

Teachers' Metacognitive Knowledge and Teacher Education Programs in Iran as an Input-poor Environment: Training Teachers' Brains?

Mohsen Mahdavi¹, Leila JafarZade²

¹Department of English, Chabahar Maritime University, Chabahar, Iran

²English Department, Islamic Azad University, Ayatollah Amoli Branch, Amol, Iran

Received: April 2, 2014

Accepted: May 17, 2014

ABSTRACT

Metacognition or thinking about thinking and regulation of this thinking is an inevitable factor in teaching and learning. This study aims to investigate the role of the present teacher education program in providing metacognitive need of high school English language teachers. To achieve this, 100 male and female teachers teaching English as a Foreign Language (TEFL) from Iran selected randomly to take part in this study. Teachers' Metacognition Scale (TMS) questionnaire served as an instrument for measuring teachers' awareness of four metacognitive factors- pedagogical, declarative, procedural, and conditional. One sample t-test was used to analyze the coded quantitative data. Findings from the quantitative data analysis showed that teachers' metacognitive awareness of teaching processes in this input-poor environment is poor. To conclude, adding and enhancing of metacognitive factors in the teacher education program will increase teachers' metacognitive awareness of teaching processes in Iran.

KEYWORDS: metacognitive knowledge, teacher education program, input-poor environment

1. INTRODUCTION

Teaching and learning English as a foreign language in an input-poor environment is far more challenging than its teaching and learning in other foreign or second language contexts. Mahdavi (2013) noted that English language learning environment in Iran is a typical example of an input-poor environment where EFL teaching is geared towards enhancing learner's *linguistic competence* than their *communicative competence*, and formal aspects of the English language are the focus [1]. A lack of motivation and a real opportunity to practice the language are major problems that may be found in such environments. A constant effort is needed to tackle with all facing obstacles. Teachers have to be aware of all the appropriate ways to improve their own English knowledge in order to be able to use this knowledge in the classroom as an English language teacher. Receiving adequate input for learning English language is very difficult in Iran, for English is not fully acknowledged out of classroom, and all input is limited to the classroom, which is not enough in the process of learning English. The quantity and quality of input, the amount of interaction, and an opportunity to practice English language are crucial elements for learning and teaching language.

The present failure in EFL learning in Iranian high schools supports the idea of EFL teachers' inadequate knowledge of EFL teaching. Teachers should consistently adjust their speech to an appropriate level of difficulty in order to solve unpredictable communication and linguistic problem from moment to moment. In non-native situations, the most substantial problem of teachers is that English often dates back to their school time. To enhance EFL learners' language proficiency, first, language teachers themselves should master a target language; otherwise, expecting students to be proficient is not reasonable [2]. Nowadays, most English teachers have hardly undergone well trainings and instructions for teaching English in many local areas in Iran or their standards have remained outdated and modest. In such areas, most secondary school teachers have taught English to both primary and advanced school students.

If a teacher wants to be successful in teaching activities, he/she has to keep himself/herself up-to-date and be curious and aware of the modern teaching and learning techniques and try them practically in the real classroom environments. To accomplish this goal, researchers such as Zeichner and Noffke (2001) shared the idea that a meaningful professional development for in-service teachers is essential [3]. Thus, teacher training programs can be considered as one of the most important sources of required teaching and learning information because teacher training programs are designed to improve teachers' behavior and teaching abilities which will result in learners' better learning and motivate them to contribute in classroom activities.

It is believed that teachers' teaching experience and passed teaching courses during university years are substantial to teaching EFL. For most of the teachers, the terms reflection and creation during teaching are vogue because they themselves believe that experience and repetitive subjects and text-books help them to be master of teaching materials. To help teachers to be aware of the importance of reflection before, while, and after teaching, professional Teacher Training Programs are necessary.

* **Corresponding Author:** Mohsen Mahdavi, Department of English, Chabahar Maritime University, Chabahar, Iran.
mohsenmahdavi.academiclife@yahoo.com

When the term metacognition consists of some professional teaching and learning, essential knowledge is rarely introduced and discussed during university courses and almost never practiced in pre-service and in-service programs. How we can expect teachers use this knowledge in their teaching process and guide learners use them in their learning activities? Veeman et al. (2006) in their study theoretically support the idea that many teachers suffer adequate knowledge regarding metacognition [4]. Therefore, metacognitive strategies must be taught during Teacher Training Programs in order to help the teachers use this knowledge in their curriculum designing, teaching skills and evaluating his/her learning performances.

Metacognition is ones' knowledge about his own thinking which results in better learning and understanding [5]. It means that when you are performing a task, you have a pre-plan, all the time you monitor your performance, and you are aware of your action step by step. While you are observing your performance, you have some evaluation regarding the correctness of the steps. As soon as you encounter an obstacle, you have some strategies to overcome the problem. Monitoring, evaluation and offering remedial strategies for better learning and teaching must be a good teachers' priority. A good teacher is metacognitive and is aware of whatever he/she does in the classroom. He/she knows the strategies and is aware in which emergency regulates what strategy. In fact, when a person is metacognitive, s/he is aware of his/her own mental process [6].

To teach metacognition, teachers' pedagogical understanding of metacognition is required. Pedagogical understanding of metacognition refers to teachers' ability in selecting appropriate strategies in a specific point of time suitable for a specific goal. Successful strategy teaching addresses learners' knowledge of strategies and knowledge regarding appropriate time of using such strategies [6]. Teachers must be aware of their learners' performance, monitor activities, evaluate results, and offer the best needed strategies in an appropriate period of time. To help students be aware of the strategies, it is better to discuss the specific strategy selection. Constant learner-learners and teacher-learner interaction result in better learning. But still explicit instructions of such strategies are teachers' responsibilities and depend on teachers' pedagogical understanding of metacognition. In fact, teachers need to create learning environment in which learners are asked to use these metacognitive strategies explicitly and reflect upon their own thinking [7].

To sum up, teachers can improve most aspects of teaching skills during appropriate Teacher Training Program. In Iran, inadequacy of such teaching strategies results in less effective teachers and students' disability in writing correct English sentences after seven years of studying English reading and writing skills at school. Using metacognitive strategies may result in better development in teaching reading and writing skills at high schools in Iran.

The main focus of this study is to consider whether teachers gain and become aware of metacognitive knowledge during Teacher Training Program, and learn how to use such knowledge in their teaching process in order to find a practical and applicable solution to overcome the old problem of Iran's unlearned EFL. The purpose of this study is twofold. One is considering the teachers' teaching programs, and the next one is to check out teachers' knowledge of metacognition.

1.1 Why teacher education?

English as a foreign language teaching is not an easy task. It is required online and permanent consciousness of evaluating whatever you are teaching. However, it was previously believed that teaching is a simple job that anybody can do. Thus, training teachers was quite an easy job because it was based on master-apprenticeship relation as Woodring (1975) stated that "The oldest form of teacher education is the observation and emulation of a master. Plato learned to teach by sitting at the feet of Socrates. Aristotle, in turn, learned from Plato" [8]. Concept of Teacher Education first introduced by Richard (1989) to explain second language teacher training and declares "the intent of second language teacher education must provide opportunities for the novice teachers to acquire the skills and competencies of effective teachers and to discover the working rules that effective teachers use" [9] (p. 15).

A professional teacher should be aware that he/she is not in the classroom to deliver the curriculum, he/she is there to guide and help students the best ways of behaving in any real life situations.. Instead of using pre-prepared teaching strategies, an educated and professional teacher tries to make teaching and learning experience existing and also tries to take students out of classroom atmosphere to the real life situations. Palmer (1999) indicated:

Good teaching isn't about technique. I've asked students around the country to describe their good teachers to me. Some of them describe people who lecture all the time, some of them describe people who do little other than facilitate group process, and others describe everything in between. But all of them describe people who have some sort of connective capacity, who connect themselves to their students, their students to each other, and everyone to the subject being studied." (p. 27) [10]

Research regarding teacher education set up in 1980s. The pioneer of such studies were Edward Ducharme and Russell Agne (1982), Heather Carter (1984), Judith Lanier and Judith Little (1986) ([11], [12], [13]). Although there are long lists of characteristics of good and qualified teachers published every day, the source of gaining required knowledge for effective teaching still is not able to satisfy expectations. Teacher Training

Program consists of pre-service and in-service training programs which themselves have their own programs, objective, and outcomes. Metacognitive strategy training during teacher training program will raise a sense of awareness of these strategies and equip teachers with strategies which can lead to conscious teaching.

1.2. Importance of Teachers' metacognition

Metacognition is vital to the everyday learning process because it refers to the processes that allow people to reflect on their own cognitive abilities. In other words, by the use of its strategies, metacognitive learners are able to remember information, know what they know, or to think about their thinking. Metacognition is a central element in effective teaching and learning. In fact, metacognition can be considered as an essential factor in distinguishing between good and poor language learners ([14], [15]).

Although research indicates that metacognition leads to successful and effective teaching and learning in addition to independent teachers and students, more research regarding whyness and howness of its teaching and practical ideas for promoting metacognitive thinking in the classroom are needed because many problems can be solved by cognitive methods alone [16]. Teachers can help students to be aware of strategy categories and help them to recall the best one while doing a specific task. Students must be encouraged to reflect upon their activities and verbalize them during problem solving tasks. They also have to be encouraged to have self-assessment while they are performing a task because

An emphasis on self-assessment helps students to develop the ability to monitor their own understanding and to find resources to deepen it when necessary.... Learners get opportunities to test their mettle, to see how they are doing and to revise their learning process as necessary. Without these assessment opportunities, the quality of learning can be disappointing—yet, [too often] this is not discovered until the end of the project when it is too late to change and revise the process” (Barron et al. 1998, p. 284). [17]

Moreover, students must be taught the regulation of their thoughts. Teachers can do it through modeling and explicit instruction of their own thoughts [7]. In other word, as Tovani (2000) stated

When teachers make the invisible mental processes visible, they arm readers with powerful weapons. I stop often to think out loud for my students. I describe what is going on in my mind as I read. When I get stuck, I demonstrate out loud the comprehension strategies I use to construction meaning” (p. 27). [18]

Teachers’ understanding of what is necessary for the teaching of metacognition results in the pedagogical understanding of metacognition. In general, pedagogical understanding of metacognition refers to the teaching strategies and instructional techniques that will be used in particular situations to achieve a teaching goal. Successful metacognitive instruction addresses student schema, knowledge of strategies, and knowledge of the conditions for implementing strategies ([19], [6]).

Metacognition plays an important role in students learning process. Therefore, teachers have one of the most important responsibilities to acknowledge, cultivate, exploit and enhance the metacognitive capabilities of all learners. Flavell (1979) stated “increasing the quantity and quality of children’s metacognitive knowledge and monitoring skills through systematic training may be feasible as well as desirable” [20] (p. 906). But mostly teachers use tacit instruction of such certain elements of learning process. Students need models of strategies in action, guided practice as they implement those models, and independent practice with the strategies [21]. In addition, students need to see that strategies are flexible, and they are authorized to implement different strategies depending on the learning purpose and the demands of the task [22]. In addition, in order to determine the appropriateness of the strategy application, students need time to reflect on their thinking. Think aloud (Isreal & Massey, 2005), opportunities to practice thinking strategies (Schreiber, 2005), active discussions (Zohar, 2006), and the use the language of thinking (Tishman et al., 1995) are instructional strategies, which help teachers implement explicit instruction and provide students time for reflecting on the processes ([23], [24], [25], [26]). Metacognition is an important concept in teacher professional development because if a teacher wants his students to think metacognitively, he himself ought to be metacognitive in advanced. In other words, “the ability to self-regulate learning is essential for teachers’ professional growth during their entire career as well as for their ability to promote these processes among students” [27] (p.161).

To sum up, Since the English language teaching here in Iran is based on reading comprehension, students must be offered the present metacognitive reading comprehension strategies due to the fact that metacognitive person is a sample of a good reader and is a successful learner at school ([6], [28], [29]). To teach metacognitive knowledge and strategies properly, first teachers themselves must be metacognitive because according to Prytula (2012) “one cannot teach what one does not know” [30]. To train metacognitive teachers for effective instruction, the present and traditional teacher training programs have to be reviewed and revised.

This study seeks to find the answers of the following two questions:

1. Do EFL teachers in high school in Iran use metacognitive knowledge?
2. Does Teacher Training Program in high school train metacognitive knowledge for EFL teachers in Iran?

2. METHOD AND DESIGN

The aim of this research is firstly to investigate whether metacognitive knowledge as one of the essential factors a teacher needs is trained in the EFL teaching training program in Iran and secondly to focus on whether EFL teachers in high school use metacognitive knowledge. In addition to the explanation of design of the study from outset, this section provides information regarding samples, instruments, procedure, and data analysis methods. Then, the detailed explanation of the used instruments, procedure and data analysis is followed.

2.1. The Design of the Study

The present study tried to firstly investigate Iranian EFL teachers' awareness of metacognitive strategies by virtue of two widely used instruments intended to measure teachers' metacognitive awareness and the content of present in-service training program. Thus, part of the research was a survey aimed at discerning the metacognitive strategies teachers using in the classroom in an input-poor context. Furthermore, this study endeavored to study the presence of metacognitive strategy in in-service training programs for EFL high school teachers on the north of Iran.

In an attempt to uncover the Iranian EFL teachers' metacognitive knowledge, a survey study brought together with a qualitative study in a single unitary research project. First, the present study tries to investigate Iranian high school English language teachers' pedagogical understanding of metacognition, awareness of metacognition and its strategies. 40 male and female high school English language teachers (5-20 year experience) with an age range from 25 to 50 from the north of Iran were randomly selected to participate in the Teachers' Metacognition Scale (TMS) questionnaires [31]. All questions were translated into Persian and the original 4-point Likert scale range changed to 1 (strongly agree) to 4 (strongly disagree).

Furthermore, this study attempted to investigate kind of pre-service and in-service Teacher Training Program performed for high school English language teachers through a researcher made semi-structured interview. Therefore, for the second step, 15 teachers were randomly selected and invited to participate in a semi-structured interview to investigate in depth whether they were interested in using metacognitive knowledge in teaching or they ever used it in their frequent teacher training programs. The efforts were made to demonstrate whether metacognitive strategy training would add something valuable to EFL teaching in an input-poor environment.

2.2. Participants

For the present study the participants were selected randomly among Iranian EFL teachers in five separated but interrelated districts of ministry of education in north of Iran. They were 27 male and female EFL teachers with 5 to 25 years of teaching EFL at high schools. Most of the participants were female and received BA degree in English language translation.

Table 1: Participant demographics

Gender	N	Age	%	Degree	%	Years of experience
Male	26	20-29	33.3	AD*	3.7	0-5
		30-39	33.3	BA	63	11-20
Female	74	40-50	33.3	MA	29.6	20 -25
				PHD	3.7	
Total	100					

*Associate degree

2.2. Instrumentations

To respond to the above mentioned research questions two instruments were used, namely a questionnaire and interview.

2.2.1. Questionnaire

At first, the multiple variable teachers' metacognitive scale questionnaire was taken from Wilson and Bai's (2010) study to examine the hypothesis for the first research question focusing on the amount of high school EFL teachers' knowledge regarding metacognitive knowledge and skills [31]. The items in the questionnaire addressed the teachers' pedagogical understanding of metacognition in the first five items. Next, through items 6-9 teachers' knowledge of conditional knowledge were studied. Then, teachers' declarative knowledge was measured through items 10 to 13. Finally, teachers' ability in explicit instruction of metacognitive strategies was measured through the last seven items. The participants in the survey were offered adequate information regarding the content and deadline. After a week or two, the completed questionnaires were collected and 15 of the participants were randomly selected to participate in semi-structured interview questions.

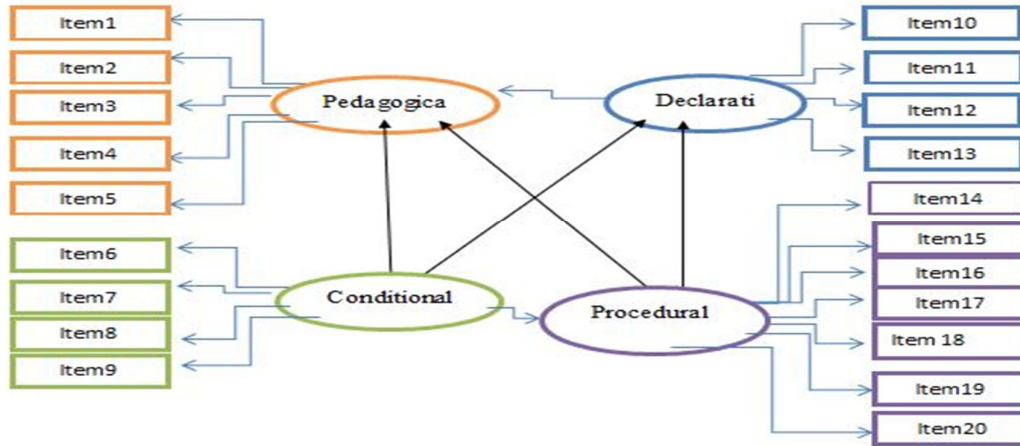


Figure 1: Hypothetical structural model of metacognition (after Wilson & Bai, 2010) [31]

2.2.2. Interview

After administrating and collecting of the questionnaire, 15 of the participants were randomly selected to participate in the semi-structured interview with five open-ended questions regarding the quality and quantity of the present teacher training program provided to them during their EFL teaching experiences. They were provided enough explanation about the purpose of the interview and they were promised pseudonyms because of their job security. The participants were interviewed in a relaxed atmosphere and each interview took almost 30 minutes.

2.3. Data Collection Procedures

First the researcher asked permission to conduct the questionnaire from the head Education departments in different cities and the assistant of investigation in administrations of education in Iran. After ethics were cleared and the Education department granted the permission, eight weeks were granted to questionnaire conduction and collection among the high school English language teachers in their breaks at schools. Quantitative Data for this study was collected through Teachers’ Metacognition Scale (TMS) questionnaire with 20 Likert- Scale questions validated by Wilson and Bai (2010) and designed to investigate teachers’ knowledge of metacognition [31]. It was administered among volunteer teachers in person during the second half of the school year. Teachers were asked to complete the questionnaire in seven days. All the subjects were provided with the explanation of the questionnaire, purpose of the study, and way of answering questions in detail. In addition, before distribution of the questionnaire, the researcher emphasized that their responses to the questions would affect the research results, therefore they were asked not to respond the questions may look vague. The completed and uncompleted questionnaires were collected through face-to-face meetings, telephones, and emails in two weeks.

The high school teachers were also asked to take part in the semi-structured interview with five open-ended questions after completing the questionnaires. In week nine and ten, fifteen of the teachers were interviewed in different places; some at school, some at their houses, and some in coffee shops. Each interview session took approximately 30 minutes providing explanation about goal and process of interview. All the subjects were promised pseudonyms because of their job security. Recording took place and the subjects were appreciated at the end of the interview.

As soon as the questionnaires were collected results were analyzed through Statistical Package for Social Science (SPSS, version 20) by an expert in the field. Moreover, the collected interview data were transcribed and reread several times to highlight the prominent subjects. Then based on the research questions, themes were identified, coded, and labeled to be available faster.

2.4. Data Analysis

The collected data will address the teachers’ pedagogical understanding of metacognition and appropriateness of Teacher Training Program in meeting metacognitive needs of the teachers. In order to answer the above-mentioned research questions, the quantitative questionnaire data will be analyzed through SPSS, and the qualitative data will be collected through the semi-structured interview and the transcriptions will be analyzed.

3.RESULTS AND DISCUSSIONS

This study used quantitative and qualitative approaches, namely a survey study and an interview to respond to the research questions. The prominent goal of the survey study was to shed light on the amount of

Iranian high schools teachers' metacognitive knowledge. The interview was also designed to unveil the quality and the quantity of in-service Teacher Training Program provided for high school English language teachers on north of Iran. In addition to the explanation of quantitative and qualitative data analysis results, this section provides detailed explanation of statistical analysis. This study set out to answer the two research questions. The first part of this section focuses on the results which help to answer the first research question regarding the amount of high school English language teachers' metacognitive knowledge.

3.1. Analysis of the First Research Question

Research question one: Do EFL teachers in high school in Iran use metacognitive knowledge?

For the first research question, we hypothesized that teachers lack metacognitive knowledge. In order to examine the hypothesis, the responses were compared through one-sample t-test. The primary analysis indicated that teachers have metacognitive knowledge in general, but it can be claimed that the amount of general knowledge regarding metacognition was completely tacit because when they were asked to explain their insights regarding questions, they did not provide reasonable responses and stated that years of teaching experiences brought them such ideas.

As it is shown in table 2, after comparing the amount of two means and the obtained t value and p value, it has been suggested that there is a significant difference among the participants' responses to the metacognitive evaluation questions. In addition, the lower amount of obtained mean from that of assumed mean supports the hypothesis that participants have poor metacognitive knowledge.

Table2:Single sample T-test for TMS questionnaire

Metacognitive Knowledge	Mean Difference	df	Assumed Mean (AS)	Mean	SD	N	P Value	T Value
Pedagogy	.30	24	2.50	2.19	.48	25	< .00	2.95
Condition	.27	24	2.50	2.22	.48	25	< .00	2.74
Declaration	.47	24	2.50	2.02	.26	25	< .00	8.86
Procedure	.58	24	2.50	1.91	.41	25	< .00	7.16
Total	.42	24	2.50	2.08	.35	25	< .00	5.85

3.2 Analysis of the Second Research Question

The qualitative data was analyzed based on interpretive psychology. By analyzing interview data, it has been tried to investigate the sort of Teacher Training Program for high school English teachers, and weather the amount of required knowledge for increasing teachers' metacognition is available or not. The process of interview analysis was two-folded: first, transcription of what has been recorded, and then identification of the themes. The interviews were transcribed, coded, and labeled in order to be reachable and available faster.

Research question two: Does Teacher Training Program in high school train metacognitive knowledge for EFL teachers in Iran?

For the second research question, we hypothesized that the provided teacher training program for Iranian high school EFL teachers hardly meet EFL teachers' real needs in the real classroom contexts. The uncovered themes among the qualitative data supported our hypothesis. First, however, the teacher training program is not a novel task, it is a completely new and far beyond globalized idea of post method teacher education programs in Iran. Second, the present pre-service programs are limited to the university courses that student teachers may pass during studying EFL teaching or translation. And, prospective teachers should start teaching with that amount of EFL teaching knowledge. Third, the provided in-service teacher training programs are far beyond reflection and hardly ever take place.

In addition, in the rarely held in-service programs mainly instead of specialized courses regarding EFL teaching and learning, social, economical, and moral issues occupy the program sections. Finally, the provided teacher education programs which are supported by Ministry of Education almost never meet metacognitive needs of the EFL teachers. Most teachers did not even hear the term metacognition and its explicit strategy instructions, so there cannot be expectation on the side of the teachers to use metacognitive knowledge and strategies in the classrooms.

4. CONCLUSIONS

To conclude, this study examined whether high school EFL teachers have metacognitive knowledge and in-service training programs meet metacognitive need of teacher. The findings indicated that both EFL teachers and in-service programs lack sufficient knowledge of metacognition.

Although, it is supported that in-service training program would lead to qualified and well- prepared teachers who have great impact on students' achievement, the findings of this study indicated that the present in-service programs for high school EFL teachers in Iran lack quality and quantity because the importance and objectives of this program are still unclear for both EFL teachers and policy makers.

Therefore, to gain better results in teaching and learning EFL, both quality and quantity of present teacher training programs have to be revised. In addition, improvement of technical teaching and consideration of learning styles and skills have to be applied to the content of the programs. For instance, metacognition can be introduced and discussed as one of the essential knowledge bases which increases teaching skills and learning outcomes. On the other hand, instead of on-shot workshops, it is better to conduct the training programs throughout a school year and offer EFL teachers opportunity to discuss their experiences with a qualified mentor.

Acknowledgement

I appreciate all members of English Department at Chabahar Maritime University, especially Dr. Esmail Zare Behtash and Dr. Hooshang Khoshshima for their unwavering supports and encouragements.

REFERENCES

1. Mahdavi, M. (2013) Language Learner Strategies Used by Iranian EFL Learners in an Input-poor Environment. *Anglisticum Journal*, Vol. 2, issue 4, pp. 173-179.
2. Cheng, L. Y., and Wang, H. (2004). Understanding Professional Challenges Faced by Chinese Teachers of English. [Online] Available: <http://www-writing.berkeley.edu/TESL-EJ/ej28/a2.html>.
3. Zeichner, M. K. and S. E. Noffke. (2001). Practitioner research. In V. Richardson (Ed.). *Handbook of Research on Teaching* (pp. 293-330). Washington, DC: American Educational Research Association.
4. Veenman, J. V. M., Bernadette, H. A. M., Hout-Wolters, V., and Afflerbach, P. (2006). Metacognition and Learning: Conceptual and Methodological Considerations. *Metacognition Learning*, 1, pp. 3-14.
5. Flavell, J. H. (1976). Metacognitive aspects of problem solving. In L. B. Resnick (Ed.), *the nature of intelligence* (pp. 231-235). Hillsdale, NJ: Erlbaum.
6. Griffith, P. L., & Ruan, J. (2005). What is metacognition and what should be its role in literacy instruction? In S. Isreal, C. Block, K. Bauserman, and K. Kinnucan-Welsch (Eds.), *Metacognition in literacy learning: theory, assessment, instruction, and professional development* (pp. 3-18). Mahwah: Lawrence Erlbaum Associates.
7. Leat, D. and Lin, M. (2007). Developing pedagogy of metacognition and transfer: some signposts for the generation and use of knowledge and the creation of research partnerships. *British Educational Research Journal*, 29(3), 383-414.
8. Woodring, Paul. (1975). The Development of Teacher Education. In *Teacher Education*, Seventy-fourth Yearbook of the National Society for the Study of Education, Kevin Ryan ed. Chicago: University of Chicago Press.
9. Richards, J. C. (1990). The dilemma of teacher education in second language teaching. In J. C. Richards and D. Nunan (Eds.), *Second language teacher education* (pp. 3-15). Cambridge, UK: Cambridge University Press.
10. Palmer, P. (1999). *The Grace of Great Things: Reclaiming the Sacred in Knowing, Teaching, and Learning*. In *The Heart of Knowing: Spirituality in Education*. Ed. Stephen Glazer. NY: Jeremy P. Tarcher/Putnam.
11. Ducharme, Edward R. and Agne, Russell M. (1982). "The Education Professoriate: A Research Based Perspective," *Journal of Teacher education*, Vol. XXXIII, Number 6, pp. 30-36.
12. Carter, H. (1984). "Teachers of Teachers." In *Advances in Education*, Vol. 1, (Ed.). Lillian Katz and James Raths. Norwood, NJ: Ablex Publishing.
13. Lanier, J. and Little, J. (1986). "Research in Teacher Education." In *Handbook of Research on Teaching*, (3rd Ed.). Merlin C. Wittrock. New York: Macmillan.
14. Gillette, B. K. (1990). *Beyond Learning Strategies: A Whole Person Approach to Second Language Learning*. Unpublished doctoral dissertation. University of Delaware.
15. Rubin, J. (2005). The Expert Language Learner: a Review of Good Language Learner Studies and Learner Strategies. In K. Johnson (Ed.), *Expertise in Second Language Learning and Teaching* (pp. 37-63). New York: Palgrave MacMillan.
16. Fisher R. (1998). Thinking about Thinking: Developing Metacognition, *Early Child Development and Care*, 141, pp1-15.
17. Barron, B., Schwartz, D. L., Vye, N., Moore, A., Petrosino, A., Zech, L., & Bransford, J. (1998). Doing with understanding: Lessons from research on problem- and project-based learning. *The Journal of the Learning Sciences*, 7(3-4), 271-311.
18. Tovani, C. (2000). *I read it, but I don't get it: Comprehension strategies for adolescent readers*. Portland, ME: Stenhouse Publishers.
19. Gougeon, A. F. (1999). Teaching reading from a metacognitive perspective: theory and classroom practice. *Journal of College Reading and Learning*, 30 (1), 85-94.

20. Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive developmental inquiry. *American Psychologist*, 34, 906–911.
21. Clark, K. F., & Graves, M. F. (2005). Scaffolding students' comprehension of text. *The Reading Teacher*, 58(6).
22. Pressley, M. (2002b). Metacognition and self-regulated comprehension. In A.E. Farstrup & S.J. Samuels (Eds.), *what research has to say about reading instruction* (3rd ed., pp. 291–309). Newark, DE: International Reading Association.
23. Isreal, S. E., & Massey, D. (2005). Metacognitive think-aloud: Using a gradual release model with middle school students. In S. Isreal, C. Block, K. Bauserman, & K. Kinnucan-Welsch (Eds.), *Metacognition in literacy learning: theory, assessment, instruction, and professional development* (pp. 183–189). Mahwah: Lawrence Erlbaum Associates.
24. Schreiber, F. J. (2005). Metacognition and self-regulation in literacy. In S. E. Israel, C. C. Block, K.L. Bauserman, & K. Kinnucan-Welsch (Eds.), *Metacognition in Literacy Learning: Theory, Assessment, Instruction, and Professional Development*, pp. 215–239. Mahwah, NJ: Lawrence Erlbaum Associates.
25. Zohar, A. (2006). The nature and development of teachers' meta-strategic knowledge in the context of teaching higher-order thinking. *The Journal of Learning Sciences*, 15(3), 331–377.
26. Tishman, S., Perkins, D., & Jay, E. (1995). *The Thinking Classroom: Teaching and learning in a culture of thinking*. Needham, MA: Allyn & Bacon.
27. Kramarski, B., & Michalsky, T. (2009). Investigating pre-service teachers' professional growth in self-regulated learning environments. *Journal of educational psychology*, 101(1), 161. Doi:org/10.1037/a0013101.
28. Randi, J., Grigorenko, E. L., & Sternberg, R. J. (2005). Revisiting definitions of reading comprehension. Just what is reading comprehension anyway? In S. Isreal, C. Block, K. Bauserman, & K. Kinnucan-Welsch (Eds.), *Metacognition in literacy learning: theory, assessment, instruction, and professional development* (pp. 19–39). Mahwah: Lawrence Erlbaum Associates.
29. Stenberg, R. J. (1998). Metacognition, abilities, and developing expertise: What makes an expert student? *Instructional Science*, 26, 127–140.
30. Prytula, M. P. (2012). Teacher Metacognition within the Professional Learning Community. *International Education Studies*, 5(4), pp.112–121.
31. Wilson, N.S. & Bai, H. (2010). The relationships and impact of teachers' metacognitive knowledge and pedagogical understandings of metacognition. *Metacognition and Learning*, 5(3), 269–288.