaged in language tasks that help them develop their language. A fun, interesting atmosphere is important to attract students' attention. I should think of activities, games, songs, aids that make students like me and my class."*

This may be similar to Noura's idea about planning for the language class. But Noura emphasized the role of pair and group work in addition to what Sarah mentioned. Noura explained:

*"I did not know the value of pair and group work until I saw its result in my students during teaching practice. What I learned was true. When I asked the students to answer me for example reading comprehension questions without giving them the time to work in pairs or groups, some of the students could do it, others could not..... but when I asked them to work in pairs... sometimes in groups, I noticed that more students participated, and their answers were also better. I will never do without pair and group work, they are parts of my class."*

#### **Sources of change in PCK about Classroom Management**

The changes and/ or development in the participants' PCK that took place during the course of the academic year were attributed in the EFL student- teachers' interviews to different variables: observing others while teaching, direct practicum experience at schools, methodology classes, readings and reflections upon experiences. Results related to these sources are presented in table (3).

**Table (3): Sources of conceptual change and/ or development**

Source	2 <sup>nd</sup> map		3 <sup>rd</sup> map	
	n	%	n	%
Direct practicum experience at schools	9	90	10	100
Observing others while teaching	8	80	3	30
Methodology classes and educational subjects	9	90	5	50
Readings	3	30	2	20
Reflections upon experiences	2	20	2	20

Sources of change and /or development in the participants' PCK about classroom management slightly differed from map 2 to map 3. In the second map, participants attributed changes and/ or development in their PCK to both methodology classes and direct experiences in schools (n=9, 90%).

Most of the interviewed student- teachers (n=8, 80%) attributed their conceptual change to the observation experiences they were allowed to gain through observing the regular teachers and their peers while teaching their classes. Few of them viewed readings and reflections about teaching experiences to be sources of their PCK.

In their third maps, all of the participants over-emphasized the role of direct teaching experience while deemphasizing the role of teacher education program represented in the Methodology classes. It might be useful to refer to one of the interviewees who commented on this point. Hala explained that she believed that it's teaching practice rather than college courses that shaped her view about classroom management. This is because, according to her, "theory is theory but practice is something else, something difficult." Hala explained:

*"I learned better and much from teaching practice... you can't learn skills in theory... but you can learn so realistically when you're actually in the middle of the class... you learn swimming by swimming not by studying or reading about swimming."*

When asked to elaborate on what she learned from teaching practice, Hala, like some other participants, had difficulty expressing her thoughts saying: "It's really difficult to explain but I feel it. There is something different"

## **Discussion and recommendations**

Although limited by the few number of the pre-service teachers studied, some patterns of acquiring and developing PCK about classroom management across a complete year of teacher education program could be drawn.

Results of the present revealed the first pattern that acquisition of PCK is a continuous developmental process resulting in increasingly complex and organized concept maps. This is congruent with Winitzky, Kauchak and Kelly (1994); Jones and Vesilind (1995) and Kettle and Sellars (1996). Yet, results are counter to those gained by Winitzky and Kauchak (1995) and Sunfstri (2001) who found a decline in the structure of the participants' concept maps over time.

The researcher believe that results of the present study can be interpreted in the light of Anderson's (1987) theory of knowledge acquisition which explains how kinds of knowledge are acquired, stored in long-term memory and activated and used when needed. Anderson explained that declarative knowledge, facts and concepts, is stored in the form of propositions. Procedural knowledge, describing how to perform something to attain a goal, on the other hand, is stored in the form of productions or plans of actions. When needed, the learner integrates relevant declarative and procedural knowledge in the working memory and

takes an action, then receives feedback. This feedback helps refine the knowledge the learner gained. Over time, this process creates a production— a schema or a script— which is stored in the form of an "if-then" statement. As more related knowledge is gained, more productions are formed.

Unexpectedly, the participants of this study did not start acquiring their PCK about classroom management during their teacher education program. In fact, results of the first concept map indicated that they came to the college with some prior knowledge about classroom management which they unconsciously gained from their experience as students in the school system. Such knowledge should not be ignored since it certainly affects their classroom behaviors. It is said that teachers tend to teach as they were taught. Therefore, the learners' prior knowledge should be activated and discussed specially when it is not congruent with what the Methodology teacher is going to teach. Strengths and weaknesses of such knowledge should be adequately discussed so that it allows conceptual change. It is suggested that cognitive maps be used to help define and reflect on current knowledge base and on how new material fits with the current knowledge network.

A related finding revealed by content analysis of the maps is the thematic shifts over a year of teacher education from teacher control to classroom organization, dealing with problem behavior, creation of the learning environment, teacher/ student relationship, and teacher/ student responsibility for learning. This recognition of the multi-faceted nature of classroom management, led the participants to think of the relationships between concepts and their importance to their learners. The participants began with a simple conceptualization about classroom management as a process of maintaining discipline and control. After that, they began to include techniques and concepts that might be useful such as grouping techniques, nomination techniques, reward and punishment, preventing and reacting to problem behavior, etc.

By the end of a complete year of teacher education and after experimenting with the various techniques and concepts, the participants began to change their views and conceptualization about classroom management. Being liked by the learners was no longer as important, but keeping a balance of being friendly, fair and firm became more important. Issues such as the responsibility of both teacher and student for the success of learning became of great concern. This last idea was revealed in Jones and Vesilind (1995). The participants' focus on the learners' and the relationship with them and their responsibility for learning may be viewed as an evidence of their maturation and/ or influence of college classes. As Jones and Vesilind (1995) pointed out the shift from concern about self to

concerns about students is a developmental phenomenon typical of experienced learners.

Another pattern was the participants' use of labels in the second and third maps. In the second and third maps, the participants heavily used labels of concepts related to classroom management. This might be contradicting to the participants' over emphasis of the role of teaching practice experiences and the de-emphasis of the role of the college classes when asked about the sources of the PCK they gained about classroom management. Teaching practice might have provided the participants with classroom management direct practical experiences but it is college classes that provided them with the concepts and labels they used in their maps.

Results of the interviews yielded two important findings. First, four out of the ten interviewed participants could not verbalize or elaborate on their thoughts concerning the development of their concept maps. Although this might be surprising, but it is congruent with the literature emphasizing that PCK is tacit and not easily accessible (Winitzky, Kauchak and Kelly 1994, Jones and Vesilind, 1995, Winitzky and Kauchak 1995, Kettle and Sellars, 1996 and Meijer, Verloop and Beijaard, 1999, El-Okda, 2004 and Jahin and Alexander, 2005). Anderson's theory of knowledge acquisition postulates that as learners become more skilled, many of the declarative knowledge they acquire change into procedural knowledge which in turn is compiled into a production of action minimizing the number of concepts or steps to the lowest number possible. As the learner becomes more skilled, the process of activation the knowledge becomes faster and less conscious. That is why the ability to verbalize restored knowledge decreases with increasing skill contrary to what is believed. This means that those four participants are, in the light of Anderson's theory, more skilled than the other participants.

The aforementioned finding also interprets the second finding gained from the interview. Participants in the second maps valued college classes and teaching practice experiences as sources of PCK about classroom management equally. In the third maps, college classes were de-emphasized and teaching practice experiences over-emphasized. This result is congruent with Kauchak and Kelly (1994), Jones and Vesilind (1995) and Kettle and Sellars (1996). According to Anderson's (1987) theory, it might be said that the declarative knowledge gained from the college classes became tacit knowledge, subsumed into productions and unavailable to conscious, explicit retrieval. So, if the participants have reached that point that they do not literally remember the concepts, they would be hardly expected to value it. Another explanation might be that learners usually find it difficult to learn in theory concepts related to a skill. They prefer being indulged in a direct experience practicing the skill.

It can be said that the use of a multi-faceted approach for data collection, i.e. the concept maps and the interviews, allowed the triangulation of data and capturing a deep insight into the nature of the PCK that the participants had about classroom management. It also allowed having a thorough picture of the process of acquisition and development of that knowledge. The tools also allowed finding out the sources behind conceptual change and/ or development.

## **Conclusion**

The purpose of the present study was to investigate and track the development of PCK about classroom management of EFL student-teachers over a year of teacher education program. Most prominent among the findings of the study was the increase in the size and complexity of the concept maps indicating an increase and development in the participants' PCK about classroom management. Other patterns revealed by this study are the shift of themes under concern and the use of labels. Finally, the learners emphasized the role of direct teaching practice experiences and de-emphasized college classes as sources of their conceptual development.

This study is an exploratory one. The low number of participants and the specificity of the domain studied limit generalizability. Therefore, more research is needed with greater number of teachers to validate the results of the present study. Teachers', pre-service, beginning or expert, PCK in other domains such as reading, writing, listening, speaking, etc. needs exploration.

Since results of previous research concerning the existence of a relationship between teachers' knowledge about different domains and their performance in such domains are incongruent, studies addressing this area are needed. The paucity of such studies in the Arab world is another rationale for conducting such studies.

Little research in the area of expert versus novice PCK is done in the field of education in general and EFL in particular. Investigating the differences between expert and novice teachers in PCK in different domains may render valuable information and allow setting a knowledge base for teacher knowledge.

Personality traits such as learning styles, motivation, reflection, etc may have an effect on the way participants acquire, develop and structure their PCK. Such a study may render valuable implications for teaching and teacher education. Since teachers' behaviors affect learners' outcomes, a study that explores the relationship between teachers' knowledge structures, teachers' performance and learners' outcomes may be useful.

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