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"The relationship between Critical thinking and Deductive|Inductive teaching of Grammar to Uzbek EFL learners"

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Ilmiy rahbar: **katta oqituvchi Yo.Soliyev**

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Theme: The Relationship between Critical Thinking and Deductive/Inductive Teaching of Grammar to Uzbek EFL Learners

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INTRODUCTION

Developing excellent communication skills is uniquely important for clinicians specializing in palliative care because many of the benefits of palliative care are only realized when clinicians can create discussions that are patient-centered, medically realistic, and therapeutic.1 These advances will only be sustained if educators can develop methods for teaching communication that are more effective and far-reaching than what has typically occurred in graduate medical education. While there is certainly a need for communication skills at the medical student level, there is an urgent need for palliative care to develop faculty who can teach communication skills at a sophisticated level, for palliative medicine fellows and other palliative care clinicians.

A challenge in teaching communication skills at a sophisticated level is that being a master communicator oneself does not translate into the ability to teach advanced communication skills to trainees. Clinicians with expert communication skills are often revered for the “magic” that they are able to create in nuanced interactions with patients and families. Expertise of this kind develops with years of deliberate practice that includes self-reflection and openness to real, sometimes difficult, feedback. Fortunately, we know that experts are made and not born2 and that numerous studies have shown that communication skills can be taught and that this type of teaching results in behavior change that persists over time. This magic is, in fact, a set of well-honed skills that involves listening actively, identifying and responding to affect, and the ability to manage one's own affect while discussing difficult topics.3–14 To assist trainees in the cultivation of this kind of expertise educators must to possess a set of skills beyond their own personal ability to communicate and, even beyond the skills typically required to teach biomedical content. Teaching communication skills requires the educator to deconstruct the components of the interaction and develop a cognitive approach that can be used across a variety of learners, diverse content, and under different time constraints while helping the learner develop the skill of self-reflection in a “safe” and effective learning environment.

Thus, in this article we focus on the process of teaching communication skills in small groups through the use of role-play. The rationale for focusing on role-play is that the most rigorously conducted studies of communication skills that demonstrate behavior change used this method.3–14

The actuality of a given qualification paper depends on study of a concrete language which is connected which the requirement of teaching English in secondary and higher schools in an intensive progressive way.

Object of the work. The teaching of **English and** The Relationship between Critical Thinking and Deductive/Inductive Teaching of Grammar

Learners' Speaking Skills have been chosen as an object of our qualification paper.

The aim of diploma work is the study of ways improving learning English.

The following tasks were set and solved:

- To define speaking skills as reporting, negotiating, clarifying, and problem solving, structural and semantico-stylistic peculiarities of units in Modern English.

* assessing characteristics of the target audience, including shared knowledge or shared points of reference, status and power relations of participants, interest levels, or differences in perspectives;

applying strategies to enhance comprehensibility, such as emphasizing key words, rephrasing, or checking for listener comprehension;

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Method of the work. In our work we used of the method of componential analysis which was successfully used in studying need for communication skills , there is an urgent need for palliative care to develop faculty who can teach communication skills at a sophisticated level, for palliative medicine fellows and other palliative care clinicians speaking English.

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The results of our qualification paper have **theoretical and practical significance.**

Theoretically the results will have an important income for the development of improving speaking skils of Modern English.

Practical results of investigation can be used in teaching English in higher and secondary schools.

The main material of the work contains different theoretical and practical books on grammar and typology; we have used Internet information to reveal our work.

The structure of the work. Work contains introduction, four chapters, conclusion and bibliography.ю

Communicative and whole language instructional approaches promote integration of speaking, listening, reading, and writing in ways that reflect natural language use. But opportunities for speaking and listening require structure and planning if they are to support language development. This digest describes what speaking involves and what good speakers do in the process of expressing themselves. It also presents an outline for creating an effective speaking lesson and for assessing learners' speaking skills.

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Recently, the interest of both teachers and researchers in the field of foreign language learning and teaching has increasingly focused on the learner, including the strategies which an individual uses in learning and communicating. The problem under investigation is to see whether there is any relationship between the critical thinking ability of language learners and their performances using rule driven/ discovery learning approaches to teaching grammar. After the homogenizing process, 73 learners were taught during two periods of eight sessions. During the first period, the researcher taught the group deductively and during the second period, inductively. At the end of each period, a grammar test was administered to measure the grammar knowledge of the learners. The results of the analyses for the collected data showed that there was a positive correlation between the critical thinking ability of the learners and their grammar test scores in the inductive period. However, as for the deductive teaching method, no special relationship could be found between the critical thinking ability of the learners and

their grammar test scores. In other words, the results of the study indicated that learners with a higher critical thinking ability prefer inductive methods of teaching grammar while in deductive methods of teaching grammar, there seems to be no difference between learners with high or low critical thinking abilities.

« The Effect of the Method on the Trait: Investigating the Function of No-Error Options in Grammar Error-Identification Items in Admissions Tests Foreword – Volume 7. Issue 1 February 2011 »

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Drs. Rajabali Askarzadeh Torghabeh & Paul Robertson

Foreword:Welcome to the first edition of the year 2011. The Iranian EFL Journal will be a bi-monthly journal from 2011. The journal has had strong growth over the last few years with a monthly readership now exceeding 2000 readers. For a new journal examining the topic of English second language acquisition from a local perspective, the growth and readership has been pleasing. Statistically, readers are coming from almost 80 countries. In the first issue of volume 7 we present 15 articles for your reading.

In the first article, the authors Khalil Motallebzadeh and Neda Heirany report findings from an experimental study of the effect of thematic clustering of L2

vocabulary on the reading comprehension ability that occurred in 10 sessions of classes for two intact groups of intermediate EFL adult learners.

In the second article, Nasser Rashidi and Hamid Reza Zare Asl have evaluated, compared, and determined the strengths and weaknesses of two Pre-university English textbooks based on Littlejohn's framework that is a language teaching materials evaluation framework. In the next article, Bahman Gorjian, Syyed Rahim Moosavinia, and Parisa Shahramiri have investigated the effects of oral summary of short stories on male/female learners' speaking proficiency. In the fourth article, Ebrahim Khodadady, Sara Shirmohammadi, and Farima Talebi have explored whether applying brainstorming strategies brings about significant improvements in English language learners' speaking proficiency and critical thinking skills. In the next article, Hamid Ashraf has examined critical thinking in the context of language learning at universities. In the next article, Mahdieh Arjomand and Masoud Sharififar have explored the most and least frequently used vocabulary learning strategies and the relationship between gender and strategy use among Iranian EFL freshman students. In the next article, Majid Nemati and Amin Shahini have focused on the relationship between extroversion/introversion and English oral proficiency.

In the next article, Mehdi Mehrani and Ghasem Modarresi report the findings from a case study research of a proficient EFL reading instructor in order to provide a rich account of the process of effective scaffolding in a one-to-one tutoring context. In the next article, Maryam Shirin zarii and Mehdi Mardani have investigated the effects of text modification (i.e. simplification and elaboration) on EFL learners' incidental vocabulary acquisition. Ehsan Rassaei and Mansoor Tavakoli have explored if learners' gender influences the effectiveness of corrective feedback they receive during classroom interactions. Moreover, Sepideh Ahmad Khan Beigi and Hamed Ahmadi reported on rhetorical patterns of social essays in Persian and English based on five contrastive features.

In the next article, Shirin Abadikhah and Zahra Mosleh have investigated whether EFL learners at different proficiency levels differ in their focus of attention to linguistic features during the completion of a set of output activities. Fateme Layeghi has also attempted to shed light on the problematic issue of whether to provide writers with one or multiple writing prompts to elicit their best performance and explore their preference in single vs. multiple topics writing.

In the next article, Bahareh Khazaeenezhad and Mohammad Reza Talebinezhad have presented a preliminary step towards approaching a cognitive-affective course or, in Forgas' (2001) terms, an affect into thought infusion course, which focuses

on reading open-ended stories. In the last article, Hossein Askari and Moussa Ahmadian have determined how many reading comprehension strategies are effective to be taught to university students in a given semester.

Induction vs. Deduction

Inductive and deductive reasoning are often confused. This lesson introduces the concept of reasoning and gives you tips and tricks to keeping inductive and deductive reasoning straight.

Using Reasoning

Andrew and Kevin are studying for their upcoming speech final. They have to define inductive and deductive reasoning and provide examples of each. Kevin says he has a great example for deductive reasoning: 'Every time it hails, I get a dent in my car. Every time it hails, my dad gets a dent in his car. Every time it hails, my brother gets a dent in his car. Every time it hails, everyone will get a dent in their cars.'Andrew says that Kevin does not have an example of deductive reasoning, but it is better as an example for inductive reasoning. Who is right?In this lesson, you will learn about the concept of reasoning and how it is used in conjunction with logic for inductive and deductive arguments.

Reasoning and Logic

First, let's discuss the concept of reasoning. Reasoning is the action of constructing thoughts into a valid argument. This is something you probably do every day. When you make a decision, you are using reasoning, taking different thoughts and making those thoughts into reasons why you should go with one option over the other options available. When you construct an argument, that argument will be either valid or invalid. A valid argument is reasoning that is comprehensive on the foundation of logic or fact.

Now let's discuss propositional logic. Inductive and deductive reasoning are both forms of propositional logic. Propositional logic is the branch of logic that studies ways of joining and/or modifying entire propositions, statements or sentences to form more complicated propositions, statements or sentences. For our purposes, this means that propositional logic uses a series of facts and reasoning to develop a conclusion. Inductive and deductive reasoning use propositional logic to develop valid arguments based on fact and reasoning. Both types of reasoning have a premise and a conclusion. How each type of reasoning gets to the conclusion is different.Let's discuss inductive reasoning first.

Inductive Reasoning

Inductive reasoning is reasoning where the premises support the conclusion. The conclusion is the hypothesis, or probable. This means that the conclusion is the part of reasoning that inductive reasoning is trying to prove. Inductive reasoning is also referred to as 'cause and effect reasoning' or 'bottom-up reasoning' because it seeks to prove a conclusion first. This is usually derived from specific instances to develop a general conclusion.Kevin and Andrew are now arguing about math. Kevin says that all big brothers are good at math. Andrew is an only child, but he's pretty sure that this argument cannot be valid.

Kevin makes a conclusion based on the following premises: 'My older brother is good at math. My friend's older brother is good at math. My neighbor's big brother is a math tutor. Therefore, all older brothers are good at math.'

You've probably heard people use this type of reasoning in life. We know this can't be true. You probably know that being an older brother doesn't inherently make you good at math. What Kevin has done is made a generalized conclusion: all older brothers are good at math based on three premises of specific instances: Mine, my friend's and my neighbor's older brother are all good at math. These specific instances are not representative of the entire population of older brothers. Because inductive reasoning is based on specific instances, it can often produce weak and invalid arguments.You can remember inductive reasoning like this: inductive reasoning is bottom-up reasoning; it starts with a probable conclusion and induces premises.Now let's talk about deductive reasoning.

Deductive Reasoning

Deductive reasoning is reasoning where true premises develop a true and valid conclusion. In the case of deductive reasoning, the conclusion must be true if the premises are also true. Deductive reasoning uses general principles to create a specific conclusion. Deductive reasoning is also known as 'top-down reasoning' because it goes from general and works its way down more specific. For example, 'All cars have engines. I have a car. Therefore, my car has an engine.'We know that the conclusion is true because it is based on generalized premises that are true without any exceptions. As long as the premises are true, then the conclusion will also be true. This probably seems like a simple example; however, you need to see the importance of having a true and unquestionable premise. For example: 'All blondes have blue eyes. Kevin has blonde hair. Therefore, Kevin must have blue eyes.'It is an untrue conclusion because it is based on an untrue premise, 'all blondes have blue eyes.' There are many exceptions to this statement. Even if the

premise 'Kevin has blonde hair' is true, the conclusion cannot be true because it is based on untrue premises.You can remember deductive reasoning like this: deductive reasoning is top-down reasoning. It starts with a true premise and deduces a true conclusion. The relationship between reading comprehension and critical thinking**: A theoretical study** Abdulmohsen S. Aloqaili King Saud University, College of Education, Department of Curriculum and Instruction, Saudi Arabia :

Induction vs. Deduction

Induction and deduction are pervasive elements in critical thinking. They are also somewhat misunderstood terms. Arguments based on experience or observation are best expressed inductively, while arguments based on laws or rules are best expressed deductively. Most arguments are mainly inductive. In fact, inductive reasoning usually comes much more naturally to us than deductive reasoning.

Inductive reasoning moves from specific details and observations (typically of nature) to the more general underlying principles or process that explains them (e.g., Newton's Law of Gravity). It is open-ended and exploratory, especially at the beginning. The premises of an inductive argument are believed to support the conclusion, but do not ensure it. Thus, the conclusion of an induction is regarded as a hypothesis. In the Inductive method, also called the scientific method, observation of nature is the authority.

In contrast, deductive reasoning typically moves from general truths to specific conclusions. It opens with an expansive explanation (statements known or believed to be true) and continues with predictions for specific observations supporting it. Deductive reasoning is narrow in nature and is concerned with testing or confirming a hypothesis. It is dependent on its premises. For example, a false premise can lead to a false result, and inconclusive premises will also yield an inconclusive conclusion. Deductive reasoning leads to a confirmation (or not) of our original theories. It guarantees the correctness of a conclusion. Logic is the authority in the deductive method. If you can strengthen your argument or hypothesis by adding another piece of information, you are using inductive reasoning. If you cannot improve your argument by adding more evidence, you are employing deductive reasoning. Mansoor Fahim, Islamic Azad University, Science and Research Branch, Tehran, Iran,Mehrshad Ahmadian,Islamic Azad University, Science and Research Branch, Tehran, Iran

Abstract—The advent of the information diffusion emanating from the information technology of the third millennium along with the revamped concept of literacy

and intellectual understanding, and the demand for accountability as one of the prerequisites of modern societies has given birth to a movement resting on the idea

that schools should be less concerned with imparting information and requiring the memorization of empirical data. Dealing with the extraordinary challenges of today's information society requires autonomous citizens equipped with "critical competence" (Feuerstein, 1999) whose meta-knowing is to be ameliorated through curriculum. The present study is an attempt to sketch the concept of critical thinking as a viable alternative in language education in Iranian EFL context. First, a number of definitions, along with the dimensions, of the concept from various scholars' viewpoints are put forward. Second, the typical features of critical thinkers and what resources they need are introduced. Third, the relation between critical thinking and learner autonomy is examined. Fourth, the relation between critical thinking and the instructional process is investigated. And finally, the issue from both theoretical and pedagogical standpoints in the contemporary EFL context is reviewed.

CRITICAL THINKING What is Critical Thinking?

When group members apply critical thinking skills in problem solving and decision-making, they carefully analyze, critique, and evaluate information so the conclusions they reach are well founded. By using effective critical-decision making skills and processes, group members draw valid inferences based on accurate evidence and well-supported reasoning. They avoid the common pitfalls often associated with poor reasoning, such as drawing inferences based on insufficient or faulty information.

What is Reasoning?

Reasoning involves evaluating claims and drawing conclusions based on those claims. Arguments are the primary tool we use in reasoning. Arguments always have a premise (or reason) and a conclusion (supported by the premise or reason). For example, consider:

Premise: Critical thinking skills are essential for effective participation in a democratic society. **Conclusion**: All college students should complete a course in critical thinking.In this example, the reason why college students should take a course in critical thinking is because such skills are necessary to participate in a democratic society. Words that often signal a statement is a premise include: since, because, assuming that. Words that often signal a conclusion statement include: therefore, thus, consequently.

Explanations that contain arguments are another tool used in reasoning. As with all arguments, explanations used in reasoning must include at least one premise that supports a conclusion. For example, consider:

First Premise: San José State is the metropolitan university of Silicon Valley.

Second Premise: Silicon Valley is well known for its innovative ideas.

Third Premise: A joint library between a city and university has never been tried before.

Conclusion: The joint library between SJSU and the city of San José demonstrates the university's commitment to innovation.In this example, the second and third premises would likely be unstated. Still, we can see this as an argument (with premises and a conclusion) embedded in an explanation (why SJSU pursued the joint library idea).Critical thinkers are able to distinguish reasoning (arguments and explanations) from other forms of discourse (such as description and assertion). For example, contrast the argument above with the assertion: "San José State University and the city of San José should have a joint library."

There are two broad categories of reasoning: inductive reasoning (reasoning from the specific to the general) and deductive reasoning (reasoning from the general to the specific). An example of inductive reasoning is:

First Premise: Jean did not attend our second group meeting, but called to say that she had car trouble.

Second Premise: Jean did not attend our third or fourth group meetings, saying that she forgot about them, even though I called to remind her.

Conclusion: We cannot depend on Jean to attend group meetings.

With inductive reasoning, we search for patterns and draw conclusions based on those patterns. We cite specific instances or observations that form the foundation for inferences or conclusions.

In deductive reasoning, we draw specific conclusions based on a general premise we assume is true. For example: First Premise: Bodies of water, such as lakes and oceans, moderate adjoining land temperatures.

Second Premise: Santa Cruz, California, borders a body of water, Monterey Bay.Conclusion: Santa Cruz, California has moderate temperatures.

Note that the conclusion depends on the accuracy of the premises. If bodies of water do not moderate adjacent land temperatures, then the conclusion is false. If Santa Cruz, California is not located on Monterey Bay, then the conclusion is false. Happily, both premises are true and the residents of Santa Cruz, California enjoy moderate temperatures year-round.

Why is Critical Thinking Important?

Mastering critical thinking skills will allow you to take greater advantage of the opportunities provided by your constitutional rights; you will be able to more fully and effectively use the precious rights of free expression and suffrage granted by the U.S. Constitution. You will be able to "become wise" by listening to "all that can be said" against your views and by subjecting your ideas to others' perspectives. Critical thinking is essential in four areas of our lives.

1. **Critical thinking as fundamental to freedom**

Critical thinking is one of the foundations of democracy and is central to preserving our liberties, such as freedom of speech. In turn, liberty is necessary for critical thinking to flourish. We need to be able to openly discuss, debate, and deliberate ideas in order to examine them critically.

2**. Critical thinking as essential to group decision making**

To reach sound conclusions, small group members must use critical thinking when making decisions. Critical thinking helps groups avoid making serious mistakes by encouraging group members to examine carefully all their options.

3. **Critical thinking as essential to professional decisions making**

Employers expect employees to make competent decisions based on a thorough and careful examination of all available information. Employees need to ask relevant questions, listen actively, assess complex information, and engage with others in critical decision making. The success of an organization depends on the ability of members to ask relevant questions, evaluate complex information, make difficult decisions, and anticipate the outcomes of those decisions. These are all critical thinking skills.

4. **Critical thinking as essential to personal decision-making**

We make decisions every day, from deciding what to have for breakfast to deciding where to go to college. We need to be critical thinkers in the everyday and more unique problems we face. We need to ask questions, find and evaluate

relevant information, and use information to make reasonable decisions. Also, we get fulfillment from the discovery and creativity involved in critical thinking.

Developing Critical Thinking Skills

Now you may be asking, How can I develop my critical thinking skills? There are four areas to work on:

1**. Asking relevant questions**

Asking meaningful, relevant questions is fundamental to critical thinking. Consider the following exchange in a small group discussion:

Sam: I think California needs to spend more money on education and less on prisons. Did you know that California ranks in the bottom third of spending per student among all U.S. states?

Angie: I agree with you, Sam, that we need to put more resources toward education. I think that would keep more people out of prison. However, I don't know that simply spending more money is the answer.

Jamie: Where did you all go to high school? Was it in California?

In this example, Angie relates her comments to Sam's original statement. In contrast, Jamie's questions have little relevance to the topic under discussion. To more critically examine the issue, Jamie might have asked Sam, "What is the relationship between spending and student achievement?" or might have asked Angie, "What resources, other than money, do you think would improve education in California?"

2**. Finding relevant information**

Finding relevant information is the basis of critical decision making and problem solving in small groups. Lack of quantity and/or quality of information leads to faulty decision making in small groups. Asking relevant questions often leads to uncovering relevant information and challenging incomplete or poor quality information.

Not only do you need to find relevant information, but you also need to figure out how much information is enough.If Sam, Angie and Jamie were charged with assessing the state of K-12 education in California, they would need to conduct research and locate relevant information in order to determine (1) if problems exist and (2) how to address those problems.

3. **Interpreting and evaluating information**

Although we all share commonalties with others in how we interpret and evaluate information based on our cultural and societal backgrounds, each person brings to every situation a different "lens" for interpreting the world. Thus, our own experiences, biases, beliefs, and values will influence our interpretations.

For example, suppose each of the members of our small group attended very different high schools: Sam went to a private boarding school on the east coast, Angie attended school in an exclusive Bay Area neighborhood, and Jamie went to a large public high school in Los Angeles. These experiences alone will influence how they interpret the information the group gathers about the topic.

Group members must also evaluate information, including examining the source, the context in which the information is presented, and the date of the information. For example, Sam would need to evaluate his source for the statement that, "California ranks in the bottom third of spending per student among all U.S. states."

In evaluating information, you want to check the source of the information (is it credible? unbiased?), check the context in which the information was acquired (under what circumstances did the source get the information?), and check the context in which the information was presented (was the information presented to a particular audience? on a television talk show?).

4**. Drawing and evaluating inferences**

Inferences are conclusions we draw based on observations. In evaluating inferences, you want to examine the basis for the inference. Could other inferences be drawn? Is more information needed to draw an inference? Are you fully informed?

Often we are hasty in developing inferences, basing them on insufficient or faulty evidence. For example, let's assume that Sam earns a failing grade on the first test in his small group communication class. Knowing that Sam attended a private boarding school, Angie concludes that such schools do not prepare students for college. Although the premise is true, we don't know if the conclusion is true or false. Without a great deal more information, such as Sam's academic record, his motivations (Did he study for the exam?), how other students from similar schools perform in college, we cannot draw the conclusion that private boarding schools don't prepare their graduates for college.

Elements of Critical Thinking

The elements of critical thinking are closely related to the critical thinking skills.

1. Questioning skills

As I noted earlier, asking relevant questions is fundamental to critical thinking. Here are some questions the critical listener or reader can ask:

What conclusions does the author or speaker want me to draw?

What support or evidence does the author or speaker give for these conclusions?

How relevant, reliable, and adequate is the evidence presented?

What are the assumptions underlying the author's or speaker's arguments?

What are other alternatives to the conclusions drawn by the author or speaker?

2**. Observation skills**

As speakers and writers, we gather evidence to support our arguments. As listeners and readers, we compare the facts presented by speakers and writers to our own observations. Let's examine observations and inferences more closely.

Observation

1. Observation is contact with the world through the use of the senses.

2. Observation equips us with the material for thought, reflection and judgment.

3. Observers exposed to the same sense impressions do not necessarily see, hear, feel, taste or smell the same things.

4. Observation is influenced by experience, knowledge and emotion.

5. Attention plays an important part in observation.

6. People can be trained to be a more effective observers.

Inference

1. We draw inferences on the basis of observations, or on conclusions drawn from previous observations.

2. Inference is the interpretation of facts. (A statement of fact is an observation statement that can be verified by the use of the senses.)

3. Valid inferences are based on sufficient and relevant evidence.

4. Inferences express probability, not certainty.

5. Our training and background provide a basis for our inferences.

6. Inferences enable us to assess and evaluate conditions and make predictions.

3. Effective listening skills

Effective listening skills are essential for critical thinking and communication competence. Listening is necessary in asking relevant questions, making accurate observations, finding and evaluating information, developing inferences, and evaluating those inferences. Of course, listening and questioning skills go hand in hand. You need to listen to what others have to say before you can ask them questions. But what are we usually doing when we're "listening"? We're usually thinking of what we want to say! Then we miss out on important things others are talking about.

There are four types of listening: empathic, content, appreciative and critical. In empathic listening, we are concerned with the feelings and emotions the speaker is conveying. When we listen for content, we are gathering information, focusing on the speaker's main ideas. In appreciative listening, we listen for enjoyment, such as when we watch a comedy on television. Finally, critical listening requires that we evaluate the speaker's message by considering the source's credibility, assessing the validity of a speaker's arguments, evaluating the evidence used to support those arguments, recognizing reasoning fallacies, and identifying emotional appeals.

4. **Exploring written sources of information**

The basis of effective critical decision making is sufficient and relevant information. Written sources of information include reference books (Encyclopaedia Britannica), magazines and pamphlets, atlases and gazetteers (National Geographic Atlas of the World), academic journals (American Communication Journal), newspapers (the San José Mercury News), government publications (for which there are indexes, such as the American Statistical Index), dictionaries (English Oxford Dictionary) subject abstracts (Communication Abstracts) and indexes

(Social Science Index). Written sources of information are also available on the World Wide Web. See "The Internet Detective" http://sosig.ac.uk/desire/internet-detective.html for an excellent tutorial on evaluating WWW resources.

5. **Reading skills**

Effective reading skills are necessary for identifying and evaluating written sources of information. As with listening, there are different types of reading. Reading for content focuses on the content of the author's message. When reading for appreciation our goal is to enjoy the message, as with the comics in the newspaper. With empathic reading you are trying to identify the spirit of the message; the feelings and emotions underlying what the author has written. Finally, critical reading requires that we both understand and evaluate the message.

6. **Identifying underlying assumptions**

Underlying assumptions may be implicit (unstated) or explicit (stated). Most assumptions are implicit; that is, speakers and writers often don't say what their assumptions are.What assumptions can you identify in this excerpt from a San José Mercury News editorial (January 14, 1999)? What is taken-for-granted? What factual assumptions are readers expected to share? For example, what do readers have to know about the "tribulations of President Bill" to understand the argument put forth? The city council of Davis has stricken the name of the man whom first struck gold in California. . . .The council took a pickaxe to the memory of John Sutter, after a local historian outed him as an 'immoral man, a sexual predator, a rapist and an enslaver of native Californians.' A biographer of Sutter called the charges blasphemous, but never mind. As fast as you can say quicksilver, Sutter Place will become known as Shasta Way.

The tribulations of President Bill and the indiscretions of Reps. Henry Hyde, Dan Burton, and the soon-departed Robert Livingston show how few reputations can stand up under intense scrutiny. Viewing historical conduct through a modern lens is an even surer source of mischief. It will surely end in distortion and misinterpretation. . . .

There's nothing sacrosanct about a name of a monument. Hitler, Stalin and other tyrants certainly deserved to have theirs torn down. But it's another matter to run people like Sutter through a sieve of modern virtues in order to screen out any impurities. And what's true in Davis would be true in San Jose. Once the revisionists start swinging their blade, there'd be no stopping the guillotine.

7. **Identifying underlying values**

Values are deeply held beliefs about what is right and wrong, good and bad, important and not important, etc. We typically prioritize values in a hierarchical

fashion. That is, some values are more important to us that others. For example, I may think it is important that all dog owners go to obedience school with their dogs. I may also think that it is good for all members of a democratic society to take a course in critical thinking. Although I value both these things, the second one is higher on my value hierarchy than the first.

As I noted earlier, our values influence the observations we make and the inferences we draw based on those observations. Values also influence a speaker's or writer's choice of evidence presented and arguments made. For example, why did the Mercury News decide to run the editorial above? What values are implicit in the message?

What do critical thinking proponents generally have in mind when they talk about critical thinking? What skills do individuals accomplish in to be critical thinkers? How does this critical thinking accomplishment manifest itself? What are the components or states of such accomplishment? Viewed as an accomplishment means that not just any thinking however aimed at deciding what to believe or do can count as critical thinking. This suggests that thinking about what to believe or do must meet appropriate standards if it is to be regarded as critical thinking (Bailin et al., 1999). Thus, it seems relevant here to approach these questions through considering what types of thinking and standards per se educators typically would/would not regard as critical thinking.As a concept, critical thinking has been elaborated in several ways. A major influence in critical thinking traces back to the work of the American educational philosopher John Dewey. To John Dewey, schools are laboratories of human development in arranged environments. Dewey held that the goal of education could only be development (or what he

called "growth"); Education "means supplying the conditions which foster growth" (Dewey, 1916, as cited in Kuhn, 1999), not toward a predetermined end but rather in the direction of "an increase in the range and complexity of situations to which the child is capable of applying reasoned inquiry" (Cahan, 1994, as cited in Kuhn, 1999). In fact, the educator's task is seen as a process of connecting with the young child's interests and purposes, but that one could not stop there. Dewey said, "The real problem of intellectual education is the transformation of more or less casual curiosity and sporadic suggestion into attitudes of alert, cautious, and thorough inquiry" (Dewey, 1933, as cited in Kuhn, 1999).Reviewing the many definitions of critical thinking, Richard Paul (1990) delineated it as:

Critical thinking is disciplined, self-directed thinking which exemplifies the perfections of thinking appropriate to a particular mode or domain of thought. It comes in two forms. If disciplined to serve the interests of a particular individual or

group, to the exclusion of other relevant persons and groups, it is sophistic or weak sense critical thinking.

If disciplined to take into account the interests of diverse persons or groups, it is fair-minded or strong sense critical thinking.Taking a closer look at the above-mentioned definition, one would find out that the definition highlights three crucial dimensions of critical thought: 1) the perfections of thought; 2) the elements of thought; and, 3) the domains of thought.

According to Paul (1990), in thinking critically we use our command of the elements of thought to adjust our thinking to the logical demands of a type or mode of thought. As we come to habitually think critically in the strong sense we develop special traits of mind: intellectual humility, intellectual courage, intellectual perseverance, intellectual integrity, and confidence in reason. A sophistic or weak sense critical thinker develops these traits only narrowly in accordance with egocentric and sociocentric commitments. By perfections of thought, Paul refers to features such as clarity, accuracy, adequacy, specificity, consistency, precision, and fairness.

Paul is critical of the definitions of other educational philosophers, for instance, Ennis' (1987; Norris & Ennis, 1989, as cited in Paul, 1990) definition of critical thinking as "reasonable and reflective thinking concerned with what to do or believe" or Siegel's (1988, as cited in Paul, 1990) definition as thinking "appropriately moved by reasons", since Paul believes that these definitions rely on concepts such as reasonableness or reflectivity that are not themselves well defined.The second position put forward here belongs to Kuhn (1999) who holds that developing cognitive competencies most relevant to critical thinking are metacognitive – rather than cognitive – competencies. Metacognitive skills are

higher-order meta-knowing skills which help individuals to know about their own and that of others' knowing. As such, they are in contrast to lower-order cognitive skills which enable individuals to know about the world since "thinking about one's thought – in contrast to simply engaging in it – opens up a whole new plane of cognitive operations that do not exist at a simple first-order level of cognition" (Kuhn, 1999).Kuhn's meta-knowing entails three broad categories: metastrategic, metacognitive and epistemological. Briefly elaborating, the distinction between metastrategic and metacognitive knowing is the same as the widely-employed dichotomy in cognitive psychology between procedural knowing (knowing how) and declarative knowing (knowing that): Procedural or strategic knowing entails the exercise of strategies to achieve certain goals, thus invoking a metastrategic form of knowing which selects and monitors the strategies from the repertoire of

potentially vailable strategies; Metacognitive knowing operates on the basis of declarative knowledge. Simply put: What do I know, and how do I know it? Finally, epistemological knowing is related to an individual's broader understanding of knowledge and knowing: "It has both a general, philosophical aspect – How does anyone know? – and a personal aspect – What do I know about my own knowing?" (Kuhn, 1999).

The development of metacognitive understanding is essential to critical thinking because "critical thinking by definition involves reflecting on what is known and how that knowledge is justified" (Kuhn, 1999). Therefore, JOURNAL OF LANGUAGE TEACHING AND RESEARCH individuals with well-developed metacognitive skills take control of their own beliefs so that they can exercise conscious control over their evolution in the face of external influences. In other words, they both know what they think and can justify why.

Metastrategic skill is also essential to critical thinking since this skill help individuals apply consistent standards of evaluation across time and situations and do not fall for one favored assertion as more probable than its alternatives because of its favored status; in other words, these individuals resist the temptation of local interpretation" (Klahr, Fay, & Dunbar, 1993, as cited in Kuhn, 1999) of an isolated piece of evidence as supportive since context to which it belongs is absent in such an interpretation.

Last but not least, the development of epistemological understanding plays the pivotal role among the constituents of critical thinking. Epistemologically speaking, there are three stances: the absolutists who conceive that knowledge is entirely objective, certain, and simply accumulates, unconnected to the human minds that do this knowing; the multiplists who conceive that knowledge is entirely subjective, subject only to the tastes and wishes of the knower; and finally the evaluative epistemology, in which all opinions are not equal and knowing is understood as a process that entails judgment, evaluation, and argument (Kuhn, 1991, as cited in Kuhn, 1999).

To evaluative epistemologists some views can be more right than others. They weigh alternative claims in a process of reasoned debate as the path to informed opinion, and they understand that arguments can be evaluated and compared

based on their merit (Kuhn, 1991, as cited in Kuhn, 1999); as a result, to absolutists and multiplists critical thinking skills are taxed to a lesser extent than those of the evaluative epistemologists.Kuhn suggests that developing competence in all three categories of meta-knowing entails attention as a major component of

cognitive development. As a result of such development, thought becomes increasingly aware of itself and under the individual's control. If one is to "know how one knows", one should take charge of one's own knowing, of deciding what to believe and why and of updating and revising those beliefs as one regards much needed. To get to this high level of awareness and control of their own thinking is arguably the most important way in which people both individually and collectively take control of their lives (Kuhn, 1999).

Now one question arises: Is critical thinking limited to the cognitive aspect of reasoning? Or does the affective side of individuals have a say too? Mc Peck (1981, as cited in Garrison, 1991) conceives of critical thinking as involvingboth a propensity and skill – "one must develop the disposition to use those skills", hence, teaching someone to be a critical thinker entails both the cognitive and the affective domains of reasoning. Furthermore, Brookfield (1987, as cited in Simpson & Courtney, 2002) proposes that critical thinking entails more than cognitive skills, such as logical reasoning or scrutinizing arguments. Brookfield agrees that emotions are paramount to the critical thinking process, because as one attempts to think critically and assist others to do so, one cannot help but become conscious of the importance of one's emotions to this activity (Simpson & Courtney, 2002).As such, critical thinking comprises two dimensions: (a) cognitive skills and (b) affective dispositions. Having the requisite cognitive critical thinking skills is essential to being a good critical thinker, but it is not enough. The concept of critical thinking has also to do with a set of personal attitudes or dispositions that can be used to describe an individual who is inclined to use critical thinking. Therefore, in thinking critically, not only does a person attempt to determine judiciously what to do or what to believe, but a person is also able to apply the core critical thinking skills to one another. In other words, in thinking critically, one may analyze one's own inferences, explain one's own interpretation or evaluate one's own analysis (Simpson & Courtney, 2002).

A word of caution needs to be mentioned here. Different scholars have their own varying definitions for critical thinking with certain unique elements such as knowledge, active argumentation, reasoning, initiative, intuition, application, analyzing complex meanings, identification of problems, seeking alternatives and making related value judgments. However, critical thinking is substantially larger than the sum of its parts, because it is a developmental process – an orientation of mind –, rather a static product or method to be learned, that promotes attitudes to continuously explore, redefine or understand (Simpson & Courtney, 2002).

III. **CRITICAL THINKER**

Prior to answering this question, let's take a look at who an uncritical thinker is. The uncritical thinker is often "unclear, imprecise, vague, illogical, unreflective, superficial, inconsistent, inaccurate, or trivial" (Paul, 1990). If one is going to move away from being an uncritical thinker and become a critical thinker, s/he requires some command of the elements of thought. These elements include an understanding of and an ability to formulate, analyze, and assess:

1. The problem or question at issue;

2. The purpose or goal of the thinking;

3. The frame of reference or points of view involved;

4. Assumptions made;

5. Central concepts and ideas involved;

6. Principles or theories used;

7. Evidence, data, or reasons advanced;

8. Interpretations and claims made;

9. Inferences, reasoning, and lines of formulated thought; and JOURNAL OF LANGUAGE TEACHING AND RESEARCH

10. Implications and consequences which follow. (Paul, 1990) Brookfield (1987, as cited in Simpson & Courtney, 2002) suggests that critical thinkers are typically individuals who are involved in productive and positive activity, in that they are actively involved with life and perceive themselves as creative and being re-creative in aspects of their personal, workplace and political lives. Furthermore, critical thinkers view their thinking as a process, rather than an outcome: A critical thinker is continually questioning the veracity of assumptions since critical thinking is not a static phenomenon. As King (1995) believes, a critical thinker has an "inquiring mind." Good (critical) thinkers are good questioners. Whatever they see, hear, read, or experience, they are constantly analyzing it, puzzling over its significance, searching for explanations, and speculating about relations

between that experience and what they already know (king, 1995).

IV. **INTELLECTUAL RESOURCES TO BE A CRITICAL THINKER**

The best way to characterize who a real critical thinker might be is in terms of the required intellectual resources.

These are as follows:

(1) Background knowledge

The quality of thinking individuals are able to do about a particular problem or question is determined by what they already know about it and about the context in which it must be resolved. Moreover, critical thinking always takes place in the context of already existing concepts, beliefs, values, and ways of acting. This context plays a crucial role in specifying what will count as reasonable application of standards and principles of good thinking. Hence, the depth of this background knowledge is a significant determinant of the degree to which they are capable of thinking critically in that area (Bailin et al., 1999).

(2) **Operational knowledge of the standards of good thinking**

As it was mentioned earlier, there need to be some standards in carrying out thinking tasks of critical thinking; otherwise, it would be haphazard. Therefore, the operational level of knowledge of the standards that govern critical deliberation and judgment is essential for anyone who would embark on thinking critically. Two kinds of standards seem relevant here: (1) standards that are relevant to judging intellectual products (e.g. arguments, theories, legal judgments, work of art), and (2) principles that are relevant to guiding practices of deliberation or inquiry (Bailin et al., 1999). In other words, one should:

 consider as many plausible alternative courses of action as is reasonable given the context of the decision, its significance, and one's prior reasoning about similar decisions;

 attempt to discover and take into account as much relevant information about the nature and consequences of each alternative as is reasonable given the context of the decision; and

 make a reasonable attempt to acquire an awareness of the point of view and presuppositions underlying one's thinking, and the possible biases to which this may give rise.(Coombs, 1997, as cited in Bailin et al., 1999)

(3) Heuristics

To effectively deal with thinking tasks, the critical thinker requires a rich repertoire of heuristic devices such as problem-solving procedure, Socratic Questioning and Dialogical Discussion.

(4) **Habits of mind**

To be a critical thinker, not only should one have the intellectual resources necessary for critical thinking, but one also must have certain commitments, attitudes or habits of mind that dispose him/her to use these resources to fulfill relevant standards and principles of good thinking (Bailin et al., 1999). Some attitudes or commitments that have been characterized by Paul (1990) and Bailin et al. (1999) include respect for reasons and truth, open-mindedness, fairmindedness, independent-mindedness, and an intellectual work-ethic.

V. CRITICAL THINKING AND LEARNER AUTONOMY

Critical thinking has also something to do with the concept of learner autonomy. Autonomy lies at the very center of Enlightenment thinking began in the (European) Enlightenment period (Schmenk, 2005). Most notably, it was the philosopher Kant (1933, as cited in Schmenk, 2005) who developed the concept of personal autonomy to characterize the human potential to make rational decisions individually while respecting other persons' autonomy. Autonomy does not, therefore, imply freedom of action on any given occasion, but rather a more general idea that the individual should "freely direct the course of his or her own life" (Young 1986, as cited in Benson, 2008). As such, the concept of autonomy defines the senses in which a liberal society should value and protect individual freedom (Benson, 2008;

Trebbi, 2008). The emergence of the Enlightenment ideals of autonomy and independence, and its subsequent application in education, recognizes the right of individuals to use their own capacity to make reasonable decisions of and on their own to think and act independently, be able to resist domination and move toward emancipation (Schmenk, 2005, Trebbi, 2008). Critical thinking with its libratory promise paves the way to achieve the ideal of emancipation as Brookfield (1988, as cited in Garrison, 1991) suggests emancipatory learning "places critical thinking squarely in the context of adult life".

VI. CRITICAL THINKING/THINKER AND INSTRUCTIONAL PROCESSJOURNAL OF LANGUAGE TEACHING AND RESEARCH

To enhance critical thinking, we should not simply make our students master information, but we should also help them develop an unceasing process of

thinking about that information. If we teach students this way, they will realize that their field of study is not merely a repertoire of knowledge to be memorized. Instead, they come to realize that each discipline is a dynamic, creative thinking process. If students learn "how to think", they will know new ways of perceiving the world around themselves.

Now one question arises: Should critical thinking be addressed as a distinct subject or it may be regarded as an indispensible part of specific disciplines? Glaser (1984, as cited in Garrison, 1991) holds that "as individuals acquire knowledge, they also should be empowered to think and reason." In short, as McPeck (1981, as cited in Garrison, 1991) believes "there is no universal skill properly to be called critical thinking"; therefore, critical thinking skills are not generalizable and are specific to the context in which the process is exercised. Accordingly, if we take the idea put forward by McPeck, we can teach critical thinking in much the same way that other skills are teachable, namely, through drills, exercises or problem solving in an area.Considering that critical thinking skills are best developed contextually within certain disciplines, the most challenging responsibility lies with the teacher. Teacher's role is to both encourage and develop critical thinking skills.

Learners may find resources and even organize their own learning processes, but breaking out of deeply-rooted longheld beliefs, mindsets, or perspectives about the way things are, entails an unusual ability and discipline (Garrison, 1991). Hence teacher plays the role of a facilitator in that s/he encourages the learner to challenge ideas, beliefs and norms through collaborative dialogue, to accept responsibility for their own leaning, to examine ideas and issues and to make worthy judgments. In fact, all this process of contextual development of critical thinking takes place through what Brookfield (1987, as cited in Garrison, 1991) calls a "learning conversation" in that both teacher and learner are involved in a reciprocal interactive challenge for which they need to take risk, be spontaneous and resolve their disagreements.

The "learning conversation" phrase mentioned earlier places emphasis on the importance and necessity of dialogic discussion between teacher and student. If we recall what King (1995) conceives of a critical thinker as an inquiring mind who asks thought-provoking questions, then as Glaser (1984, as cited in Garrison, 1991) states "interactive inquiry methods are powerful tools for teaching thinking in the context of subject matter" since they help teachers develop a critical spirit in students. However, as Siegel (1988, as cited in Garrison, 1991) believes, helping students develop their own critical spirit happens if their teachers adopt a critical manner in the first place. In other words, teachers should be willing to subject all

his/her own beliefs and practices to scrutiny and critical analysis, and so to allow students the genuine opportunities to understand the role reasons play in the justification of thought and action. In short, the most important role of the teacher is to model critical thinking. This critical spirit does not realize provided that teachers may themselves freely participate in critical discussion in the first place. As such, critical thinking is challenging to teach and model. It puts greater demands on faculty and students than traditional education.

In fact, tackling stressful challenging and demanding world in which individuals, and L2 learners in particular,live is required to obtain academic and social success. The results of their study revealed that there is a significant relationship between critical thinking ability, resilience, and reading comprehension suggesting that good internal resources such as high levels of critical thinking ability and resilience can affect academic performance, i.e. competence in reading, and may be considered as protective factors among L2 readers. Their findings also suggest that the presence of such a strong relationship may be due to the fact that critical thinking and reading are both cognitive abilities which have some identifiable cognitive skills in common.

Still in another research, Fahim and Sa'eepour (2011) conducted a study intending to investigate the impact of teaching critical thinking skills on reading comprehension ability, as well as the effect of applying debate on critical thinking of EFL learners. Their findings showed that incorporating critical thinking skills in language classroom is vital to improve language teaching and learning. They concluded that every effort students made including being involved in reading materials, searching different sources, sharing opinions with others, cooperating in the classroom, and taking part in the argumentation for debate was a considerable contribution to triggering their thinking skills, in other words, activating their cognitive ability which led to the improvement of their reading comprehension. In fact, their results are in line with the studies confirming the positive relationship between critical thinking ability and language proficiency indicating that teaching critical thinking skills in EFL context can improve language learning.

Furthermore, Nikoopour et al. (2011) carried out a study investigating the relationship between critical thinking and the use of direct and indirect language learning strategies by Iranian learners. Results from their study showed that critical thinkers did show a significant relationship with the overall direct language learning strategies on the one hand.

The critical thinkers, on the other hand, showed a significant relationship with cognitive strategy. In other words, critical thinkers preferred the cognitive

language learning strategies. However, no significant relationship was found between critical thinking and other direct strategies that are compensation and memory strategies. As far as the relationship between critical thinking and indirect language learning strategies is concerned, the findings of the study indicate that critical thinkers preferred the metacognitive and social language learning trategies. However, no significant relationship was found between critical thinking and the other class of indirect strategies; that is, affective language learning strategies.

In another research study, Fahim & Azarnioushi (2011) tried to see whether there is any relationship between the critical thinking ability of language learners and their performances using rule driven/ discovery learning approaches to teaching grammar. The results of the results of their study showed that there was a positive correlation between the critical thinking ability of the learners and their grammar test scores in the inductive period. However, as for the deductive teaching method, no special relationship could be found between the critical thinking ability of the learners and their grammar test scores. In other words, the results of the study indicated that learners with a higher critical thinking ability prefer inductive methods of teaching grammar while in deductive methods of teaching grammar, there seems to be no difference between learners with high or low critical thinking abilities.

The findings of a study conducted by Khorasani and Farimani (2010) suggest that the Iranian educational setting is more or less in line with the old metaphor of "teacher as both a full container and a funnel, and learner as an empty container", and does not support educational practitioners in their educational endeavors towards training critical thinkers and autonomous learners. Furthermore, the educational books currently used in the Iranian schools do not support critical thinking either; therefore, critical thinking is not in large part regarded as an educational goal. In another study Jamshidian and Farahani (2010) showed that there is no significant relationship between critical thinking and either gender or the age of the learners. Despite this, it is still a question why in this single setting we have different learners in term of being critical or non-critical thinkers, and why do we still have critical thinkers in Iran in the first place?

According to Khorasani and Farimani (2010), the reason we have both critical thinkers and non-critical thinkers in the Iranian setting is that, and in spite of books playing as the non-critical-thinking-inducing variable, the whole educational agenda is more of a teacher-dependent entity. Things in the classroom are defined and refined by teachers.

The majority of teachers are themselves brought up by this old view of education and view education mainly as filling their students' memory banks with bits of information, so they cannot take their students any further than what they themselves are. But there are teachers who do not belong to the mainstream view of education and do not consider themselves as the only voice in the classroom (Pishghadam, 2008). Khorasani and Farimani (2010) showed that teachers, who come from democratic families, favor divergent thinking, organize and lead both political, social and scientific discussions, and try to have as many voices as possible in the classrooms instead of them being the only voice, are able to sow seeds of critical thinking in their students. This latter group of teachers do their best prepare the classroom atmosphere in such a way that students can (learn to) express their own ideas. They make the same books and educational materials but with a different attitude. As such, critical thinkers in Iran are not formally and officially trained to be critical thinkers, and critical thinking is in fact a style whose status varies from person to person depending on the training learners received from various teachers.JOURNAL OF LANGUAGE TEACHING AND RESEARCH

The Relationship between Critical Thinking and L2 Grammatical and Lexical Knowledge

The present study was conducted to investigate the relationship between critical thinking and L2 grammatical knowledge on the one hand, and the relationship between critical thinking and lexical knowledge on the other. To fulfill this objective, a 60-item vocabulary and grammar subtest of the TOEFL test and an 80–item Watson Glaser Critical Thinking questionnaire were distributed among 150 male and female Iranians studying English as a foreign language at Azad University in Takestan, Iran. Data were analyzed using Pearson correlation procedure. The result of data analysis indicated that the correlation between vocabulary and critical thinking was not statistically significant. The correlation between grammar and critical thinking was not statistically significant either, but there was a strong trend towards a positive relationship.

1. Introduction to critical thinking

Critical thinking has been one of the hottest issues since the times of ancient Greece. There are various views of critical thinking. As Mason (2007) rightly claims, many philosophers have developed theories of critical thinking.

Some, like Ennis (1996), argue that critical thinking comprises particular skills, such as being able to assess reasons appropriately, or to identify false arguments.

Others, like Siegel (1990), claim that critical thinking is a critical attitude or disposition such as the tendency to ask investigating questions, or critical direction. According to Astleitner (2007), critical thinking is a higher-order thinking skill which includes evaluating arguments, and is a purposeful, self-regulatory judgment which ends in interpretation, analysis, evaluation, and inference. Paul and Elder

(2007) maintain that critical thinking is the disciplined art of verifying that can be used as the best thinking a person is able to in any system of conditions. Dewey (2001) views critical thinking as a method of intelligent learning that employs and rewards mind.

Various studies, to some of which reference will be made shortly, have nvestigated different aspects of critical thinking and its implications in language learning. The purpose of the present study is to further explore the implications of critical thinking in language pedagogy by focusing on the relationship between critical thinking and L2 lexical and grammatical knowledge. It aims to answer the following research questions:

1) Is there any significant relationship between critical thinking and L2 grammatical knowledge?

2) Is there any significant relationship between critical thinking and L2 lexical knowledge?

2. Literature Review

Over the last few decades, many definitions of critical thinking have been offered, but there is no consensus on its definition. Kadir (2007) maintains that this lack of unity in defining critical thinking is related to different perspectives of philosophy and psychology. Actually, philosophers focus on the notion of critical thinking, while psychologists focus on the notion of critical thinking skills.
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Published by Sciedu Press 105 ISSN 1927-6028 E-ISSN 1927-6036Noddlings (2006) defines critical thinking as the use of reason in a diligent and skillful way on personal decision making, conduct, and belief, which are matters of moral or social importance, whereas Cottrell (2005) views critical thinking as a cognitive activity which is integrated with using the mind.

Paul, Elder, & Bartell (1997) point out that the rational roots of critical thinking are ancient and go back to the teaching practice and insight of Socrates 2500 years ago. Socrates was the one who found a method of investigating and questioning that people could not logically give grounds for their assertions to knowledge.

Plato, Aristotle, and the Greek skeptics followed Socrates' practice. They believed that things are often different from what they seem to be, and only the trained mind is able to see the reality of things. So, the need to think systematically emerged from this ancient Greek tradition. During the Renaissance (15-16th centuries), a large number of scholars in Europe started to think critically about different issues such as religion, art, society, human nature, and so on, by the belief that most of the domains of human life needed search, analysis, and critique. In the 20 th century, the strong need for critical thinking in life and education was recognized. At present, the importance of critical thinking and its power have become ever more evident.

King (1995) believes that the distinctive feature of a critical thinker is having an investigative mind; good critical thinkers are actually those who ask good questions. Paul et al. (1997) maintain that self-assessment is a crucial factor to critical thinking, and only those students who learn to assess their own thinking are critical thinkers. A critical thinker is able to reflect, explore, and analyze, and can choose to think in these advanced, complicated ways. To be a critical thinker is in fact announcing our reason and intellect with our emotions, attitudes, and dispositions. In addition, Paul and Elder (2002) hold that developing critical thinking is a progressive process which requires hard work , and becoming an excellent thinker is not possible by just taking a beginning course. So, the crucial

characteristics of a critical thinker demand a long-lasting period of development.

The relationship between critical thinking and learning is fairly well-documented. Paul and Elder (2005) assert that there is a key insight that makes a connection between critical thinking and learning; human thinking is the only capacity which is used to learn. We can learn well when we think well, and when we think poorly during learning, we learn poorly. Similarly, Brown and Freeman (2000) state that learning is a collaboration and a means of connection which is necessary for critical thinking. Critical thinking demands careful reading and listening, and it

also endangers the peace of assumed pleasantness that manages much of people's interaction with one another. Likewise, Duron, Limbach, and Waugh (2006) maintain that active learning can make the course more pleasant for both teachers and students, and it can encourage students to think critically (p.160). Mok (2010) claims that critical thinking consists of two important aspects. One aspect is about space of learning and the other is about classroom teaching. In terms of space of learning, it is important to organize learning in such a way that makes students actively engaged in learning. To this end, the critical thinking process should be provided for

students to distinguish the critical features of different critical attitudes. In terms of classroom teaching, the effective use of teacher questions, and participation of students in authentic discussions can engage students in meaningful critical thinking processes.

As to the importance of critical thinking, Levine (2002) avows that experience may be a great teacher, but it cannot teach us much but just some repeating experiences and happenings. We learn only when we use our creativity, and it happens when we think about our experiences more than only experiencing them. In other words, thinking is very important and has impact on every aspect of our life. In much the same vein, Weiler (2004) acknowledges that critical thinking is crucial to the learning process, cognitive development, and effective information seeking.

Moreover, Hale (2008) states that critical thinking can penetrate every aspect of human life if it is substantively conceived and engaged. He emphasizes the importance of critical thinking in education and claims that critical thinking and education are inter-related and inseparable. Atkinson (1997) provides four independent reasons for the importance of teaching critical thinking and adopting its pedagogies in TESOL educators' classrooms:

(a) Critical thinking may be more on the order of a non-overt social practice than a well-defined and teachable pedagogical set of behaviors;

(b) Critical thinking can be, and has been, criticized for its exclusive and reductive character;

(c) Teaching thinking to nonnative speakers may be fraught with cultural problems; and,

(d) Once taught, thinking skills do not appear to transfer effectively beyond their narrow context of instruction (p.71).

Mimbs (2005) and Halvorsen (2005) also assert that today critical thinking is an important skill in life, and that teachers need to integrate some of its key elements into their classrooms. This view is shared by others like Davidson (1998); Waters (2006); and Liaw (2007). Furthermore, Paul and Elder (2005) give four reasons why critical thinking is becoming more and more important: "accelerating change, intensifying complexity, escalating interdependence, and increasing danger" (p.12).

A number of factors may influence critical thinking. Moon (2008) focuses on the role of emotion, language, and curiosity in critical thinking. She asserts that

emotion may have an effect on the process of critical thinking. Emotion can affect the way in which we work with the materials of learning. She also believes that curiosity has an important role in critical thinking. Actually, curious people do not accept ideas easily and try to ask more and more questions and to think critically about issues. Another factor is gender. Research done by King, Wood, and Mines (1990) seems to indicate that the rate of development of critical thinking may be different for men and woman and that differential educational experiences may motivate men to become good critical thinkers.

Still another factor is level of education. Keeley, Browne, and Kreutzer (1982) investigated the impact of college on critical thinking ability. In general, the results of their study revealed that seniors did better than freshmen in critical thinking and that college can stimulate and provoke students' critical thinking ability. Ku and Ho (2010) refer to the use of meta-cognitive strategies as another important factor to enhance critical thinking. They claim that meta-cognitive strategies invoke behaviors that make students able to control their thinking process. These meta-cognitive strategies can be divided into three categories of planning, monitoring, and evaluating. Magno (2010) also claims that meta-cognitive skills have positive influence on critical thinking skills. A number of studies have empirically investigated the relationship between critical thinking and various areas of language. Mirzai (2008) attempted to find the relationship between critical thinking and lexical inferencing of Iranian EFL learners. To this end, 130 male and female students of a language institute were given a TOEFL and Honey critical thinking questionnaire including 30 items. The results of the study revealed that those students with high critical thinking ability outperformed the ones with low critical thinking ability in lexical inferencing. Kamali and Fahim (2011) investigated the relationship between critical thinking ability, resilience, and reading comprehension of texts containing unknown vocabulary items. 63 intermediate EFL learners were given Honey(2004) appraisal test, Connor and Davidson's (2003) Resilience Scale, a vocabulary checklist, and a validated battery of four reading tests. Results showed that (a) the levels of critical thinking had a significant effect on the scores of the participants on the resilience scale, (b) the levels of critical thinking had significant effect on the participants' comprehension of texts with unfamiliar vocabulary items, and (c) the levels of resilience had significant effect on the participants' comprehension of texts with unfamiliar vocabulary items.

Myers and Dyer (2006) investigated the effect of students' learning style on critical thinking skill. To this end, 135 students taking the agriculture and life sciences leadership courses at the University of Florida were chosen. The Gregorc Style

Delineator was administered to assess the preferred learning style of each student. To determine the critical thinking skills of each student, the Cornell Critical Thinking test was administered. No differences were found between the critical thinking skills of male and female students. However, students with deeply embedded abstract sequential learning style preferences showed significantly higher critical thinking scores. No differences in critical thinking ability existed between students of other learning styles.

Koupaee Dar, Rahimi, and Shams (2010) investigated the importance of raising students' critical thinking through explicit teaching of some techniques of critical discourse analysis (CDA). Their study attempted to find changes in BA students' abilities in discovering the hidden layers of meaning implied in texts. There was also an attempt to reveal the possible changes both in students' views toward learning English language and in their critical language awareness (CLA) before and after teaching critical reading through CDA techniques. 60 BA-level English students at intermediate and advanced proficiency levels were chosen. Three pairs of online news articles were selected from different sources, and students were supposed to analyze them. They were also given a six-item questionnaire to elicit students' feedback after the treatment. The results showed that critical language awareness of about 90% of students and their motivation in learning English increased after becoming familiar with the field of CDA.

Birjandi and Bagherkazemi (2010) investigated the relationship between EFL teachers' critical thinking ability and their student-evaluated professional success. To this end, the critical thinking ability of 67 Iranian EFL teachers was measured through the Persian version of Watson-Glaser critical thinking appraisal. The teachers' professional success was also gauged through the successful Iranian EFL Teacher Questionnaire (SIETQ). The results of correlation and regression analyses showed a statistically significant relationship between the two sets of easuresLun, Fischer, and Word (2010) investigated the cultural differences in critical thinking between Asian and European students. The results revealed that European students performed better on two objective measures of critical thinking skills than Asian students. Sheikhi (2009) investigated the relationship between autonomy, critical thinking, and reading comprehension of Iranian EFL learners. To this end, a language proficiency test (TOEFL), a questionnaire of autonomy, a questionnaire of critical thinking (Watson-Glaser Critical Thinking Appraisal) and two reading tests were used. The result of the analyses revealed that autonomy is significantly related to critical thinking, and that there is a correlation between critical thinking and reading comprehension. The findings also showed a strong relationship between autonomy and reading comprehension Boloori (2010) conducted a study

to evaluate the predictive power of critical thinking of Iranian English language learners on their performance on inferential reading comprehension tests. She found that there was a significant correlation between critical thinking and nferential reading comprehension.

Magno (2010) investigated the role of metacognitive skills in developing critical thinking. To this end, the Watson-Glaser Critical Thinking Appraisal and the Metacognitive Assessment Inventory were administered to 240 freshmen college students who were taking their first year in college in Philippines. In order to determine the effect of metacognition on critical thinking, the Structural Equation Modeling (SEM) was used. The Pearson Product Moment correlation procedure revealed that the factors of metacognition are significantly related to the factors of critical thinking.

3**. Method**

3.**1 Participants**

A sample of 150 pre-intermediate level EFL students (male and female) majoring in different fields other than English language at Azad University in Takestan participated in this study. The initial number of participants was then reduced to 133 after the administration of TOEFL test to homogenize them. The participants, who ranged in age from 18 to 32, were taking English as a general course.

3.**2 Instruments**

To conduct the present study, two instruments were employed: a TOEFL test and a critical thinking questionnaire (Watson Glaser Critical thinking questionnaire)

The TOEFL test was employed to determine the participants' level of English language proficiency as well as their vocabulary and grammar knowledge. It was a three-part, 100-item multiple-choice test containing 40 grammar items, 30 vocabulary items requiring selection of a synonym or completion of a sentence , and reading passages followed by 30 comprehension questions.

The Watson Glaser Critical Thinking Appraisal was used to assess the participants' critical thinking. The CTA is designed to measure some of the important abilities involved in critical thinking. The questionnaire is a reliable and standard one. Since it was designed for native speakers, to avoid any misunderstanding, the translated version of this test, prepared and validated by Yari (2004, cited in Sheikhi, 2009), was used.

3.3 Procedures

Initially, to homogenize the participants, a multiple-choice 100-item TOEFL test was administered to 150 participants. The analysis of the scores indicated that 17 of the participants had to be excluded from the study due to a different proficiency level. The other ones were selected as the participants of the study. The scores of the participants on the vocabulary and grammar subtests of the same TOEFL test were used to measure the vocabulary and grammatical knowledge of the participants. Each subtest contained 30 items in multiple-choice format. Then, the

Watson Glaser critical thinking questionnaire, which consisted of 80 items, was administered. To avoid any misunderstanding, its translated version was used. Having administered the tests and the questionnaire and gathered the data, to answer the research questions, two separate Pearson Correlations were run.

4. Results

4.1 Investigation of the first research question

The first question attempted to find the relationship between critical thinking and L2 grammatical knowledge. To this end, a Pearson correlation was used. Table 1 summarizes the descriptive statistics and test results for the criticathinking scores as well as the grammar scores of the participants. As Table 1 shows, the correlation coefficient index (0.169) is not statistically significant, but there is a strong trend

towards a positive relationship.

4.2 Investigation of the second research question

The second question investigated the relationship between critical thinking and L2 lexical knowledge. To this end, another Pearson correlation was used. Table 2 contains the result.

Table 2 shows that the correlation coefficient of 0.141 is not statistically significant. This means that there is no significant correlation between critical thinking and L2 lexical knowledge.

4.3 Discussion

The findings of the present study contradict those of a number of previous studies. Kamali and Fahim (2011) found that critical thinking had significant effect on the participants' comprehension of text with learning unfamiliar vocabulary items. Mirzai (2008) also, reported that there is a significant relationship between critical thinking and lexical inferencing. This is not in accordance with the result of the

present study. Moreover, Khamesian (2009) found a relationship between critical thinking skills and learners' grammar, while the result of this study revealed that the correlation between critical thinking and L2 grammatical knowledge was not statistically significant, although there was a strong positive trend.

The differences between the findings of the present study and those of other studies can be accounted for on several grounds. One possible reason for such differences may be partially attributable to the cultural differences leading to different abilities of the participants. According to the research done by Lun et al. (2010), Asian students often show more difficulties in engaging in critical thinking. Volet (1999 cited in Lun et al, ibid) maintains that different educational contexts have their own unique culture of learning. Alagozlu (2007) claims that Turkish EFL students are not strong enough to express their thoughts, especially in a foreign language, and they should be supported regarding critical thinking skills. This problem is rooted in the system of traditional education, which provides ready-made information requiring no questions. The Iranian context falls into the same category. At the beginning levels of education, students might be involved in critical thinking, but in higher levels, they are not encouraged to think critically. They do not have any courses regarding critical thinking and improving it at schools and universities. This is, in turn, due to the wider socio-cultural context in which obedience is encouraged and any inclinations toward critical thinking are suppressed. It is undeniable that culture of education and culture of society are interrelated. In societies such as Iran, people are not allowed to critique and express their opinions freely. This culture of authoritarianism is transferred to schools and universities where there is no learner-autonomy, and classes are teacher-centered.

Regarding educational context, it can be said that context of learning may affect critical thinking ability. Contrary to ESL learners, EFL learners may not be able to express their ideas easily because of their limited English language knowledge. The infirmity of educational program may also prevent the development of critical thinking by providing ready-made materials and course books which do not provoke the sense of probing in students.

Considering practical constraints, it can be said that the large number of students in classes is a problem by itself. They do not have enough time to share their ideas or ask any questions in class, so teachers have to cover the syllabus in a limited time without giving students any chance to talk. Their only concern is to cover the book, and they prefer to teach and inform their students instead of asking them to evaluate materials.

Another possible reason could be differences in the proficiency level of the participants. In this study, the participants were lower–intermediate general English students, while in studies such as Sheikhi (2009), Koupaee Dar et al. (2010), Boloori (2010) and Kamali and Fahim (2011), the participants were at intermediate and advanced proficiency levels. As it was shown by Sheikhi (2009), there is a significant direct relationship between critical thinking and autonomy. In the beginning levels, students are not familiar with language strategies, so they heavily rely on their teachers and avoid applying their own thought. But in advanced levels, students enjoy a higher level of background knowledge, learning strategies, and autonomy. That is why they are less dependent on the teacher, and less afraid of expressing themselves. Keeley et al. (1982) also, revealed that seniors Ku, K. Y. L, & Ho, I. T. (2010). Metacognitive strategies that enhance critical thinking. Metacognition and LearningLevine, P. D. (2002). Thinking about doing: on learning from experience and the flight from thinking. Human relations,

Critical Thinking in Teaching and Learning Language

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The crucial role of language in man's life in this era of globalization, multiculturalism, knowledge explosion, or modern technology prodded several professionals, academicians, and graduate-school students to conduct research studies on language teaching and learning, specifically, on language theories and pedagogical practices related to communicative approach and functional rammar.[9] One modern grammar theory this study assumed as the theoretical underpinning of any language teaching and learning methodology that zeroes in on critical thinking, a higher-order thinking strategy that every nation in this contemporary world needs to progress economically and politically, is the SFG or Systemic Functional Grammar. Several research studies have been conducted about the strong link between these two major topics of this paper. One study showed the use of systemic functional grammar in criticizing or evaluating intellectual and emotional traits of people in society.[4] Another revealed the development of critical thinking through collaborative or interactive language activities, such as pair work, small or large group work for accomplishing or carrying out language-learning tasks [18] Based on these previous research studies, this study had its goal or main objective of investigating or examining the role of SFG in developing critical thinking in teaching and learning language. Likewise, it aimed at obtaining thorough or in-depth knowledge or understanding of the concepts, features, and components of systemic functional grammar and critical thinking. Description, qualitative approach to data, and analysis or survey

of existing Literature such as books, research studies, journals, and other reading materials with comprehensive and detailed discussions of the nature of SFG and critical thinking were the research methods and data-gathering technique used by this study. The results showed that the ideas behind the Systemic Functional Grammar were likewise the ones applied in language teaching and learning activities or exercises infusing critical thinking. The SFG concepts like multi-functionality of clauses, grammar structures linked with communicative functions, interactive activities, contextualized exercises, among others would trigger off critical-thinking acts like: comparing, classifying, patterning, planning, critiquing, speculating, defining and the like. .

In addition, this study finds itself timely and relevant to the present set up of the world in which people, in general, deal with all kinds of characters,, products, knowledge, services, technology, and so on. To make people evaluate or judge the genuineness, essence, appropriateness or quality of diverse people or things in their environment is another significance of this study. Validating the impact of the SFG theory on critical thinking for developing excellent communicators and reasonable or logical thinkers for the progress of not only local but also international community is the contribution of this paper to the field of language teaching and learning.

A person thinking critically employs care in assessing the merits of a thing, based on some criteria or standards. The results of his assessment serve as the basis of his judgment on the validity, worthiness, or acceptability of such subject. However, criticizing something requires substantial knowledge about the topic. . Knowledge about the subject alone is not enough. "What a person knows and how he thinks of what he knows" are the two essential requisites of critical thinking." [6].Studies show that these two modes of world understanding, declarative and procedural knowledge, operate under the influence ofsociety. Societal influence is likewise a part and parcel of this contemporary language theory called Systemic Functional Grammar or SFG, that involves language features whose meanings result from interactions of people in society. Given such background on the analogous features of SFG and Critical Thinking, this study wanted to discover the impact of SFG on the development of critical thinking.

In addition, it aimed at obtaining thorough knowledge of SFG and critical thinking, specifically, of their nature and similarities with each other. This study is significant for it gives language teachers an awareness and deeper understanding of the concepts and capacity of SFG to develop or enhance a person's critical thinking, a higher-order thinking strategy.

2. Methodology

Description through analysis, qualitative approach to the data, and analysis or survey of existing reading materials on SFG and critical thinking were the research methods used by this study. The following then are the graphically presented results of this study.

3. Results/Discussions

3.1 Multi-functionality of clauses

A clause has three interactive systems of language features:

transitivity system for ideational function; mood system for interpersonal function, and theme system for textual function. [12}

Consistency of thoughts

Critical thinking involves logical thinking or sequential reasoning to prove the validity or falsity of something. [6]

The success of critical thinking

depends on the unity, coherence, or consistency of people's arguments. The interconnectedness or words, clauses, or sentences is necessary for a clear expression of people's reasons or arguments to support their claims or choices

3.2 Ideational, interpersonal

and textual functions of language The Ideational function, is for world nderstanding: Interpersonal function; for human relationship development; and

textual function for coherent expression of ideas. [11]

Evaluation based on morally and professionally determined views or ideas of a person and of other people. Critical thinking deals with "dispositional knowledge" that makes one weigh the value or merits of something based on his schemata, on other's views, and standards [16] SFG deals with varied language features to express the multiple functions of language. This is also true for critical thinking that requires the thinker to listen, analyze, and evaluate diverse views on the basis of some criteria before he gives his final judgment on which of the varied ideas is the best to prove his3.3 Connection of language features or structures with the macro-functions of language SFG deals with language features to make a person acquire knowledge, do a systematic expression of such knowledge, relate himself with others, and devise a strategy, or technique to express ideas. ,

Necessity of declarative and procedural knowledge

Critical thinking requires things to think of and ways to think of these things. This kind of thinking does not only stock in a person's brain varied views, knowledge orreasons, but also tells him the manner of determining or measuring the quality, essence, or value of these ideas as the basis of his intelligent judgment or decisions about something. SFG has language features or like clauses or modes of discourse to express meanings of language that mirror societal events and constitute a person's reasons to support his point. However, to acquire and evaluate these ideas expressed by language structures, he has to perform things requiring procedural knowledge like defining, analyzing, comparing, and other top-level thinking acts that are crucial to critical thinking.

3.**4 Language activities encouraging social interactions**

The mood system has language features to initiate interpersonal relationships. Used in a social context, the language features make up a text with a dialogical or conversational nature that allows explorations of varied worldviews and erformance of specific roles that may put one in the same or different rank or

standing with respect to other members in the group.

3.**5 Use of contextualized language exercises**

Language as a social activity involves arbitrary communication system that mirrors a cultural group's understanding of things existing or taking place in society. Exercises for language mastery necessarily involves a context of situation referring to who, what, where, when, and to other non-linguistic factors affecting the entire

communication setting.

[13] **Critical thinking as a social activity.**

To think critically is to judge the quality of something based not only on a person's schemata, but also on others' views that conform to some standards. Resulting from varied people's ideas, or reasons influenced by cultural, social, or nstitutional

factors, a person' s decision reflects his own knowledge, plus other peoples' ideas.

Critical thinking embedded in society

Critical thinking depends greatly on a person's own disposition or judgment about the quality, value, or worth of something. It is a fact, though, that any forms of knowledge emanate from his experiences influenced by sociological, cultural, and

other environmental factors. In a way, It is an "egocentric and sociocentric" kind of thinking. [8] SFG, encouraging dialogical or conversational activities, give participants in a speech community much opportunity to listen to different ideas or views that they can use in analyzing a problem and in evaluating things for the purpose of arriving at better decisions, or choices.

Language exercises simulating social events open the minds of communicators to realities in life.Their awareness of facts or truths in society by means of contextualized activities that resemble real-life situations in society, enables them to create plausible reasons or arguments to support their stance, judgments, or decisions.

3.**6 Dominant use of discourse**

Discourse is a text composed of sentences coherently expressing the three macro-functions of language plus cultural, sociological, and institutional factors affecting language. Made up of a set of sentences following a certain organizational pattern with the help of cohesive devices, a discourse is able to present bigger amount of related ideas and more extensive discussions of the subject.

Consistency of ideas, reasons, or arguments to justify one's claim.

Critical thinking makes one discern or decide on the worth or value of something based on facts or reasons related with one another. The strength of one's conclusion or decision lies in the consistency or coherence of his ideas or reasons to justify his point. SFG involves systems of language features to express multiple meanings of language. It is through the use of bigger language structures like the discourse modes of narration, exposition, description, and argumentation that one increases or deepens his or her knowledge of something. Also, in critical thinking, presenting reasons to justify one's point in a coherent, or sequential manner, rather than in an isolated or discrete manner, facilitates one's choice of the best reason to defend his stance.

3.7 **Freedom of choice**

SFG uses language features with meanings resulting from their uses in society. Language features and the language user are influenced by sociological, cultural, institutional, and other environmental factors, Hence, with schemata influenced by many factors, one views things differently; thereby, he needs freedom to choose the language features he thinks are the right ones to express his worldviews.

Dispositions based on free will

Critical thinking leads a person to an independent act of choosing the best reason among several major alternatives. Based on his personal knowledge, other people's ideas, and some ethical societal norms, he deals with things at his own disposal; that is, he independently chooses what he thinks suits his taste or plans. .Influenced by varied factors, language features have no fixed meanings. Depending on a person's schemata and other factors, language features convey meanings based on his disposition or determination. Like in critical thinking, a person, though influenced by others' ideas, has his own thoughts on things vis-a-vis alternatives from which he can choose the most appropriate reason to justify his judgment.

The Relationship between Critical Thinking and Language Proficiency of Undergraduates

In the present information era, university students are expected to be able to think critically so that they will be able to keep up with the changes brought about by new technological innovations and have better chances of employability. Since language is an important tool for acquiring knowledge at the tertiary level, it is therefore important to gain insight into the nature of the critical thinking ability of undergraduates and its possible link to their language proficiency. This study examined the critical thinking ability of Malaysian undergraduates and its relationship to language proficiency. The Bahasa Malaysia version of the Cornell Critical Thinking Test (CCTT) Level X was administered to 280 undergraduates. Results indicated that the critical thinking ability of the undergraduates was much lower than that of their American counterparts. Nevertheless, significant correlations were found between their critical thinking ability and English language proficiency as measured by two nationallevel tests. Implications for teaching and future research are discussed in this paper.

The emergence of the information age has created great demands for ―knowledgeable workers‖ and ―smarter graduates‖. This has urged many nations to invest in their human capital via education so that they can have a competitive edge over the other nations. However, complaints have been made by employers in many parts of the world such as America (Curry, 1999), United Kingdom and Europe (Bennett et al., 2000) and Malaysia (Nazaria Baharudin, 2004) regarding their distrust in the school, college or university systems of being able to prepare future workers who could meet the demands of the global job market. It seems that there is a mismatch between the skills required by the employers and those acquired by the graduates. Included in this mismatch is critical thinking, a skill which has been claimed to be lacking among the graduates. This harsh reality

concerning university graduates has sparked off worldwide interests in research on critical thinking ability of university students.

LITERATURE REVIEW

Critical thinking skills and mastery of English language are expected to become important outcomes of university education in Malaysia. This is so because the country, in its rigorous attempts to realize the nation‘s goal to achieve the status of an industrialized country by the year 2020, recognizes the need to use English as the language of science, technology and trade, and the need to generate workforce who are proficient in English and critical in their thinking (Abdul Shukor Abdullah, 2000; Awang Had Salleh, 2006). This recognition is reflected in the Malaysian government‘s decision to 374 allow the use of English in the teaching of professional courses such as medicine and information technology at the tertiary level (Choi Kim Yok, 2005; Gill, 2002) and replace B.Malaysia, the national language, with English as the medium of instruction for the teaching of Mathematics and Science in all primary and secondary schools beginning from the year 2003 (Choi Kim Yok, 2005; Lim & Normizan Bakar, 2004). These changes made to the education system will definitely affect the teaching and learning process at the university when the first group of school students learning Mathematics and Science in English gain admission to university in 2009 or 2010. The present importance placed on the need for university students to be critical in thinking and proficient in English is partly attributed to the problem of high unemployment rate in the country.

Malaysia has experienced a continuous increase in unemployment rate among graduates ever since the financial crisis which hit the Asian region in 1997. Several studies done to determine the causes of high unemployment rate produced findings which indicate that competency in critical thinking and English language are among the abilities highly sought after by employers. A study involving 2,274 graduates who graduated in 2001 (Morshidi Sirat et al. 2004) revealed communication skills as one of the main skills needed by the graduates to secure a job; i.e., most of the unemployed graduates in the study were found to have low proficiency in English. Another study on 241 employers‘ view on requirements sought in the graduates (Ambigapathy Pandian and Aniswal Abdul Ghani, 2005)confirms the finding of the former study indicating communication skills, particularly English communication skills, as one of the main six competencies required of the graduates; in addition, thinking skills were also rated to be important competencies by the employers who were interviewed.

Similar results were found in a survey study on the perceptions of fifteen human resource personnel of national and multi-national organization in Malaysia (Ain Nadzimah Abdullah & Rosli Talif, 2001) - proficiency in English was a quality that the personnel sought after when hiring new employees and was perceived to be an important contributing factor to an individual's success in the related organizations. These studies have raised awareness among many relevant parties on the crucial need to improve the standard of English and thinking skills among Malaysian undergraduates to enable them secure a job upon completing their studies at the university.

Critical thinking ability has been identified as one of the constructs which has been proven to be a good predictor of academic performance (Tsui, 1998; Giancarlo & Facione, 2001; Moore, 1995).

Hence, it is important for relevant university authorities to be informed of the critical thinking ability level of their undergraduates. At present, due to insufficient amount of empirical evidence forwarded, the general critical thinking ability of Malaysian undergraduates is still not that transparent. Relevant information on the matter will, beyond doubt, help the university authority to both improve the academic performance of the students and better prepare them for future work.

Critical thinking is also claimed to be important in the acquisition of language skills particularly writing and reading (Elder & Paul, 2006; Shaharom Abdullah, 2004; Seung-Ryul Shin, 2002; Stapleton, 2001; Moore, 1995), two indispensable language skills that can help undergraduates secure their academic success. However, studies on the relationship between critical thinking and these two language skills, especially those which use second language learners as the sample are still not sufficient. Similarly, there are not many studies conducted on the relationship of the aforementioned construct with general language proficiency.

Research on critical thinking in relation to second language learning is still in its infancy stage. Most of the studies done had been triggered by the claim made by some western scholars who have gone to the extreme of taking a universalist stance claiming that Asian students ―are deficient in critical thinking abilities‖ (Stapleton, 2001, p. 509). Scholars such as Fox (1994) and Atkinson (1997)

consider critical thinking as a form of western cultural thinking and they hold the view that Asians students are not able to think critically because such nature of thinking is a form of cultural thinking that is alien to Asians. Nevertheless, two studies carried out on Japanese students (Stapleton, 2001; Davidson and Dunham, 1997) produced results which are able to refute the claim that Asians are deficient

in critical thinking skills. The findings of the studies did not only show that Japanese studentshad critical thoughts but also indicated that critical skills could be taught to these students in an English language class. However, more research needs to be conducted in other Asian contexts, especially in the Malaysian university context, to investigate if the same results apply to the undergraduates in the related contexts.

OBJECTIVE OF THE STUDY

The present correlational study was conducted to ascertain the critical thinking level of Malaysian undergraduates and determine whether the students‘ prior ability in English language influences their scores on a test which measures their general critical thinking ability.

METHOD

Participants

The target population of this study was the second year undergraduates of Universiti Utara Malaysia (UUM). This group was chosen based on the assumption that they had undergone at least three semesters of university education which was deemed as an adequate period to have had the students exposed to the kind of learning at the tertiary level which promotes the development of critical thinking. The participants of the present study were 280 undergraduates of four different English proficiency levels: Excellent (N=30), Good (N=50), Fair (N=85) and Poor (N=115). A stratified sampling technique was employed in the study to ensure that the sample used is representative of the target population. The undergraduates were selected based on their grades in the SPM English, a national-level examination. The sampling frame for the study was obtained from the university Students‘ Academic Affairs Department. The rather small number of undergraduates in the Excellent group compared to that in the Poor proficiency group reflects that majority of the undergraduates at the university were not highly proficient in English.

Instrument

A demographic questionnaire was used to gather data on the undergraduates‘ performance on two national-level English language proficiency tests run by the Malaysian Examinations Council. The first one was the SPM English which is one of the examinations that all high school students have to sit for at the end of their 5

th year to be awarded a certificate (i.e., Malaysia Certificate of Education or ‗Sijil Pelajaran Malaysia‘ -SPM). The grades awarded to the students range from A1

(very good) to 9G (fail). The second English language proficiency test was the Malaysian University English Language Test (MUET), taken prior to admissions to any Malaysian public universities and colleges.

The scores attained by the students on the MUET are represented by the bands (1-6) printed on their MUET slips: Band 6 indicates that the test taker is a very good language user while Band 1 reflects that the individual is an extremely limited language user. Both tests are considered as English proficiency tests covering main language skills such as speaking, reading, writing and grammar. The students' self-reported grades on these two tests were then counter checked with those obtained from the Students' Academic Affairs Department to ensure that they were true reflections of actual grades earned. This was done due to doubts raised over the construct validity of self-reported grades (Kuncel et al., 2005).Cornell Critical Thinking Test (CCTT), Level X .Cornell Critical Thinking Skills Test (CCTST), Level X was used as an instrument to measure the critical thinking ability of the undergraduates involved in the present study. The CCTT is a standardized test developed by Ennis, Millman, and Tomko (1985) and is based on the developers' conceptual definition of critical thinking as ―…the process of reasonably deciding what to believe and do‖ (1985, p.1). The test was considered suitable to be used in the present study because it is claimed by its developers to be a general critical thinking test which attempts to measure ―critical thinking skills as a whole‖ (1985, p. 1). Thus, it is an appropriate test to employ in measuring the criticthinking ability or level of the undergraduates in this study irrespective of their disciplines, a rationale shared by Nuraihan Mat Daud and Zamnah Husin (2004) and Royalty (1995). Moreover, the test has been widely used throughout the world for more than twenty years for determining critical thinking ability of a group or individuals for the purposes of admission to academic programmes or as a criterion for employment. The reliability coefficient of the CCTT Level X ranges from .67 to .90 (Ennis et al, 1985).

The present researcher strongly believes that in measuring critical thinking ability of individuals, the test administered to the individuals must be in the language that they have competence in so that the scores obtained on the test will not be distorted in any way due to the test takers' deficiencies in the language. Therefore, a test conducted in the national language, that is, Bahasa Malaysia, will be the most suitable one for Malaysian undergraduates since the language concerned is the medium of instruction at the public universities and colleges in the country. Furthermore, mastery of Bahasa Malaysia at a satisfactory level is a requirement for entry to Malaysian universities. For these reasons, the CCTT adopted in the present study was the Bahasa Malaysia version of Level X. The test was translated

by Shaharom Abdullah (2004) using Brislin's (1980) back-translation technique and the committee approach (Azlina, 1992). The CCTT Level X was chosen by several Malaysian researchers (Nuraihan Mat Daud & Zamnah Husin, 2004; Syahrom Abdullah, 2004; Faizah Mohamad, 2004) to assess the local undergraduates' critical thinking ability since the test, as claimed by the test developers, has been used among undergraduates and graduates whose language use are not yet sophisticated (Ennis et al, 1985, p.3).

The CCTT is a 76-item multiple-choice test which is to be completed within 50 minutes. 5 of the test items are sample items and the other 71 are the real test items that the test takers have to work on. Each test item has three alternative response choices, A, B, and C, respectively. The test is divided into four parts labelled as Induction (23 items), Credibility (24 items), Deduction (14 items) and Assumption Identification (10 items). Each of the test items that are correctly answered is given a score of 1. In this study, the individual undergraduate's total score obtained on the CCTT was used as a measure of his or her general critical thinking ability; that is, a higher score on the test indicates a better critical thinking ability.

The use of part scores of the CCTT to represent performance on each of the four CCTT dimensions is not encouraged by the test developers since the parts are argued to be overlapped and interdependent (Ennis et al., 1985, p.3) – a non unusual thing to occur for a complicated construct like critical thinking. This, in fact, helps to explain the theoretical difficulty of performing factor analysis on the data based on the CCTT scores. Nevertheless, Ennis et al., (1985) argue for the construct validity of the CCTT based on its content validity (i.e., the fact that the test was developed based on a sound rationale and that the test items were intensively discussed by the test developers who were scholars involved in the Illinois Critical Thinking Project) and correlations with other tests especially those that are also developed to measure critical thinking.

Procedure

This study used part of the data collected for another main study. The translated Bahasa Malaysia version of the CCTT Level X was administered to 280 undergraduates from various programmes of studies. The students were briefed on the test and allowed to ask questions. Most of the students took not more than 50 minutes (as recommended in the test manual) to complete the test. In addition, the

students were asked to write the grades that they obtained for the MUET and SPM English in the demographic part of a questionnaire which also included a survey on

their general metacognitiveawareness. Data Analysis The present study employed both descriptive and inferential data analysis procedures. Descriptive statistics like means and standard deviations were computed to provide information concerning the sample and distribution of data and they were also used in the testing of the underlying assumptions of inferential tests employed in the study. The students' SPM English grades were recoded so that the grades were of equal importance to their MUET bands. Five case outliers were identified in the preliminary analysis of the data. These were excluded from the main data leaving the remaining 275 cases (N=275) to be used in further inferential analyses. The reliability of the CCTT and the mean of the total test score were computed before further analyses were carried out. Correlational and structural equation modelling (SEM) analyses were performed on the data to investigate the relationship between the undergraduates' general critical thinking ability and their language proficiency. One-way analysis of variance (ANOVA) was employed to determine if significant differences in the mean of the CCTT scores exist between the four proficiency groups.

RESULTS

The means computed for SPM English and MUET Bands were 5.43 (SD= 2.01) and 2.76 (SD= .846), respectively. These mean values and the results of the stratification procedure indicate that the majority of the sample, which represented its real population, were from the two low proficiency groups. Cronbach's alpha coefficient was used to examine internal consistency reliability for the items

within each of the CCTT subscales and for the overall scale. As tabulated in Table 1, the alpha coefficient for the overall scale is adequate (r =.70) and is within the range of reliability estimates reported in the CCTT test manual (i.e., .67-.90). However, the alpha values for the sub-scales ranged from .34 to .58; these values are far lesser than .70. This could be due to the fact that the test employed in this study was the translated version of the original CCTT and the sample used was different from those mentioned in the test manual. Furthermore, the original test developers have never claimed the four sub-scales to be distinct and caution test users of treating them so. Table1: Reliability coefficients for the Bahasa Malaysia

The computed mean (M) for the total score on the CCTT obtained by the 275 Malaysian undergraduates was 38.17 (SD= 6.65) with the minimum total score of 20 and maximum score of 55.

The computed mean was much lower than the mean of 52.2 (SD=6.5) obtained by the sample norm (i.e., the American undergraduates) which was provided in the CCTT test manual for the basis of comparison purposes. In fact, the mean obtained

by the Malaysian sample was lower than any of the norms given in the manual; the lowest mean tabulated in the manual was for the American senior highschool students (M= 40.6, SD= 7.9). A summary of the results of correlations between the variables studied are presented in Table 2. The results revealed that the CCTT was significantly and positively correlated to all measures of language proficiency. This indicated that high scores on the CCTT were associated with high scores on measures of proficiency. Nevertheless, the computed coefficients were within the small range (i.e., <.30) suggesting that the relationships between the variables studied were not that strong. The two measures of English language proficiency (i.e., MUET and SPM English), however, were found to be significantly and strongly correlated ($r = .633$, $n= 275$, $p<.05$) implying both were measures of proficiency in English.

. The scores on each of the four sub-scales of the CCTT were used as the indicators which were regarded as observed or measured variables of the critical thinking construct since the use of the total scale on the CCTT together with scores on the MUET and SPM English, as measured variables of language proficiency, could not generate the text output of model fitness for any interpretation to be made (i.e., ran into identification problem since df= 0). The results of this analysis are to be interpreted with care since the researcher has stated earlier that the four sub-scales ofthe CCTT would not be taken as distinct dimensions of the CCTT.

DISCUSSION

Results suggest that the translated Malay version of the CCTT Level X is a reliable measure of general critical thinking ability of Malaysian undergraduates. Evidence of construct validity of the test could not be forwarded since the data gathered was not found suitable for performing factor analysis procedure. This is not surprising since the test developers of the CCTT have already cautioned the test users of the difficulty in securing distinct factors; that is, they have stated in the test manual that many of the test items can be assigned to more than one of the four proposed aspects of critical thinking.

This is argued so because critical thinking is a complex construct. Since measuring a specific aspect of critical thinking is difficult if not impossible, the test developers recommend that the CCTT be used as a general critical thinking ability test. This provides explanation for the use of the CCTT total score instead of the four sub-scale scores in the analysis of the data gathered in the present study. The

present researcher relies on the test developers‘ claim that the CCTT is construct valid based on its content validity and correlations with other cognitive tests as presented in the test manual. Results of the present study also provide valuable

information on the nature of critical thinking ability of Malaysian undergraduates. As indicated by the results, Malaysian undergraduates did display critical thoughts even though their level of critical thinking ability, as indicated by the mean btained for the test total score, was not found to be equivalent to that of their American counterparts. In actual fact, the computed ability level was found to be lower than that of the American Senior High School students. Similar findings were obtained by Nuraihan Mat Daud and Zamnah Husin (2004) who studied the development of critical thinking skills in reading classes of 40 international undergraduates (from Malaysia, Indonesia, Bosnia, China and Africa) studying at the International slamic University in Malaysia. Although the researchers did not specifically calculate the mean for the total score obtained by the undergraduates on the CCTT, they did provide the mean for the score on each of the sub-scales. When the means were added by the present researcher, a mean for the overall or total score on the CCTT was obtained for both the experimental and control group involved in the study, respectively. The mean for the former group was 30.04 before the intervention and 35.18 after the intervention. While the mean for the latter group was 20.84 prior to treatment and 23.99 after the treatment. These computed means were found to be much lower than those presented in this study.

Shaharom Abdullah (2004) who first used the Bahasa Malaysia version of the CCTT to measure 112 Malaysian undergraduates‘ critical thinking ability, also found that the undergraduates had a much lower level of critical thinking ability (M=41.80, SD= 5.25) when compared to their American counterparts. A large scale study (Aida Suraya Mohd Yunus et al., 2005) which attempted to determine the critical thinking ability and skills of undergraduates in seven public universities in Malaysia using a newly designed inventory also did not find the undergraduates to have a high level of critical thinking ability; the study revealed that the critical thinking ability of the undergraduates was at a low moderate level.

The present study also provides evidence on the importance of improving the undergraduates‘ English language proficiency. As revealed by the results, proficiency in English is positively related to critical thinking ability implying that if the undergraduates are proficient in English, their critical thinking ability will also be heightened. Some may disagree with this proposition because the computed correlation coefficients were not large enough to imply anything meaningful. Furthermore, the two different competencies can be acquired independently of each other; that is, there are undergraduates who are proficient in English and yet poor in their ability to exercise critical thinking skills. Nevertheless, one may concur with the weaker version of the proposition made if one considers thepossible interactions between the two competencies – of how they ―feed each

other‖ (Brumfit et al., 2005, p.158). The rather weak correlations between language proficiency and critical thinking established in this study lend support to the weaker interpretation of Whorf‘s theory of linguistic relativity (1941) argued by Hakuta (1986), which proposes that language is not solely responsible for determining one‘s thought but functions instead as one of the elements that helps to shape one‘s thought. Thus, the small correlation coefficients computed in this study indicated that proficiency in English partly contributed to undergraduates‘ ability to think critically.

The valuable contribution that language proficiency may make to the undergraduates‘ critical thinking ability is further reinforced by the results produced through the one-way analysis of variance (ANOVA) procedure which showed that students of the highest English proficiency level also obtained high scores on the CCTT. The actual difference in the mean scores of the four proficiency groups (i.e., eta square =.10) was approaching Cohen‘s (1988) large effect size coefficient (eta square = .14) indicating a rather substantial practical importance of the difference between the most proficientgroup and the other three less proficient ones.

IMPLICATIONS & CONCLUSION

The findings of the present study imply that more work needs to be done towards upgrading the standard of English language and critical thinking ability among UUM undergraduates. The observed facts that the undergraduates did not have critical thinking ability level equivalent to that of their western counterparts and that the majority of them were not highly proficient in English are consistent with the findings of a study done on Malaysian undergraduates studying in Australia (Jones et al., 1999). The study revealed that Malaysian students had problems coping with their studies in Australia not only because they had poor critical thinking skills but also due to the fact that their English language skills were poor and that they relied heavily on rote-learning, which Pugh and Fenelon (as cited in Moore, 1995) claim to be the kind of learning style developed through one‘s experience studying under the Malaysian educational system. If Malaysian undergraduates are still merely rote learners who have poor English language skills in spite of the initiatives taken by the Malaysian Ministry of Higher Education to upgrade the standard of English at the university, include critical thinking in the curriculum and promote assessments with emphasis on higher order thinking, the country‘s future is then at risk – Malaysia will lack competitive edge if its workforce does not have the skills and ability to take up the challenges of the information era.

Therefore, the Malaysian university should play its role well. To sustain its present role as the most important ‗producer' of human capital, which is a valuable asset to the country, the university must dare take the challenges of bringing about drastic or real changes that will eventually improve the standard of English among the undergraduates and enhance their critical thinking ability. More

serious attempts should be made towards creating an educational system that promotes life-long learning; that is, a system which will generate graduates who can flexibly meet the demands of the global job market. To establish such a system, the university authority needs to re-evaluate the effectiveness of the present curriculum and teaching practice, particularly, those pertaining to the teaching and learning of English and development of critical thinking. Any initiatives taken towards realizing the aforementioned educational system will also serve as preparatory efforts taken to accommodate the needs of future undergraduates, especially the first batch of students learning Science and Mathematics at schools in English who will enrol in their first year of study at the university by the year 2010. This group of students will be exposed to the learning demands similar to that of their western counterparts because they will have to learn all science and Mathematics related subjects at the university completely in English. If these students are critical in their thinking and proficient in English, they will be at par with their western counterparts and will later be able to make substantial contribution to the nation when they become part of the human resource; that is, they will be the graduates who will help Malaysia meet the challenges of the 21 st century, sustain her economicprosperity and realize her goal to become a developed nation by the year 2020. The findings of the present study should never be taken as conclusive. This study only investigated the relationship between critical thinking ability and prior second language proficiency of UUM undergraduates. Future research should focus on measuring both critical thinking ability and actual language proficiency of undergraduates at other Malaysian universities so that better comparisons and generalizations can be made. This will require the use of a general proficiency test that is different from the tests employed in this study. A replication and extension of this study, particularly involving longitudinal data and the use of a sophisticated multivariate procedure like Structural Equation Modeling is needed to provide more evidence on the relationship between the two main variablesexamined in the present study

Is critical thinking in the classroom more important than rote memorization?

Now, at the beginning of the 21st century, almost all information can be gleaned from the Internet, so long as you ask the right questions on Google. So is there any point in having students memorize facts? Instead, students could spend their time learning to ask the right questions, which requires critical thinking skills.

The American educational arena is certainly stressing the importance of teaching critical thinkingskills. Common Core standards emphasize the importance of critical thinking. Students must be able to read text, grapple with the meaning of the text, challenge and verify or refute its accuracy, and use the information in meaningful ways.

In discussions with teachers, I often hear that they are very concerned with their students' abilities to make distinctions between fact and fiction when searching the Internet, which is essential to knowledge acquisition. We would not want students to think that Dallas is the capital of Texas just because someone decided to be funny on Wikipedia. The ability to distinguish between fact and fiction requires both critical reading and critical thinking skills.

In addition to developing the skills to use the Internet effectively, students must develop the skills to adapt. Today's kindergarten students will graduate from college in 2029. We do not know the knowledge and skills that students will need to possess in order to succeed in this future world. Therefore, teachers cannot successfully impart 2029 knowledge and skills to students in today's classrooms. Instead, the best that we can do is help students adapt to different kinds of environments. Adaptation requires critical thinking skills.

It's clear that an argument can be made for the importance of teaching critical thinking skills in schools. However, what is the argument in favor of teaching knowledge and skills that do not require critical thinking?

Consider the numerous subjects that today's adults learned in school that did not require critical thinking skills. For example, learning multiplication tables involves rote memorization. Learning geography may involve simple recall. Quick. What's the capital of your state? Students can obviously learn to answer this question very simply. They might even spend hours memorizing the capitals of every state and country. This is engaging, but it represents low-level thinking. As another example, learning to spell does not require critical thinking in most situations.When I was in graduate school, my friends nicknamed me E.D. Hirsch, Jr. You may recall Hirsch's book series on what common knowledge students should possess at every grade level. Most of the members of my graduate school cohort emphasized the

importance of critical thinking. I certainly did not disparage its importance. However, I think I would lack something as an individual if I did not know that Austin is the capital of Texas, as I wait in the Austin airport for a flight. I hope that there are no spelling mistakes in this post, though I know spell-check cannot always catch the difference between there and their.

Rote memorization can be essential to successful participation in social, business, and civic life. A well-known American broadcaster once said that if she were trying to get a job today she would try to learn as much about as many things as possible. The best job candidates know as much about as many topics as they can learn. The reason for this is simple: one never knows what topic an interviewer is going to want to discuss. People should be prepared with as much information about sports, history, music, dining, and everything else as possible. Schools can promote this kind of knowledge by exposing students to a wide array of different topics. Simple exposure, however, does not require critical thinking.

Within science, there are certain pieces of information that all students should know. Can you imagine how lost an individual would be if he/she did not know how to identify the different parts of the body? People who know sophisticated terms for various bodily functions will feel much better when speaking to polite audiences in certain situations. (This situation is particularly meaningful to me this week as I was in the emergency room last week passing a kidney stone.) These words must be learned and memorized. Nobody is going to Google synonyms in the middle of conversations just so that they do not have to use slang terms.

Of course, the challenge is in determining which facts and ideas people must know. E.D. Hirsch tried to do this for himself. I would argue that communities must come up with these lists for themselves. A single author cannot impose a body of knowledge on anybody else.Unfortunately, the school year is only about 1,100 hours long. Consequently, students cannot spend an unlimited amount of time learning simple information and how to think and read critically. However, I do not believe that learning to think critically necessarily precludes the opportunity to learn simple information. The best curricula scaffold learning so that students have something meaningful to think about. Students can read facts, in engaging text, and then be challenged to think about them in critical ways. I think that the best curricula include both rote learning and critical thinking.

What do you think?

). Critical thinking: origins, applications, and limitations for postsecondary studentsThe Achievement and Development of Critical Thinking Skills in the

Arabic Language of Adolescent Pupils With reference to The Primary Stage throughout Jordan Dr. Zakariya I . Abu- Dabat Associate Professor

Al-Zaytoonah University Amman-Jordan

This study aims to investigate and measure the students' critical thinking skills and achievements in the Arabic language at Primary and secondary stages, also measuring the development of the cognitive Dimentions of critical thinking asserted by the researcher. The researcher has identified five elements which comprise of the varying levels of critical thinking abilities in the Arabic Language. These are as follows; analyses, inference, Induction, deduction and evaluation,. The Arabic grammar and literature exam has been formulated for both primary and secondary Pupils, in order to answer the questions posed by the study. The researcher found out that the levels achievement of critical thinking of students in both stages, are average and satisfactory, there is no significant statistical difference in the achievement of critical thinking skills between primary and secondary students, there is also no significant statistical differences in the achievement of critical thinking skills attributed to gender, However there are significant statistical differences in the achievement of critical thinking skills between Government schools & public schools. Records show that critical thinking thrives mostly in public schools. According to the category of critical thinking skills, students can deal with analysis best, This dimension ranked top of the list of answers Evaluation, inference, deduction and induction came last respectively.

The most important educational goals to be achieved at secondary school level is to apply critical thinking to their academic assignments. In Article 3 of the Jordanian Constitution both the dimensions and foundations of Educational philosophy has been emphasized. In article IV we read that the student should at this point able to;

* Use the Arabic language in self-expression and communication with others easily and smoothly.

* The development of critical thinking skills and a means to use scientific methods of observation, research and to solve problems (a teacher's message, issue 2, 1993)

We note that the focus included within the articles of the Constitution relating to education was on the subject of the Arabic language and its importance in maintaining the nation's identity. It also focused on the training of critical thinking skills that develop the capacity of individuals and contribute to solving the problems they face thus leading to the elevation and progress of the nation.Placing them in the ranks of advanced nations. The Education Act passed in 1994

stipulated it's main objective which was to develop further the capacity of citizens capable of critical thinking following scientific methods in research and problem solving (Teachers Message, issue2, 1993).

Critical thinking is the cornerstone for the acquisition of different experiences throughout ones life. Hence a fundamental role of teaching is the ability to train students to apply critical thinking together with problem solving methods. In addition to this a scientific approach should become a habitual response of students to problems through the continuous training of critical thinking methods. Accordingly the student should demonstrate autonomy in their ability to critically analyze problems and provide comprehensive solutions. The ability to apply

critical thinking methods is not achieved simply by dictation but is a result and combination of ones general intelligence and academic practice. (Abu - Dabat 2007, p. 52)

There are substantial differences discovered between a persons own unique style of scientific thinking mechanisms and the steps employed to teach a person the skills required for critical thinking. Commenting on this the American educator and philosopher John Dewey, who laid the foundations of scientific thinking for the 20th century outlined the steps in which such a mechanism could be employed. These are as follows; feeling that there is a problem, data collection, hypothesis and conclusion.

The mechanism of critical thinking lies at the heart of the educational process of what we call the 'Dewey thinking apostate' or reflexive thinking which are based on two basic processes, hesitation and trial and error, after which the students or learner will achieve better reflective thinking and problem solving skills. (Archambault, 1964.p.29RD) .In the sphere of reflective thinking hesitation and ‘trial and error’ are considered by Dewey to be the main embodiment of life itself. The results of which are said to be the human beings innate ability to carry out everyday activities. There dimensions of critical thinking are emotional, social, physical and cognitive. In our study we will focus on the cognitive aspect for the study of critical thinking. These Cognitive aspects can divide into five different categories: Inference, Analysis, Evaluation, Conclusion and Induction.

These five dimensions indicate the acquisition of information by students, which drive them to think in a more complex manner and become more self critical and often reflect on the work they have done. (Anderson, J.R. 1988)

Accordingly we are assured that critical thinking must give students an overall better understanding of not only their academic work but also a better general

understanding about the world around them and independence in making their own decisions. After examining their results produced when critical thinking methods are applied the student is then more aware of a means to control such results and in turn become more efficient and more accurate. *(Stephen, 2000.p45)

Problem of the study

Many educators and researchers associates critical thinking skills with modern and up to date teaching methods,and usually return to configure proper scientific thinking to the methods in which they apply in the pilot schools. They conducted their tests in accordance with the principle of the experimental and control groups. The researcher believes that the constructions of critical thinking skills has not only become a skill in students minds and actions as a result of applying and conducted them in a certain and a limited time, but they need to be trained through continuously in every subject according to the desired aims laid down and formulated by the teacher and his colleagues in the school. So these skills are scientifically achieved as a process that is long term in nature. This may take years governed by many factors and variables. For that the researcher has realized that the measurement of critical thinking skills among students must be built and formulated on the performance of the teacher and based on the actual strategies in the schools and not on the proposed and inaccurate postulates and hypotheses.

(Geoff. 2009, P.57)

The aims of the study

This study aims to measure the level of cognitive aspects of critical thinking skills, identified by the researcher among the students of primary and secondary stages. The study also aimed to determine the development of these aspects in secondary school where the students moved from the primary school to secondary level. On the other hand, the researcher would like to know to what extend the long terms goals performed by The Ministry of Education in Jordan has been achieved.

Accordingly, this study aims to demonstrate the results for students who have been taught the five dimensions for cognitive thinking and will answer the following questions;

1. To what extent do learning strategies and teaching methods contribute in the formation of critical thinking skills for students in both primary and secondary stages?

2. Is there any development of critical thinking skills among students of secondary stage and what element of the five Dimentions received more than

3. To what extent such strategies contribute in building up students (males and females) ability for critical thinking skills in both primary and secondary stages?

4. Are there any differences in the way of critical thinking among public and private school students?

5. Which of the five cognitive dimensions have received a greater response from students?

Postulates of the study

From these questions, the researcher extrapolated the following assumptions:

1. The current education strategy and methods of teaching do not usually contribute to the building of critical thinking skills among students.

2. There are no statistically significant differences between the performances of primary and secondary school students according to the five cognitive dimensions,.

3. There are no statistically significant differences between the performances of all students according to their gender.

4. There are no statistically significant differences between the performance of public school students and their counterparts in private schools.

5. There are no significant differences between students' responses in both primary and secondary schools to the test questions performed to measure critical thinking skills dimensions.

Dewey and Mathew agreed on the meaning and mechanism of explanation of critical thinking. Both scholars

thought that critical thinking skills grow gradually in the mind of a person and pass through several stages until they become part of that person's personality and actions (Mathew. 1988, P.38-43) .

Critical thinking skills according to the entomology theory, are the most important characteristic of the human from other organisms. The mechanism of critical thinking skills start from direct experience passing through criticism and analysis up to the deduction and approach the results (Kadra, 2005) Paul has identified critical thinking as an organized procedural way of which form human meaningful and accurate thinking (Paul 1991). In his term Hullf identified it as caution and

careful examination of the events and beliefs, then working very hard to make an accurate assessment to those elements (Hullf , 2000) .

Al-Jarwan identified critical thinking skills as reasonable thinking that is focused on deciding on doing what you want according to what to believe. He added, such a process needs and requires forming a suitable hypothesis and questions to be answered, also alternative plans to experiment. (Al-Jarwan , 2002)

From the above definitions we can understand critical thinking as an appreciation of reflexive action and estimation to what we believe. According to such complicated thinking and acting, one can accept it or refuse it. (Fisherman.S.1997).Parker, M. pointed out that C.T. is a decision to accept such ideas or reject ideas of a certain judgment (Richard and Linden.2002).Some educators believe that critical thinking is logical thinking. But in fact it contains a correct vision of thinking, honesty and accuracy in performance to reach the factual judgment.(Http:11enWikipedia Org/p.1). The researcher believes that above all mentioned identifications, critical thinking skills are a clear knowledge of the differences between logic on the one hand and measurement (inductive thinking) and extrapolation (deductive thinking) on the other.

Edward Glasser has confirmed the existence of three basic elements of critical thinking skills:

1. The ability to link the elements of the problem and experiences.

2. Identify the logical scientific methods and the results achieved.

3. Obtaining certain skills to make connections between premises and results (Glasser,E.1941) William Simner who lived in the period in which Dewey, J. lived could conclude on the type of individual thinking through his performance and work, you can say: 'this man is an expert in medicine or in mechanics etIn our point of view critical thinking skills are intended objectives formed by the teacher and the goals of education in all fields. (Edgar,S.1976,P.54)

Inference **.**Inference is the process of extracting the answer or the result based on information known in advance. This may be either true or false. In the Oxford dictionary we read: infer, to reach a conclusion from the information you have, (Oxford dictionary 1999, P.392)

Conclusion

A method of reasoning, cognitive mental process and a means to find the cause of accidents, in order to understand or support the beliefs, or extraction through the concepts, actions or feelingsز)available at wikipedia.org/wiki)

Induction

The process of deriving general principles from particular facts or instances.(www.thefreedictionary.com.) thus is the process that stimulates the mind of individuals to reach total realization.

Analysis

To determine the relationship between the intended and actual phrases, questions, concepts and attributes.

Evaluation

A systematic process of data collection and interpretation of the evidence, related to students or a program, which helps direct the educational work and action, It is intended to measure the credibility and validity of exams.

ً)www.slah.jeeran.com/sal14.htm)

Previous Studies

Many studies conducted on the effectiveness of new strategies in teaching in educational achievement. There are studies related to the relationship between teaching strategies and the development of critical thinking among students. Majid Aljalad conducted a study about the impact of the use of geographic map concepts on the development of critical thinking skills in Islamic Studies (Aljalad 2006).M. Soleiman conducted research on the impact of the proposed strategy for reading a certain book in the Arabic Language on critical thinking skills. The researcher found a positive relationship between the two variables (Soleiman, 2002).

A study also carried out by M.Hamadna found out the level is satisfactory and differentiated. in critical thinking in mathematics at the tenth grade in Jordan. (Hamadna, 1995)

There is a relevant study that proved good relations between classroom speeches (addressing) and group grammatical concepts in secondary schools and put them into practice (Garaida, 2007).In the Western world a study was conducted by Roland on the impact of the classroom environment on student mental skills. The researcher found out there was a significant relation between the variables assigned by the researcher and critical thinking in general. (Roland, 2000)

An important study about students' achievements of critical thinking at university level, was conducted by a grouof California.

The researcher team found out and reached the following conclusion:

A large proportion of the sample (89%) recognized the importance of students training in critical thinking skills, but only 19% of the students operate in order to achieve this goal.The study also showed that teachers do not explain the importance of critical thinking skills to their students as agoal that should be achieved. The study showed that 78% of the student's response lack necessary skills, whilst 75% considered the assessment was something minor.

The results proved that 8% of the faculty teachers are deliberately teaching their students critical teaching skills.(Gardiner, 1995).

Methodology and procedures

The researcher used a special test to measure critical thinking skills which are: Inference, deduction, induction, analyses and evaluation for both primary and secondary stages. The test has extrapolated from Arabic grammar and Arabic literature fields with reference to a Californian test of critical thinking skills. The test was approved by the American Philosophical Society (Fashion and Fashions, 2002).

Every test included twenty five questions for primary and secondary students. Five questions for each element to be marked equally. Twenty points for each element. The total marks were out one hundred The researcher used the descriptive analytical method to achieve the objectives of the research and answer the questions of the study. The researcher also requested from a group of professors of curriculum and Arabic language for approval after modifying the test.

For the stability of the test, the researcher used Koder Richard -20 equation after its application to a sample of twenty pupils in each grade. The results showed a high degree of internal consistency between paragraphs of the test, reaching an appropriate value (0 .72) and(0.62) , (0.25) and (0. 50) , this indicated that the coefficient for both was suitable to go a head with the scientific conditions of the research.

Limitation of the study

This study was limited to sixth grade students because it is the final stage of the primary school and tenth grade students because it represents the secondary

school.The researcher used statistical correlation coefficients to compare between students responses of the two groups. The researcher chooses Arabic language grammar and literature to be the fields of the study. Arabic grammar and literature contain specific areas of critical thinking skills identified in the research. Arabic grammar is the tool in modifying the Arabic tongue and devise grammar rules (Abu- Dabat, Z 2007, P.272).

Arabic literature is the artistic heritage and linguistic science that has been accumulated over the centuries and presented and reflected Arabic life in all its forms, shapes and colours (Abu-Magli, 1999).The researcher also selected eight schools west of the city of greater Amman. Four primary schools and four secondary schools, divided between public and private schools, males and females in each grade. The number of students consisted of forty from each stage, chosen in an orderly manner.

Results of the study

To answer the previous questions and verify the validity of the assumptions, appropriate tests were used and the results are demonstrated in the tables below. To answer the first question: to what extent do learning strategies and teaching methods contribute in the forming of critical thinking skills among students in both primary and secondary stages.

Averages and standard deviations of the five dimensions been extrapolated and the table below shows the results, Table (1): Averages and standard deviations of critical thinking skills available among the students in both

primary and secondary stages

No. Dimentions Primary S. X SD. Secondary S. X SD T SS p

1 Analysis 11.00 2.20 13.50 4.16 3.7 0001 0.05

2 Evaluation 10.20 2.00 13.25 3.74 2.7 0.007 0.05

3 Inference 11.20 2.20 13.40 3.47 2.4 0.014 0.05

4 Conclusion 12.00 2.95 13.26 3.51 1.9 0.105 0.05

5 Extrapolation 11.20 2.20 12.24 3.47 2.4 0.015 0.05

Total 55.60 11.55 65.68 18.35 3.8 0.017 0. 05

From the above table, it is clear that teaching strategies and teaching methods, contributed in the format of critical thinking skills among the students with a medium degree in secondary stage and a low degree in primary stage. If we take into consideration that the degree of success is an average of 50%. Thus we reject the first hypotheses.To answer the second question: If there was any development of critical thinking skills among students of secondary stage, the researcher used T. test independent to examine the differences between students' scores in both stages.

The above schedule indicated that there were no statistical significant deviations in the scores of four dimensions being, analysis, evaluation, inference and extrapolation, but there was little differences in conclusion dimensions in favor of secondary stage results. On the other hand, the arithmetic average marks and the standard deviation of all dimensions were nearly equal.

To answer the third question, the researcher also used a T .test independent sample to acknowledge the differences between the results of male and female students in both primary and secondary schools.

Table No.(2) clarifies the results:)

Dimentions X .Male.X .female S.D .Male S.D .Female T. D.of . Freedom S.S P.

Analysis 12.73 14.28 4.49 3.81 1.68 78 0.096 0.05

Evaluation 13.20 13.35 4.05 3.45 0.178 78 0.859 0.05

Inference 13.3 13.78 3.28 3.66 0.985 78 0.337 0.05

Conclusion 13.15 13.38 2.73 4.18 0.285 78 0.776 0.05

Extrapolation 11.95 12.53 3.55 3.40 0.739 78 0.462 0.05

Total 61.00 66.97 15.42 16.47 1.67

The above table indicated that there were no statically significant differences in the way of critical thinking male and female in the over all critical thinking skills in both primary and secondary stages. Thus, we agree the third

hypothesis emphasized that there is no statistical significant relationship between the results of students in both stages.

To answer the fourth question, about critical thinking skills among students in public and private schools, the researcher also used a T test independent and the results were in table (3)

. The results of the study indicated some differences between the two types of schools in practicing the dimensions of the critical thinking skills, this is because the private schools changed some existing teaching strategies, or perhaps, the teachers at those schools used the latest methods of teaching than those used in public schools.

To answer the fifth question: Which of the five cognitive dimensions have received a greater response from students? The highest skills in the secondary school were as follows:

The analysis was 67.5% followed by inference 65% , then the evaluation 66.5% followed by conclusion 66.3% finally induction or extrapolation 61.% .That means the average of the whole scores were 65.68% . In the primary school the highest scores were as follows: conclusion was 60% followed by inference and extrapolation 56% and analysis 55% Finally, the evaluation score was 51% that means the average of the whole scores was 55.60%.

From the above scores and averages, its clear that the dimensions of critical thinking skills had been developed in the secondary schools and the same dimensions were low in general at primary schools as shown in table(1).

Discussion of the results

The results of the two exams showed that the teachers in primary and secondary stages had tried to apply the strategies of teaching methods to achieve the aims and objectives of education formed by the Ministry of education in Jordan, but in a satisfactory manner. The teachers had used the same strategies and methods in teaching with no differences in this respect between public and private schools.The study also showed that the students of secondary stage responded to the five dimensions with some improvements and those dimension developed and witnessed some progress in students responses and answers the questions of the exam, which means that the students got and achieved more experience and was aware of the importance of such skills, influenced by the awareness of there teachers about critical thinking skills in Arabic language.

Recommendations

1) The teacher should try various strategies of teaching methods in both stages primary and secondary stages, in order to stimulate and reinforce student's skills especially in the previous dimensions.

2) The need for diversification in the use of appropriate and educational technology.

3) The need for further research on teaching methods and useful strategies used to achieve the objectives ofeducation in Jordan.

4) The need for contentious training for teachers to improve their performanceCritical Thinking: Identifying the Targets

Abstract

The goal of this chapter is to set out clearly what critical thinking is in general and how it plays itself out in a variety of domains: in reading, in writing, in studying academic subjects, and on the job. Richard Paul and Jane Willsen provide down-to-earth examples that enable the reader to appreciate both the most general characteristics of critical thinking and their specific manifestations on the concrete level. It is essential, of course, that the reader becomes clear about the concept, including its translation into cases, for otherwise she is apt to mis-translate the concept or fail to see its relevance in a wide variety of circumstances.The danger of misunderstanding and mis-application is touched upon in this chapter at the end, but is developed at great length in another chapter, "Pseudo Critical Thinking in the Educational Establishment" (p. 47).

Is this a good idea or a bad idea?

Is this belief defensible or indefensible?

Is my position on this issue reasonable and rational or not?

Am I willing to deal with complexity or do I retreat into simple stereotypes to avoid it?

If I can't tell if my idea or belief is reasonable or defensible, how can I have confidence in my thinking, or in myself?

Is it appropriate and wise to assume that my ideas and beliefs are accurate, clear, and reasonable, when I haven't really tested them?

Do I think deeply or only on the surface of things?

Do I ever enter sympathetically into points of view that are very different from my own, or do I just assume that I am right?

Do I know how to question my own ideas and to test them?

Do I know what I am aiming for? Should I?

Effectively evaluating our own thinking and the thinking of others is a habit few of us practice. We evaluate which washing machine to buy after reading Consumer Reports, we evaluate which movie to go see after studying the reviews, we evaluate new job opportunities after talking with friends and colleagues, but rarely do we explicitly evaluate the quality of our thinking (or the thinking of our students).But, you may ask, how can we know if our thinking is sound? Are we relegated to "trial and error" to discover the consequences of our thinking? Do the consequences always accurately tell the tale? Isn't thinking all a matter of opinion anyway? Isn't my opinion as good as anyone else's? If what I believe is true for me, isn't that all that matters? In our education and upbringing, have we developed the ability to evaluate, objectively and fairly, the quality of our beliefs? What did we learn about thinking during our schooling?

How did we come to believe what we do believe, and why one belief and not another? How many of our beliefs have we come to through rigorous, independent thinking, and how many have been down-loaded from the media, parents, our culture, our spouses or friends? As we focus on it, do we value the continuing improvement of our thinking abilities? Do we value the continuing improvement of our students' thinking abilities? Important research findings indicate that we need to look closely at this issue. Mary Kennedy reports the findings on the opposite page in the Phi Delta Kappan, May, 1991, in an article entitled, "Policy Issues in Teaching Education."

How can we improve our thinking without effective evaluation practices? Can we learn how to evaluate our thinking and reasoning objectively? Let's look at one concrete example for clues into the elements of effective evaluation in a familiar field. In platform diving, there are criteria to be met to receive a score of "10" and standards that judges and competitors alike use to evaluate the dive. These standards guide the divers in each practice session, in each effort off the board. Without these criteria and standards, how would the diver and the judges know what was excellent and what was marginal? Awareness of the criteria and standards are alive in the divers' and coaches' minds. Do we have parallel criteria and standards as we strive to improve our abilities, our performances in thinking?

There is nothing more common than evaluation in the everyday world but for sound evaluation to take place, one must establish relevant standards, gather appropriate evidence, and judge the evidence in keeping with the standards.

There are appropriate standards for the assessment of thinking and there are specific ways to cultivate the learning of them. The research into critical thinking establishes tools that can help us evaluate our own thinking and the thinking of others, if we see their potential benefit and are willing to discipline our minds in ways that may seem awkward at first. This chapter briefly lays out those tools in general terms and acts as a map, so to speak, of their dimensions. We present examples of student thinking that demonstrate critical and uncritical thinking as we define those terms. In other chapters, we identify approaches to teaching critical thinking that are flawed, and explain why they undermine the success of those who attempt to use them.

Important Research Findings

First Finding: National assessments in virtually every subject indicate that, although our students can perform basic skills pretty well, they are not doing well on thinking and reasoning. American students can compute, but they cannot reason . . . They can write complete and correct sentences, but they cannot prepare arguments . . . Moreover, in international comparisons, American students are falling behind . . . particularly in those areas that require higher-order thinking . . . Our students are not doing well at thinking, reasoning, analyzing, predicting, estimating, or problem solving.

Second Finding: Textbooks in this country typically pay scant attention to big ideas, offer no analysis, and pose no challenging questions. Instead, they provide a tremendous array of information or 'factlets,' while they ask questions requiring only that students be able to recite back the same empty list.

Third Finding: Teachers teach most content only for exposure, not for understanding.

Fourth Finding: Teachers tend to avoid thought-provoking work and activities and stick to predictable routines. Conclusion: "If we were to describe our current K–12 education system on the basis of these four findings, we would have to say that it provides very little intellectually stimulating work for students, and that it tends to produce students who are not capable of intellectual work.

Fifth Finding: Our fifth finding from research compounds all the others and makes it harder to change practice: teachers are highly likely to teach in the way they themselves were taught. If your elementary teacher presented mathematics to you as a set of procedural rules with no substantive rationale, then you are likely to

think that this is what mathematics is and that this is how mathematics should be studied. And you are likely to teach it in this way. If you studied writing as a set of grammatical rules rather than as a way to organize your thoughts and to communicate ideas to others, then this is what you will think writing is, and you will probably teach it so . . . By the time we complete our undergraduate education, we have observed teachers for up to 3,060 days.

Implication: "We are caught in a vicious circle of mediocre practice modeled after mediocre practice, of trivialized knowledge begetting more trivialized knowledge. Unless we find a way out of this circle, we will continue re-creating generations of teachers who re-create generations of students who are not prepared for the technological society we are becoming."

Critical Thinking is a systematic way to form and shape one's thinking. It functions purposefully and exactingly. It is thought that is disciplined, comprehensive, based on intellectual standards, and, as a result, well-reasoned.

Critical Thinking is distinguishable from other thinking because the thinker is thinking with the awareness of the systematic nature of high quality thought, and is continuously checking up on himself or herself, striving to improve the quality of thinking. As with any system, critical thinking is not just a random series of characteristics or components. All of its components — its elements, principles, standards and values — form an integrated, working network that can be applied effectively not only to academic learning, but to learning in every dimension of living.

Critical thinking's most fundamental concern is excellence of thought. Critical thinking is based on two assumptions: first, that the quality of our thinking affects the quality of our lives, and second, that everyone can learn how to continually improve the quality of his or her thinking.

Critical thinking implies a fundamental, overriding goal for education in school and in the workplace: always to teach so as to help students improve their own thinking. As students learn to take command of their thinking and continually to improve its quality, they learn to take command of their lives, continually improving the quality of their lives.

Comprehensive Critical Thinking
has the Following Characteristics

It is thinking which is responsive to and guided by Intellectual Standards, such as relevance, accuracy, precision, clarity, depth, and breadth. Without intellectual

standards to guide it, thinking cannot achieve excellence. [Note: most so-called "thinking skill" educational programs and approaches have no intellectual standards.]

It is thinking that deliberately supports the development of Intellectual Traits in the thinker, such as intellectual humility, intellectual integrity, intellectual perseverance, intellectual empathy, and intellectual self-discipline, among others. [Note: most "thinking skill" programs ignore fundamental intellectual traits.]

It is thinking in which the thinker can identify the Elements of Thought that are present in all thinking about any problem, such that the thinker makes the logical connection between the elements and the problem at hand. For example, the critical thinker will routinely ask himself or herself questions such as these about the subject of the thinking task at hand:

What is the purpose of my thinking?

What precise question am I trying to answer?

Within what point of view am I thinking?

What information am I using?

How am I interpreting that information?

What concepts or ideas are central to my thinking?

What conclusions am I coming to?

What am I taking for granted, what assumptions am I making?

If I accept the conclusions, what are the implications?

What would the consequences be, if I put my thought into action?

For each element, the thinker must be able to reflect on the standards that will shed light on the effectiveness of her thinking. [Note: Most "thinking skill" programs ignore most or all of the basic elements of thought and the need to apply standards to their evaluation.]

It is thinking that is **ROUTINELY SELF-ASSESSING, SELF-EXAMINING**, and **SELF-IMPROVING**. The thinker takes steps to assess the various dimensions of her thinking, using appropriate intellectual standards. [Note: Most "thinking skill" programs do not emphasize student self-assessment.] But what is

essential to recognize is that if students are not assessing their own thinking, they are not thinking critically.

It is thinking in which THERE IS AN INTEGRITY TO THE WHOLE SYSTEM. The thinker is able, not only to critically examine her thought as a whole, but also to take it apart, to consider its various parts, as well. Furthermore, the thinker is committed to thinking within a system of interrelated traits of mind; for example, to be intellectually humble, to be intellectually perseverant, to be intellectually courageous, to be intellectually fair and just. Ideally, the critical thinker is aware of the full variety of ways in which thinking can become distorted, misleading, prejudiced, superficial, unfair, or otherwise defective. The thinker strives for wholeness and integrity as fundamental values. [Note: Most "thinking skills" programs are not well integrated and lack a broad vision of the range of thinking abilities, standards, and traits that the successful critical thinking student will develop. Many tend to instruct students with a technique such as mapping of ideas in diagrams or comparing two ideas, yet these ask little of the student and can readily mislead student and teacher to believe that such techniques will be sufficient.]

It is thinking that YIELDS A PREDICTABLE, WELL-REASONED ANSWER because of the comprehensive and demanding process that the thinker pursues. If we know quite explicitly how to check our thinking as we go, and we are committed to doing so, and we get extensive practice, then we can depend on the results of our thinking being productive. Good thinking produces good results. [Note: Because most "thinking skills" programs lack intellectual standards and do not require a comprehensive process of thinking, the quality of student response is unpredictable, both for the students and for the teacher.]

It is thinking that is responsive to the social and moral imperative to not only enthusiastically argue from alternate and opposing points of view, but also to SEEK AND IDENTIFY WEAKNESSES AND LIMITATIONS IN ONE'S OWN POSITION. When one becomes aware that there are many legitimate points of view, each of which — when deeply thought through — yields some level of insight, then one becomes keenly aware that one's own thinking — however rich and insightful it may be, however carefully constructed — will not capture everything worth knowing and seeing. [Because most "thinking skills" programs lack intellectual standards, the students are unable to identify weaknesses in their own reasoning nor are they taught to see this as a value to be pursued.]

What Does Comprehensive Critical Thinking Look Like?

The following section highlights examples of legitimate, substantial, comprehensive critical thinking in a variety of contexts. These examples will provide the reader with concrete samples of the criteria, the standards and characteristics integral to genuine critical thinking.

Identifying the Target:

Critical Thinking at School

Critical thinking has an appropriate role in virtually every dimension of school learning, very little that we learn that is of value can be learned by automatic, unreflective processes. Textbooks, subject matter, classroom discussion, even relationships with classmates are things to be "figured out" and "assessed." Let's look at two students who are each "reading" a passage from a story and see if we can identify the consequences of critical and uncritical reading habits and abilities.

Are We Hitting the Target, Assessing Student Thinking in Reading?

Consider the following example of two students engaging in reading the same story. This example is taken from an important article by Stephen Norris and Linda Phillips, "Explanations of Reading Comprehension: Schema Theory and Critical Thinking Theory," in Teachers College Record, Volume 89, Number 2, Winter 1987. We are privy to conversations between each of the two students, Colleen and Stephen and an experimenter. We are thus invited to reconstruct, from the students' responses, our own appraisal of the quality of their thinking. The utility of intellectual standards such as clarity, relevance, accuracy, consistency, and depth of thinking come into sharp focus once one begins to assess specific thinking for "quality."

In what follows we will present episode-by-episode Stephen and Colleen's thinking aloud as they work through the passage. The experimenter's questions are given in brackets. We have chosen to make our example detailed, because we see this as the best route for providing specificity to otherwise vague generalizations about the relationship between reading and thinking. To simulate the task for you we present the passage without a title and one episode at a time as was done with the children.Episode 1:

The stillness of the morning air was broken. The men headed down the bay.
Stephen:

The men were heading down the bay, I'm not sure why yet. It was a very peaceful morning. [Any questions?] No, not really. [Where do you think they're going?] I think they might be going sailing, water skiing, or something like that.

Colleen:

The men are going shopping. [Why do you think that?] They're going to buy clothes at The Bay. [What is The Bay?] It's a shopping center. [Any questions?] No. [Where do you think they're going?] They're going shopping because it seems like they broke something.

Commentary

Stephen recognizes that there is insufficient information for explaining what the men are doing. On questioning, he tentatively suggests a couple of alternatives consistent with the information given, but indicates there are other possibilities. Colleen presents one explanation of the story, and seems fairly definitive that the men are going to buy clothes at The Bay, a chain of department stores in Canada. On being queried she maintains her idea that the men are going shopping but offers an explanation inconsistent with her first one that they are going to buy clothes. To do this she assumes that something concrete was broken, which could be replaced at The Bay.

Episode 2

The net was hard to pull. The heavy sea and strong tide made it even difficult for the girdie. The meshed catch encouraged us to try harder.

Stephen:

It was not a very good day as there were waves which made it difficult for the girdie. That must be some kind of machine for doing something. The net could be for pulling something out of the water like an old wreck. No, wait! It said "meshed catch." I don't know why but that makes me think of fish and, sure, if you caught fish you'd really want to get them. [Any questions?] No questions, just that I think maybe the girdie is a machine for helping the men pull in the fish or whatever it was. Maybe a type of pulley.

Colleen:

I guess The Bay must have a big water fountain. [Why was the net hard to pull?] There's a lot of force on the water. [Why was it important for them to pull the net?]

It was something they had to do. [What do you mean?] They had to pull the net and it was hard to do. [Any questions?] No. [Where do you think they're going?] Shopping.

Commentary

For both children the interpretations of Episode 2 built on those of Episode 1. Stephen continues to question what the men were doing. He raises a number of alternative interpretation dealing with the context of the sea. He refines his interpretations through testing hypothetical interpretations against specific details, and hypotheses of specific word meanings against his emerging interpretation of the story. At the outset he makes an inference that a girdie is a machine, but leaves details about its nature and function unspecified. He tentatively offers one specific use for the net, but immediately questions this use when he realizes that it will not account for the meshed catch, and substitutes an alternative function. He then confirms this interpretation with the fact from the story that the men were encouraged to try harder and his belief that if you catch fish you would really want to bring them aboard. Finally, he sees that he is in a position to offer a more definitive but tentative interpretation of the word girdie.

Colleen maintains her interpretation of going shopping at The Bay. When questioned about her interpretation, Colleen responds in vague or tautological terms. She seems not to integrate information relating to the terms net, catch, and sea, and it seemed satisfied to remain uniformed about the nature of the girdie and the reason for pulling the net. In the end, she concludes definitively that the men are going shopping.

Episode 3:

With four quintels aboard, we were now ready to leave. The skipper saw mares' tails in the north.

Stephen:

I wonder what quintels are? I think maybe it's a sea term, a word that means perhaps the weight aboard. Yes maybe it's how much fish they had aboard. [So you think it was fish?] I think fish or maybe something they had found in the water but I think fish more because of the word "catch." [Why were they worried about the mares' tails?] I'm not sure. Mares' tails, let me see, mares are horses but horses are not going to be in the water. The mares' tails are in the north. Here farmers watch the north for bad weather, so maybe the fishermen do the same thing. Yeah, I think that's it, it's a cloud formation which could mean strong winds and hail or

something which I think could be dangerous if you were in a boat and had a lot of weight aboard. [Any questions?] No.

Colleen:

They were finished with their shopping and were ready to go home. [What did they have aboard?] Quintels. [What are quintels?] I don't know. [Why were they worried about the mares' tails?] There were a group of horses on the street and they were afraid they would attack the car. [Any questions?] No.

Commentary

Stephen is successful in his efforts to incorporate the new information into an evolving interpretation. From the outset Stephen acknowledges that he does not know the meaning of quintel and seeks a resolution of this unknown. He derives a meaning consistent with his evolving interpretations and with the textual evidence. In his attempt to understand the expression mares' tails he first acknowledges that he does not know the meaning of the expression. Thence, he establishes what he does know from the background knowledge (mares are horses, horses are not going to be in the water, there is nothing around except sky and water, farmers watch the north for bad weather) and textual information (the men are on the bay, they have things aboard, the mares' tails are in the north) and inferences he has previously made (the men are in a boat, they are fishing). He integrates this knowledge into a comparison between the concerns of Alberta farmers with which he is familiar, and what he takes to be analogous concerns of fishermen. On seeing the pertinence of this analogy he draws the conclusion that the mares' tails must be a cloud formation foreboding inclement weather. He claims support for his conclusion in the fact that it would explain the skipper's concern for the mares' tails, indicating that he did not lose sight of the overall task of understanding the story.

Colleen maintains her original interpretation but does not incorporate all the new textual information into it. She works with the information on the men's leaving and the mares' tails, but appears to ignore or remain vague about other information. For example, she says the cargo was comprised of quintels but indicates no effort to determine what these things are. She cites the fact that the men were ready to leave and suggests that they have finished their shopping, but does not attempt to explain the use of such words as skipper, cargo, and aboard in the context for shopping for clothes. She interprets mares' tails as a group of horses the possibly would attack the men, but gives no account of what the horses might be doing on the street. Basically, she appears to grow tolerant of ambiguity and incompleteness in her interpretation.

Interestingly, each student believes that he or she has read the passage. The question becomes, what does it mean "to read" something? Comprehensive, legitimate critical thinking enables us to explore the meaning of the concept "to read" and to come to understand that there is a spectrum of quality of readings, some superficial and mechanical, some deep and thorough. Specifically, Colleen has scrambled to piece together meanings that have little relationship to the writer's ideas. Colleen has "read" the passage but we can quickly see that the quality of her thinking lacks characteristics that we equate with sound reasoning, with critical thinking. She has been ineffective in thinking within the system of meanings inherent in what was said in the passage she tried to read. That her responses were inconsistent did not seem to disturb her, almost as if she had no sense of how to figure out what she was reading. The consequences for Colleen in this episode of thinking are minimal.

However, consider how vulnerable she will be outside school, when much more than grades or teacher approval is riding on her ability to think effectively in other systems, such as health care, parenting, upgrading job skills or becoming a proficient consumer.

On the other hand, Stephen has "read" the passage by means of critical reasoning, effectively decoding not only the words but the writer's thoughts. He has taken the initiative to reconstruct in his mind as much as he can of the logic of the images and concepts that the writer conveyed through the system of language. Stephen also explored the implications of his ideas and was clear about what he understood and failed to understand. He demonstrated intellectual perseverance in striving to make sense when struggling with difficult passages. He expected to make sense of the passage, to grasp the author's ideas, and finally he did. These habits, traits and abilities are among those we find in individuals for whom critical thinking is a comprehensive, substantial system of thought embedded, ideally, in every aspect of their lives. Although Colleen and Stephen have each "read" the passage, a useful distinction can be drawn between "critical reading" and "uncritical reading."

Most reading is performed at the lower end of the spectrum in school today. Very little instruction is given in the thinking skills that critical readers use. Colleen will only be able to improve with professional assistance, that is, with instruction that helps her assess her thinking using intellectual standards and a sense of the elements of thought. She needs help in learning how to think through the elements of a problem. Of course, instruction alone is insufficient. She will also need to apply her will and acquire self-discipline. She will need extensive practice and expectations placed on her effort.

As we stretch ourselves to develop our bodies we naturally feel some physical stress. So, too, do we feel intellectual stress as we stretch our minds to develop our thinking. Students must learn intellectual perseverance, intellectual responsibility, intellectual integrity to develop true intellectual "fitness." This is a lifetime process that merely begins in school. Most students are not well informed about the consequences of their uncritical thinking habits. It is likely that no one has presented these ideas to them so that they realistically grasp the possibility of intellectual development. Let's now look at two student written responses and examine the quality of the thinking displayed, keeping in mind the implications for the students' future effectiveness.

Are We Hitting the Target, Assessing Student Thinking in Writing?

The Assignment: The students in Ms. Tamari's 8th grade class were asked to write a paragraph in which they were to explain what the most important characteristics of a "friend" are and why they are most important. Here are the written responses of two students, Susan and Carl.

Susan:

A friend is someone who cares a lot about you, who likes to be with you, and who helps you out when you get in trouble. The most important characteristics of a friend are loyalty, helpfulness, and honesty. First, it's important for a friend to be loyal because you want to depend on your friend. If someone is not loyal that person may turn against you, especially if she meets someone he or she likes better than you. Second, it's important for a friend to be helpful, because often a person needs help and if you have no friends it can be real hard to feel so alone. And finally, it's important for a friend to be honest because very few people will tell you something about yourself that you don't want to hear. An honest friend will try to help you improve, even though she knows it may hurt your feelings. It's okay to hear some things from a friend because you know that she isn't trying to hurt you.

Observations

Susan is basically doing a good job critically analyzing which characteristics are desirable in a friend. First of all, it is clear that she understands the issue. First she clarifies the concept of a friend. Then she asserts three characteristics of a good friend. Then she takes each one in order and gives good reasons in support of each of them. Her writing is clear, relevant to the issue, systematic, well-reasoned, and reflects deep thinking for her age.

Now let's look at the writing of Carl.

Carl:

The most important thing is to have a lot of friends who like to do the things you like to do. Then you can go places and have fun. I mostly like other boys for my friends because they like sports like me. Girls sometimes play sports too but not as good as boys. I like to play baseball, football, and basketball. Sometimes I like to play Hockey. There are no good places to play in my neighborhood and sometimes my mother makes me come in too early. She sometimes makes me very mad because she screws up my life. All she ever wants me to do is work around the house. I don't think she knows anything about having friends. Maybe if she had played sports when she was little she'd let me play more and not just think about work, work, and more work.

Observations

Almost all of Carl's writing is irrelevant to the issue of what are the most desirable characteristics of a friend. He seems simply to be writing thoughts down as they occur to him in a stream of consciousness, in an associational way. Carl begins by confusing the question "What are the most important characteristics in a friend?" with "Is it important to know a lot of people who share pleasures with you?" He then moves to the question "Who do I like?" Then he moves to the question "What do I like to do?" and then on to "What's wrong with my neighborhood?" The final question, "Why doesn't my mother let me do what I want to do?" indicates that he has ended up far off course, yet it is unlikely that he realizes it. Until Carl learns to discipline his mind to stick to the question at hand, he will have trouble doing any quality thinking.

Learning to write out our thinking is one of the best ways to improve it. It goes without saying that excellence in writing requires excellence in thinking.

Writing requires that one systematize one's thinking, arranging thought in a progression that makes the system of one's thought accessible to others. When the writer's thinking lacks a clear purpose, lacks focus, lacks documentation and logic, and standards by which to judge the merit of the ideas, these flaws are revealed in the written work.

Writing, then, which is excellent is excellently thought through and is produced by someone with definite standards for both thinking and writing. (See the chapters: "Why Students and Teachers Don't Reason Well" and "Pseudo Critical Thinking in the Educational Establishment.") It is obvious as we read the responses of Carl and Susan that each has a very different understanding of what is well-thought-out thinking and writing, critical and uncritical thinking and writing. The consequences

for Carl's uncritical thinking are minimal in 8th grade, but how will he be affected when he demonstrates the same confusions on the job?

School instruction is focused on "subject matter." We usually, but wrongfully, think of school subjects as little more than masses of facts and definitions to be memorized. We don't often recognize that what is really important about school subjects is that they—when properly learned provide us raw materials upon which to practice thinking in a more proficient and insightful manner. They introduce us to new "systems" in which to think. As you read the next section, see if you can think of school subjects in this more illuminating and penetrating way.

Are We Hitting the Target? Assessing Student Thinking in Academic Subjects.

Subject Matter, Especially in High School and College Courses.

Though we often do not think of it this way, all subject matter — history, literature, geography, biology, chemistry, physics, mathematics — is part of a system of logically ordered parts. A historian studies a period and creates a "story" that puts events into meaningful patterns. In literature we study periods with their distinctive visions, their distinctive values, their distinctive modes of expression. One period is "romantic," one is "classic," one is "realist," and so forth. Or we study the outlook of an author, the way he or she sees the world: Dickens, Austen, Hemingway, Faulkner. In geography we develop systems for dividing up the surface of the earth into continents, countries, climates. We develop organized, logical ways to look at the surface, especially the physical surface, of the earth. In geology, we use a system to arrange time into geological time periods, and correlate principal physical and biological features with those periods. In biology, we develop systems for making sense of multiple forms of living and pre-living things. In math, we develop systems — arithmetic, geometry, algebra, calculus — for dealing with the quantitative dimensions of the world.

Everywhere there are systems inherent in subject matter, networks of logically ordered parts functioning in relation to each other for a definite human purpose. Critical thinking, with its system-unlocking orientation, is the perfect set of tools to take command of the systems inherent in subject matter. It is perfect, that is, only if we understand what it is and how to use it. Most students, unfortunately, have never been introduced to critical thinking, so cannot systematically use it to guide and empower their learning. Most students try to learn what is in fact systematized, by randomly memorizing fragments of the system as if they had no relation to each other. Compare the two following students talking about studying history.

Anna: “I don’t really like history too much. There is too much to try to remember. And it’s all about olden times, with a lot of dates and different wars and people doing things we don’t do anymore. You learn about presidents and kings and what they did and about when things happened. History is all about the past. It’s boring and I never use it. How could you? Things are really different now. “

Carra: “We do it differently in Mrs Brown’s class. Do you know that we’re all part of history? For example, in my mind I remember all of my past as a kind of story I tell myself. That’s how I remember things and that’s also how I figure things out. Think about it. Whenever you talk about yourself, you’re like a historian trying to help people figure things out about you. Everyone is really interested in their own history and in the history of the people they know. That’s what gossip is all about. Also the news. It’s like the history of yesterday. In her class we talk about how the history writer puts together the story he writes.

We also look at how the story might be told differently, I mean ‘cause what we read is only a tiny part of what the writer knows, and what the writer knows is only a tiny part of what actually happened. You have to look at it from different points of view or else you don’t have a chance of figuring out what most likely really happened. We are learning how to tell the difference between “facts” and how different people filter and interpret the facts depending on their own interests. We also try to notice what is left out of the history stories we read. Mrs. Brown says we are learning to think like history writers do and face the problems that they face. I think its fun to try to figure out history . . . how to tell a story in the most honest way, and how to see when people twist a story to make themselves look good.”

Observations

Anna and Carra, in their reactions to history, model the distinction between the way subjects have traditionally been taught (as a lot of stuff to remember for a test) and the way they should be taught (as a way to figure things out). The traditional student never gets the real point of the subject and hence does not transfer what she learns to the “real” world. By teaching history in a critical manner students can readily transfer what they learn to “life-centered” situations. They can improve their own everyday historical thinking.

Critical thinking is valuable, of course, not only in school but in the world beyond school as well. If we are teaching properly, our students not only learn how to apply critical thinking effectively to their reading, writing, and subject-matter

learning, they also begin to apply it to their everyday lives. The wonderful result is they not only reason historically about what is in their history textbook, for example, they also begin to reason much better about the "historical" issues in their daily life, as Carra is doing above. They not only reason scientifically about what is in their science textbook, they also begin to reason scientifically about the 'scientific" questions in their daily life. They not only hear about ethical principles when talking about characters in stories in their literature class, they also begin to use ethical reasoning when dealing with the ethical issues embedded in their lives.

Indeed, if we do our job correctly, students begin to discover that all the kinds of reasoning that they learn to do at school have application in the "real" world. They not only start to talk about and value reasoning in school, they also begin to discover how actually to do it, how to realistically and effectively to apply intellectual standards to their own thought in virtually every context of their lives. The result is that students, for the first time in their lives, begin to evaluate their own thinking and do so in a way that is increasingly disciplined and objective. Let's look at three examples of college students beginning to discover the value of applying intellectual standards to their own work and thinking.

Mandy: "I am often inconsistent. The most difficult aspect of my weakness is my attempt at achieving consistency between that of word and deed. That is, I use a double standard. I often say one thing and do another."

Kristin: "This semester I have learned how to organize my thinking through critical thinking. In organizing my thinking logically I have learned to break down my thought processes down into specific parts. By breaking my thought process down into specific parts I can see some of my strengths and weaknesses. When I do not organize my thought logically, my writing often becomes trivial, irrelevant and vague."

Laurie: "It is important to recognize key concepts when one thinks. If I need to figure out a problem and do not understand the key concepts, I will not be able to come to a logical conclusion. I am more and more aware of the need to pay attention to key concepts. One particular example occurred this winter when I went snowboarding for the first time.

The relevant concepts of snowboarding are: one needs to torque the body, the back leg is your anchor, and the edges of the board are used to slow down and in turn control the speed of the board. My friend explained to me that it usually takes a whole day to learn to snowboard, but because I paid close attention to the concepts and kept them carefully in mind, I was able to learn quickly. Most students do not

realize that concepts are important in learning. In fact, I think that most students don't know what concepts are. I certainly didn't."

These examples demonstrate that some students are prepared to take advantage of critical thinking instruction, though others are less ready. The teacher's challenge, however, is to meet the student's needs and respond effectively with appropriate instruction.

Identifying the Target:

Critical Thinking in the Workplace

With accelerating change and the increasing complexity of problems facing us at the dawn of the 21st Century, we are striving to compete within the new global economic realities. John Sculley, CEO of Apple Computer, Inc. reported to President-elect Clinton in December of 1992:Most Americans see our largest corporations going through massive restructurings, layoffs, and downsizing. People know something has changed and they are scared because they don't fully understand it and they see people they know losing their jobs.

They also see their neighbors buying high-quality, lower-priced products from abroad, and they ask why can't we build these same products or better ones here at home?The answer is, we can. But only if we have a public education system that will turn out a world-class product. We need an education system that will educate all our students, not just the top 15–20 percent. A highly-skilled work force must begin with a world class public education system. Eventually, the New Economy will touch every industry in our nation. There will be no place to hide!

In the New Economy, low-skilled manual work will be paid less. The United States cannot afford to have the high-skilled work being done somewhere else in the world and end up with the low-wage work.

This is not an issue about protectionism. It is an issue about an educational system aligned with the New Economy and a broad educational opportunity for everyone. Maximum flexibility.

In the old economy, America had a real advantage because we were rich with natural resources and our large domestic market formed the basis for economies of scale.

In the New Economy, strategic resources no longer just come out of the ground (such as oil, coal, iron, and wheat). The strategic resources are ideas and information that come out of our minds.

The result is, as a nation, we have gone from being resource-rich in the Old Economy to resource-poor in the New Economy almost overnight! Our public education system has not successfully made the shift from teaching the memorization of facts to achieving the learning of critical thinking skills. We are still trapped in a K–12 public education system which is preparing our youth for jobs that no longer exist.

Critical thinking is valuable not only in school but in the world beyond school as well. Increasingly, our ever-changing economy demands abilities and traits characteristic of comprehensive critical thinking. They enable us not only to survive but to thrive. They are essential to the new management structures to which successful businesses will routinely and increasingly turn. Consider the news item opposite, from a small town in Wisconsin. It illustrates well a trend which is going to grow enormously, and that is toward high productivity work-place organizations that "depend on workers who can do more than read, write, and do simple arithmetic, and who bring more to their jobs than reliability and a good attitude. In such organizations, workers are asked to use judgment and make decisions rather than to merely follow directions. Management layers disappear as workers take over many of the tasks that others used to do . . . " [Laura D'Andrea Tyson, Chairwoman of the President's Council of Economic Advisors]. Ladysmith, Wisconsin gives us an opportunity to see this trend displayed.

Mill Interviews 83 for Jobs

Between June 10 and 17, City Forest Corporation completed assessments of 83 candidates for jobs at the soon-to-be-opened paper mill in Ladysmith. The mill, formerly operated by Pope & Talbot, has been idle since last Aug 14.

Candidates for positions at the mill went through a half day "assessment center" to determine their potential for the new work concept to be implemented at the mill. The assessment center included several group problem-solving sessions as well as an oral presentation, written presentation and traditional interview

When the mill reopens, it will operate under a "self-directed team" method. With that approach there are no first line supervisors. Instead, workers are organized into teams that are responsible for much of the decision making and problem solving previously handled by the supervisor.

Each of the four production shifts will have a team leader. The production teams will be supported by a maintenance team . . . and a staff team made up of

management and other staff support. The beauty of this new system is that it place more of the control of the day-to-day operation in the hands of the individuals who are doing the hands-on work.

— Ladysmith News, Ladysmith, Wisconsin Thursday, June 24, 1993.

How important, then, is our role as teachers? Can we rely on parents to understand and to provide these essential abilities and traits for their children? Will the children master them on the streets or with their friends? It seems unlikely. How important, then, is it that we, ourselves, devote our professional energies to examining and assessing our own thinking? Can we do a proficient job of helping our students if we are not equally committed to improving our own abilities, traits and habits as well?

Our professional responsibility extends to recognizing that we may very well find that we need to assert our will, our initiative, our discipline and curiosity to secure the best materials and resources available to meet this obligation. How much care, then, should we use in selecting materials that will take us where we want to go, to a deep and comprehensive understanding and working knowledge of legitimate critical thinking?

Off the Target: Pseudo-Critical Thinking Approaches and Materials

Critical thinking cannot be seen, touched, tasted or heard directly, and thus it is readily subject to counterfeit, readily confused with thinking that sounds like, but is not critical thinking, with thinking that will not lead students to success in school and beyond. Critical thinking is readily falsified in the commercial world by those who seek to capitalize on its growing legitimacy. We increasingly need a regular Consumer Report that enables the reader to effectively recognize the counterfeits of good thinking, which are multiplying daily, to help us recognize the latest gimmick du jour. The characteristics of comprehensive critical thinking outlined in this chapter make available just a beginning set of criteria by which professionals and parents can evaluate educational resources in this field.

Educators, business and governmental leaders must begin to distinguish the genuine from the counterfeit, the legitimate from the specious, the incomplete from the comprehensive. Smooth, slick, and shallow thinking are everywhere around us, filled with promises of simple, quick, instant solutions, or misdirecting us into schemes that misspend our own or public monies. Other chapters of this book will

provide many examples, principally from the field of education. The reader will doubtless be able to add other examples from his or her own experience.

That we need sound critical thinking to protect ourselves and the public good is intuitively obvious, once we are clear about what critical thinking is and what it can do. Identifying the target precisely, however, is the first step in facing the challenges ahead.

Conclusion

The present study attempted to investigate the relationship between critical thinking and L2 grammatical and lexical knowledge. Few researchers have investigated such a relationship, but different studies (e.g. Sheikhi 2009; Boloori

2010; and Kamali& Fahim 2011) have investigated the relationship between critical thinking and other languagskills such as reading. Although they did not investigate the relationship between critical thinking and grammar or vocabulary specifically, their findings revealed that there is a significant positive relationship between critical thinking and reading comprehension. The important point is that grammar and vocabulary are two major components of reading comprehension. So, it can be concluded that if there is a relationship between critical thinking and reading, then critical thinking is expected to have positive relationship with grammar and vocabulary, too.

All in all, the above mentioned areas of conflict are probably indicative of the need for further research .Systemic Functional Grammar involves systems or networks of interactive language features that express three kinds of meanings: ideational for acquiring and expressing knowledge; interpersonal, for developing human relationships, and textual, for devising strategies to coherently express meanings. The interlacing nature of multiple meanings of language as well as its systems of language features is also true for critical thinking, a higher-order thinking strategy that involves varieties of ideas, reasons, or arguments. Both SFG and critical thinking require choosing. Guided by SFG concepts, a person chooses from systems of language features the right language items to express what he wants to say or do; by critical-thinking principles, he selects from varied alternative ideas or arguments the most appropriate reason to support his conclusion or claim about something.

A strong resemblance also exists between SFG and critical thinking as regards the origin, source, or basis of language features and ideas involved in their operations. Society under the influence of varied cultures, institutions, and ideologies, lays the foundation or basis of all language features, knowledge, orreasons dealt with by communicators governed by SFG and by critical-thinking concepts. Teaching Critical Thinking – the movement resting on the idea that schools should be less concerned with imparting information and requiring the memorization of empirical data – marks a new chapter in today's education since in an ever-changing world where almost nothing can be taken on faith for long, "critical thinking" seems to be a solution (Birjandi & Bagherkazemi, 2010). Dealing with the extraordinary challenges of today's information society which is based on producing and promoting knowledge requires citizens equipped with "critical competence" (Feuerstein, 1999).Within such framework, ameliorating students' meta-knowing should be a focal point in the curriculum in order to enable these individuals to form autonomous outlooks on life (Gordon, 1995, as cited in Feuerstein, 1999). Drawing learners' attention to the different purposes of critical thinking can help achieve more collaborative and constructive approaches to thinking, learning and assessment (Smith, 2011).

From the evidence of the various studies mentioned earlier, some implications may be drawn. Informed by the study conducted by Kamali and Fahim's (2011) whose findings indicated that levels of critical thinking have significant effects on both resilience and reading ability of texts with unknown words, it can be concluded that the utilization of critical thinking strategies would help learners read more effectively and improve their resilience and stressmanagement skills. Therefore, it is crucial for EFL/ESL teachers to encourage students to use their thinking abilities and provide them with challenging opportunities to reflect, grow, and learn. In other words, it is the responsibility of teachers to educate students for inquiry, problem solving, critical and creative thinking, and reflection which can contribute to their progress in language learning (Kamali & Fahim, 2011); however, students should also be made aware that the discreetly personal critical thinking is crafted at one’s own pace and to one’s own taste.

The prime pedagogical suggestion would be directed for syllabus designers and materials developers since language learners are in dire need of course books and materials that invoke critical thinking. Therefore, materials developers need to not only make an effort to create lessons that promote critical thinking as one of the effective elements in both academic and future career success and encourage students to reflect on their progress and take charge of their own thinking, but also include critical thinking issues as an essential aspect in teacher education since

they have an enormous responsibility in the classroom (Birjandi & Bagherkazemi, 2010). Teachers' effective use of questions, involving students in discussions over challenging and motivating topics and various forms of reflection conducted on the basis of mutual respect could engage students in meaningful critical thinking processes (Rezaei et al., 2011). Hence, materials developers should incorporate activities and practices which stimulate and build features of critical competence, preparing both learners and teachers to function well in the society as competent, autonomous, and accountable citizens.

The next suggestion would implicate the Iranian education department. They can do two things: firstly to include critical thinking as one of the requirements for the future employment, and secondly to hold in-service training classes to hone critical thinking skills of the incumbent teachers.

In conclusion, Systemic Functional Grammar or SFG is the language theory to underlie any language teaching and learning method or technique to develop students' communicative competence and critical thinking. The results of this study are significant to language teachers in their acts of making decisions or choices on which language-teaching methodology to use in helping their students develop their critical thinking and language proficiency. In addition, this study finds itself timely and relevant to the present set up of the world in which people, in general, deal with all kinds of characters,, products, knowledge, services, technology, and so on. To make people evaluate or judge the genuineness, essence, appropriateness or quality of diverse people or things in their environment is another significance of this study.

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