

The Significance and Instruction of Metacognition in Continuing Education

Zou Yanqun

Beijing International Studies University, Beijing, China

Email: belindazou@126.com

[Abstract] The importance of metacognition in the process of learning has been recognized in various fields, yet studies on the essential significance of metacognition to adult learners in continuing education are few. Based on a survey on metacognition and learning, this study explores the essential significance of metacognition to adult learners in China, analyzes the correlation between metacognition and motivations, self-efficacy and learning strategies, and puts forward approaches to integrate metacognition through adult learners' education.

[Keywords] metacognition; self-efficacy; motivation; learning strategy; continuing education

Introduction

The importance of metacognition in the process of learning is an old idea that can be traced from Socrates' questioning methods to Dewey's (1933) perspective that we learn more from reflecting on our experiences than from the actual experiences themselves. What is more recent is the coining of the term "metacognition" and the emergence of a metacognition research field in the last four decades (Tanner, 2012).

It is John Flavell who puts forward the term in 1970s, recognizes that metacognition consists of both monitoring and regulation aspects, and defines it as follows: Metacognition refers to one's knowledge concerning one's own cognitive processes and products or anything related to them... Metacognition refers, among other things, to the active monitoring and consequent regulation and orchestration of these processes in relation to the cognitive objects or data on which they bear, usually in the service of some concrete goal or objective (Flavell, 1976, p. 232). Reviewing scholars' interpretations of metacognition, we define metacognition as knowledge and regulation of cognition: metacognitive knowledge includes the cognition of the subject (knowledge, ability, resources, cognitive, affective, and physiological state), others, cognitive universals, the task, as well as metacognitive awareness; metacognitive regulation involves planning to maximize the resources in a certain context prior to performing a task, monitoring, regulating to optimize the performance during the task, and evaluating and reflecting the cognitive process after the performance (Zou, 2015).

The importance of metacognition in learning has been recognized that meta-cognition can be observed as one of the most important factors leading to success in learning (Schraw 1998; Veenman, Prins & Elshout, 2002). First, the impact of metacognition in learning has been proved. Students will not really learn new information if they do not go through a metacognitive realization that requires them to examine how they thought about the topic before and how they are thinking differently about that topic now (Posner et al., 1982), which is in accordance with Dewey's (1933) assertion that reflection on an experience is the key step in learning. Furthermore, there is evidence that improved metacognition is associated with promoting young students' overall academic success (Adey & Shayer, 1993; Kuhn & Pearsall, 1998), the most effective learners are self-

regulating (Butler & Winne, 1995, p. 245), and students with greater metacognitive abilities tend to be more successful in their cognitive endeavors (Livingston, 1996), while individuals with poor metacognitive skills perform less well academically than peers (Kruger, 1999; Dunning et al., 2003). Besides, an adequate level of metacognition may compensate for cognitive limitations (Veenman, Wilhelm, & Beishuizen, 2004; Veenman & Spaans, 2005). Metacognition helps to maximize what one has learned and makes one “do 20% better – you get an extra Friday every week” (Heppell, 2014).

However, most papers on metacognition focus on regular undergraduates and postgraduates. Twenty-two papers on metacognition of adult learners are found in CNKI, most of which are speculative ones with a few empirical studies; furthermore, most of the researches are quite brief, having little intensive analysis of the significance of metacognition for adult learners in schools of continuing education. This study aims to explore the following questions based on a survey on metacognition: 1. Why is metacognition significant for adult learners? 2. Could metacognition stimulate adult learners' motivation and self-efficacy? 3. How can metacognition be integrated into adult education to promote the efficiency and effect of learning?

The Necessity and Urgency of Metacognition for Adult Learners

Adult learners in schools of continuing education are different from learners in regular higher educational institutions in respect of age, career, motivation, experience, and responsibility, which makes metacognition essentially significant in continuing education for the time being and for the long term.

The Decline of Rote Memory

According to a survey conducted in the School of Continuing Education of Beijing International Studies University in 2017, 173 respondents ranged from 18 to 40+ years old, and 52% of the respondents were over 25. According to the survey, adult learners always express their anxiety and predicament in the decline of rote memory, which brings more impediments to learning, especially in language learning. Studies have shown that the rote memory declines with aging (Thorndike, 1928), yet learning is the interaction of intellectual state, motivation, self-efficacy, educational experience, physical and emotional state, and other relevant factors. Metacognition is the key to maximizing and optimizing the resources acquired, especially the adults' rich and sophisticated experiences, to make full use of prior knowledge, to develop understanding memory and long-term memory, and to compensate for the decline in rote memory, which might grow to be an advantage. Besides, metacognition could help learners make reasonable and feasible arrangement to adjust to the current circumstances by the study of oneself, task, learning universals, and regulation.

The Complexity of Roles and Responsibilities

The complexity of roles and responsibilities brings the mixture of various motivations, the fluctuation of emotion, and the contradiction between study and other responsibilities.

The complexity of motivation. First, adults play various social roles and shoulder responsibilities in different fields, which leads to the complexity of motivations. Second, adult learners have stronger motivation in learning compared to regular undergraduates because of the

needs for personal and professional development. However, strong motivation, on the one hand, conduces to clarify the learning purpose and boost learner's enthusiasm; on the other hand, strong motivation makes learners anxious for success, which negatively effects learning, especially when learners face sharp contrasts between expectation and reality. Thus, how to make various motivations stimulate and complement each other and how to maintain the vitality of motivation and enthusiasm in adult learners become urgent issues.

The emotional fluctuation of adult learners. Various social roles and responsibilities bring pressure to adult learners in continuing education in different respects, which leads to anxiety and emotional fluctuations. In addition, the obstacles adult learners encounter in work and personal lives may aggravate the stress, which may affect their physical and emotional states, accelerate the aging process, and bring impediments to learning. Moreover, adult learners are inclined to be upset by emotional and other disturbing factors beyond expectations due to various roles and responsibilities, which require more flexibility, adjustment, and regulation in the arrangement of task, time, and energy.

Limited class hours. Adult learners in schools of continuing education have limited class hours, usually on weekends, which is different from the common learning schedule of regular undergraduates, whose classes are scattered over various weekdays. Besides, adult learners have less time and energy in learning owing to various social roles and heavy responsibilities. As a result, adult learners are required to make the most of their time and energy, monitor and regulate their learning, work and family life, and make overall plans that take all factors into consideration. This indicates the necessity and urgency of metacognition for adult learners.

Prior knowledge and experience. The rich and sophisticated knowledge and experiences adult learners have accumulated are a treasure for learning, which helps them bridge the prior knowledge and fresh information to establish the connection and develop long-term memory. However, the prior knowledge and experiences may confine them to the original model and result in reluctance to embrace the fresh technology or approaches (Wang, 2013). Yet, metacognition boosts the understanding of oneself, task, and cognitive universals, and it emphasizes monitoring and regulation in learning; it highlights the optimization and overall considerations, which offer dynamic and powerful support for adult learners in compensating for the decline in rote memory, balancing learning, work and family life, and developing an open mind to embrace fresh information.

Survey on Metacognition of Adult Learners in School of Continuing Education

The research team conducted a survey on metacognition and learning in the School of Continuing Education of Beijing International Studies University in 2017; it collected 173 valid questionnaires (MSLQ) concerning the basic information of respondents, motivation, self-efficacy, cognitive strategies, and metacognition. The mean value of the metacognition of the respondents is 3.3 (1.1-4.9), which suggests that the general state of the respondents is medium. The mean value of cognitive strategies is 3.5 (1-4.9), the mean value of self-efficacy is 3.2 (1.1-5), the mean value of intrinsic motivation is 3.6, and the extrinsic motivation is 3.4.

The correlation between metacognition and cognitive strategies, metacognition and self-efficacy, metacognition and intrinsic motivation, and metacognition and extrinsic motivation are significant at a 0.01 level (2-tailed). There is remarkable positive correlation between

metacognition and cognitive strategies (84.2%) very significant positive correlation between metacognition and intrinsic motivation (58.6%), significant positive correlation between metacognition and self-efficacy (49.2%), and positive correlation between metacognition and extrinsic motivation (31.8%).

Table 1
Correlation

		Metacognition	Intrinsic motivation	Extrinsic motivation	Self-efficacy	Cognitive strategies
meta	Pearson	1	.586**	.318**	.492**	.842**
	Significance (2-tailed)		.000	.000	.000	.000
	N	173	173	173	173	173
intrinsic orientation	Pearson correlation	.586**	1	.354**	.612**	.614**
	Significance (2-tailed)	.000		.000	.000	.000
	N	173	173	173	173	173
extrinsic orientation	Pearson correlation	.318**	.354**	1	.393**	.349**
	Significance (2-tailed)	.000	.000		.000	.000
	N	173	173	173	173	173
self-efficacy	Pearson correlation	.492**	.612**	.393**	1	.495**
	Significance (2-tailed)	.000	.000	.000		.000
	N	173	173	173	173	173
strategies	Pearson correlation	.842**	.614**	.349**	.495**	1
	Significance (2-tailed)	.000	.000	.000	.000	
	N	173	173	173	173	173
** Correlation is significant at the 0.01 level (2-tailed).						

Metacognition and Self-Efficacy

Previous studies show that self-efficacy stimulates the development of metacognition (Yao, 1999; Yang, 2008; Mills, Pajares & Herron, 2007; Pajares, & Schunk, 2001). Yet, this study shows that self-efficacy and metacognition are interactive, which implies that metacognition could also promote learners' self-efficacy. First, metacognition helps learners develop better learning experience to improve self-efficacy; second, the progress and achievement brought by promoted metacognition may result in positive remarks from teachers, peer learners, and others; third, reflection drives learners to reconsider problems in learning and adjust their strategies, schedules, and approaches, which improves the ability to control their study and life, thus promoting their self-efficacy effectively. Studies have shown that training on self-efficacy and metacognition is more effective than training on either one of them (Wang Youkun, 2015), which indicates that self-efficacy and metacognition are interactive and complementary.

Metacognition and Motivation

The correlation between metacognition and intrinsic motivation is greater than metacognition and extrinsic motivation, which reveals that the enhancement in metacognition leads to a pleasant learning experience and positive results; therefore, learners experience the pleasure of learning and improve their mastery and sense of achievement in learning, which stimulates learners' intrinsic motivation and improves the learning efficiency and effect.

Adult learners face more complicated circumstances in learning compared to regular undergraduates, while metacognition is what could help them to take all factors into consideration, maximize all the resources acquired, establish reasonable and feasible goals, and harmonize different roles and motivations; this would improve the motivations, which would be given full play to drive learners to develop effective learning activities. Metacognition helps adult learners develop better learning experiences, which awakens learners' consciousness of the pleasure and fascination of learning itself; consequently, the intrinsic motivation to transcend is provoked, which inspires and sustains their inner-driven enthusiasm. Furthermore, the combination of both intrinsic and extrinsic motivation sustains long-term effective learning.

Metacognition and Strategies

The importance of learning strategies has been proved by a number of analytical and empirical studies (Wen Qiufang & Wang Lifei, 2004; Oxford, R.,1990). Professor Wen Qiufang (1995) proved that learning strategy is the determining factor in learning achievement when other factors are certain. The correlation between metacognition and learning strategies is remarkably positive, which suggests the promotion of metacognition could improve the use of learning strategies effectively, as well as the score and achievement.

The promotion of metacognition excites both intrinsic and extrinsic motivations, enhances self-efficacy, and boosts the effective use of appropriate strategies and resources. Based on the understanding of oneself, the task, and cognitive universals, metacognition facilitates learners to make feasible plans, monitor the feasibility of plans, effectiveness of strategies, completion of tasks, reflect on problems, and make corresponding adjustment and regulation; this would improve the efficiency and effectiveness of learning, which would stimulate learners' motivations and self-efficacy to sustain the steady, long-term development. Metacognition highlights the significance

of reflection, which pushes learners to reflect on the problems, draw lessons, and make corresponding adjustments to plans and strategies to optimize the mastered resources and solve problems effectively, to open one's mind and embrace fresh approaches and technologies, to sustain the power to make long-term progress.

Metacognition takes all the relevant factors concerning learning, work, and life into consideration, makes full use of one's time and energy, optimizes the use of resources and strategies, and makes overall plans to set reasonable goals; this drives learners to reflect on the problems and make corresponding adjustment to balance learning, work, and leisure, to enhance learners' general state physically, emotionally, and spiritually, and leads a happy, healthy, and harmonious life with the sustaining power of development. Metacognition is what adult learners need to optimize what they have obtained and improve their learning effectiveness and general well-being.

Conclusion

With the rapid development of science and technology, we are required to keep up with the times; therefore, what we need most are the approaches and strategies to learn to update information, knowledge, and abilities. As the Chinese saying goes: "Give a man a fish and you feed him for a day. Teach a man to fish and you feed him for a lifetime."

Adult learners not only need to deal with learning problems, but also balance learning, work, and personal life, which demands they consider all relevant factors concerning the feasibility and continuity of learning and to allow flexibility of schedules based on the promotion of metacognition. To promote adult learners' metacognition, teachers and learners are supposed to reflect on the meaning of education and the learning model and try to integrate metacognition into each and every step in the learning process.

Transition from Knowledge to Competence

The development of science and technology provides the convenience of obtaining knowledge, so the impartment of knowledge is no longer the major task of education for adult learners. The problems learners face are how to make full use of their knowledge and resources to face challenges and solve problems effectively. Thus, both teachers and learners are encouraged to reflect on the meaning of education, which is not only to impart declarative knowledge, but also to develop procedural and conditional knowledge. This intends to enhance the ability to learn and solve problems effectively, to lead a happy, healthy and harmonious life with sustaining power to development. Metacognition is the answer to improve learners' ability to learn and solve problems efficiently.

Student-Centered and Problem-Oriented Model

Teachers are no longer the center of education: students are. Teachers are no longer shapers of students, but educational resources to offer assistance. Teachers are encouraged to lead students to analyze problems, employ the appropriate strategies and resources to solve problems, and reflect on the research process and make corresponding adjustments that improve the efficiency and effectiveness of teaching and learning. Furthermore, teachers are supposed to encourage learners develop informal learning, which is especially important for adult learners, after class in addition to the development of formal learning, and to make

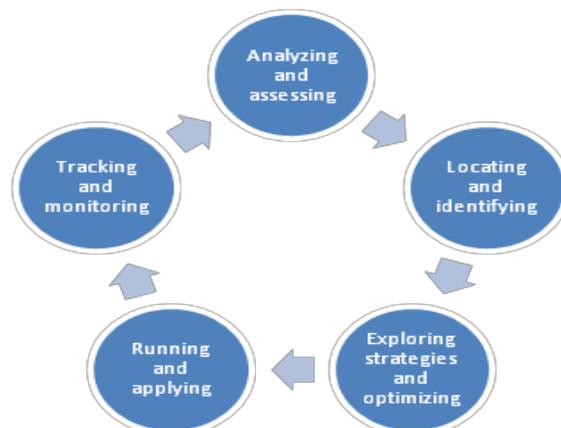
overall arrangements of learning, work, and personal life.

The focus of education becomes the promotion of dynamic, procedural knowledge and the competence to develop, instead of just using static declarative knowledge. What learners gain through the journey of exploration would be the ability to raise questions, integrate knowledge and resources, and solve problems; the ability to express, communicate, and cooperate with others in metacognitive development, which is conducive to development of an open mind that embraces challenges with a broad vision.

Adoption of ALERT Model

At the beginning of each semester, learners are required to assess the problems in learning concerning motivations, self-efficacy, cognitive strategies, metacognition, and other relevant respects; learners must make reasonable plans based on the analysis of oneself, tasks, and cognitive universals. Learners are supposed to monitor the learning and research process through each and every activity.

The adoption of the ALERT model (Zou, 2015) would enhance the development of metacognition. We are to highlight the significance of metacognition before concrete learning activities to improve learners' metacognitive consciousness; we should integrate the model ALERT in class activities, analyzing, defining problems, exploring strategies, running the strategies, and tracking and monitoring the process of research; we should reinforce and reflect on the performance with a learning journal after class. The ALERT mode helps students realize that the completion of each task is not the ultimate purpose, but to develop the competence to solve problems by monitoring, regulating, and reflecting on performance. What students are supposed to learn is not only static declarative knowledge, but also procedural and conditional knowledge about maximizing and optimizing the available resources. The learning enhances their general competence to solve problems. Metacognition equips students to satisfy the needs of the age; metacognition is the necessary power for students to become competent learners with the sustaining power of further development. The adoption of task-based and project-based teaching methods would offer students opportunities to encounter the possible difficulties and challenges. Peer-review methods offer another opportunity for students to reflect on their working process. The employment of websites and relevant APPs offer convenience for learners to record and track the research process.



Metacognition exerts a significant impact on the promotion of adult learners' learning effectiveness and efficiency; it improves adult learners' overall well-being. Metacognition cultivates autonomic learners, produces competent citizens to lead a happy, healthy, and harmonious life with the sustaining power for further development.

References

- Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process*. Boston: Heath.
- Dunning, D. et al. (2003). why people fail to recognize their own incompetence. *Psychological Science*, 12, 83-87.
- Flavell, J.H. (1976). Metacognitive aspects of problem solving. In L.B. Resnick(eds.) *The Nature of Intelligence*. Hillsdale, NJ: Erlbaum.
- Heppell, S. (2014) Want to improve your problem-solving skills? Try Metacognition. Retrieved Jan. 10th, 2015 from <http://oecdinsights.org/2014/10/28/want-to-improve-your-problem-solving-skills-try-metacognition/>
- Huang, Fushun. (2000). *Introduction to Adult Education*. Taibei: Wunanyuanshu Press Corporation.
- Kruger, J., & Dunning, D. (1999). Unskilled and unaware of it: How differences in recognizing one's own incompetence lead to inflated self-assessments. *Journal of Personality Social Psychology*, 77, 1121-1134.
- Livingston, J. (1996). Metacognition: An overview. Retrieved from <http://gse.buffalo.edu/fas/shuell/cep564/metacog.htm>
- Mills, N., E., Pajares & Herron, C. (2007). Self-efficacy of college intermediate French students: Relation to Motivation and achievement. *Language Learning*, 3, 417-442.
- Oxford, R. (1990). *Language learning strategies: What every teacher should know*. New York: Newbury House Publishers.
- Pajares, F., & Schunk, D. H. (2001). Self-efficacy beliefs and school success: Self-efficacy, self-concept, and school achievement. *Perception*. London: Ablex publishing.
- Paul R., & Pintrich et al. (1993). Reliability and predictive validity of the motivated strategies for learning questionnaire. *Educational and Psychological Measurement*, 53, 801-813.
- Posner, G.J.et al. (1982). Accommodation of a scientific conception: Towards a theory of conceptual change. *Science Education*, 66, 211-227.
- Schraw, G. (1998). Promoting general metacognitive awareness. *Instructional Science*, 26, 113–125.
- Tanner, K. D. (2012). Promoting Students' Metacognition. *CBE—Life Sciences Education*, 11(2), 113–120.
- Thorndike, Edward L. (1928). *Adult learning*. New York: Macmillan.
- Veenman, M. V. J. et al. (2005). The relation between intellectual and metacognitive skills at the onset of metacognitive skill development. *Instructional Science*, 33, 193-211.
- Wang, Youkun. (2015). The correlation of comprehension ability, reading metacognitive strategies and self-efficacy. *Education Review*, 03,105-108.
- Wang, Yuqin. (2013). Influence of adult learning intrinsic factor exploration. *Journal of School of Continuing Education in Wuhan*, 5, 47-49.
- Wenden, Anita. (1991). *Learner strategies for learner autonomy: Planning and implementing learner training for language learners*. Hertfordshire: UK, Prentice-Hall International.

- Wenden, Anita. (1998). Metacognitive knowledge and language learning. *Applied Linguistics*, 4, 515-537.
- Wen, Qiufang. (1995). The Methodological differences between successful English learners and unsuccessful English Learners. *Foreign Language Teaching and Research*, 3, 61-66.
- Wen, Qiufang & Wang, Lifei. (2004). Empirical studies on English learning strategies conducted by mainland Chinese scholars over the past two decades. *Foreign Language and Literature*, 1, 39-45.
- Xi, Youmin. (2018). Do Universities set student as the center? *Translation Education and Studies*, 7(10).
- Yang, Aiying. (2008). Metacognitive strategies in second language acquisition. *Foreign Language Research*, 4, 132-134.
- Yao, Zhiqiang. (1999). The correlation between metacognition and five personal characteristics. *Psychological Science*, 1, 87.
- Zou, Yanqun. (2015). The concept and instruction of metacognition in translation competence development. *International Forum of Teaching and Studies*, 1, 69-78.