

## The Perspective of Pre-service English Teachers on Employing the Higher Order Thinking Skills in Their In-Service Classes

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### **Abstract:**

This current study is intended to investigate to what extent the pre-service English teachers perceive in employing the higher order thinking skills when they become service English teachers someday. This study is considered strategic since one of the main important educational goals in 21<sup>st</sup> century is the competence to think critically. In addition, the pre-service English teachers today are the in service English teachers tomorrow. Consequently, what they perceive on their teaching practice today affect their in service teaching someday. This study employs a survey involving 109 subjects who fall into two categories; the experienced and the inexperienced pre-service English teachers at an Islamic university in Indonesia. A questionnaire is used to collect the data. The finding of this current study reveals that overall the sum score gained is 3848, the mean score is 35.62 and the standard deviation is 4.71. It can be said that the pre-service English teachers are not definitely sure. The standard deviation score 4.71 means that although the average pre-service English teachers does not strongly take a stand whether they are going to promote the higher order thinking skills in their teaching service later. Anyway, some of them have strong preference to promote the higher order thinking skills during their teaching service at schools later.

**Key words:** Perspective, Pre-service English Teachers, Higher Order Thinking Skills

### **Introduction**

Higher order thinking skills constitute the strategic and important skill to prepare the students of all levels of education for the 21<sup>st</sup> century. The American government's Partnership for 21<sup>st</sup> Century Skills (2009) stated that some of skills to be prepared for 21<sup>st</sup> century are higher order thinking and problem solving. Those key skills must be implemented along with the core subjects and language taught at schools. The critical thinking or higher order thinking skills are indicated as the competencies to effectively use deductive or inductive reasoning, understand the operation of a complex system, critically analyze and evaluate information and arguments, show definite stand against various information and arguments, and propose various alternatives to solve the problems (Partnership for 21<sup>st</sup> Century Skills, 2009).

Higher order thinking skills or critical thinking have become the goal of all level of education in the world today. Preus (2012) mentions that higher order thinking has been nurtured to elementary and secondary level students. In addition, Massa (2014) has convinced us how in recent years higher order thinking has become a central focus of education and some prominent

countries have emerged the policies, programs, and projects designed to develop higher thinking level competencies. In Singapore, for example, the importance of teaching higher order thinking skills has been encapsulated in the vision of 'Thinking School' launched in 1997 (Koh et al. 2012). In Australia, to deliver the critical thinking skills at university level, a compulsory (100 hour), pre-tertiary, epistemological subject called Theory of Knowledge (ToK), is introduced at the International Baccalaureate Diploma Program (Cole et al, 2015). More practically, higher order thinking skills have featured persistently for science education and have been intended to facilitate in the curriculum and examination in Australia (Fensham and Bellocchi, 2013).

The importance of promoting the higher order thinking skills at college education is as insisted by Beaumont (2010) since this thinking process enable individuals to make reasoned judgment not only at the class but in everyday life. In addition, the importance of promoting higher order thinking at universities has been argued by Piergiovanni (2014). He insists that a college education is expected to improve students' critical thinking skills. Moreover, a surprising finding in regard to higher order thinking in a college course has been demonstrated by Lopez and Whittington (2001) conforming that the lecturer's effort to promote higher order thinking skills in the classroom is not always symmetrically correlate to the students' response. They found out that although 12.2 % of the teaching activities have directed to promote the higher order thinking skills in the form of analysis, synthesis, and evaluation, but in response, the students do 49.1% other activities than activities representing the higher order thinking skills promoted by the lecturer.

As a matter of fact, teachers play the most important roles in fostering the higher order thinking skills at the classroom. It is undeniable that teachers' behavior influences student behavior and student achievement scores (Massa, 2014). In addition, the degree to which a student progress in a particular area of learning is determined by his or her involvement and by the individual instructor who can decide which instructional approaches and classroom activities would best contribute towards the intended student outcomes (Renaud and Murray, 2007). Even, Saeki (1997) believes that students go to school and perform according to what their teachers want. Therefore, considering the importance of higher order thinking skills and following Lee (2014), the teachers at university are recommended (a) to be more explicit about critical thinking or higher order thinking as one skill they expect from the students, and (b) to design the course material carefully with reference to the students' language ability.

Therefore, it can be inferred that preparing teachers for promoting the higher order thinking skills is as important as preparing the pre-service teachers. Dealing with the study on the pre-service teachers, as far as it concerns the main focus is on revealing their perspectives. The study to reveal the perspectives of pre-service teachers was conducted by Castano, Poy, Tomsa, Flores and Jenaro (2015) who find out that self-evaluation, diverse strategies are needed in order that they can improve their teaching practicum. Using psychology in teaching, Tan (2006) concluded that generally the pre-service teachers in Singapore view the knowledge on

psychology is not so vital. The different focus was conducted by Yeung (2015) investigating the teachers' perspective or conception on higher order thinking skills in which the teachers in Hong Kong claim that higher order thinking skills is needed to be taught at school in order that the students become effective thinkers. Therefore, higher order thinking skills must be infused in the teaching and learning process. In line with this finding, Miri, David, and Uri (2007) suggest that the higher order thinking must be purposively taught by teachers at their classes. Moreover, Jensen, McDaniel, Woodard, and Kummer (2014) concluded from their study that to be able to teach and test the higher order thinking skills requires greater understanding on the conception of the higher order thinking skills themselves. Still about the pre-service teachers, Basturk (2016) who examines the pre-service teachers' perspectives on their teaching practice course found out that they really welcome such teaching practices but they do not want to spend longer time at school where they conduct the teaching practice.

Different focus was presented by Kizilaslan (2012) whose study concluded that not all pre-service teachers are positively willing to be sent at rural schools in Turkey. Dealing with the reasons why pre-service teachers are willing to be future teachers, Akarsu and Kariper (2015) revealed that the pre-service teachers view teaching profession is a sacred and noble job. In Malaysia, the reasons why pre-service teachers are willing to be future teachers are due to three reasons: (1) they would like to contribute to the society, (2) some of them really have the ambition to be teachers, and (3) there are supports from their relatives (Azman, 2013).

Although what the teachers perceive and believe really influence the teaching and learning activities in the classroom, Macalister (2012) revealed that what the pre-service language teachers believe, to some extent, is quite similar to what their trainers believe. In other words, the trainers' perception and beliefs, to some extent, influence the pre-service language teachers' perception and believe too. Anyway, it turns out that what the pre-service language teachers believe and perceive will not always be reflected in their teaching practices (Macalister, 2012).

In summary, reviewing the various studies mentioned previously it is obvious that there is yet no study investigating to what extent the pre-service English teachers perceive on employing higher order thinking skills when they serve as English teachers someday. Therefore, this current study is trying to investigate how pre-service English teachers at Indonesian university perceive the promotion of higher order thinking skills in their future classes. Hence, this current study is purposively directed to answer this following question:

1. How do pre-service English teachers at Indonesian university perceive on promoting higher order thinking skills in their in-service classes later?

## Review of Literature

In this part, the discussion of the theories is presented to give some foundations of the theories used in this current study.

### Higher Order Thinking Skills in English Language Teaching

The term higher order thinking and critical thinking very often is used interchangeably. How critical thinking relates to the higher order thinking skills is well described by Surkes (2009) that critical thinking will be developed through the higher order thinking skills which include analysis, synthesis, explanation, and argumentation skills. In other words, critical thinking will be able to be achieved through the practice of higher order thinking skills. Besides, higher order thinking skills have also been conceptualized as the process of thinking which involves high level of comprehension. More precisely, Barnett and Francis (2012) has found out that quizzes containing higher order thinking questions in the form of multiple choice and essay turn to increase critical thinking. To emphasize, Miri et al. (2007) argues that critical thinking is an operative example of higher order thinking that can be accounted for due to reliable and validated tests and they finds out that teaching of higher order thinking skills turns to improve students' critical thinking skill components.

The concept of higher order thinking skills in English language teaching are well attributed to Bloom's learning taxonomy and Marzano's dimensions of thinking (King, Goodson, and Rohani, 2006). In Bloom's learning taxonomy, the higher order thinking skills encompass the ability to analyze, evaluate, and synthesize. Marzano's dimensions of thinking extend the thinking process into a concept encompassing concept and principle formation, comprehension, problem solving, decision making, scientific inquiry, composition, oral discourse, and relationships between processes and skills. More specific examples of higher order thinking skills may include activities such as formulating a research question, planning experiments, controlling variables, making inferences, making and justifying arguments, identifying assumption, and identifying reliable sources of information (Zohar, 2004).

Further, Marzano (1993) mentions that the process of teaching and learning at school involves the students' interaction which employs the five types of thinking process. First, the students should possess the positive perception and attitudes about the learning process. Second, thinking process will take place when the students are involved in learning activities in which the prior and new knowledge is integrated and acquired. Third, thinking will occur when the students are trained to redefine and improve or extend the knowledge they have achieved before. Fourth, the students will foster a good thinking skill when they are trained to practically and meaningfully utilize the knowledge they have got. In other words, direct practice will sharpen their thinking skills. Fifth, when the students are well trained in utilizing their thinking skills, it will result in the productive habits of their mind. Conversely, the productive habits of mind will contribute to the students' skill of thinking. It can be said that the habit of mind and the thinking

skills influence one to another which cannot be mentioned which one is the more important (Zohar, 2004).

Today it is widely recognized that education is more than just learning knowledge and thinking, it also involves learners' feelings, and beliefs. Nevertheless, teaching thinking and creativity becomes an important element in today's teaching and learning processes. Bloom was the first to develop a highly popularized hierarchy of six thinking skills placed on a continuum from lower to higher order skills: knowledge, comprehension, application, analysis, synthesis and evaluation. According to this system, *lower order* skills included recalling knowledge to identify, label, name or describe things. *Higher order* skills called on the application, analysis or synthesis of knowledge, needed when learners use new information or a concept in a new situation, break information or concepts into parts to understand it more fully, or put ideas together to form something new. Bloom's structure was a useful starting point and triggered many applications to school activities and curricula.

Anderson (2001) published a revised classification of higher order thinking skills which is actually similar to the original version but it focuses more on verbs than nouns and renames some of the levels. But the indicator developed to explain each aspect of the higher order thinking skills seems to easy and clear, but basically to it is rather hard to distinguish one to another and it can be also difficult to implement some of these ideas into teaching and learning experiences at the language class. Just to mention one of the functional examples of those indicators in learning is that, *comparing* falls both under *analyzing* and *understanding*, which is confusing. Here analyzing the level of comparison depends on context, for example the complexity and the coverage of the concept or knowledge which is being compared. Analyzing requires more complex and wider coverage of the discussion.

## Methodology

Relevant to objective of the study, a survey is employed. The survey method is relevant or this current study since it attempts to descriptively explore how the pre-service English teachers perceive their future commitment in promoting the higher order thinking skills when they become teachers someday. The targeted information are focused on the future possibilities of promoting higher order thinking skills in their in-service English classes.

The subjects of this current study are all pre-service English teachers in State Islamic Institute of Tulungagung, East Java, Indonesia. The selection of the university is conducted purposively since there is the only college running English Language Teaching program which can be accessed in that region. The selection of the respondents is based on some criteria: (1) the pre-service teachers has been serving and or completed their teaching practices, and (2) the pre-service English teachers may intentionally pursue the English teachers later when they graduate. The number of the respondents which covers all population of this study is 109 pre-service

English teachers in which 14 respondents have had teaching experience and 95 respondents did not have teaching experience before.

Since it is a survey, therefore, the main instrument of the study is questionnaires. The questionnaire is developed to elicit information about the perspectives of pre-service English teachers on promoting the higher order thinking skills. To maintain the validity of questions in the questionnaires, the researcher designs a blueprint of questionnaire from which the items are constructed. The construction of the items are based on the dimensions of research questions. Every dimension is divided into variables/sub variables which further are developed into several indicators representing the items in the questionnaire guide. The validation of the questionnaires is conducted into two ways. The first is expert validation. Two doctor-graduate English lecturers are invited to proofread and validate the questionnaires. The second is piloting the questionnaires. 30 English students are given the questionnaires and their responses are evaluated, which are later used to improve the questionnaires.

### **Finding**

The findings of this current study is presented in term of the overall perspective on promoting the higher order thinking skills and the perspective on promoting the components of the higher order thinking skills. Therefore, the discussion of to what extent pre-service English teachers will promote and practice higher order thinking skills at school is presented into two sub-discussions: the overall perspective of promoting the higher order thinking skills and the perspectives on specific teaching practices on the components of higher order thinking skills.

### **The Overall Perspective on Promoting HOTS**

To reveal to what extent the pre-service English teachers will promote the Higher Order Thinking Skills when someday they become English teachers at school, fifteen questions and three categories of responses are proposed: 'agree', 'neutral', and 'not agree'. The response 'agree' indicates that the respondents have a good commitment to practice the statement indicator of higher order thinking being questioned. As the result, it implies that the higher order thinking skills will be employed in their teaching and learning processes at school later. On the contrary, the response 'neutral' gives impression that the respondents do not have any idea whether or not they will promote the higher order thinking skills at their classes someday when they become teachers. In addition, the response 'not agree' clearly defines that the respondents will not practice the statement indicator of higher order thinking being questioned.

**Table 1**

The Perspectives on Promoting Higher Order Thinking Skills

SUBJECT (N)	OVERALL HOTS		
	$\Sigma$ score	$\bar{X}$	SD
Experienced (14)	516	36.85	3.27
Inexperienced (95)	3332	35.44	4.87
Total (109)	3848	35.62	4.71

Dealing with to what extent the pre-service English teachers will employ the higher order thinking skills during their teaching service at schools later, some criteria or categories are set up. Reviewing the categories of the mean score, it can be explained as the following: score 36-45 indicates that the respondents have a good commitment to promote the higher order thinking skills during their teaching service at schools later. Score 26-35 show that the respondents do not have convincing idea whether or not they will practice the higher order thinking skill-based teaching during their teaching service at schools later. Score 15-25 mean that the respondents surely take a stand that they will not employ the higher order thinking skills in their teaching service at schools later.

This current study reveals that overall the sum score gained is 3848, the mean score is 35.62 and the standard deviation is 4.71 (Table 1). Considering that the mean score 35.62 is in the range score of 26-35 but it closes to the upper range score, it can be said that the pre-service English teachers are 'in between' situation. Therefore, the standard deviation score plays important role here. The standard deviation score 4.71 gives impression that the variability of the pre-service English teachers is quite wide. It means that although the big number of the pre-service English teachers does not definitely take a stand whether they are going to promote the higher order thinking skills in their teaching service later, one thing for sure is that some of them have strong preference to promote the higher order thinking skills during their teaching service at schools later. In other words, it can be said that there is a good prospect that promoting the higher order thinking skills in English language teaching and learning. It will become the main concern of the pre-service English teachers during their teaching service later since the mean score 35.62 can be sum up into 36.00 which indicates that the average pre-service teachers have good commitment to employ the higher order thinking in their teaching service later when they become teachers.

When the subjects are distinguished into those who have experienced in teaching English for about one to three years and those who claim not having any teaching experiences, it can be identified that the experienced pre-service English have stronger commitment on the practicing higher order thinking skills during their teaching service at schools later. The finding reveals that the sum score, the mean, and the standard deviation gained for this group are 516, 36.85, and 3.27 respectively (Table 1). On the contrary, the sum score, the mean, and the standard deviation of the inexperienced pre-service English teachers are 3332, 35.44, and 4.87 respectively (Table 1). Comparing the means of those two groups, it can be identified that the experienced pre-service English teachers gain higher mean but smaller standard deviation than the inexperienced pre-service English teachers on their perspectives of promoting higher order thinking in their teaching service later.

Discussing the means of the two groups above, the score within 36-45 indicates that the respondents have a good commitment to promote the higher order thinking skills during their teaching service at schools later. Therefore, it can be said that the experienced pre-service English teachers who gain higher mean than the inexperienced pre-service English teachers, clearly identify themselves to be committed in promoting the higher order thinking later when they serve English teachers. On the contrary, the groups of inexperienced pre-service English teachers find out to be doubtful in promoting the higher order thinking skills when they become teachers someday. As a result, the difference between the experienced pre-service English teachers and the inexperienced pre-service English teachers is very vivid.

Considering the standard deviation, the variability of the experienced pre-service English teachers is smaller than the variability of the inexperienced pre-service English teachers. The standard deviation score is 3.27 and 4.87 respectively. Related to their gained means, it implies that the majority of the experienced pre-service English teachers confidently claim that they are going to promote the higher order thinking skills when they serve English teachers someday. While the rest, the smaller number, feel doubtful whether or not they are going to employ the higher order thinking skills since the mean of this group is within the 'agree' category. On the contrary, almost the majority of the inexperienced pre-service English teachers do not clearly mention whether or not they going to employ the higher order thinking skills when they become teachers someday because the mean of this group is within the 'neutral' category or 'do not have any idea'. The standard deviation of this group shows that the majority of the inexperienced pre-service teachers gather around the 'do not have any idea' category. This finding confirms that teaching experience may contribute to the decision of whether or not the pre-service English teachers are going to promote the higher order thinking skills in the English language teaching and learning processes when they serve English teachers someday.

## Discussion

This current study is trying to investigate the perspectives of the pre-service English teachers in terms of a pedagogical competence in teaching English. The subjects of this current study are pre-service teachers, but basically they are still students. Comparing to Butorac (2011), Crews and Parker (2017) who investigated the students' perspectives on blended e-learning and online learning, this study enriches the horizon on the perspective of students especially students of higher education who will become teachers.

Anyway, the finding of this study seems to support Almajed, Skinner, Peterson, and Winning (2016) investigating the students' perspectives on how learning happens in collaborative classes. They found out that the perspectives of the students constitute the key factor for promoting conducive and positive learning process. If we compare between the perspective of the pre-service teacher and their internship teaching practice, possibly there may be a relation. Their perspective is just at moderate level and so are their internship practices. In addition, the finding of this study also confirms another study conducted by Hill (2007) investigating the students' perspective in higher education finds out that teachers will conduct effective teaching when the students are exposed to apply and integrate the knowledge they got.

The following study is needed to investigate why the level of the pre-service teachers' perspective should consider the investigation conducted by Cothran and Kulinna (2006) yielding that there are two factors which influence the students' perspectives. They are the conception on effective domain and the belief. It can be questioned further that the moderate level of the pre-service teachers may be contributed by to what extent they hold belief in promoting the higher order thinking skills.

Learning from this current research finding and Dayment and Hill (2015) who investigated the students' perspectives of Initial Teacher Education in which the willingness and the capacities to employ the Australian cross curricular priority in their teaching practice are just at the moderate level, it will be fruitful to attentively consider Bloemert, Paran, Jansen, and Grift (2017) who find out that understanding students' perspective is very important in designing curriculum and planning lesson and is influenced by the institution they come from. This current study indirectly alarms the curriculum developers and the policy makers in the education faculties to purposively integrate the teaching and learning the higher order thinking skills in the subject courses.

The same subjects of the study but different focus was presented by Kizilaslan (2012) whose study concluded that not all pre-service teachers are positively willing to be sent at rural schools in Turkey. Dealing with the reasons why pre-service teachers are willing to be future teachers, Akarsu and Kariper (2015) revealed that the pre-service teachers view teaching profession is a sacred and noble job. In Malaysia, the reasons why pre-service teachers are willing to be future teachers are due to three reasons: (1) they would like to contribute to the

society, (2) some of them really have the ambition to be teachers, and (3) there are supports from their relatives (Azman, 2013).

The result of this current study should be considered as the constructive feedback to improve the quality of the pre-service teaching practicum since there is a challenge as the finding of this current study confirms. Another challenge is proposed by Basturk (2016) who examines the pre-service teachers' perspectives on their teaching practice course found out that they really welcome such teaching practices but they do not want to spend longer time at school where they conduct the teaching practice. Considering those challenges will give benefit in improving the quality of the teaching practicum and the involvement of the pre-service teachers in that practicum processes.

To answer those challenges, referring to this current study, it is advised to purposively prepare and train the pre-service teachers how to perform the higher order thinking skills in their teaching activities. Other advices are presented by the study to reveal the perspectives of pre-service teachers conducted by Castano, Poy, Tomsa, Flores and Jenaro (2015) who find out that self-evaluation, diverse strategies are needed in order that they can improve their teaching practicum. The use of technology in the language teaching and learning process, by pre-service language teachers, is viewed to be valuable and useful in improving the students' thinking skills (Sardegna and Dugartsyrenova, 2014). The importance of field experiencing in pre-service teaching internship is shown by Schmid (2014) who revealed that the collaboration between the pre-service English teachers and in-service teachers in utilizing technology provides professional learning experience for them.

Dealing with the promotion of the higher order thinking skills in the teaching and learning processes, this current study affirms the need to prepare the pre-service English teachers as also being articulated by Yeung (2015) investigating the teachers' perspective or conception on higher order thinking skills in which the teachers in Hong Kong claim that higher order thinking skills is needed to be taught at school in order that the students become effective thinkers. Therefore, higher order thinking skills must be infused in the teaching and learning process. In line with this finding, Miri, David, and Uri (2007) suggest that the higher order thinking must be purposively taught by teachers at their classes. Moreover, Jensen, McDaniel, Woodard, and Kummer (2014) concluded from their study that to be able to teach and test the higher order thinking skills requires greater understanding on the conception of the higher order thinking skills themselves.

Hard warning to the teacher trainers and ,surely, the English academicians is that although what the teachers perceive and believe really influence the teaching and learning activities in the classroom, Macalister (2012) revealed that what the pre-service language teachers believe, to some extent, is quite similar to what their trainers believe. In other words, the trainers' perception and beliefs, to some extent, influence the pre-service language teachers' perception

and believe too. Anyway, it turns out that what the pre-service language teachers believe and perceive will not always be reflected in their teaching practices (Macalister, 2012).

## Conclusion and Recommendation

This current study concluded an alarming situation dealing with the future promotion of higher order thinking skills at English classes in future since the pre-service English teachers turn out not be convinced to employ them later. Further, to what extent the pre-service English teachers will employ the higher order thinking skills in their teaching service later when they become English teachers is symmetrical to their prior experience during their study at the college which later shape their perspectives. In turn, when they possess positive perspective, they will also indicate good and positive commitment to promote the higher order thinking skills and so vice versa. Consequently, to improve the quality teaching practices of the in-service teachers should be initiated since they are still pre-service.

Since this current research investigates the perspectives of the pre-service English teachers on higher order thinking skills only through a survey, possibly it does not give a comprehensive and detailed description. Therefore, further study is needed. The future researcher may further investigate to what extent the higher order thinking skills is effective in teaching English topics. In addition, the impact of the promotion of the higher order thinking skills in English classes on the students' thinking, attitude, and learning achievement needs to be further investigated.

## References

- Akarsu, Bayram., and Kariper, I. Afsin. 2015. Investigation of Pre-service Teachers Views of Teaching as Profession. *Bulgarian Journal of Science and Education Policy*, Vol.9, No.1.
- Almajed, Abdulaziz. 2016. Collaborative Learning: Students' Perspectives on How Learning Happens. *Interdisciplinary Journal of Problem-Based Learning*, Vol. 10, Issue 2.
- Anderson (Ed.), Krathwohl (Ed.), Airasian, Cruikshank, Mayer, Pintrich, Raths, and Wittrock. 2001. A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives. *New York: Longman*.
- Anderson, Lorin W. and Krathwohl, David R. 2001. A Taxonomy for Learning, Teaching, and Assessing: a Revision of Bloom's Taxonomy. New York. Longman Publishing.
- Azman, Norzaini. 2013. Choosing Teaching as a Career: Perspectives of Male and Female Malaysian Student Teachers in Training. *European Journal of Teacher Education*, 2013, Vol. 36, No.1, 113-130

- Barnett, Jerold E., and Francis, Alisha L. 2012. Using Higher Order Questions to Foster Critical Thinking: A Classroom Study. *Journal of Educational Psychology*, 32 (2):201-211  
DOI:10.1080/01443410.2011.638619
- Bastuk, Savas. 2016. Examining Primary Pre-service Teachers' Perspectives on Teaching Practice Courses. *Acta Didactica Napocensia*, Vol. 9, No.3, 2016.
- Beaumont, John. 2010. A Sequence of Critical Thinking Task. *TESOL Journal* 1 (4).  
DOI:10.5054/tj.2010.234763
- Bloemert, Jasmijn., Paran, Amos., Jansen, Ellen., van de Grift, Wim. 2017. Students' Perspective on the Benefits of EFL Literature Education. *The Language Learning Journal*. DOI: 10.1080/09571736.2017.1298149.
- Butorac, Marta Zuvic. 2011. Blended E-Learning in Higher Education: Research on Students' Perspectives. *Issues in Informing Science and Information Technology*, Vol. 8, 2011.
- Castano, Raimundo., Poy, Racuel., Tomsa, Raluca., Flores, Noelia., and Jenaro, Cristina. 2015. Pre-service Teachers' Performance from Teacher's Perspective and Vice Versa: Behaviours, Attitudes, and Other Associated Variables. *Teachers and Teaching: Theory and Practice @ Taylor & Francis* 2015.
- Cothran, Donetta J., and Kulinna, Pamela Hodges. 2006. Students' Perspectives on Direct, Peer, and Inquiry Teaching Strategies. *Journal of Teaching in Physical Education*, 2006, 25, 166-181.
- Cole, David R. Ullman, Jacqueline. Gannon, Susanne. And Rooney, Paul. 2015. Critical Thinking Skills in International Baccalaureate's "Theory of Knowledge" Subject: Findings from an Australian Study. *Australian Journal of Education*, Vol. 59 (3) 247-264. DOI: 10.1177/0004944115603259
- Crews, Julie., and Parker, Jennie. 2017. The Cambodian Experience: Exploring University Students' Perspectives for Online Learning. *Issues in Educational Research*, 27(4), 2017.
- Dyment, Janet e., Hill, Allen. 2015 You Mean I have to Teach Sustainability too? Initial Teacher Education Students' Perspectives on The Sustainability Cross-Curriculum Priority, *Australian Journal of Teacher Education*, Vol. 40, Issue 3.
- Fensham, Peter J, and Bellocchi, Alberto. 2013. Higher Order Thinking in Chemistry Curriculum and Its Assessment. *Thinking Skills and Creativity* 10:250-264.
- Hill, Lilian H. 2014. Graduate Students' Perspectives on Effective Teaching. *Adult Learning*, Vol. 25, No. 2.
- Jensen, Jamie L., McDaniel, Mark A., Woodard, Steven M., and Kummer, Tayler A. 2014. Teaching to the Test ...or Testing to Teach: Exams Requiring Higher Order Thinking Skills Encourage Greater Conceptual Understanding. *Educ Psychol Rev* (2014) 26:307-329

- King, FJ., Goodson, Ludwika., Rohani, Faranak. 2006. Higher Order Thinking Skills: Definition, Teaching Strategies, and Assessment. *The Center for Advancement of Learning and Assessment*. [www.cala.fsu.edu](http://www.cala.fsu.edu).
- Kizilaslan, Irem. 2012. Teaching in Rural Turkey: Pre-service Teachers Perspective. *European Journal of Teacher Education, Vol. 35, No. 2, May 2012, 243-254*.
- Koh, Kim H., Tan, Charlene., and Ng, Pak Tee. 2012. Creating Thinking School through Authentic Assessment: The Case in Singapore. *Educ Asse Eval Acc*, 24:135-149. DOI: 10.1007/s11092-011-9138-y
- Lee, Hyun Jung. 2014. Thrust into Learning and Thinking Critically: East Asian Doctoral Students' Experience, Meaning, and Processes of Engaging in Critical Thinking at U.S. Universities. *Dissertation. Columbia University, USA*.
- Lopez, Josue & Whittington, M. Susie. 2001. Higher-Order Thinking in College Course: A Case Study. *NACTA Journal*.
- Macalister, John. 2012. Pre-service Teacher Cognition and Vocabulary Teaching. *RELC Journal 43 (1) 99-111*
- Massa, Susanna. 2014. The Development of Critical Thinking in Primary School: The Role of Teachers' Beliefs. *Social and Behavioral Sciences 141:387-392*.
- Marzano, Robert J. 1993. How Classroom Teachers Approach the Teaching of Thinking. *THEORY INTO PRACTICE, Volume 32, Number 3, Summer 1993*.
- Miri, Barak., David, Ben-Chaim, and Uri, Zoller. 2007. Purposely Teaching for The Promotion of Higher Order Thinking Skills: A Case of Critical Thinking. *Research Science Education, 37:353-369*. DOI: 10.1007/s11165-006-9029-2
- Partnership for 21<sup>st</sup> Century Skills. 2009. [www.p21.org](http://www.p21.org).
- Piergiiovanni, Polly R. 2014. Creating a Critical Thinker. *College Teaching Journal. 62:86-93*. DOI: 10.1080/87567555.2014.896775
- Preus, Betty. 2012. Authentic Instruction for 21st Century Learning: Higher Order Thinking in An Inclusive School. *American Secondary Education 40 (3)*.
- Renaud, Robert D. and Murray, Harry G. 2007. The Validity of Higher Order Questions as a Process Indicator of Educational Quality. *Research in Higher Education, Vol. 48, No. 3*. DOI: 10.1007/S11162-006-9028-1
- Saeki, Noriko. 1997. Differences in Creative Thinking between American and Japanese College Students in Education. *Unpublished Thesis. Master Program. Utah State University, Logan Utah, USA*.
- Sardegna, Veronica G. and Dugartsyrenova. 2014 Pre-service Foreign Language Teachers' Perspectives on Learning with Technology. *Foreign Language Annals. Vol. 47, Iss.1, pp. 147-167*.

- Schmid, Euline Cutrim. 2014. Collaborative Research Projects in The Technology-Enhanced Language Classroom: Pre-service and in-service Teachers Exchange Knowledge about Technology. *ReCALL* 26(3): 315-332.
- Surkes, Michael A. 2009. Facilitating Higher Order Thinking: Synthesizing Pedagogical Frameworks for the Development of Complex and Coherent Conceptual Systems. *Dissertation. Concordia University, Montreal, Quebec, Canada.*
- Tan, Ai-Girl. 2006. Psychology in Teacher Education: A Perspective from Singapore's Pre-service Teachers. *Asia Pacific Education Review, 2006, Vol.7, No. 1, 1-10.*
- Yeung, Sze-Yin Shirley. 2015. Conception of Teaching Higher Order Thinking: Perspectives of Chinese Teachers in Hong Kong. *The Curriculum Journal, 2015. Vol. 26, No. 4, 553-578.*
- Zohar, Anat. 2004. Elements of Teachers' Pedagogical Knowledge Regarding Instruction of Higher Order Thinking. *Journal of Science Teacher Education, 15 (4): 293-312.*