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METACOGNITIVE AWARENESS AND COGNITIVE STYLES: ARE THERE DIFFERENCES BETWEEN WHAT CHILEAN EFL PRE-SERVICE TEACHERS AND NEWLY-QUALIFIED EFL IN-SERVICE TEACHERS CLAIM?

Lucía Ramos Leiva
Universidad Católica del Norte, Chile (luramos@ucn.cl)

Marcela Quintana Lara
Universidad Arturo Prat, Chile (maquinta@unap.cl)

Claudio Díaz Larenas
Universidad de Concepción, Chile (claudiodiaz@udec.cl)

Tania Tagle
Universidad Católica de Temuco, Chile (ttagle@uct.cl)

Paola Alarcón
Universidad de Concepción. Chile (palarco@udec.cl)

Mabel Urrutia
Universidad de Concepción, Chile (maurrutia@udec.cl)

José Leiva Gutiérrez
Universidad Católica del Norte, Chile (jose.leivagutierrez@gmail.com)

Abstract: The purpose of this study is to explore the differences between EFL pre-service teachers (5th year students in their teaching practicum) and newly-qualified EFL in service-teachers' levels of metacognitive awareness and cognitive styles. An observational, cross-sectional study was proposed to measure these variables. For this purpose, 73 participants, 55 EFL pre-service teachers and 18 newly- qualified EFL in-service teachers, completed a metacognitive awareness inventory and a cognitive styles inventory. The results indicate that in-service teachers are more metacognitively aware in their declarative knowledge, procedural knowledge, and planning. The EFL pre-service teachers show higher levels of metacognitive awareness in evaluating. No differences in cognitive style were found. Thus, professional experience may have a relationship with metacognitive awareness, increasing the level of development of some dimensions. Further studies on variables related to the transition from EFL pre-service to newly-qualified EFL in-service teachers and its relationships with metacognitive awareness and cognitive style are proposed.

KEYWORDS: metacognition, cognitive styles, EFL pre-service teachers, newly EFL teachers, metacognitive awareness.

CONCIENCIA METACOGNITIVA Y ESTILOS COGNITIVOS EN PROFESORES EN FORMACIÓN Y PROFESORES NOVELES DE ILE.

RESUMEN: El propósito de este estudio es explorar la diferencia entre los niveles de conciencia metacognitiva y estilos cognitivos de estudiantes en práctica de quinto año y profesores noveles de EFL. Para medir estas variables se propuso un estudio observacional y transversal. Para este propósito, 73 participantes (55 estudiantes y 18 profesores noveles) completaron el inventario de conciencia metacognitiva y estilos cognitivos. Los resultados indican que los profesores noveles poseen una mayor conciencia metacognitiva a nivel de conocimiento declarativo y procedimental, y de planificación. Los estudiantes en práctica muestran niveles más altos de conciencia metacognitiva en la evaluación. No existe diferencia en el estilo cognitivo. La experiencia profesional puede estar relacionada con el desarrollo de la conciencia metacognitiva aumentando el nivel de desarrollo en alguna de las dimensiones estudiadas. Se proponen nuevos estudios de variables relacionadas con la transición de ser estudiante en práctica a ser profesor novel y su relación con la conciencia metacognitiva y estilos cognitivos.

PALABRAS CLAVE: metacognición, conciencia metacognitiva, estilos de aprendizaje, estudiantes en práctica de EFL, profesores noveles de EFL.

INTRODUCTION

Teachers in the XXI century are required to achieve high national teaching standards as well as developing competences that will enable them to lead a successful teaching and learning process. They are not only expected to develop teaching techniques and strategies to be able to make content teachable and accessible to all kinds of learners, but they are also expected to develop a 'curriculum vision' (Zumwalt, 1989 as cited in Hammerness, 2005). To depict a curriculum vision, teachers must develop the ability to choose, organize and design activities, tasks, and lessons that take into account learners' interests, needs, experiences, and socio-educational background. Most importantly, teachers need to be able to reflect on their own teaching practices to continually assess and improve their own work with the purpose of helping children develop their own learning strategies and achieve higher order thinking skills (Darling-Hammond & Bransford, 2005). For this to occur, it is critical for teachers to have developed metacognitive awareness and cognitive styles to approach the challenging task of teaching.

Experts agree that metacognitive processes involve the use of higher order thinking skills to solve real-life problems (Arends, 2008; Santrock, 2007). From this perspective, it is relevant to refer to the concept of *Metacognition*, which is defined as the thinking process associated to abilities, strategies and cognitive tasks (Veenman, Van Hout-Wolters, & Afflerbach, 2006; Wernke, Wagener, Anschuetz & Moschner,

2011). Identifying cognitive styles, on the other hand, helps individuals anticipate their own and other people's behavior in terms of thinking, learning and problem solving, and also enhance their own cognitive styles. Hence, increasing their ability or capacity to be flexible and skillful when facing problem-solving situations, and facilitating individual and group interaction (Martin, 1998).

Studies on teachers and teacher candidates' knowledge about metacognition and cognitive styles should be conducted to determine their level of awareness regarding these two concepts and how they work. This will allow them to strengthen their teaching and learning skills which, in turn, will enable them to help their students recognize their own cognitive styles, the most effective learning strategies, and how to control them using metacognition (Bozkurt, 2013; Farrell & Bennis, 2013). Therefore, the present study aims at exploring the differences regarding metacognitive awareness and cognitive styles between EFL pre-service teachers in their professional practicum and newly-qualified EFL in-service teachers. To reach this goal, and in agreement with the quantitative, observational and cross-sectional approach adopted in the study, the following research questions were proposed:

1. Do EFL pre-service teachers and newly-qualified EFL in-service teachers show the same level of metacognitive awareness?

2. What are the cognitive styles used by EFL pre-service teachers and newly-qualified EFL in-service teachers?

3. Is there a difference between the cognitive styles EFL pre-service teachers and newly qualified EFL in-service teachers possess?

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Literature Review

In this technological era, information and communication processes are the driving force of innovations across different fields of knowledge, including education. The rapid flux of information individuals receive on a daily basis requires the development of higher order thinking skills, that is to say, metacognitive strategies, which regulate the cognitive processes involved in learning (Demirel, Askin & Yagci, 2015; Hammann & Stevens, 1998; Onat Cihanoglu, 2013; Saricovan, 2015). It is important for the new generations to be trained in the ways to process the information they receive. They

need to know and understand how to process this information, use it, transform it, construct and create new knowledge. We are born with the capacity to learn but we need to become aware of the strategies and tools we possess and learn how *to manage them to facilitate learning* (Ma, as cited in Shi, 2011); in other words to become metacognitive aware learners.

Metacognition

Metacognition refers to the ability individuals develop through a lifetime that allows them to be aware of how they learn and how they perform tasks to meet their objectives. This ability also implies the knowledge of which cognitive strategies are to be used to attain goals, and assess their performance before and after a task (Flavell, 1987). In the literature, there are a number of definitions related to the concept of metacognition. Some researchers consider metacognition as the essential feature of the human cognition (Lories, Dardenne & Yzerbyt (1998) and as individuals´ knowledge and beliefs about their cognitive processes (Ormrod (2006). In addition, metacognition is expressed as the awareness and layout of the thinking processes learners use to solve problems and learn, to relate existing knowledge with new knowledge, to monitor their own learning, to internalize the knowledge, and then transfer it to new contexts (Brown, 1978; Victor, 2004).

Metacognition regulates the cognitive processes that take place in learning and consists of two components: knowledge of cognition, and regulation of cognition. Knowledge of cognition is divided into declarative, procedural, and conditional knowledge. *Declarative knowledge* is the knowledge individuals have about themselves as learners in terms of their skills, abilities and intellectual resources required to accomplish a task. *Procedural knowledge* refers to the knowledge of how to use learning strategies to implement and perform a task. And *conditional knowledge* relates to knowing when and why to use certain learning strategies, skills and procedures to perform a task. *Regulation of cognition* is the ability learners develop to manage their learning mechanism and is composed of three skills: planning, monitoring, and evaluating. Planning refers to the selection of skills and strategies to perform a given task. Monitoring is the skill that allows learners to assess their performance. Finally, evaluating is related to the learners' capacity to analyze, revisit and revise their own work (Kaya & Firat, 2011; Schraw et al., 2006 as cited in Lai, 2011; Whitebread et al, 2009 as cited in Lai, 2011). As a summary, metacognition "refers to one's knowledge and control of one's own cognitive systems" (Zohar, 1999, p. 414).

Cognitive styles

Cognition is the basis to understand the concept of cognitive styles. Cognition refers to those mental processes that include awareness, perception, reasoning, judgment, attention, memory coding, retention, recall, decision-making, problem-solving, imaging, planning, executing action, thinking, intelligence, and creativity

(Brandimonte, Bruno, & Collina, 2006; Kirton, 2003; Kozhevnikov, 2007; Sternberg, 1997). These mental processes transform, reduce, store, elaborate, recover, and use internal and external stimuli.

Cognitive styles are connected to those functions because they are directly linked to how individuals perceive, learn, and think (Sternberg, 2010). As such some authors define cognitive styles as "a psychological construct relating to how individuals process information" (Brown, Brailsford, Fisher, Moore, & Ashman, 2006, p. 327) and the way individuals control higher mental processes for the organization and processing of information as required by the environment (Klein, as cited in Volkova & Rusalov, 2016; Liu, as cited in Savig, Amit, Ein-Gar, & Arieli, 2013). Current psychological studies conceive cognitive styles as the mechanisms individuals have to control and coordinate their higher mental processes and behavior (Kholodnaya, 2004).

Research on cognitive styles reveals that they behave in terms of a continuum and as such, they have been related to left-brain/right-brain thinking (Buzan, 1983; Wonder & Donovan, 1984 as is cited in Martin, 1998). Each part of the brain performs certain functions that mirror the mental processes underlying the different cognitive styles. There are two major cognitive styles: systematic and intuitive styles (e.g., Allinson & Hayes, 1996 (cited in Savig et al., 2013); Epstein et al., 1996; Graff, 2000 (cited in Savig et al., 2013; Norris & Epstein, 2011; Pacini & Epstein, 1999; Sagiv et al., 2013). The systematic style is linked to the left side of the brain and the intuitive style is linked to the right side of the brain. The systematic style also known as the analytical or rational style is associated with a logical, sequential, and rule-based thinking approach (Smith & DeCoster, 2000) to problem solving and decision making. On the other hand, the intuitive or experiential style (Epstein, Pacini, Denes-Raj, & Heier, 1996; Norris & Epstein, 2011) describes a rapid, non-conscious, global and holistic approach to problem solving and decision making.

The study of metacognitive awareness and cognitive styles of individuals is critical because it increases individual's capacity to learn and manipulate knowledge, to develop and strengthen creativity and critical thinking, and to enhance individual´s self-confidence throughout their lifespan. Consequently, it is of paramount significance to identify EFL pre-service teachers and newly EFL in service-teachers' levels of metacognitive awareness and cognitive styles to generate ideas to improve teaching practices and initial teacher training programs.

The importance of metacognitive awareness and cognitive styles in teacher training

Metacognitive awareness is what makes learning happen and allows flexibility of thought, which is what leads learners to successfully accomplish their goals (Ormond, 2006). Since teachers are models of learning for their students, they need to be conscious of their metacognitive strategies to guide their students towards becoming metacognitively aware. Another benefit of metacognitive awareness in teachers is that

it allows them to strive towards the improvement of their teaching practice (Darling-Hammond, 2006).

On the other hand, cognitive styles can facilitate or hinder the processes involved in learning. They can determine an individual's capacity to think, learn, make decisions, solve problems and carry out tasks (Martin, 1998). When teachers become aware of their cognitive style, they can predict their own behaviors as well as those of their students related to the way they think, learn, and solve problems (Martin, 1998). It also allows teachers to access and strengthen styles that they do not generally use and thus enhance their skills and flexibility in various problem-solving situations that arise in their classrooms (Robertson, 2008). They can guide their students towards being aware of their cognitive styles and coach them towards using styles that benefit their learning process at a given time.

Methodology

Design

We proposed a quantitative, observational and cross-sectional study and a correlational study to describe the relationships between variables (Hernández, Fernández, & Baptista, 2010).

Participants

The sample was composed by a total of 73 subjects who participated voluntarily in this study: 55 EFL pre-service teachers in their professional practicum in different types of schools and 18 newly-qualified EFL in-service teachers. All participants were contacted by a non-probabilistic quote sampling, in order to have a representative sample, and find only those who had the desired characteristics (Tyrer & Heyman, 2016). The pre-service teachers belonged to different universities across the country. The newly-qualified EFL teachers, graduated from different universities, worked in different types of schools and lived in different geographic areas.

Research objective

To explore the differences regarding metacognitive awareness and cognitive styles between EFL pre-service teachers in their professional practicum and newly-qualified EFL in-service teachers.

Instruments

The *Metacognitive Awareness Inventory for Teachers* (MAIT), see Appendix A, was used to measure the metacognitive awareness of EFL pre-service and newly-qualified EFL in-service teachers. It consists of a Likert scale from 1 = strongly disagree to 5 =

strongly agree. The 24 items are organized into 6 dimensions; each one corresponds to the levels of metacognitive awareness: Declarative knowledge, procedural knowledge, conditional knowledge, planning, monitoring and evaluating. The score is obtained by adding the scores of dimensions and dividing them by the total number of items of each one. High scores means higher levels of awareness in a specific stage. This instrument has shown accurate levels of reliability and validity, with a Cronbach´s alpha from .79 to .85 (Balcikanli, 2011).

The *Cognitive Style Inventory*, See Appendix B, was used to assess the cognitive style of EFL pre-service and newly-qualified EFL in-service teachers. It consists of 40 items with a Likert format from 1 = totally disagree to 5= totally agree. For this study, items were classified in two dimensions: systematic and intuitive style. The score is obtained by calculating the mean of scores for each dimension. High scores in one style can be read as the person using that cognitive style.

Data collection

EFL pre-service teachers answered both instruments in class under the supervision of the researcher. In the case of the newly EFL in-service teachers, they had 2 weeks to answer the instruments and send them back. Before the participants responded, they were told that the data collected was confidential and used only by the researchers for scientific purposes.

Data analysis

Data collected was computed using the Statistical Package for Social Sciences, SPSS to proceed with the analysis. First, a descriptive analysis of the items and scores was obtained to describe participants´ metacognitive awareness and cognitive styles. Second, the parametrical T-test for independence samples and the non-parametrical Mann-Whitney´s U Test was used to compare dimensions of the variables between EFL pre-service teachers and newly-qualified EFL in-service teachers. Finally, Shappiro-Wilk´s Test was carried out to assess the normality of the measures.

Results

Metacognitive Awareness

Global Analysis

Global results of metacognitive awareness for both EFL pre-service teachers and newly-qualified EFL in-service teachers are shown in Table 1.

Table 1: Descriptive Statistics by subcategory.

	Min.	Max.	Mode (frequency)	Total Frequency (1-2)	Frequency (3)	Total Frequency (4-5)
Declarative Knowledge	1	5	4 (50.7%)	6.2%	17.5%	76.4%
Procedural Knowledge	1	5	4 (47.9%)	4.5%	23.3%	72.3%
Conditional Knowledge	1	5	5 (39.0%)	6.8%	19.5%	73.6%
Planning	1	5	5 (39.0%)	6.5%	18.5%	75.0%
Monitoring	1	5	4 (43.5%)	3.4%	16.1%	80.5%
Evaluating	1	5	4 (44.9%)	4.8%	11.6%	83.6%

n=73

It is observed that all the dimensions that compose metacognitive awareness have a positive value. Monitoring and evaluating show the highest percentage. Based on the results, it is observed that the items which obtained the most favorable perception in relation to the development of the metacognitive awareness correspond to: "10. I set my specific teaching goals before I start teaching." with a mode (frequency) of 5 (64,4%); "18. After teaching a point. I ask myself if I'd teach it more effectively next time" with a mode (frequency) of 5 (58,9%); "17. I check regularly to what extent my students comprehend the topic while I am teaching" with a mode (frequency) of 5 (47,9%); "9. I can motivate myself to teach when I really need to teach." with a mode of (frequency) 5 (49,3%); "15. I use different teaching techniques depending on the situation" with a mode (frequency) of 5 (50,7%). In this regard, it is possible to infer that the participants perceive the development of actions to generate metacognitive awareness favorably.

On the other hand, the item that shows the most unfavorable perception regarding the development of metacognitive awareness corresponds to: "21. I know when each teaching technique I use will be most effective" with a mode (frequency) of 3 (50,7%). As it can be seen, the perception of most participants is unfavorably regarding the development of metacognitive awareness when identifying those strategies that may be more effective for teaching.

EFL pre-service teachers´ sample

In Table 2, the results of EFL pre-service teachers´ dimensions of metacognitive awareness are shown.

Table 2: Descriptive Statistics by subcategory.

	Min.	Max.	Mode (frequency)	Total Frequency (1-2)	Frequency (3)	Total Frequency (4-5)
Declarative Knowledge	1	5	4 (50.5%)	7.7%	19.5%	72.7%
Procedural Knowledge	1	5	4 (48.6%)	5.5%	26.0%	68.6%
Conditional Knowledge	1	5	5 (36.8%)	7.3%	22.3%	70.5%
Planning	1	5	4 (40.0%)	7.3%	19.1%	73.6%
Monitoring	1	5	4 (44.5%)	4.1%	16.8%	79.1%
Evaluating	1	5	4 (46.4%)	5.0%	10.9%	84.1%

n=55

Results in Table 2 show that in the case of the students, as well as the total sample of participants, all the dimensions that compose metacognitive awareness show positive values. In addition, it can be seen that monitoring and evaluating obtained the highest scores.

The items that obtained a more favorable perception in relation to the development of metacognitive awareness correspond to: "10. I set my specific teaching goals before I start teaching." with a mode (frequency) of 5 (60,0%); "18. After teaching a point. I ask myself if I'd teach it more effectively next time" with a mode (frequency) of 5 (52,7%); "3. I use my strengths to compensate for my weaknesses in my teaching" with a mode (frequency) of 5 (45,5%); "17. I check regularly to what extent my students comprehend the topic while I am teaching" with a mode (frequency) of 5 (45,5%); "9. I can motivate myself to teach when I really need to teach." with a mode (frequency) of 5 (45,5%); "16. I ask myself questions about the teaching materials I am going to use" with a mode (frequency) of 4 (47,3%). In this regard, it is possible to infer that the participants perceive favorably the development of their own actions to generate metacognitive awareness.

On the other hand, the items that show the most unfavorable perception regarding the development of metacognitive awareness correspond to: "21. I know when each teaching technique I use will be most effective." with a mode (frequency) of 3 (56,4%). Results show that most participants perceive unfavorably the development of metacognitive awareness to identify those strategies that may be more effective for teaching.

Newly-qualified EFL in-service teachers´ sample

In Table 3, results of newly EFL in-service teachers´ dimensions of the metacognitive awareness are shown.

Table 3: Descriptive Statistics by Subcategories.

	Sample	Min.	Max.	Mode (frequency)	Total Frequency (1 - 2)	Frequency (3)	Total Frequency (4 - 5)
Declarative Knowledge	71	1	5	4 (51.4%)	1.40%	11.10%	87.50%
Procedural Knowledge	71	1	5	4 (45.8%)	1.40%	15%	83.30%
Conditional Knowledge	71	1	5	5 (45.8%)	5.60%	11.10%	83.30%
Planning	71	1	5	5 (55.6%)	4.20%	16.70%	79.20%
Monitoring	71	1	5	5 (44.4%)	1.40%	13.90%	84.70%
Evaluating	71	1	5	5 (41.7%)	4.20%	13.90%	81.90%

In the case of teachers, as well as in the total sample of participants, all the dimensions that compose metacognitive awareness show positive values. In addition, it can be seen that monitoring and evaluating show the most favorable values.

The items which obtained the most favorable perception in relation to the development of metacognitive awareness correspond to: “18. After teaching a point. I ask myself if I’d teach it more effectively next time” with a mode (frequency) of 5 (77,8%); “10. I set my specific teaching goals before I start teaching.” with a mode (frequency) of 5 (77,8%); “15. I use different teaching techniques depending on the situation.” with a mode (frequency) of 5 (72,2%); “9. I can motivate myself to teach when I really need to teach.” with a mode (frequency) of 5 (61,1%); “17. I check regularly to what extent my students comprehend the topic while I am teaching.” with a mode of (frequency) of 5 (55,6%). In this regard, it is possible to infer that the participants have a favorable perception of the development of actions to generate metacognitive awareness.

On the other hand, the items that show the most unfavorable perception regarding metacognitive awareness corresponds to: “24. I ask myself if I have considered all possible techniques after teaching a point.” with a mode (frequency) of 4 (50,0%); “21. I know when each teaching technique I use will be most effective.” with a mode (frequency) of 4 (38,9%). Results may indicate that some teachers do not show a tendency to think about those techniques that could help them improve the learning and teaching process. Besides, teachers also show a low level of development of

metacognitive awareness which would enable them to identify those strategies that may be more effective for teaching.

Cognitive Styles

Global Analysis

Global results of cognitive styles for both EFL pre-service teachers and newly EFL in-service teachers are shown in Table 4.

Table 4: Descriptive Statistics by Subcategories.

	Min.	Max.	Mode (frequency)	Total Frequency (1 - 2)	Frequency (3)	Total Frequency (4 - 5)
Systematic Style	1	5	4 (36.0%)	18.2%	25.5%	56.4%
Intuitive Style	1	5	4 (34.2%)	23.6%	21.8%	54.5%

n=73

Table 4 shows that the *Systematic Style* shows a more favorable value than the *Intuitive Style*. It may be inferred that participants favor the *Systematic Style* over the *Intuitive Style*. In relation to the development of cognitive styles, items with the highest percentage of agreement corresponds to: "(B) I analyze a problem or a situation in order to determine whether the facts match" with a mode (frequency) of 5 (50,7%); "(A) I try to perceive the problem before solving it" with a mode (frequency) of 4 (46,6%).

On the other hand, the items that show a more unfavorable perception correspond to:"(HH) I feel comfortable with ambiguity and uncertainty" with a mode (frequency) of 1 (42,5%); "(K) The most efficient and effective way to deal with a problem is to follow your instincts" with a mode (frequency) of 2 (30,1%); "(MM) I feel comfortable with the 'status quo;' the 'new methods' are not always the best ones" with a mode (frequency) of 3 (32,9%); "(P) I accumulate amounts of information in my memory, as a computer, partitioning each input in order to remember more easily" with a mode (frequency) of 3 (39,7%).

EFL pre-service teachers´ sample

In Table 5, results of EFL pre-service teachers´ cognitive styles are shown.

Table 5: Descriptive Statistics by Subcategories.

	Min.	Max.	Mode (frequency)	Total Frequency (1 - 2)	Frequency (3)	Total Frequency (4 - 5)
Systematic Style	1	5	4 (35.0%)	18.6%	26.0%	55.4%
Intuitive Style	1	5	4 (33.2%)	23.2%	23.5%	53.3%

n=55

In the case of students, as well as in the total sample of participants, the *Systematic Style* show a more favorable value. Thus, it can be observed that students favor the *Systematic Style*. The results suggest that the items that obtained a more favorable perception in relation to the development of cognitive styles, correspond to: "(B) I analyze a problem or a situation in order to determine whether the facts match" with a mode (frequency) of 5 (56,4%); "(A) I try to perceive the problem before solve it" with a mode (frequency) of 5 (49,1%).

On the other hand, the items that obtained a more unfavorable perception correspond to: "(HH) I feel comfortable with ambiguity and uncertainty" with a mode (frequency) of 1 (41,8%); "(MM) I feel comfortable with the 'status quo;' the 'new methods' are not always the best ones" with a mode (frequency) of 3 (32,7%); "(K) The most efficient and effective way to deal with a problem is to follow your instincts" with a mode (frequency) of 2 (34,5%); "(P) I accumulate amounts of information in my memory, as a computer, partitioning each input in order to remember more easily" with a mode (frequency) of 3 (40,0%).

Newly-qualified EFL in-service teachers´ sample

In Table 6, results of newly-qualified EFL in-service teachers´ cognitive styles are shown.

Table 6: Descriptive Statistics by Subcategories.

	Min.	Max.	Mode (frequency)	Total Frequency (1 - 2)	Frequency (3)	Total Frequency (4 - 5)
Systematic Style	1	5	4 (38.9%)	16.70%	23.9%	59.40%
Intuitive Style	1	5	4 (38.0%)	25.10%	16.70%	58.20%

n=18

In the case of the teachers, as well as in the total sample of participants, the *Systematic Style* shows a more favorable value. The items that obtained the highest scores in relation to the development of cognitive styles correspond to: "(A) I try to perceive the problem before solving it" with a mode (frequency) of 4 (61,1%); "(B) I analyze a problem or a situation in order to determine whether the facts match" with a mode (frequency) of 4 (61,1%).

On the other hand, the items that obtained a more unfavorable perception correspond to: "(K) The most efficient and effective way to deal with a problem is to follow your instincts" with a mode (frequency) of 1 (38,9%); "(HH)I feel comfortable with ambiguity and uncertainty" with a mode (frequency) of 1 (44,4%); "(S) I usually, trust in "hunches", instincts and some other nonverbal cues that help me in the process of solving a problem." with a mode (frequency) of 2 (33,3%); "(Y) When I analyse a problem, I have the impression that I am going from one step to the next and then I go back again." with a mode (frequency) of 4 (33,3%); "(P) I accumulate amounts of information in my memory, as a computer, partitioning each input in order to remember more easily" with a mode (frequency) of 3 (38,9%).

Group Comparisons

Normality tests

The Shapiro-Wilks test for Normality was used to determine whether t-Student or Mann-Whitney U test was the most accurate test to find significant differences between EFL pre-service teachers and newly EFL in-service teachers. Table 7 summarizes the results for normality tests for metacognitive awareness and Table 8 for cognitive styles.

Table 7: Normality Test (Shapiro-Wilks)

Variable	Students		Teachers	
	Statistical	p-value	Statistical	p-value
Declarative Knowledge	.88	<.0001*	.86	.0241*
Procedural Knowledge	.96	.3614	.88	.0653
Conditional Knowledge	.93	.0215*	.92	.33
Planning	.95	.1256	.85	.0128*
Monitoring	.93	.0146*	.93	.4475
Evaluating	.91	.002*	.9	.134

*p<.05

Table N.º 8: Normality Test (Shapiro-Wilks)

Variable	Students		Teachers	
	Statistical	p-value	Statistical	p-value
Systematic Style	0.98	0.8665	0.96	0.8122
Intuitive Style	0.95	0.1152	0.92	0.2499

In the metacognitive awareness dimensions, significant differences were found between a normal distribution and the measures for EFL pre-service teachers declarative knowledge, conditional knowledge, monitoring and evaluating, and for newly in-service teachers´ declarative knowledge and planning. In all these dimension, Mann-Whitney-U test must be used. In the case of cognitive styles, no differences were found with a normal distribution in either of the measures, so the t-test for independent samples can be used.

Mean differences tests

Significant differences between EFL pre-service and EFL newly-qualified in-service were found for declarative knowledge (U=283.00, z=-2.77, p=.01), procedural knowledge (T=-2.64, p=.01), and planning (U=300.5, Z=-2.52, p=.01). In all these three dimensions, newly-qualified EFL in-service teachers have higher scores, which can be interpreted as a major level of awareness of these three processes in these participants. No differences were found for the cognitive styles dimensions (p>.05), which means that both dimensions, systematic and intuitive, have the same level in both groups.

Discussion and conclusion

The purpose of this study is to explore the relationship between EFL pre-service teachers, and newly-qualified EFL in-service-teachers' levels of metacognitive awareness and cognitive styles. The analysis of the results concludes that EFL pre-service and newly-qualified EFL in-service teachers show some level of metacognitive awareness. However, there is a significant difference between the two groups, being the newly-qualified EFL in-service teachers the ones that show a higher level of awareness in declarative knowledge, procedural knowledge and planning. This analysis also reveals that both groups show characteristics of both systematic and intuitive styles; nonetheless, there is a tendency to favor the systematic one.

This study indicates that in the case of newly EFL in-service teachers the metacognitive awareness dimensions are at different stages of development. Nevertheless, as mentioned above, newly-qualified EFL in-service teachers show a higher level of awareness in declarative knowledge, procedural knowledge and planning. That is to say, these teachers seem to be aware of their strengths and weaknesses, know what strategies and techniques are to be used when performing a class, and know the contents they have to teach. They know what it is expected from them and the skills a good teacher should have. They have also developed the capacity to plan the contents they are going to teach based on specific objectives. They also seem to be aware of the fact that materials and time are important variables to consider when designing a class (Balcikanli, 2011). Teachers should be especially careful when planning their classes since during this process they have to organize what, how and when to teach what requires both; the use of cognitive strategies and metacognitive awareness (MINEDUC, 2007; Purgason 2013; Serdyukou & Ryan 2008). These findings are not completely surprising given that this group of teachers are in the early years of their professional life and experience and guidance may contribute to attain a higher level of development.

In the case of the pre-service EFL teachers, the results show that this group has a lower level of metacognitive awareness of those dimensions where significant differences were found. This finding is expected since they are still in the process of training. However, it seems relevant to mention here that these EFL pre-service teachers show an advanced level of development in terms of regulation of cognition, especially in the evaluating dimension, even though the results are not statistically significant. These EFL pre-service teachers show a tendency to monitor and evaluate themselves. This may be due to the fact that as they are in their teaching practicum, they have constant guidance from a supervisor and a guide teacher who emphasize that monitoring and evaluating are two of the stages in regulation of cognition that lead to successful teaching. When *Knowledge of Cognition* and Regulation of Cognition work together, teachers are able to improve their teaching performance at the same time they can help their students use their cognitive strategies and develop metacognitive awareness; metacognitive awareness is needed for successful learning (Saricoban, 2015).

As to cognitive styles, there are no statistically significant differences in the type of styles used by both groups. It is very likely that EFL pre-service teachers as well as newly-qualified EFL in-service teachers need more years of experience to find out the type of cognitive style or styles that best help them in their teaching practice. It is relevant to point out that the type of cognitive style individuals develop throughout a life time depends on personality traits and higher mental processes (Volkova & Rusalov 2016). In teaching, as in any other area, experience is critical since this gives teachers the opportunity and tools to develop metacognitive awareness and cognitive skills required to perform their work inside and outside the classroom efficiently and accurately. Nevertheless, the analysis of the results reveals a tendency towards the use of the *Systematic Style* by both groups. From these findings, we can hypothesize that these groups, in general, prefer to follow a more well-defined step-by-step approach to solve problems and decision making (Martin, 1998). That both groups favor the use of a more systematic approach to teaching may be related to the fact that although they are in different stages of their profession, both are gaining experience and confidence in the teaching scenario. Thus, they might feel more confident using a systematic approach that tells them exactly what to do, when and how. Another idea that arises from this result is that cognitive styles are associated to intellectual and personality characteristics of human behavior (Volkova & Rusalov, 2016); so we can suppose that the people in both groups may share one personal characteristic**:** self-confidence which could, definitely, be reflected in their work as teachers.

The findings revealed in this study show that EFL pre-service teachers and EFL newly-qualified in-service teachers are almost at the same level of development in metacognitive awareness. Evidently, what is expected is that teachers who have been teaching for more than one year should have better and more developed metacognitive strategies that facilitate their work, and help them improve the way they teach in favor of their students' metacognitive and cognitive development. Regarding cognitive styles, it could be argued that having a tendency to use one style more than the other should not affect the work teachers do, in a negative way.

To summarize, concerning metacognitive awareness, the results of this study indicate that globally newly qualified teachers and pre-service teachers behave similarly. Both groups know that before teaching they have to state goals that guide this process, and that the use of appropriate teaching strategies have a positive impact on student's learning process. However, newly in-service teachers show more consciousness about these strategies than the pre-service teachers, may be, due to the years of experience in working in the schools system.

On the subject of cognitive styles, newly qualified teachers and pre-service teachers manage the cognitive strategies of analysis and reflection to some extent what might denote more awareness of the fact that reflecting on their practice may lead to better performance.

Future studies are needed to complement the findings of this research work. The topics that should be addressed to further explore the issues investigated are: How teachers' metacognitive awareness in process of development can affect or have an

impact on the teaching and learning process and whether teachers' cognitive styles are really associated to personality factors and how this may significantly affect the teaching and learning process.

Results of this study may shed some light on how to improve initial teacher training programs to help future teachers to develop their metacognitive awareness and identify the cognitive style that will have a positive impact on their teaching performance.

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Appendix A

FOLIO N.º_____

CUESTIONARIO DE CONCIENCIA METACOGNITIVA PARA PROFESORES

Estimado participante:

A continuación, se presenta una serie de afirmaciones relacionadas con la conciencia metacognitiva para profesores. Por favor conteste cada una de las afirmaciones. La información entregada será de gran ayuda para nuestra investigación.

Este cuestionario contiene 24 afirmaciones donde no hay respuestas ni correctas ni incorrectas. Es simplemente lo que es verdadero para usted. Lea cada afirmación cuidadosamente y elija la que mejor lo/la describa. Muchas gracias por su participación.

Indicadores:

1 2 3 4 5

1 = muy en desacuerdo 2 = en desacuerdo 3 = neutral 4 = de acuerdo 5 = muy de acuerdo

1. Estoy consciente de las fortalezas y debilidades de mi forma de enseñar.	1	2	3	4	5
2. Trato de usar técnicas de enseñanza que fueron efectivas en el pasado.	1	2	3	4	5
3. Uso mis fortalezas para compensar las debilidades en la forma en que enseño.	1	2	3	4	5
4. Mido mi tiempo mientras estoy enseñando para poder alcanzar los objetivos de la clase.	1	2	3	4	5
5. Me pregunto periódicamente si logro alcanzar mis objetivos de enseñanza mientras realizo mi clase.	1	2	3	4	5
6. Me pregunto qué tan bien he logrado mis objetivos de enseñanza una vez que finalizo mi clase.	1	2	3	4	5
7. Sé cuáles son las habilidades más importantes para ser un buen profesor.	1	2	3	4	5
8. Tengo una razón específica para escoger cada técnica de enseñanza que uso en la clase.	1	2	3	4	5
9. Puedo motivarme a enseñar cuando realmente necesito enseñar.	1	2	3	4	5

10. Establezco mis objetivos de enseñanza antes de comenzar mi clase.	1	2	3	4	5
11. Me doy cuenta que evalúo cuán útiles son mis técnicas de enseñanza mientras estoy enseñando.	1	2	3	4	5
12. Me pregunto si podría haber utilizado diferentes técnicas después de cada experiencia de enseñanza.	1	2	3	4	5
13. Tengo control sobre lo bien que enseño.	1	2	3	4	5
14. Estoy consciente de las técnicas de enseñanza que utilizo mientras enseño.	1	2	3	4	5
15. Uso diferentes técnicas de enseñanza dependiendo de la situación.	1	2	3	4	5
16. Me cuestiono sobre los materiales que voy a utilizar.	1	2	3	4	5
17. Monitoreo regularmente hasta qué punto mis estudiantes comprenden el tema mientras enseño.	1	2	3	4	5
18. Después de enseñar un contenido, me pregunto si lo podría enseñar de una manera más efectiva en una próxima oportunidad.	1	2	3	4	5
19. Sé lo que se espera que enseñe.	1	2	3	4	5
20. Utilizo estrategias de enseñanza útiles de manera espontánea.	1	2	3	4	5
21. Sé cuándo cada estrategia de enseñanza que uso será más efectiva.	1	2	3	4	5
22. Organizo mi tiempo de la mejor manera para cumplir mis objetivos de enseñanza.	1	2	3	4	5
23. Me cuestiono sobre cuán bien lo estoy haciendo mientras enseño.	1	2	3	4	5
24. Me pregunto si he considerado todas las técnicas posibles después de enseñar un contenido.	1	2	3	4	5

Appendix B

FOLIO N.º_____

CUESTIONARIO DE ESTILOS COGNITIVOS

ESTIMADO PARTICIPANTE:

A continuación, se presenta una serie de afirmaciones relacionadas con estilos cognitivos. Por favor conteste cada una de las aseveraciones. La información entregada será de gran ayuda para nuestra investigación.

Instrucciones: Para cada afirmación en este inventario, refiérase a la siguiente escala y decida cuál número corresponde a su nivel de acuerdo con la afirmación. Luego, escriba el número en el espacio a la izquierda de la aseveración.

Indicadores:

1 = muy en desacuerdo 2 = en desacuerdo 3 = indeciso 4 = de acuerdo 5 = muy de acuerdo

_____ A. Trato de percibir el problema antes de solucionarlo.

_____ B. Analizo un problema o situación para determinar si los hechos calzan sí o no.

_____C. Creo diagramas visuales mientras soluciono un problema.

_____D. Tengo un sistema de clasificación donde acumulo información mientras resuelvo un problema.

_____E. Me descubro hablando en voz alta cuando trabajo en la solución de problemas.

_____F. Resuelvo un problema primero destacando o enfocándome en los puntos críticos.

_____G. Resuelvo un problema esclareciéndolo o extendiendo el ámbito del problema.

_____H. Enfrento un problema paso a paso de manera secuencial y ordenada.

_____I. Enfrento un problema examinándolo en su totalidad antes de observar sus partes.

_____J. La manera más eficiente y efectiva de lidiar con un problema es de manera lógica y racional.

_____K. La manera más eficiente y efectiva de lidiar con un problema es seguir tus instintos.

_____L. Yo soluciono un problema ordenando, combinando y construyendo sus partes para

generar una solución para el problema en general.

_____M. Yo soluciono un problema examinándolo en su totalidad en relación con sus partes antes de proseguir.

_____N. Todos los problemas tienen respuestas predeterminadas, correctas o más apropiadas en un set de circunstancias.

_____O. Todos los problemas son abiertos por naturaleza por lo que permiten muchas respuestas y soluciones posibles.

_____P. Acumulo volúmenes de información en mi memoria, como una computadora, compartimentando cada entrada para poder recordar con mayor facilidad.

_____Q. Acumulo mucha información en mi memoria asociándola a la existente y luego determino como esta se acomoda (como la relación entre un puzzle y sus piezas).

_____R. Antes de resolver un problema, busco un plan o método para resolverlo.

_____S. Generalmente, confío en "corazonadas", instintos y otras señales no verbales que me ayudan en el proceso de la solución de un problema.

_____T. Generalmente confío en hechos y datos cuando soluciono un problema.

_____U. Creo y descarto alternativas rápidamente.

_____V. Organizo una búsqueda para encontrar información adicional y selecciono cuidadosamente las fuentes de información.

_____W. Considero un número de alternativas y opciones simultáneamente.

_____X. Tiendo a identificar las limitaciones específicas dentro del problema de manera temprana en su proceso de solución.

_____Y. Cuando analizo un problema, me parece que voy de un paso a otro y luego vuelvo nuevamente.

_____Z. Cuando analizo un problema, me parece que progreso de un paso a otro de manera secuencial.

_____AA. Generalmente examino muchas fuentes de información, leyendo rápidamente la información para buscar pistas que me guíen.

_____BB. Cuando trabajo con un problema que implica una situación compleja, lo divido en una serie de bloques más pequeños y más fáciles de manejar.

_____CC. Me parece que vuelvo a la misma fuente de información varias veces, obteniendo diferentes puntos de vista cada vez que lo hago.

_____DD. Recolecto información metódicamente, detalladamente, y siguiendo una secuencia lógica.

_____EE. Generalmente, percibo el tamaño y la dimensión del problema antes de sacar la idea completa.

_____FF. Cuando soluciono un problema, mi enfoque es detallado y organizado; como resultado el llegar a una solución implica un proceso que ocupa bastante tiempo.

_____GG. Soy capaz de solucionar un problema rápida y efectivamente; no ocupo gran cantidad de tiempo en el proceso que conlleva la resolución de un problema.

_____HH. Me siento cómodo ante la incertidumbre y la ambigüedad.

_____II. Yo me describiría- como me describirían otros– como una persona predecible y confiable.

_____JJ. Tengo muchas ideas y soy de naturaleza inquisitiva.

_____KK. Está en mi naturaleza el evitar 'crear problemas' con el cambio.

_____LL. Me describiría a mí mismo – como harían otros - como alguien que toma riesgos.

_____MM. Me siento cómodo con el "statu quo"; las 'nuevas formas' no son siempre las mejores formas.