

Combination of Screen Capturing, Video and Audio Data Collection in Analysis ESL Learners' Cognitive and Metacognitive Strategies in Finding and Comprehending Internet-related Information for Academic Purposes  
Neny Isharyanti\*

**Definition of Metacognitive and Cognitive Strategies**

O'Malley and Chamot (1990):

Metacognitive strategies: strategies that require the learner to think or to have knowledge of the learning processes, to plan the learning, to monitor the learning simultaneously with the learning process or to evaluate the learning when the task has been accomplished (pp. 230-231).

Cognitive strategies: strategies that "involve mental manipulation or transformation of materials or tasks and are intended to enhance comprehension, acquisition and retention" (p. 229).

O'Malley et al (1985):

These strategies are usually specific to certain learning activities and that they involve steps in learning or problem solving that entail direct analysis, transformation, or synthesis of learning materials. (cf. articles and studies by Brown: 1982, 1983 and Rigney: 1978).

**Studies in Metacognitive and Cognitive Strategies by ESL Learners**

Studies by O'Malley et al (1985)

list several cognitive and metacognitive strategies that are mostly used by ESL learners for listening, speaking and vocab. In metacognitive strategies, learners employed self management (20.8%), advance preparation (22.9%), directed attention (13.0%), and selective attention (19.8%). In cognitive strategies, 192 learners mostly used transfer (10.4%), translation (11.3%), imagery (12.5%), note-taking (18.7%), and repetition (19.6%). In reading, a study by Padron & Waxman (1988, p. 148) reveals imagery and referencing as the cognitive strategies mostly used by learners while self-management and self-monitoring are the metacognitive strategies that frequently used by learners.

Chapelle (2001):

summarizes several studies that link learning strategies with computer usage. The studies are: Chapelle and Mizuno (1989): learners' resourcing strategy (one of the cognitive strategies) in the use of vocabulary, grammar or semantic facts help to complete a task of constructing and editing sentences.

Hsu, Chapelle, and Thomson (1993): 'exploration' strategy which studied learners' interaction with a software that enables them to construct and edit their sentences. Specifically this study provides evidences of the presence of learners' choices and linguistic editing.

Jamieson and Chapelle (1987): advance preparation for spelling and dictation tasks, in which the use of the strategy was measured through the amount of time the learners spent from the beginning of pressing the first key to begin to answer to the end of input. The study found that there is an elapsed time before the production of learners' output.

Jamieson and Chapelle (1987): monitoring output strategy, in which the number learners' trial to listen to the input before typing their output in a dictation task. The evidence suggests that there were requests of repetition of input.

**Planned application and indicators of theory in the study design**

	<b>Actions by the Learners</b>	<b>Possible Actions in the Study</b>	<b>Indicators</b>
<i>Metacognitive strategies</i>			
Advance preparation	Rehearsing the language needed for an oral or written task.	Reviewing the info of the materials	Interview: Answer Yes to Question No. 1

Neny Isharyanti is a graduate student of MA TESL/Applied Linguistics program in Iowa State University from Indonesia. Her research interest is in the sociocultural and linguistic aspects of internet chatting. Correspondence: English Department, 203 Ross Hall, Ames, IA 50010. Email: [neny@iastate.edu](mailto:neny@iastate.edu). Website: <http://www.public.iastate.edu/~neny>.

		from class or visit the website beforehand.	
Selective attention	Attending to or scanning key words, phrases, linguistic markers, sentences, or types of information.	Read the whole thing (task, all links) then do the task	Interview: Answer Yes to Question No 4, reasons Screen Capturing: Do the actions
Directed attention	Deciding in advance to attend in general to a learning task and to ignore irrelevant distractors.	Read parts by parts (task, open one link) then do the task	Interview: Answer Yes to Question No. 5, reasons Screen Capturing: Do the actions
Self-monitoring	Checking one's comprehension during listening or reading, or checking one's oral or written production while it is taking place.	Ask the investigator for checking subject's comprehension	Interview: Answer Yes to Question No. 6 Video: Do the actions Audio: Ask a question to the investigator about the language.
Self-management	Seeking or arranging the conditions that help one learn, such as finding opportunities for additional language or content input and practice.	Asking the investigator for information, more input on the task	Interview: Answer Yes to Question No. 7 Screen capturing: check other websites for more info Audio: Ask the investigator about the task.
<b><i>Cognitive strategies</i></b>			
Resourcing/referencing	Using reference materials such as dictionaries, encyclopedias, or textbooks.	Check the dictionaries (online, paper L1) and other website references.	Interview: Answer Yes to Question No. 1 Screen capturing: Open the dictionary link or other reference link. Video: Use the L1 paper dictionary.
Translation	Using the first language as a base for understanding and/or producing the second language	Use the L1 paper dictionary for comprehension.	Interview: Select the paper dictionary in Question No. 2. Video: Use the L1 paper dictionary
Imagery	Using visual images (either mental or actual) to understand and remember new information or to make a mental representation of a problem.	Looking at more pictures in the link/using links with more pictures	Interview: Select links with pictures in Question No. 3, provide reasons Screen capturing: Select link with pictures.
Repetition	Imitating a language model, including overt practice and silent rehearsal.	Frequent referencing to the	Interview: Answer Yes to Question No. 4 and 5.

		websites.	Screen capturing: frequently referencing to the websites.
Note taking	Writing down key words and concepts in abbreviated verbal, graphic, or numerical form.	Taking notes of concepts/difficult words	Video: write down in the paper provided.
Transfer	Using what is already known about language to assist comprehension or production.	Picking links whose language is easy or familiar	Interview: Answer Yes to Question No. 7. Screen capturing: select the Indonesian link.

### **Guide for interview questions**

#### *General Questions:*

1. Which link did you choose to write the summary?
2. Why did you choose the link? (language vs. content)

#### *Metacognitive strategies:*

##### Advanced Preparation

1. Did you review the web before the study?
2. Did you understand what the task is?
3. What aspects did you look to prepare yourself for the task?

##### Selective vs. Directed Attention

4. Did you read the task and ALL links? (directed)
5. Did you read the task, open one link and finish the task? (selective)

##### Self-monitoring

6. Did you understand the task/ the links? Do you check if your understanding is correct?

##### Self-management

7. What did you do when you did not understand?

#### *Cognitive Strategies:*

##### Resourcing/Referencing

1. Did you find the dictionary useful?

##### Translation

2. Which one is more useful: the online or the paper one?

##### Imagery

3. Which one do you like: the link with pictures or with text?

##### Repetition

4. Did you consult the links to write the summary?
5. How often did you consult the links?

##### Transfer

6. Which link did you like: the one from Indonesia or from other countries than Indonesia?
7. Why did you like that link?

### **Predictive language difficulty level of Websites**

	<b>Link 1</b>	<b>Link 2</b>	<b>Link 3</b>	<b>Link 4</b>
<b>Name</b>	Network Indonesia	Joglo Semar	Pearson Education	Wikipedia
<b>Source</b>	Indonesia	Indonesia	Non-Indonesia	Non-Indonesia

<b>Predictive Language Difficulty Level*</b>	Difficult	Easy	Difficult	Easy
<b>Reading Difficulty</b>				
<b>Passive Sentence</b>	23%	12%	36%	16%
<b>Reading Ease</b>	36.9	52.9	46.4	27.1
<b>Grade Level</b>	12.0	9.7	10.5	12.0
<b>Vocabulary Profile</b>				
<b>Number of Words</b>	698	733	746	855
<b>K1 Words</b>	66.48%	62.21%	73.46%	61.64%
<b>K2 Words</b>	8.17%	6.41%	6.03%	6.90%
<b>Academic Writing Level Words</b>	6.88%	2.46%	4.16%	4.91%
<b>Off-list words</b>	18.48%	28.92%	16.35%	26.55%

### Description of Internet Sources

Source	Website details
Non-native	Network Indonesia <a href="http://users.skynet.be/network.indonesia/ni3001b4.htm">http://users.skynet.be/network.indonesia/ni3001b4.htm</a> Developed by Jon Pauwels and Dirk Oeghoede of Antwerp, Belgium.
Non-native	Joglo Semar Travel Guide <a href="http://www.joglosemar.co.id/gamelan.html">http://www.joglosemar.co.id/gamelan.html</a> Developed by PT Sangga Sarana Persada of Indonesia.
Native	Silver Burdett Making Music – Pearson Education <a href="http://www.sbgmusic.com/html/teacher/reference/cultures/gamelan.html">http://www.sbgmusic.com/html/teacher/reference/cultures/gamelan.html</a> Developed by Pearson Education Inc., New Jersey, USA.
Native	Wikipedia free online encyclopedia <a href="http://en.wikipedia.org/wiki/Gamelan">http://en.wikipedia.org/wiki/Gamelan</a> Developed by Wikipedia Foundation, Florida, USA.

### References

- Chapelle, C. (2001) *Computer applications in Second Language Acquisition: Foundations for teaching, testing and research*. Cambridge: Cambridge University Press.
- Chun, D.M. and Plass, J.L. (July 1997). *Research on Text Comprehension in Multimedia Environments*. *Language Learning and Technology*, 1 (1), pp. 68-80. Retrieved on May 1, 2004 from [http://ilt.msu.edu/vol1num1/chun\\_plass/default.html](http://ilt.msu.edu/vol1num1/chun_plass/default.html)
- Cobb, T. *Compleat Lexical Tutor: Web VP Version 1.5*. Retrieved on March 23, 2004 from <http://www.lexitutor.ca> or [http://www.er.uqam.ca/nobel/r21270/cgi-bin/webfreqs/web\\_vp.cgi](http://www.er.uqam.ca/nobel/r21270/cgi-bin/webfreqs/web_vp.cgi)
- Google™ Search Engine. Retrieved on May 4, 2004 from <http://www.google.com>
- Honolulu Community College Library. *MLA Citation Examples*. Retrieved on May 4, 2004 from <http://www.hcc.hawaii.edu/education/hcc/library/mlahcc.html#internet>
- Isharyanti, N. (2004). *526 Final Project*. Retrieved on May 3, 2004 from Neny Isharyanti's Professional Website: <http://www.public.iastate.edu/~neny/526/finalproject.htm>
- LeLoup J. W. and Ponterio, R. (September, 2000). *On the Net: Literacy: Reading on the Net*. *Language Learning and Technology*, 4 (2), pp. 5-10. Retrieved May 3, 2004 from <http://ilt.msu.edu/vol4num2/onthenet/default.html>

- Lexico Publishing Group, LLC. *English-English Online Dictionary*. Retrieved on May 3, 2004 from <http://www.dictionary.com>.
- Microsoft®. *Microsoft Word 2002: Help*. Redmond, Washington: Microsoft Corporation.
- O'Bryan, A. (2004). *Essay 4: Artifact Analysis*. Retrieved on May 3, 2004 from Anne O'Bryan Professional Website: [http://www.public.iastate.edu/~aobryan/Engl\\_104cc/Essay4\\_culturalartifact.doc](http://www.public.iastate.edu/~aobryan/Engl_104cc/Essay4_culturalartifact.doc)
- O'Bryan, A. (2004). *Tentative Course Syllabus English 104: Cross-Cultural First Year Composition*. Retrieved on May 3, 2004 from Anne O'Bryan Professional Website: [http://www.public.iastate.edu/~aobryan/Engl\\_104cc/engl\\_104cc\\_syllabus.htm](http://www.public.iastate.edu/~aobryan/Engl_104cc/engl_104cc_syllabus.htm).
- O'Malley, M. and Chamot, A. (1990) *Learning strategies in Second Language Acquisition*. Cambridge: Cambridge University Press.
- O'Malley, M.; Chamot, A.; Stewner-Manzanares, G.; Kupper, L.; and Russo, P. (1985) *Learning strategies used by beginning and intermediate ESL students*. *Language Learning*, 35 (1), pp. 21-46.
- Oxford, R.L. (1989) *Use of language learning strategies: A synthesis of studies with implications for strategy training*. *System*, 17(2), pp. 235-247.
- Padron, Y. and Waxman, H. (1988). *The effect of ESL students' perception of their cognitive strategies on reading achievement*. *TESOL Quarterly*, 22 (1), pp. 146-150.
- Pauwels, J. and Oeghoede, D. *Network Indonesia: Introduction to Gamelan*. Retrieved on May 3, 2004 from <http://users.skynet.be/network.indonesia/ni3001b4.htm>.
- Pearson Education Inc. *Silver Burdett Making Music: Gamelan*. Retrieved on May 3, 2004 from <http://www.sbgmusic.com/html/teacher/reference/cultures/gamelan.html>
- PT Sangga Sarana Persada. *Joglo Semar: Gamelan*. Retrieved on May 3, 2004 from <http://www.joglosemar.co.id/gamelan.html>
- TechSmith®. *Camtasia Studio Version 2.0.3*. Okemos, Michigan: TechSmith Corporation.
- Wikipedia Foundation. *Wikipedia Free Online Encyclopedia: Gamelan*. Retrieved on May 3, 2004 from <http://en.wikipedia.org/wiki/Gamelan>

### **Further Reading**

- Block, E. (1986). *The Comprehension Strategies of Second Language Readers*. *TESOL Quarterly*, 20 (3), pp. 463-494.
- Chapelle, C. (2003). *English Language Learning and Technology*. Amsterdam: John Benjamins Publishing Company.
- Chun, D. and Plass, J. (1996). *Facilitating Reading Comprehension with Multimedia*. *System*, 24 (4), pp. 503-519.
- Simpson, M. and Nist, S. (2002). Encouraging Active Reading at the College Level. In Block, C. and Pressley, M. (Eds.), *Comprehension Instruction: Research-Based Best Practices*. New York, NY: The Guilford Press, pp. 365-379.
- Spires, H. and Estes, T. (2002). Reading in Web-Based Learning Environments. In Block, C. and Pressley, M. (Eds.), *Comprehension Instruction: Research-Based Best Practices*. New York, NY: The Guilford Press, pp.115-125.
- Vann, R and Abraham, R. (1990). *Strategies of Unsuccessful Language Learners*. *TESOL Quarterly*, 24 (2), pp. 177-198.
- Wenden, A. (1999). *An Introduction to Metacognitive Knowledge and Beliefs in Language Learning: beyond the basics*. *System*, 27, pp. 435-441.