CONTENT ANALYSIS OF TEXTBOOKS IN PRIMARY SCHOOLS IN TERMS OF THE AMOUNT OF FOCUS ON COGNITION AND META-COGNITION LEARNING

ZAHRA KAZEMI

Master of Education under the Academy of Sciences of Tajikistan

Zahrakazemi323@yahoo.com

ABSTRACT

Considering enriching curriculum of empirical sciences in primary school with the content analysis approach, as the subject of the present study, the curriculum history and textbooks compilation in Iran and the world in terms of general knowledge about curriculum, content analysis, selecting the methods of textbooks' contents compilation, curriculum evolutionary progress, empirical sciences education in Iran and the world, national curriculum, related researches and their findings have been presented in the study. The main purpose of the study is to assess and analyze the content of textbooks in primary schools in terms of the amount of focus on cognition and meta-cognition learning. As the research findings show, 515 analysis units of empirical sciences books in three grades include 265 paragraphs with meta-cognition components. Students` involvement coefficient with the content of the books is computed 1/10 with respect to meta-cognitive skills; indicating favorable conditions (the first grade as much as 1/33, the second grade as much as 1/21 and the third grade as much as 1). The frequency of meta-cognition components indicates meta-cognition knowledge has a frequency of 26 and meta-cognition regulatory has a frequency of 306 in the empirical sciences book. Therefore, it can be concluded that the regulators of the empirical sciences lessons of the primary schools have disregarded higher cognitive levels of learning and the conditions needed to show creation; while the levels of knowledge and understanding have the most percentage as the goals and analysis, evaluation and creating are allocated a percentage less than 18%.

Keywords: Assessment, Meta-Cognition Awareness, Cognitive Skills, Textbooks, Content Analysis, Primary School

INTRODUCTION

A brief history of Iranian textbooks` compiling

Book has been of Iranian`s high interest from a long time ago. Iranian taught their children horsing, hunting, polo, and the way of using weapons in addition to reading, writing and computing in schools. In the age of Sasanids, children and adolescents were taught with Pahlavi language and religious books of Avesta and Zand. The education of this age progressed so that it led to establishment of Jondi Shapour University. But education was only limited to the noble class of the society before Islam`s entrance in Iran. Education system was evolved by entering Islam in Iran. Since theology is based on self-knowledge, awareness and cognition is the prerequisite of believing in God in Islamic educations: Islam is a rational religion considering cognition and awareness as necessary for all human. Accordingly, education was started from mosques and then provided for all classes of the society.

Afterwards, Iranians can provide valuable services in order to develop Islamic culture. The first effective step was translating books from Greek, Indian, Syriac, and Arabic languages.

In the age of Bani Abbas, Baghdad University was established followed by establishing Jondi Shapour University. Later, universities and scientific centers were established in other cities of Iran such as Bokhara, Balkh, Harat, Damghan, and Rey in which big scholars like Abou Reyhan-e- Birouni, Ebn-e-Sina, Sadi, Khaje Nasir-al-din Tousi, etc. were trained.

In the growing trend of education in Iran, not only the schools and universities were developed but many scholars were trained proposed valuable theories regarding education methods.

Sheikh-al-Raeis Abou Ali Sina was the first Iranian scholar who theorized about education directly (Sedigh, 1973). He stated his opinions in "the law book" and "Shafa" book as well as in Tadabir-al-Manazel thesis. He regarded 5 goals for education including faith, good ethics, health, literacy, and art and to achieve these goals, the curriculum should contains teaching Quran, religious educations, language, ethical poems, sports, art, job and other necessary affairs for art and job learning. Ebn-e-Sina believed that educational content and teacher`s teaching methodology should be consistent with learner`s learning capability.

CONTENT ANALYSIS HISTORY

The base of content analysis technique is "Hermeneutics", i.e. "interpretation" or the knowledge of "finding inner and ultimate meaning" of the text. In fact, "Hermeneutics" is driven from the name of a Greece and Roman God. Therefore, the content analysis concludes the age of reading and describing holy texts of Indians and Greek righteous. But by reviewing the historical progress of the content analysis in the last fifty years, its development as a technique of communication analysis in America should be taken into consideration. In this age, newspapers were the first contents to be analyzed which were highly considered during the Second World War. Lasswell was the first person who analyzed the content considerably. He described the main framework of the content in the questions of "who", "what", and "how".

THE FLOW OF AN ANALYSIS

Studying the curriculums of empirical sciences has always been considered by sciences specialists but education researchers have had the more contribution due to their responsibility and profession. By evaluating the related researches in this regards, these studies can be fallen into two general categories including internal and external studies about the components of sciences curriculums, each of them discusses about an element of the curriculum and the researches related to total curriculum of sciences as Times referred to it.

In 20th century, science education and evolving its teaching have highly been considered by the education scholars of the world so that its signs can be seen in the evolutions after the 1960 in America and other countries (Reagan & Shepherd, 1992).
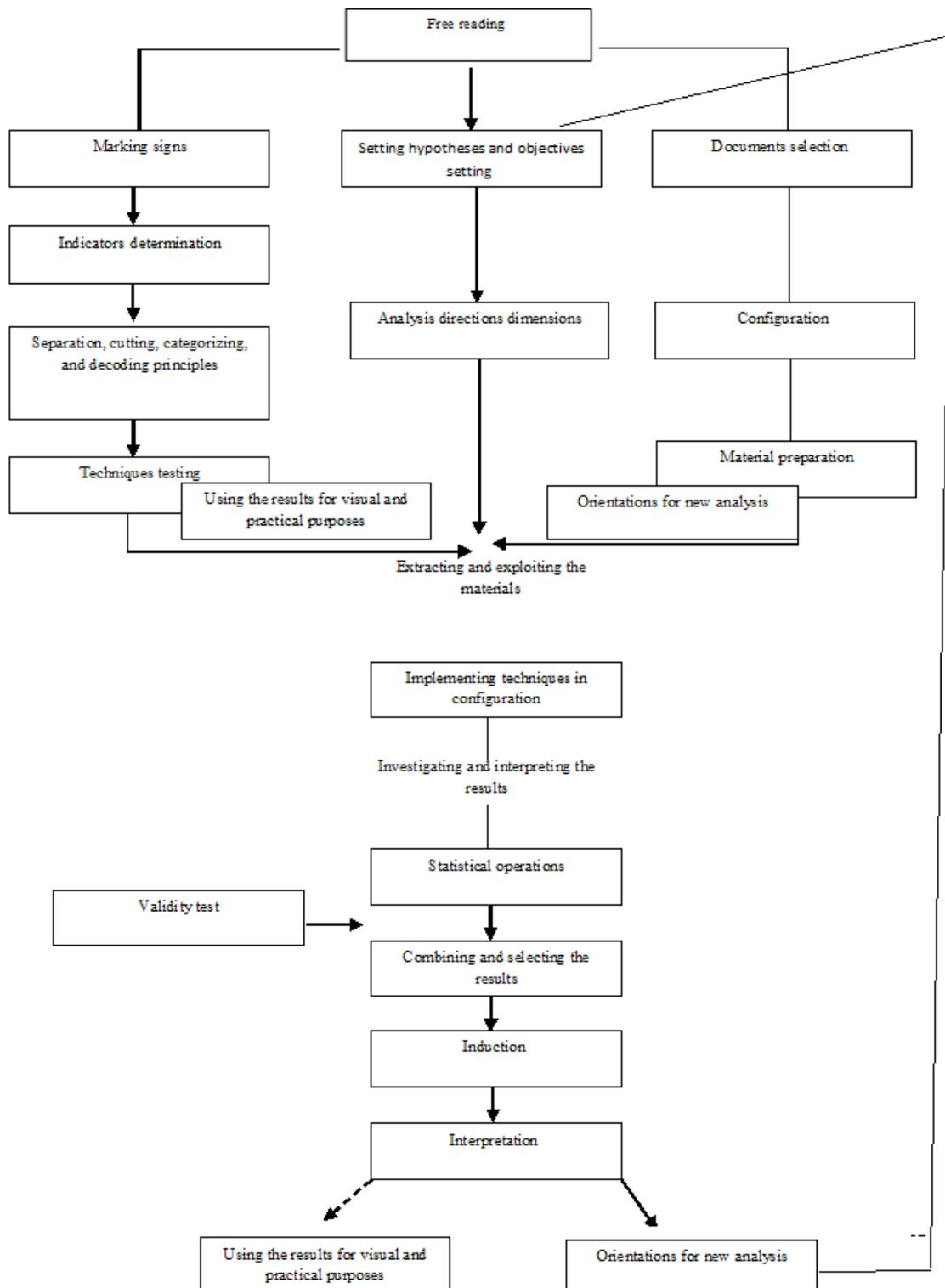
Figure1- The flow of an analysis

Jenkins (1994) explained teaching methods of the early 20th century. Harlin (1999) referred to some features of curriculum in the 1980s. Perkins (1999) referred to learner`s direct involvement experience in learning process, learner`s interests and capacities, group works and collaborative activities in the 1980s and 1990s as well as the main slogan of that age indicating learners learn more from peers than the teacher. Donnelly&Jenkin (2001) claimed that in the late 20th century, learning theories still were influenced by Dewey`s theories and sciences teaching was greatly influenced by cognitive learning theories like information processing and meta-cognition theory. At the present time, Parkinson (2002) and Cobern (2006) believed that solving the problems related to society and scientific-technological literacy is the goal of education and structuralism and emphasis on problem solving is the dominant approach in learning. Strong (2004) asserted that during the last years, the attitudes towards teaching-learning processes have totally been changed in the world and learners should be prepared to live in a complex and technologically advanced society. To sum up, foreign studies have investigated the features of a certain period

and lack a general view towards sciences curriculum.

Some internal studies also have examined this issue from various perspectives. Esfandiari (1973), Fathi and Ejargah (1995), Ahmadi (2001), Farshad (2004), Badrian (2006), and Valizade (2007) have considered the evolution of sciences teaching in the world. Mousapour (1997) referred to the evolutions of primary education goals in Iran from 1909 to 2007. Ghaderi (2000) conducted a comparative study on sciences courses curriculums of primary schools in Iran and America, indicating that American books have a more attention to application. Also Ahmadi (2001) in his study investigating the amount of consistency between three programs of intentioned, implemented ad acquired in new program of sciences teaching in primary school indicated that sometimes teachers are not familiar with the basic philosophies and hypotheses as the base of new science program approach. In other research, the results of researches on sciences in primary school in terms of the elements of goals, content, teaching-learning approaches, and meta-analysis evaluation have been reviewed and reported in which some teachers are not still familiar with the basic philosophies and hypotheses as the

base of new science program approach in spite of the consistency between the content and teaching guidance and teachers` positive attitudes towards administering the sciences curriculum in schools (Valizade, 2007).

In the other work done by Asfijani, Zamani and Nasr Abadi (2008), textbooks of empirical sciences in Iranian, England and American primary schools were compared in terms of the amount of focus on various skills in research process. The results indicated that the sciences books of all three countries are research-oriented but the amount of their focus on various research skills is different. To sum up, these researches lack a general view towards sciences curriculum and neglect various factors affecting curriculum fields and its administration.

On one hand, the researches related to total sciences curriculum are more international. International association for the evaluation of educational achievement (IEA) and specifically, the third international mathematics and study (TIMSS) done for the third and fourth grades of secondary school in 1995, 1999, 2003, and 2007 are of these researches.

MAIN BODY

Considering the role of learning cognitive skills and meta-cognitive awareness in learning improvement and educational achievement; and with respect to the main role of curriculum in cognitive and meta-cognitive skills of learners; as well as the important place of textbooks in educational system, the main purpose of the study is to assess the empirical sciences curriculum of the first, second, and third grades in primary school in terms of cognitive skills and meta-cognitive awareness of learning. The obtained results can be a useful guidance for curriculum planners and textbook authors to enrich the curriculum of the empirical sciences and other lessons. The research findings also can highly contribute the planers and educational policy makers tending to review the curriculums based on the national curriculum.

Accordingly, the following questions as the research`s main questions have been investigated:

1. To what extent the meta-cognitive skills components have been considered in the content of empirical sciences book of the primary school?

2. Which dimensions of the meta-cognitive skills have been considered more in the content of empirical sciences book of the primary school?

3. To what extent the objectives of empirical sciences book of the primary school are at the higher cognitive levels (creation)?

4. To what extent the content of empirical sciences book of the primary school involves students in higher levels of cognitive activities?

5. What are the defects of cognitive and meta-cognitive skills in the content of empirical sciences textbooks?

The subject investigated in the present study is of the subjects that have rarely been considered inside and outside of Iran.

METHODOLOGY

To answer the research questions, quantitative content analysis method has been used to evaluate the amount of the empirical sciences books` focus in the first, second and third primary grade on cognition and meta-cognition skills. The statistical population includes the empirical sciences books of the first, second and third primary grade in 2010-2011 school year in which the components of text, question as well as active and passive images if the book have been considered. The purpose of applying this method in the content analysis is to find the amount of the learner involvement in text, questions and images. The obtained data has been analyzed using descriptive statistics (frequency, percentage, charts, involvement coefficient estimation in each chapter of the book for text, questions and images; as well as the relative coefficient estimation in each chapter for the content components; and then involvement coefficient estimation for all texts, all images and all questions; and the process of inviting to the research and thinking.

To analyze the content of the empirical sciences book of the first, second and third primary grades, the frequency of meta-cognitive categories in the text has been shown in frequency table. Also, involvement coefficient with the text in terms of meta-cognitive components has been computed using WilliamRomeyformula (dividing meta-cognitive units on non meta-cognitive units). Also, frequency counter has also been used as the most common data gathering tool and representing results so that the number of using meta-cognitive components in each chapter in terms of each of analysis units (paragraph) have been counted and reported. In fact, the content of the empirical sciences books have been classified into paragraphs in the text analyzed based on eight meta-cognitive components of declarative knowledge, procedural knowledge, conditional knowledge, planning, supervision, information

management strategies, evaluation, and error correction strategies. As a result, the analysis includes the categories that some of them relate to the text, questions image and active images and some other relate to the text, questions and passive images. The purpose of using this kind of content analysis is to realize the amount of students` involvement in texts, questions and images.

DISCUSSION AND RESULT

The research findings indicates that the texts and questions presented in the book are active and the images of the empirical sciences book of the first to third grades of primary school are passive. Also, the content of the third grade`s book has a less critical and evaluative value and its verbal phrases are less than its comprehensive phrases. The research results are consistent with the findings of Fathi and Ejargah (1993) in terms of the questions activeness, Ebrahimi (2000)in terms of texts activeness Fathi and Ejargah (1993) in terms of images and diagrams passiveness, Emam Jome (2008) and Seyedi (2010) in terms of non-practical aspect and images passiveness. Considering the findings, it should be taken into consideration that the curriculum content should be presented in such a way that learnersare involved with the given content encouraging them to use their previous

experiences and guiding them to analyze. In this case, their thinking power is trained since it helps the learners to achieve an actual experience by some activities. On the contrary, learners try only to maintain the information in case of receiving information in a completely new and prepared form since received information will be embedded in the mind shallowly if there is no opportunity for activity and experience. In such a condition, learners cannot use the information effectively since learners are not involved in constructing information during learning process. Providing suggestions based on the material regarding skills training, questions arousing learners` involvement, research and problem solving, critical thinking, information processing, and divergent thinking are needed to be included in the empirical sciences books of primary school.

As a conclusion, it can be stated that the empirical sciences curriculum of primary school does not pave the way for emerging learners` creativity, problem solving and theorizing. In other words, communicative interest is disregarded in the structure of the empirical sciences books of primary school and there is no specific scheme for teaching creativity. To this end, circular creativity pattern was selected among several patterns

including primary models and creative problem solving, the models based on mental, attribute, acuity, computer, cyclic, and systematic awareness.

On the other hand, the research findings show that 265 paragraphs out of 515 analysis units have meta-cognition components, it can approximately stated that a half of analysis units have meta-cognition components. Also, learners` involvement coefficient with text of the books has been computed 1/10 indicating the favorable conditions since the involvement coefficient of 50% indicates that at least 25% of the units include meta-cognition components and involvement coefficient of 1 indicates that 50% of the units have meta-cognition components.

Hence, the closer the involvement coefficient is to 1 (or more than 1),the inclusion of meta-cognition components will be more in the content (Mahmoudi, 2006; cited in safari & Marzoughi, 2009). Further, involvement coefficient in the empirical sciences book of the third grade is 1/80 which is very favorable coefficient. Involvement coefficient of the second grade is 0/77 which is favorable although it is less than 1. The computed coefficient for the first grade is 1 which is a favorable as well.

The results of meta-cognition components have indicated that the frequency of meta-cognition components indicates meta-cognition knowledge has a frequency of 26 and meta-cognition regulatory has a frequency of 306 in the empirical sciences book. As it can be seen, there is no balance between tow meta-cognition components. Considering meta-cognition components` two important functions (including knowledge related to cognitive issues informing about one`s thinking and cognition features and regulating cognitive activities), there should be a balance between them (Mohseni, 2004; cited in Salarifar & Pakdaman, 2009). Moreover, the frequency of meta-cognition components in the books of the first, second and third grades are 130, 92 and 110, respectively. Notably, meta-cognitive awareness not only has not been increased by raising the grades but it has been decreased.

The results of the content analysis in terms of the frequency of meta-cognition components indicated that the secondary components of "supervision" with the frequency of 181 had the most frequency and the components of "procedural knowledge" and "evaluation" with the frequency of zero had the least frequency. Regardless of them, "error correction

strategies" and "declarative knowledge" has the frequencies of 3 and 7, respectively. As it mentioned earlier, "cognition knowledge" includes the variables facilitating learning control such as "planning" (targeting and resources allocation before learning), "information management strategies" (learning strategies needed for effective information processing including regulation, summarizing and selective concentration), "supervision" (control during learning and continuous self-evaluation and evaluation strategies application), and "evaluation" (analyzing the effect of learning strategies and post-learning performance and strategies effectiveness) (Falavell, 1971, 1977, 1979; Artz & Armour, 1992; Schraw & Danison, 1994; Zohr, 1998; cited in Schraw & Danison, 1994; Michal Sky, 2007). But the results of the study showed that these components have not equally been considered in all three grades. The research findings are consistent with the findings of the researches done by Khalkhali (1976, cited in Soleymanpour, 2004), Dehghanpour (2011), arabi (2007), Rezapour (1992), and Mersi (1992, cited in Golzari, 2006), Yaghini (2006).

CONCLUSION

Considering the importance of meta-cognitive skills in students` educational achievement and weakness of meta-cognition components in the content of the empirical sciences book of primary course, books compilers and educational planers should take meta-cognitive skills highly into consideration. Planning experts should enrich curriculum with an integrated approach (skills and knowledge content integration) and prepare students for life and educational successes. Curriculums of universities and teachers` guidance should be reviewed in terms of meta-cognitive skills and new sciences teaching goals should be highly considered. Similar researches regarding new sciences textbooks recently published and comparative researches regarding meta-cognitive skills teaching should be prioritized by research institutes. Teachers play a key role in the process of learners` meta-cognitive skills development and they will not be able to apply them successfully till learners master in meta-cognitive skills. So, it is necessary to embed the meta-cognitive components-based content in teaching guidance and training teachers in this regards.

The findings of the research indicate the weak attention to meta-cognitive components in the content of empirical sciences books; so considering the fact that these skills can be taught, it is suggested that

these skills are taught using an integrated approach (content and skill integration) with enriching the content of textbooks.

Considering the fact that cognitive goals, at creation level,consist about 6/5% of total goals of the empirical sciences textbooks, it is recommended to course planners and books compilers to redesign and recompose the goals with a focus on creative thinking and revised taxonomy of cognition (Anderson).

Also, teachers should attempt to provide a wisely organized design for learners` cognitive skills using an integration approach (cognitive approach and content integration) and prepare them for life and educational successes.

REFERENCES

1. Ahmadi, Gh. (2001), an evaluation of the amount of consistency among intended, administered and acquired programs in new curriculum of primary school, education research center

2. Esfandiary, M. (1973). Gradual evolution of empirical sciences teaching from the late of 19th century up to now, journal educational sciences of Tehran university, education research center

3. Esfijani, A.; Bibieshrat; Nasrabadi, and Hasanali Bakhtiar. (2008), a comparison of empirical sciences textbooks of primary course in Iran, America and England in terms of the focus on various skills in the research process, curriculum studies seasonal, third year, no. 8, 132-155

4. Emam jome, M. R. (19998). The content analysis of the empirical sciences of primary school in 1997-1998 school year, MA thesis

5. Dehghanpour, A. and Razavi, A. (2011). The content analysis of the empirical sciences of primary school in terms of the focus on meta-cognitive skills, the first national conference of cognitive sciences findings in education, Ferdousi University, Mashhad

6. Salarifar, M. H. and Mazaheri, M. A. (2010). The relation of meta-cognition and metaphore with self-regulatory, cognitive sciences news, twelfth year, no. 1

7. Seyedi, M. (2010). The content analysis of the empirical sciences of the fourth primary grade based on content analysis techniqueof William Romey, journal of research news in curriculum, first year, no. 1

8. Sedaghat, S. (1996). Evaluating the way of presenting the content of the empirical sciences textbook of the first and second primary grades using William Romey`s

technique in 1995-1996 school year, MA thesis, Tarbiat Moallem University

9. Safari, Y. and Marzoughi, R. (2009). Evaluating the content of the books, teacher guidance and educational goals of emrical sciences in secondary school in terms of the focus on learners` meta-cognitive components and skills, journal of teaching and learning analysis of Shiraz University, first year, no. 2

10. Fathi, A. and Ejargah, K. (1995), curriculum global evolution in sciences teaching, journal of educational technology growth, tenth year, no. 8, 21-34

11. Ghaderi, M. (2000). A comparative study of the books and teacher guidance of empirical sciences in Iranian and American primary schools based on William Romey`s technique, Tarbiat Moallem University

12. Golzari, S. and Mazidi, M. (2006). Evaluating the amount of focus on meta-cognition components in primary schools` books, MA thesis, Shiraz University

13. Marzoughi, R. (2004). Meta-cognition, theories and implications for education, Meshkat publication, Shiraz

14. Mousapour, N. (1991). Evaluating the way of presenting the content of Islamic cultural and religious books in primary school, MA thesis, Tarbiat Moallem University, Tehran

15. Yaghin, F. (1997). Evaluating the role of the content of biology book of the third high school grade to build creativity in students, yadvare publication

16. Schraw T.G. and Dennison R.S (1994). Assessing meta-cognitive awareness. Contemporary Educational psychology 19.460-475.

17. Michalsky .T. zion .M .Mevarech .Z.R. (2007).Developing students meta-cognitive awareness in asynchronous learning networks in comparison to face-to-face discussion groups. Educational computing research 36(4)pp 395-424.

18. Zohr. A. (1998). Teachers' meta-cognitive knowledge and the instruction higher order thinking.School of Education the herbrew university Jerusalem Israel 15 pp 413-429.

19. Falavell J.H. (1979). Meta-cognition and cognitive monitoring: A new Area of cognitive- development inquiry, American psychologist, 34, pp906-911.

20. Artz, A .F. Armour – Thomas, E. (1992). Development of Cognitive – Meta-cognitive Framework for for Protocol Analysis of mathematical problem Solving in Small Groups,

Cognition and instruction ,19,pp. 137-175.

21. Williams, W. etal.92002).Practical Intelligence forSchool: Development Mcta-cognitive Sourced of Achievement in Adolescence Development Review. 22:162-270.

22. Block, C. C. (2004). Teaching comprehension: the Comprehension Process Approach. Boston. Pearson, Inc.

23. Byrnes, I. (1996). Cognitive development and learning in instruction content. Boston: Allyn and Bacon.

24. GanZ, M. M. & Ganz B. C. (1990). Linking meta-cognition to classroom success. The high school Journal, 73(3), 180- 185.

25. Hennessy, M. G. (1993). Students' ideas about their conceptualization: Their elicitation through instruction. ERIC Document Service No: ED 361209.

26. Lifford, J. Eckblad , B. & Ziemian , J . (2000). Reading, Responding, & Reflecting. English Journal 89: 46- 5- 7.

27. Martinez, M. E. (2006). What is Meta-cognition? Phi Delta Kappan : Bloomington :Vo .87, ISS.9, Pg. 696-700.

28. Nancy, J. (2006).Strategies for success: Teaching meta-cognition skills to adolescent learners. New England Reading Association Journal. Portland: Vol. 42.pg.33-41.

29. Pintrich, R.R. (2002).Motivation in education: Schunk, D. H. Theory, Research, and Meta-cognition. Reading important, 30, 82-85.

30. Reder, L. M. (1996). Meta-cognition does not imply awareness: Mahwah, NJ: Lawrence Erlbaum Associates, publishers.PP.45-70.

31. Harlen. W. (1992), Research and development of science in the primary school. international journal of science education, 14(5): 491-503

32. Harlan, W. (1999). Effective Teaching of science. edinburgh: Scottish council.