ISSN: 1817-6798 (Print)
Journal of Tikrit University for Humanities
available online at: http://www.jtuh.tu.edu.iq

The Effect of Using Meta-Knowledge Strategies on Text Analysis among First Year Students in Iraqi Universities

Assist. Lect: Rajaa Hamid Salih

\ Ministry of Education General Directorate of Anbar Education

* Corresponding author: E-mail : rajaahamid333@gmail.com

Keywords:
Strategy
Intelligence
theory of knowledge
,strategies scholastic achievement,.

A R T I C L E I N F O

Article history:
Received 17 Sept. 2020
Accepted 26 Oct 2020
Available online 24 Feb 2021
E-mail
journal.of.tikrit.university.of.humanities@tu.edu.i
E-mail : adxxxx@tu.edu.iq

A B S T R A C T

Intelligence is considered as the strongest predictor of scholastic achievement. Research aimed to identify the impact of the use of supra-cognitive thinking strategies in the analysis of texts for first year students at Mosul University in Iraq . The researcher used the questionnaire as a tool to collect information about supra-cognitive.

This study aimed to identify the impact of the use of supra-cognitive thinking strategies in the analysis of texts for first .year students at Mosul University in IraqTo achieve the goals of the study, the researcher used the a questionnaire as a tool data collection instrument for the study, and. The study was applied to 10 Iraqi university lecturers to take their views on the effect of using supra-cognitive thinking strategies in teaching on students' ability toanalyze.

DOI: http://dx.doi.org/10.25130/jtuh.28.2021.6

أثر استخدام استراتيجيات المعرفة الفوقية على تحليل النص لطلاب السنة الأولى في الجامعات العراقية

رجاء حامد صالح/ وزارة التربية المديرية العامة لتربيه الانبار

الخلاصة:

يعتبر الذكاء أقوى منبه للتحصيل الدراسي. يهدف هذا البحث إلى التعرف على تأثير استخدام استراتيجيات التفكير فوق المعرفي من خلال تحليل النصوص لطلاب السنة الأولى في جامعة الموصل في العراق. استخدم الباحث مقياس كأداة لجمع المعلومات عن التفكير الفوق معرفي.

هدفت هذه الدراسة إلى الوقوف على أثر استخدام استراتيجيات التفكير الفوق معرفي لتحليل النصوص

لطلاب السنة الأولى في جامعة الموصل. أستخدم الباحث استبانة من أجل الوصول لأهداف الدراسة. لقد تم تطبيق هذه الدراسة على 10 محاضرين العاملين في الجامعة بقسم التفكير الفوق معرفي وذلك لأخذ وجهات نظرهم حول أثر استخدام استراتيجيات التفكير الفوق معرفي على التعليم من حيث قدرة الطلاب على تحليل النصوص.

Introduction .1

The world tends to develop thinking in various scientific theories, and there is an increasing interest in this type of thinking, which aims to include students in the cognitive and mental process. Thus, it has become necessary to motivate students to think positively and to keep abreast of the rapid development taking place in various aspects of life and to face the ever-changing challenge.

The development of thinking is one of the most important goals of the theory of knowledge, which was proposed by the world Falafel in the year 1970, where his indicated that the individual envisions his thinking and the processes he uses in various educational situations, so that students can monitor their thinking and the ability to control it, which It is easy to build knowledge for them, in addition to using students' abilities to direct that knowledge and to carry out the process of organizing, planning and amending it. (Belet & Guven 2011, Shaheen and Rayyan .(2011

Various terms have been used for cognitive intellectual thinking, in addition to meta-knowledge, thinking at the heart of thinking, and awareness of thinking are posters and synonyms of "intellectual awareness", which means that the individual is fully aware of cognitive processes and different mental activities, as well as different techniques in control and self-learning that are used In understanding, planning, fluency and solving different problems. (Ersozlu and Arslan 2009).

The various terms “conscious thinking” supernatural knowledge was used in addition to careful thinking in thinking as terms and synonyms for “astronomical perception.” This means that the individual is aware of the activities he performs in all cognitive and mental processes, as techniques for learning and self-control that students use in the process of understanding, learning and planning to solve various problems. (Ersozlu and Arslan 2009).

These procedures will enable students to remember and work on formulating useful and meaningful sentences, and to analyze and correct the information required of them. Therefore, students will be able to solve the various problems

they encounter in everyday life, as these processes are known as meta-knowledge ,strategies (Henson and Eller 1999Seung 2002). The writer Shaheen concluded in that the strategies of meta-knowledge are intellectual skills that are (2011)complex and form the components of intelligent behavior that battle processes information with them. On the one hand, these skills become more developed as the individual increases in age, and on the other hand by meeting the requirements of thinking and directing all the acquired ideas to solve different problems.

Thus, the importance of knowledge strategies lies by developing positive .attitudes of students. As students become aware of the information they need Students also have a full awareness of the weaknesses or mental strengths that they have and which they have gained in organizing knowledge. As students become able to listen to their thinking and talk about contemplative thinking processes that go beyond the limit of superficial or random understanding of things. All of this enabled students to obtain knowledge self-management, which is the most important moleculein meta-knowledge, which aims primarily to help students increase their learning awareness by controlling their behavior and attitudes.

In order to enable students to gain access to descriptive knowledge, these students need to go through many procedures and processes in the first, and some scholars such as Stenberg (1986), Jacobs and Paris (1987) have identified knowledge strategies that fall under three main skills:

A. Planning: Planning relates to the ability of students to choose goals accurately, in addition to identifying the appropriate strategy to achieve the goal, and arranging actions to achieve the goals, and to identify errors that can occur and how to solve these errors, as it allows to predict the goals set in advance and the possibility of achieving them.

B - Control and Mongering: where monitoring and control can be achieved by -maintaining the primary goal, in addition to maintaining the goals and sub procedures, the timing of the move from one step to the next, in addition to knowing the circle that surrounds the obstacles and errors, and identifying all ways to overcome both errors and obstacles , And modification of behavior if necessary to eliminate it.

C. Evaluation: Where evaluation can be applied by knowing whether the goals were achieved or not, and judging the accuracy of the results issued and evaluation of the technique used, in addition to a statement and evaluation of how to address various issues, and finally an evaluation of the effectiveness of the plan andways to achieve it.

Research Problem 1.1

In line with the continuing needs of the educational field, this study aimed to build learning strategies that have the potential to equip students with different strategies. As this becomes more urgent, the call continues around the world to train students to think in the right ways while integrating students' different skills in the curriculum. Because a student must incorporate meta-knowledge of thinking in an educational curriculumwhere there is great difficulty that the student faces by using his ability to think Meditative during the educational stage. Therefore, the researcher found that it became necessary to design an advanced educational program based on meta-knowledge of its strategiesin addition to measuring its .efficiency in developing reflective thinking among students.

Research Objectives 1.2

The research aims to use the Meta-Knowledge strategies that he can do to enhance the student's ability to analyze English language texts in addition to developing the student's contemplative thinking skills and how to use contemplative thinking skills during the educational stage. In addition to identifying the effects of using meta-knowledge strategies oncontemplative thinking andthe advantages of using meta-knowledge strategies.

Research Questions 1.3

This study have a questions as follow:

1. Does meta knowledge strategy promote students' deductive understanding of reading text?
2. Can meta knowledge strategy enhance students' critical understanding of text?
3. Can meta knowledge strategy enhance students' ability of creative thinking while reading text?

Significance of the Study 1.3

This study is of importance to both students and teachers for the valuable -information it provides and finding regarding the effectiveness of applying meta knowledge strategies in improving general reading comprehension skills and text analysis in particular among university students for use by teachers and other lecturers as well.

Literature Review .2

2.1Historical perspective of the concept of knowlede

The concept of thinking in the beginning of the 1970s was introduced to add a new dimension to cognitive psychology and to open up a wide range of empirical studies and theoretical discussions on the subjects of intelligence, thinking, memory, comprehension and learning skills[7].

Interest in this concept developed in the 1980s and continues to receive much attention as a new way of teaching thinking. When we think about our thinking, we become aware of how we can modify it in a deliberate way. [31]emphasized that there is a positive correlation between students awareness of what they are doing and using meta knowledge strategies, their understanding of andassimilation of information and data obtained, and their ability to use it in different learning situations [33].

2.2The importance of strategies beyond knowledge

he metcognition strategy is one of the strategies to teach yourself how to learn, and it is based on exploiting the previous knowledge of the learner, and asking questions about what the student knows about a specific subject, meaning that it is an introductory strategy that provides the student with remembering what he knows about a particular subject, and it is the best strategy to get to know the learners And on their educational needs and what they learned during their educational situations, and we take a base for it after that through knowing how the learner learned[5].

This learning strategy is attributed to Dietrich Graham, who presented a set of teaching strategies based on structural theory that trace its origins to the psychologist[10,30]. Interest in the field of cognitive psychology has evolved, and opened with this concept in the eighties From the twentieth century to add a broad perspective and new and empirical studies and theoretical discussions in the topics of intelligence, thinking, memory, comprehension and problem-solving strategies and still receives a lot of attention due to its link with learning [8]theories, and this concept has become the subject of many research and research Sat on both theoretical and applied[25].

Meta knowledge is one of the highest levels of thinking, as it is described as a complicated level of thinking, related to the individual's observation of his mental use and perception of metacognition, i.e. the individual's ability to monitor, control and regulate his thinking[12,17]that meta knowledge is divided into two broad areas:

The first area is self-evaluation of knowledge, and metacognitive awareness refers to higher-order thinking skills that include active control of cognitive processes involved in learning, and Flavell has divided awareness of metacognition into three types:

1. Informative knowledge: It relates to the learner's knowledge of a specific content, and it consists largely of facts and concepts involved in the subject of learning.
2. Procedural knowled ge: It means the learner's knowledge of how to use different educational strategies.
3. Conditional knowledge: It includes the learner's awareness of the conditions that affect learning, knowing the reason for which a particular strategy was used, and knowing the appropriate time to use it in the learning situation used.

The second area: is the self-awareness of knowledge or self-management of knowledge, which aims to help the learner to increase his awareness of learning through processes of self-control and self-control of behavior (Yore & et al, 1998: and inclu:(587des the following elements:

A) Planning: It includes the multiple choice of specific strategies to achieve specific goals, and includes several main tasks:

1. Determine the goal to be achieved accurately.
2. Choose the implementation strategy appropriate to the task to be performed.
3. Arranging the sequence of steps or processes.
4. Determining potential obstacles and mistakes.
5. Determine the methods for dealing with difficulties.
6. Predicting the desired results.

B) Monitoring and control: The process of controlling and monitoring the implementation of the predetermined plan, which includes: -

1. Keep the goal in the focus.
2. Maintaining the sequence of steps.
3. Knowing when to achieve a sub-goal.
4. Cho ose the appropriate process.
5. Discovering obstacles and mistakes
6. Knowing how to overcome obstacles and get rid of mistakes.

C) Evaluation: The process of ascertaining the extent to which predetermined cognitive goals have been achieved, or is the process of comparing the results achieved with previously prepared goals, and includes: -

1. A statement of the extent to which the goals have been achieved
2. Test and confirm the accuracy of the results and the efficiency of these results.
3. T est whether the methods used are good or not.
4. Explain how to use errors and obstacles.
5. Error evaluation or strategy effectiveness [40].

Requirements Learning beyond Knowledge

The requirements learning beyond knowledge are: [9,18,20,37]

1. Knowledge: It includes the learner's knowledge of the nature of learning, its processes and goals, and knowledge of effective learning strategies and when to use them.

2. Awareness: It means the learner's awareness of the procedures that must be taken to achieve a specific result, and it includes three dimensions:
   a. Awareness of personality changes
   b) B. Awareness of changes in the educational situation
   c) T. Awareness of appropriate strategy variables.
3. Control: It refers to the nature of informed decisions made by the learner based on his knowledge and awareness.

Need for extra knowledge Strategies in Education:

The learner's use of strategies beyond knowledge can lead to the development of his ability to think about what he learns and increase hisability to control this learning because it contribute to the following: [12,16]

1. Increased attention to the learner's ability to plan and monitor.
2. Moving the learner from the level of quantitative learning and extension to the level of learning.
3. The findings of studies that have conducted metacognitive strategies

- Improving learners' acquisition of learning processes, and their uploading.
- There is a relationship between you and the learners' knowledge of their thinking.
- Increase the ability of learners to examine everything that approves its affairs and criticism.
- Make learners able to face difficulties while learning.
- Helping the learner to play a positive role during his participation in ●the learning process.
- The growth of a number of human capabilities.
- Increase learners' control as they gain concepts, and generate new ideas.
- Increasing the adequacy of learners to solve their problem.

2.3 Knowledge Skills:

1. Planning skill: includes the test of the course of objectives and the procedure followed by the preparation and planning of the tasks of thinking, and these questions include the specific skill put forward by the learner for example, What is important? What is my goal? How much time would it take? What materials do I need?
2. The Skill of Observation: It concerns the self – control and steptaken by the individual to achieve the goal, and include the following questions: Do I have a clear understanding of what I do? Is the task that I perform a task? Should I make changes?

3. The Skill of the Calendar: It concerns the assessment of the achievement of the individual self and reviews the elements of strength andweakness in the thinking of the individual, and includes the following questions: Did you achieve my goal? What have you achieved? What did not happen? Will I do my work next time differently? [3]

Previous Studies

The use of meta-knowledge strategies, the development of thinking skills in general, and systemic thinking in particular have been of particular interest to some researchers at the international and regional levels.

Explicit teaching of meta-strategi c knowledge in authentic classroom situations

The Knowledge Strategy (MSK) is a sub-component of metacognition, which .is defined as general and comprehensive knowledge about thinking strategiesThe study focused on how to control the variables in the strategy. In a previous study which showed that there are significant effects beyond ,[41,42]metacognition on laboratory status, where this study attempted to explore if the effects were preserved in classroom situations. A total of 119 class 6 students participated in a non-homogeneous school. Where a list was prepared for students who achieve low or high results in a random manner, and the results of this study show that students strategic thinking develops after the teaching process. The'treatment effect of the tests is preserved and transferred late. It also showed that frank and explicit education of metacognition had a strong impact on the decline in student achievement level. And discuss the implications of the educational method.

The effect of using some of the strategies of thinking beyond the cognitive on level of critical thinking and self-confidence among the students of the university of Shaqra.

This study aimed to identify how to use strategic cognitive thinking in the level of critical thinking and self-confidence among university students. The study sample included50 students from the second level in psychology, the study used the experimental method, and the data was analyzed on the statistical program (SPSS) [10].

The results of the study indicated that there are statistically significant differences at the level of ($\alpha = 0.01$) in the subsequent application of criteria for critical thinking and self-confidence; between experimental groups; average (28.1) for critical thinking and (21.275) for self-confidence and control; (30.325) for

critical thinking and (23000) Self-confidence, in favor of the experimental group This indicates the effectiveness of thinking strategies beyond the cognitive level of intellectual criticism and self-confidence among students of Shqra University .[10]]

2.4Methodology:

A systematic literature search was conducted using survey questionnaire & The method of survey is being considered an easy research.approach and is also a -very wellknown and common procedure used in the researches related same this study [10]. Relevant studies were located through a comprehensive search of publicly available literature published from 1995 through July 2019.18 Searches of dissertations were limited to those published from 2005 through July 2008 to allow researchers to use meta-knowledge of thinking in an educational curriculum .With method of questionnaire provide a relatively cheap, quick and efficient way of obtaining large amounts of information from a large sample of people.Data can be collected relatively quickly because the researcher would not need to be present when the questionnaires were completed. This is useful for large populations when interviews would be impractical..

2.4.1The Sampling Proces

The sampling is selection procedure of enough elements from population, so that with the help of studying features and characteristics of sample, the features of the sample can be generalized to the feature of the elements of population. In accordance to Churchill (1999), the procedure of six steps can be used in any (study for the purpose of sampling process like: 1) introduction of population, 2 recognize the frame of sampling, 3) selection of sampling process, 4) the sample size is determined, 5) selection of elements of a sample, 6) data gathering from the elements designed.

The sample in this research will be chosen by a group of students in three Iraqi universities, where it will be distributed questionnaire on university professors to assess the impact of meta-knowledge on the educational curriculum.

Procedures of the study 2.5

Based on the research problem, and after reviewing the literature on teaching in general, and on comprehension skills for reading in particular, 10 participants in .this poll were randomly selected from the lecturers at Iraqi universitiesWhereas, the questionnaire was sent to them after receiving approval from them over the phone. 4 of those chosen chose not to answer the questionnaire because they did not have the time to answer them.

The data for each main question was filled out on a sheet alone. It was as follows:

Table 1: data analyses related to question 1 (deductive understanding)

Deductive understanding Participants

1 Participants

2 Participants

3 Participants

4 Participants

5 Participants

6 Participants

7 Participants

8 Participants

9 Participants

Inferring main ideas / / / / / / / / ×
×

Inferring of ideas sequence / / / / / / / /
× ×

Inferring and effect relationship / / / / / / / /
× ×

Answering questions / / / / / / / / ×
×

Recognition of supporting details / / / / / / /
/ × ×

Inferring comparison / / / / / / / / × ×

Table 2: data analyses related to question 2 (critical understanding)

Critical understanding Participants

1 Participants

2 Participants

3 Participants

4 Participants

5 Participants

6 Participants

7 Participants

8 Participants

9 Participants

10

Judgment of appropriateness / / / × × × × / / /

Judgment of fact or opinion / / / × × × × / / /

Judgment ,worthdesirability acceptability / / / × × × × / / /

Table 3: data analyses related to question 3 (Creative understanding)

Creative understanding Participants

1 Participants

2 Participants

3 Participants

4 Participants

5 Participants

6 Participants

7 Participants

8 Participants

9 Participants

10

Reformulation of sentences / / / / / / / / / /

Developing new ideas / / / / / / / / /

Using ideas onsimilar situation / / / / / / / / / /

Result.3

As shown in Table 1, the responses of the participants showed a positive attitude towards the application of the knowledge strategy achieved in improving the deductive comprehension of the students. Teaching with a college-aged descriptive knowledge strategy can help improve his inferential understanding of the text. The ability to understand English texts is a very desirable trait. It is clear that the Met Knowledge strategies have a great influence on students' inferential understanding of a text. Participants attributed their children's increased ability to understand the text in the descriptive knowledge strategies used by the lecturers.

Helping students think optimally and critically about the text they read does not benefit them as lost people, but increases for universities or even societies as a whole. Students play an important role in contributing significantly to sustainable national development, and it is imperative that students acquire good reading skills. Focusing on successful and successful future thinking is one of the most important

skills for building personality that contributes to the development and progress of societies.

Table 2 illustrates that although the responses did not demonstrate the important role metacognitive strategies play in giving students the qualities of critical thinking, all participants reflected that their students preferred critical thinking. However, it appears that there is still a relationship between the Met .Knowledge strategy and the characteristics of critical thinking

Respondents 'answers showed that descriptive knowledge strategy has to do with students' critical thinking.

A result from Table 3 showed that creative thinking can result from applying a descriptive knowledge strategy in teaching English. Seven of the respondents stated that their students have the ability to think critically when a student begins college. Other participants demonstrated that their students have the ability by applying a descriptive knowledge strategy.

Conclusion .4

Many students do not use effective thinking in text analysis during the undergraduate level. Meta-knowledge has been usedto help students creative .thinking and analyze English language texts in an effective and fast manner Responses from participant have shown positive attitude towards applying met knowledge strategy in improving students deductive understanding. Teaching using met knowledge strategy at university age can help improve his deductive understanding of text. The ability to understand English texts is a highly desirable trait. The study also showed that students tend to think critically, but there is still a relationship between the Meta knowledge strategy and the characteristics of critical thinking. The study also showed that students have the ability to think critically when a student starts college. Other participants indicated that theirstudents do indeed have the ability to do.

References

Alexander, P. A., Graham, S., and Harris, K. R. (1998). A [1]perspective on strategy research: .progress and prospects. Educ. PsycholRev. 10, 129–154. doi: 10.1023/A:1022185502996.

Bereiter, C., and[2]Scardamalia, M. (1987). The Psychology of Written Composition. Hillsdale, NJ: Lawrence Erlbaum Associates.

Berninger, V. W. (ed.). (2012). Past, Present, and Future [3]Contributions of Cognitive Writing Research to Cognitive Psychology. New York, NY: Psychology Press.

Braaksma, M. A. H., Rijlaarsdam, G., and Van den Bergh, H. [4](2002). Observational learning and the effects of model-observer similarity. J. Educ. Psychol. 94, 405–415. doi: 10.1037/0022-0663.94.2.405.

,.Braaksma, M. A. H [5]Van den Bergh, H., Rijlaarsdam, G., and Couzijn, M. (2001). Effective learning activities in observation tasks when learning to write and read argumentative texts. Eur. J. Psychol. Educ. 16, 33–48. doi: 10.1007/BF03172993.

Brunstein, J. C., and Gl [6]aser, C. (2011). Testing path-analytic mediation model of how self-regulated writing strategies improve fourth graders' composition skills: a randomized controlled trial. J. Educ. Psychol. 103, 922–938. doi: 10.1037/a0024622.

.De La Paz, S. (2007) [7] Managing cognitive demands for writing: comparing the effects of instructional components in strategy instruction. Read. Writ. Q. 23, 249–266. doi: 10.1080/10573560701277609.

Fayol, M. (1999). "From on-line management problems to [8]strategies in written composition," in The Cognitive Demands of Writing: Processing Capacity and Working Memory Effects in ,Text Productioneds M. Torrance and G. Jeffery (Amsterdam: Amsterdam University Press), 13–23.

.Fidalgo, R., Torrance, M., and Robledo, P[9] (2011). Comparación de dos programas de instrucción estratégica y auto-regulada para la mejora de la competencia escrita [Comparison of two self-regulated and strategic instructional programs for improving writingcompetence]. Psicothema 23, 672–680.

Fidalgo, R., Torrance, M., Rijlaarsdam, G., van den Bergh, H., [10]and Álvarez, M. L. (2015). Strategy-focused writing instruction: just observing and reflecting on a model benefits 6th grade students. Contemp. Educ. Psychol. 41, 37–50. doi: 10.1016/j.cedpsych.2014.11.004.

Flower, L., and Hayes, J. R. (1980). "The dynamics of [11]composing: making plans and juggling constraints," in CognitiveProcesses in Writing, eds L. W. Greeg and E. R. Steinberg :Hillsdale, NJ) ,(Lawrence Erlbaum Associates31–49.

Graham, S. (2006). "Strategy instruction and the teaching of [12]writing: a meta-analysis," in Handbook of Writing Research, eds C. MacArthur, S. Graham, and J. Fitzgerald (New York, ,(NY: Guilford.207–187

) .Graham, S., and Harris, K[13]2014). “Evidence-based writing practices: a meta-analysis of existing meta-analysis,” in Design Principlesfor Teaching Effective Writing: Theoretical and Empirical Grounded Principles, eds E. R. Fidalgo, K. Harris, and M. Braaksma (Leiden: Brill Editions).

Graham, S., and Harris, K. R. (1989). Components analysis of [14]cognitive strategy instruction: effects on learning disabled students’ compositions and self-efficacy. J. Educ. Psychol. 81, 353–doi: .36110.1037/0022-0663.81.3.353.

Grah[15]am, S., and Harris, K. R. (2000). The role of self-regulation and transcription skills in .writing and writing development. EducPsychol. 35, 3–12. doi: 10.1207/S15326985EP3501_2.

Graham, S., and Harris, K. R. (2003). “Students with learning [16]disabilities and the process of writing: a meta-analysis of SRSD studies,” in Handbook of Learning Disabilities, eds H. L. ,Swanson, K. R. Harrisand S. Graham (New York, NY: Guilford), 323–344.

Graham, S., and Perin, D. (2007). A meta-analysis of wri[17]ting instruction for adolescent :students. J. Educ. Psychol. 99, 445–476. doi.0663.99.3.445-0022/10.1037

Graham, S., Harris, K. R., and Troia, G. A. (2000). Self-regulated[18]strategy development revisited: teaching writing strategies to struggling writers. Top. Lang. Disord. 20, 1–14. doi: -00011363/10.1097.00003-200020040

.Graham, S., McKeown, D., Kiuhara, S., and Harris, K. R[19]A meta-analysis of writing .(2012) instruction for students in the,elementary grades. J. Educ. Psychol. 104 879–896. doi: a0029185./10.1037

Groenendijk, T., Janssen, T., Rijlaarsdam, G., and van den [20]Bergh, H. (2013). The effect of observational learning on students’ performance, processes, and motivation in two creative domains. Br. J. Educ. Psychol. 83, 3–28. doi: 10.1111/j.2044-8279.2011.02052.x.

.Harris, K. R., Graham, S., Brindle, M., and Sandmel, L. (2009)[21]Metacognition and “ children’s writing,” in Handbook of Metacognition in Education, eds D. J. Hacker, J. Dunlosky, and A. C. Graesser (New York, NY: Routledge), 131–153.

Harris, K. R., Graham, S., MacArthur, C. A., Reid, R., and[22]Mason, L. H. (2011). “Self regulated learning processes and children’swriting,” in Handbook of Self Regulation of Learning and Performance, eds B. J. Zimmerman and D. H. Schunk (New York, NY: Routledge), .201–187

Harris, K. R., Lane, K. L., Graham, S., Driscoll, S. A., Sandmel, [23]K., Brindle, M., et al. (2012). Practice-based professional development for self-regulated strategies development in writing: a randomized controlled study. J. Teac. Educ. 63, 103–119. doi: .0022487111429005/10.1177

Harris, K. R., Santangelo, T., and Graham, S. (2008). Self- [24]regulated strategy development in writing: going beyond NLEs to a more balanced approach. Instr. Sci. 36, 395–408. doi: -s11251-008/10.1007.9-9062

Harris, K., Graham, S., and Mason[25], L. (2006). Improving the writing, knowledge, and motivation of young struggling writers: effects of self-regulated strategy development with and without peer support. Am. Educ. Res. J. 43, 295–340. doi: 10.3102/00028312043002295.

Hayes, A. F. (2013). Introduction to Mediation, Moderation, and [26]Conditional Process ,Analysis: A Regression-based Approach. New YorkNY: Guilford Press.

Hayes, J. R. (1996). "A new framework for understanding [27]cognition and affect in writing," in The Science of Writing: Theories, Methods, Individual Differences, and Applications, eds C. M. Levy and S. Ransdell (Mahwah, NJ: Lawrence Erlbaum Associates), 1–27.

Hopwood, C. J. (2007). Moderation and mediation in structural[28]equation modelling: applications for early intervention research. J. Early Interv. 29, 262–272. doi: .10538151070290030510.1177/

Johnson, P. O., and Neyman, J. (1936). Tests of certain linear [29]hypotheses and their applications to some educational problems. Stat. Res. Mem. 1, 57–93.

Kellogg, R. (1999). "The components of working memory in text [30]production," in The Cognitive Demands of Writing: Processing Capacity and Working Memory Effects in Text Production, eds M. Torrance and G. Jeffery (Amsterdam: Amsterdam University Press), 43–62.

Kellogg, R. T. (1988). Attentional overload and writing[31]performance: effects of rough draft .and outline strategies. J. Exp. PsycholLearn. Mem. Cogn. 14, 355–365. doi: 10.1037/0278-.7393.14.2.355

Limpo, T [32]., Alves, R. A., and Fidalgo, R. (2014). Children's high-level writing skills: development of planning and revising and their contribution to writing quality. Br. J. Educ. Psychol. 84, 177–193. doi: 10.1111/bjep.12020.

McCutchen, D. (1996). A ca [33]pacity theory of writing: working memory in composition. :Educ. Psychol. Rev. 8, 299–325. doiBF01464076./10.1007

Medlo, M. (2015), The Strategies of post-Knowledge: A [34]Theoretical Vision of Acquiring Grammatical Concepts, College of Educationfor Human Sciences / University of Basrah, 2015.

Pressley, M., and Harris, K. R. (2006). "Cognitive strategies [35]instruction: from basic research to classroom instruction," in Handbook ofEducational Psychology, eds P. A. Alexander and P.) H. WinneNew York, NY: Macmillan), 265–286.

Quené, H., and Van den Bergh, H. (2004). On multi-level [36]modeling of data from repeated measures designs: a tutorial. Speech Commun. 43, 103–121. doi: 10.1016/j.specom.2004.02.004.

Quené, H., and Van den B [37]ergh, H. (2008). Examples of mixed-effects modeling with .crossed random effects and with binomial data. JMem. Lang. 59, 413–425. doi: j.jml.2008.02.002./10.1016

Sawyer, R. J., Graham, S., and Harris, K. R. (1992). Direct [38]teaching, strategy instruction, and strategy instruction with explicit self-regulation: effects on the composition skills and self-

efficacy of students with learning disabilities. J. Educ. Psychol. 84, 340–352. doi: 10.1037/0022-.0663.84.3.340

Schultz, K. (1997). “Do [39]you want to be in my story?”: collaborative writing in an urban ,elementary classroom. J. Lit. Res. 29doi: 10.1080/10862969709547958. .288–253

Sonnenschein, S., and Whitehurst, G. J. (1984). Developing [40]referential communication: a hierarchy of skills. Child Dev. 55, 1936–doi: 10.2307/1129940. .1945

,Spencer, S. L., and Fitzgerald, J. (1993). Validity and structure [41]coherence, and quality .measures in writing. J. Read. Behav. 25, 209–231doi: 10.1080/10862969309547811.

.Storch, N [43] (2001). How collaborative is pair work? ESL tertiary students composing in :pairs. Lang. Teach. Res. 5, 29–53. doi.136216801666650977/10.1191

Storch, N., and Wigglesworth, G. (2007). “Writing tasks: [44]comparing individual and collaborative writing,” in Investigating Tasks in Formal Language Learning, ed. M. P. García :Mayo (LondonMultilingual Matters), 157–177.

Sutherland, J. A., and Topping, K. J. (1999). Collaborative [45]creative writing in eight year olds: comparing cross ability fixed role and same ability reciprocal role pairing. J. Res. Read. 22, :doi .179–154.9817.00080-1467/10.1111

Torrance, M., and Galbraith, D. (2006). “The processing [46]demands of writing,” in Handbook of Writing Research, eds C. MacArthur, S. Graham, and J. Fitzgerald (New York, NY: Guilford Publications), 67–82.

Torrance, M., Fidalgo, R., and Robledo, P. (2015). Do sixth- [47]grade writers need process strategies? Br. J. Educ. Psychol. 85, 91–112. doi: 10.1111/bjep.12065.

,.Wigglesworth, G [48] and Storch, N. (2009). Pair versus individual writing: effects on fluency, ,complexity and accuracy. Lang. Test. 26doi: 10.1177/0265532209104670. .466–445

Williams, J. R. (2008). Revising the declaration of Helsinki. World Med. [49]J. 54, 120–125.

Yarrow, F., and Topping, K. (2001). Collaborative writing: the [50]effects of metacognitive prompting and structured peer interaction. Br. J. Educ. Psychol. 71, 261–282. doi: .000709901158514/10.1348