

Note-Taking in the Mirror of Literature: Theory and Practice

Lotfollah Karimi

Department of English, Hamedan Branch, Islamic Azad University, Hamedan, Iran

Abstract: The purpose of the present article is to review the literature of note-taking to explore its theoretical and practical state. The author has also cultivated in his mind the idea of providing the students, teachers and researchers with a rich source of information and future research priorities concerning the theme. Methodologically, note-taking studies were searched for in books, on the web and in some important databases including Elsevier, ScienceDirect, Sagepub and Springer. The search notes focused on the theory underlying note-taking and the findings of the previous studies. It was found that from the early of 20th century up to now note-taking has occupied the minds of many scholars. Rooted in cognition and metacognition, note-taking performs a crucial function in learning and academic achievement. Practically, note-taking is significant for students-they learn via this study skill-, for teachers-they can raise the level of students' knowledge by acquainting them with various note-taking strategies-and for the researchers-they can use it as a unique data-gathering instrument and conduct further research about it.

Key words: Note-taking • Cognition • Metacognition • Literature • Academic achievement

INTRODUCTION

Due to its significance for different groups dealing with learning, teaching and researching, research on note-taking has both theoretically and practically generated debates since C.C. Crawford began his studies in 1920s. Initially the debates centered on whether note-taking resulted in improved student performance on tests. Over the years, researchers have tried to verify that note-taking helps students “encode” the information involved and that notes are valuable as materials for review [1]. The literature reviews accompanying the previous studies are not rich enough. Therefore, a more extensive literature is felt.

To approach the objective of the study the present article aims to analyze the related literature focusing on the following categories:

- Significance;
- theory; and
- Results

The Significance of the Study: Every research project should be worth doing. The necessity of conducting such a study originates from the uses, advantages and importance of note-taking for those who, in one way or another, deal with learning, teaching and researching.

People take notes to plan future events and activities, to study for examinations, to prepare a technical talk and to record the minutes of work meetings. Furthermore, the reasons why individuals take notes are highly variable. Despite the diversity of contexts and situations, all note-taking entails recording information collected from one or more sources. Such a record constitutes a stable external memory that is intended to help to plan future activities, to learn, to think or to create. Thus, it is important to understand this common activity for both theoretical and practical reasons [2].

Note taking is recognized as a critical activity which enhances learning in learning contexts. Notes are essential for recalling what has been heard or seen and can promote reflection afterwards [3]. According to Castello and Monereo [4] note-taking is the hegemonic study activity at university and the main ground for education interaction between teacher and students. This observation has given rise to an increasing interest in studying students' note-taking and its impact on learning.

Education journals and current research support the claim that note taking is one of the strategies students can cultivate to increase academic achievement. As students encounter unfamiliar text, they are equipped with the means to extract the most important information while staying engaged with the text [5].

Department of Lifelong Learning: study skills series [6] provides a few reasons why note taking is an important activity: taking notes will help one to 1) extend attention span, 2) keep focused on the subject area and the task at hand, 3) remember what is heard or read, 4) be an active learner and 5) organize the ideas being learnt about. The notes one produces are his or her own work and are a visible reminder of the effort being put into the course. This in itself can be a motivational factor for study!

In the same vein Cottrell [7] has provided the following list of reasons which imply why the researchers should bother themselves to deal with note-taking:

- useful record
- of important points for lecture use
- of where the information comes from

Helps Writing:

- Helps ideas flow.
- Helps planning-you can see what information you have.
- Assists organization-you can rearrange and remember notes in a different order.
- Helps you get started.

Helps Understanding:

- If you focus on selecting information to note.
- If you think through where everything fits.

Helps Memory:

- Summing things up briefly helps long-term memory.
- The act of writing helps motor memory.
- Pattern notes can be more memorable visually.

Investigating the encoding effect of note-taking is important at least in two ways [8]. First, note-taking is generally considered as an effective learning strategy. To support this idea, Kobayashi [8] refers to a study [9] according to which college students shared beliefs that the act of taking notes facilitates attending to lecture, comprehension of the material to be learned and the subsequent recall. Second, note-taking is one of the commonest study activities in school settings.

The proponents of the encoding hypothesis [10] claim that note-taking increases learning by stimulating note-takers to actively process the material and to relate it to their present knowledge.

Weishaar and Boyle [11] report that students, especially those with learning disabilities who are often “passive” learners, enjoy taking notes because it helps them in some ways: first, it allows for active engagement during lecture; second, it actively engages them in the learning process, thus improving comprehension; third, note taking encourages clarification of confusing information and aids encoding during long-term storage; and fourth, there is a positive correlation between the amount of notes taken and test scores.

Kiewra [12], White [13] and Ward and Tatsukawa [14] implicitly signify such a study by referring to three hypotheses concerning the effects of note-taking on learning. Firstly, the view that the process of recording notes facilitates learning is known as the encoding hypothesis. According to this view note-taking itself is seen as effective independent of review since it increases attention and helps with the encoding of material. Thus the process functions of note-taking are emphasized. The second view is that notes serve principally as a means of recording information for later review. This is known as the external storage hypothesis and emphasizes the product functions of note-taking. In this view, it is the review of notes that facilitates performance. A third hypothesis, the generative hypothesis, put forward by Peper and Mayer [15] states that note-taking facilitates the selection of important information. Note-taking is viewed as a generative activity that encourages students to build connections between what is presented and what they know. The process of note-taking itself helps students learn the material. This is usually explained in terms of encoding: the student’s mind receives some inputs from the instructor, both verbal and written on the blackboard and the task is to assimilate them. In the process of taking notes, the student has to re-express those inputs and while doing so, the ideas get mentally rehearsed and integrated at a deeper level, or even re-encoded mentally in a form that is easier for him to think about, apply and remember.

Theoretical Bases: The underlying bases of the study are cognitive (i.e., repetition, grouping, note-taking, key words, imagery) and metacognitive (i.e., self-management, advance preparation, self-monitoring, self-evaluation, self-reinforcement, general preview) theories [16-18].

As a complex activity, note-taking requires comprehension, selection of information and written production processes. The time urgency of selecting key points and recording them while comprehending new information at the same time places significant demands on the central executive and other components of working memory [2].

For cognitive psychologists, it is important to study the mental operations that underlie note taking in addition to studying the product itself. A cognitive analysis is even more critical to understanding when it is recognized that note taking cannot be equated to simply copying what is heard, observed, or thought. On the contrary, in a large majority of cases, note taking implies comprehension and written production. Note takers, as readers, must comprehend information and, as learners, try to store information in long-term memory by writing it down. As writers, note takers must select the information to record and format it in ways that differs from the source material. Accordingly, the goal of a cognitive analysis is to specify the processes, knowledge and working memory resources that note takers activate when they produce this unique kind of written product [2].

Second language acquisition has been viewed as a complex cognitive skill. Studies suggest that language learners employ certain ways to learn a language and are capable of becoming aware of their mental processes, which are their metacognitive knowledge [19]. According to Goh [20] metacognitive knowledge consists primarily of understanding or perception of the ways in which different factors act and interact to affect the course and outcome of cognitive enterprise.

How do cognitivists account for the learning of language? The answer to this question lies in the reviewing of three approaches: the *perceptual saliency* approach, *connectionism* and *information processing* approach.

Slobin [21] argues that the similarity in linguistic development across children and across languages is due to the fact that human beings are programmed to perceive and organize information in certain ways. It is this perceptual saliency which drives the learning process rather than an innate language-specific module.

A distinctive feature of connectionism or parallel distributed processing models (PDP) resides in the links it attempts to build with neurology and even neurobiology. Connectionists believe that we have to study learning within the actual architecture of the brain and make use of neurological information [22].

The main characteristics of McLaughlin's *information processing model* are as follows:

- Humans are viewed as autonomous and active.
- Mind is a general-purpose, symbolic-processing system.

- Complex behavior is composed of simpler processes. These processes are modular.
- Component processes can be isolated and studied independently of other processes.
- Processes take time; therefore, prediction about reaction time can be made.
- The mind is a limited-capacity processor.

When applied to second language learning, this approach can be summarized as follows:

- Within this framework, second language learning is viewed as the acquisition of a complex cognitive skill. To learn a second language is to learn a *skill*, because various aspects of the *task* must be practiced and integrated into fluent performance. This requires the automatization of component sub-skills. Learning is a *cognitive* process, because it is thought to involve internal representations which regulate and guide performance. As performance improves, there is constant restructuring as learners simplify, unify and gain increasing control over their internal representations [23]. These two notions—automatization and restructuring—are central to cognitive theory [22].
- According to Ellis [17] some strategies learners use are *cognitive* (for example, relating new concepts to other information in memory), some other are *metacognitive* (for example, organizing a time table to facilitate effective study of L2).

Theoretically, we would know whether instruction is successful and we will explore the relationship between (linguistic) environment and the learner's internal processing mechanism. Formal instruction directed at cognitive goals is concerned with attempts to train learners to use effective learning strategies. This allows us to address the question: Does learner's training enhance learner's ability to learn from formal instruction? A theoretical position concerning the role of formal instruction is 'the selective attention hypothesis' according to which formal instruction acts as an aid to acquisition [17].

Information is processed in short-term memory, which is limited in the amount of information it can process. When the short-term memory is overloaded, some materials are lost from short-term memory. Therefore, one way to help students jot down more

information in their notes is to lessen their cognitive load, thereby allowing students more cognitive space to process lecture information. A primary obstacle of note-taking is the amount of cognitive overload experienced by student Lee *et al.* [24].

Metacognitive is a term used in information processing theory to indicate an “executive” function, strategies that involve planning for learning, thinking about the learning process as it is taking place, monitoring of one’s production or comprehension and evaluating learning after an activity is completed [25].

One type of metacognitive knowledge is *strategy* (knowledge regarding the strategies which are likely to be effective in achieving goals and undertaking tasks) [26]. Wenden [27] claims that metacognitive knowledge is essential for successful learning because students’ understanding of themselves, the task they engage in and the strategies available to them directly affects all their decisions about learning. Zimmerman [28] notes that as metacognitively active participants in their own learning, “self-regulated learners are persons who plan, organize, self-instruct, self-monitor and self-evaluate at various stages of learning process”.

Making mnemonic and nonmnemonic notations by the children is another evidence for the relationship between cognition and note-taking. In other words, cognition underlies notations. One explanation for why children make nonmnemonic notations is age-related change. Children producing more functional notations may be more cognitively advanced, perhaps having more advanced symbolic understanding, but nonmnemonic note takers might not understand how to use notations to aid their memory and ... might not understand that their nonmnemonic notations are not useful. Functional note takers tend to be older children than those who make nonmnemonic notes [29-31].

Armbruster [32] and Stefannou, Hoffman and Vielee [33] suggested that the more generative the note-taking activity is, the more learning is likely to occur. However, Armbruster further acknowledged that the act of note-taking is itself a cognitively complex activity: “Generative processing while taking notes is especially difficult because the task is so cognitively demanding. Students must listen to the lecture, select important ideas, hold and manipulate these ideas in working memory, interpret the information, decide what to record and then write it down”.

According to White [13] note taking is not generally considered to be as central to language learning as, say, inferencing, translation or association, but has been found to be among the most frequent cognitive strategies used by language learners. Repetition and note-taking have been considered as the cognitive strategies used most often by ESL learners.

Wenden [27] claims that metacognitive knowledge is essential for successful learning because students’ understanding of themselves, the task they engage in and the strategies available to them directly affect all their decisions about learning. She goes on to argue that metacognition consists of a knowledge element and a strategic element. She defines the latter as “general skills through which learners manage, direct, regulate, sic [and] guide their learning, i.e., planning, monitoring and evaluating” [26].

Wang *et al.* [34] introduced several virtues of metacognition: it focuses on the role of awareness and executive management of thinking and helps learners become active participants in the learning process, instead of passive recipients of instruction and imposed experiences. It emphasizes personal appraisal and management, oriented towards cognitive development and learning; and is embedded in cognitive development, functioning as both product and producer. It is amenable to classroom instruction with teachers encouraging metacognitive dialogues and promoting self-appraisal and self-management skills. A further virtue is that self-appraisal and self-management invite both cognitive and motivational explanations as “skill and will” are interwoven in reflections and anticipations about learning. Metacognitive strategies are executive skills that evaluate the success of a learning activity. The basic metacognitive strategies include connecting new information to old, selecting deliberate thinking strategies, planning, monitoring and evaluating thinking process. The emphasis is on reflection on learning processes and learning to learn, leading to enhanced self-direction and learner autonomy in language learning. Metacognitive strategies are sequential processes to control cognitive activities and to ensure that a cognitive goal is achieved. They help to regulate and oversee learning activities, such as taking conscious control of learning, correcting errors, analyzing the effectiveness of learning strategies and changing learning behaviors and strategies when necessary. Students without metacognitive approaches are essentially learners without direction.

RESULTS

Concerning the theme many studies have been conducted with the interesting results. In 1925, Crawford [35] published a study which sought to verify his observation that there is a positive correlation between analyses of college students' lecture notes and their grades on subsequent quizzes. He concluded that taking notes was better than not taking notes, that reviewing notes was a key to their impact and that organizing notes effectively contributes to improved performance on tests.

According to DI Vesta and Gray [36] the immediate value of notes is less than the delayed-review value. This immediate value is of sufficient importance, however, to justify the practice of taking notes, even if there is no opportunity to use them later.

Castello and Monereo [4] refer to different eras when note-taking has been dealt with. A dominant approach in the sixties and seventies focused on the effects of note-taking and note-writing on some cognitive variables, such as attention, memory and comprehension. In the eighties and nineties, interest was focused on the relationship between quality of notes and significance of learning. More specifically, these studies analyzed whether the use of different note-taking procedures improved the learning of some information. From this perspective, a clear distinction between note-taking procedures was established, identifying those allowing only for information repetition, others facilitating its elaboration and those enhancing comprehension and restructuring of the content to be noted down. More recently, the interest of research has shifted to what really happens in the classrooms when teachers aim at prompting certain note-taking forms. Apart from showing the adequacy of some didactic strategies such as expository patterns or "note-taking tips" these studies have highlighted the importance of teachers' and students' conceptions about note-taking.

These studies have also paid attention to the consideration of notes as a symbolic mediator between the content taught by the teacher and the knowledge constructed by students in their minds. Castello and Monereo's [4] article deals with such an approach: firstly, clarifying the significance of notes as a tool to transform knowledge (epistemic note-taking); and secondly, presenting some results of a research and educational innovation project aimed at studying the changes in conditions of instructional context that may promote notes becoming real tools for conceptual change.

Some studies have focused on the relationship between lecture note-taking and academic achievement. According to Stahl *et al.* [37] lecture note-taking influences the academic success of high school and college students. As Spires and Stone [38] point out, students will "increasingly have to depend on their ability to take notes in order to be successful in the classroom". Armbruster [32] reported that college students usually spend about 80% of class time listening to lectures. If lecturing is the instructor's sacred cow, then lecture note-taking is the students' "pet calf".

On the same stock Kiewra and Benton [39] have been studying the relationship between lecture note-taking behaviors and academic ability by using more global measures of ability, such as GPA and predictive achievement test scores. In addition, they have considered a) scores on an information processing ability test, b) analyses of notes taken during designated lecture and c) scores on a test based on a lecture and scores on a course exam covering several lectures. They concluded that the amount of note-taking is related to academic achievement and the ability to hold and manipulate propositional knowledge in working memory is related to the number of words, complex propositions and main ideas recorded in notes.

Similarly, there is general consensus among American college students and professors alike that taking notes on lecture information assists in the process of learning and retaining the information [40]. They also continue to add that taking notes while listening to a lecture is a time-honored tradition in academic context. ... 92% of the international students and 94% of the American surveyed (N=164) through a questionnaire on the value and practice of taking notes expressed the view that note taking is an important activity that assists in the process of learning and retaining the materials. Dunkel and Davy [40] came to the conclusion that understanding the views of students on note taking in lecture and the considerable variation in how they conceptualize lectures, provides many insights into this component of academic literacy and, they would argue, is a necessary adjunct to other kinds of research in this area. Badger *et al.* [41] suggest that the aim of taking note is to recall as much as possible of the lecture. Taking note may help achieve this aim because the process of taking note aids the concentration in the lectures or because the product of note taking facilitates some kind of review process.

A little change in the angle of our vision leads us to the importance of reviewing the notes taken. In a report on their study which allowed students to review their notes immediately before a test, Carter and Van Matre [42] argued that the benefit of note-taking appeared to be derived from the review rather than from the act of note-taking itself. An interesting study by Kiewra [43] also endorsed the value of review, but not of student note.

Achievement is usually higher when notes are reviewed. Note-taking may, therefore, primarily serve as an external storage function because its main value is the product that is externally stored and reviewed. This external storage function suggests that note-taking is important mainly as the source of a written document which can be referred to when reviewing for tests [44]. Mee also believed that rereading or rewriting notes seemed equally beneficial and most of the successful test performers were those who took full notes, had positive attitude towards note-taking and reviewed their notes.

Kiewra *et al.* [45] investigated how different note-taking formats in combination with review activities affect recall and relational learning. The results of their study indicated that essay writing was less effective than standard review practice for relational learning and that note-taking on an outline increased test performance beyond other note formats. Performance differences might have resulted from quantitative differences in note-taking favoring outline note-takers. Additionally, conducting a study, Kiewra [12] concluded that listening to a lecture and subsequently reviewing the instructor's notes prior to a delayed exam leads to relatively higher achievement than does the traditional method of taking and reviewing personal lecture notes. According to Slotte and Lonka [46] reviewing the notes during essay-writing generally resulted in good performance in an exam calling for deep-level text comprehension. However, this review effect was mainly limited to detailed learning instead of making one's own inferences.

Strategically, note-taking is generally considered as an effective learning tool. Many students believe in the positive effect of note-taking process itself on the learning performance [8]. According to Van Meter, Yokoi and Pressley [9] college students shared beliefs that the act of taking notes facilitates attending to the lecture, comprehension of the material to be learned and the subsequent recall. Lee *et al.* [24] have taken note-taking into accounts as effective strategies to improve students' learning.

Another strategy is concept mapping, a tool for representing the interrelationships among concepts in an integrated, hierarchical manner. In other words, it is a strategy via which we can organize our notes. Conducting a study on the influence of concept mapping on achievement, self-regulation and self-efficacy in ESL students, Chularut and DeBacker's [47] findings clearly demonstrate that concept mapping can benefit ESL students across a range of levels of English proficiency, including those who were most advanced in English acquisition. This has important implications for both students and educators. Students may optimize their learning by adopting concept mapping as a learning strategy. Because concept mapping is a student-directed strategy that does not rely on teacher involvement or other formal or complex technological support, it is easily adopted by users. Furthermore, concept mapping is flexible enough to be useful in variety of learning setting. Educators may enhance the achievement as well as the self-efficacy of their ESL students by familiarizing them with the concept mapping strategy.

Some others have geared their attention towards the quality of notes. Research on the qualitative dimension, based on the note completeness, indicates that the number of idea units in lecture notes is positively related to test performance [45]. Benton *et al.* [48] also presented data consistent with the conclusion that the length of lecture notes was related to both qualitative measures of essay writing.

Slotte and Lonka [46] also found that taking extensive and high-quality notes is related to success in tasks calling for deep-level discourse processing. They continue to argue that writing more extensive summaries would improve the quality of deep-level mental representations. The results they have obtained clearly show that the process of recording notes is related to text comprehension even without any instruction on how to produce the notes. In particular, they found that spontaneous note-taking is effective when deep-level understanding and one's own references are called for. The fact that the review and process effects of note-taking are different, depending on the nature of the task, poses challenge to instructional designers. First, students should be made aware that various note-taking strategies exist. This requires developing met cognitive knowledge about when and under what conditions a particular type of note-taking activity is more effective. Further, the learning situations should be such that rote learning would not be reasonable.

According to Slotte and Lonka [46] results pertaining to note quality indicated that the participants who summarized the content of the text resulted in better performance in all tasks in comparison with those who produced notes following the text order or verbatim notes. The amount of note-taking was also positively related to text comprehension. They also state that, in spontaneous note-taking, summarizing and using other methods which require the elaboration from words to meaning units in one's own words lead to a deeper-level mental representation than copying, verbatim notes, or underlining text. They believe that dimensional formats have improved learning from text, whereas conventional notes, taken in the students' ordinary way, have generally resulted in poorer performance. These researchers argue that the results of their study have important theoretical and pedagogical implications, since their study has shown that the quality of spontaneous used learning activities determines the quality of mental representation formed of the materials to be learned.

Some researchers have noticed the encoding and external storage dimensions of note-taking. Rickards and Friedman [49] concluded that note-taking seemed to serve as both an encoding device and as external storage mechanism, with latter being the more important function. The external storage function not only led to enhanced recall of the notes, but also facilitated the reconstruction of other parts of the passage.

The research findings on whether note-taking promotes encoding have been mixed. Hult *et al.* [50], for example, found that note-taking does involve semantic encoding; but Henk and Stahl [51] found that the process of note-taking in itself does little to enhance recall. They found, however, that reviewing notes clearly results in superior recall. Their conclusions were dramatically different from those of Barnett *et al.* [52], who found "strong support" for the encoding function of note-taking but not for the value of using notes to review material [53]. The proponents of the encoding hypothesis [54, 36, 10, 15, 55] state that note-taking enhances learning by stimulating the note-takers to actively process the material and to relate it to their existing knowledge.

A number of studies have been conducted over the last 30 years that examine the effect of note-taking training on achievement. It is widely accepted by educators that notetaking is a valuable tool that can help increase the retention of information [56].

Some experimental studies on student achievement have been inconclusive regarding the benefits of note-taking training. However, these studies have had serious methodological weaknesses and have not consistently involved meaningful training sessions that incorporate practice and evaluation of the note-taking skills. For example, a study by Bretzing *et al.* [54] involved 15 minute training sessions before the testing and provided only general note-taking tips.

Bertzing, Kulhavy and Caterino [54] and Peck and Hannafin [57] conducted similar research to gain insight into this issue. In all of these studies, one or more experimental groups received special note-taking training, while one or more groups received no formal training. The results of Peck and Hannafin's [57] study showed that the uninstructed note takers actually performed better on all three tests. Peck and Hannafin [57] suggested that the results were a product of an "interference effect" in which the process of note-taking itself interfered with the retention of information.

In, practically, all college and high school classrooms, students take note while attending lecture presentations. Although students fill volumes of notebooks throughout their academic careers, few students are ever taught or advised about note-taking and review. In fact, Palmatier and Bennett [58] surveyed 233 University of Georgia students and found that although 99% of them took lecture notes, only 17% of those students had received limited formal instruction in note-taking. Such limited training is perhaps a reflection of insufficient teacher preparation in study skills such as note-taking [59]. For example, only two of 29 educational psychology textbooks reviewed by Ladas [1] even mentioned the topic of note-taking.

Boyle and Weishaar [60] in their study of high school students with disabilities concluded that improved note-taking skills contribute to increasing students' comprehension, short-term and long-term recall. They extended the academic note-taking training in their study from 15 minutes to 50 minute sessions. Instructed students scored significantly higher on measures of immediate recall, long-term recall and comprehension and number of words recorded. It is reasonable to assume that if speed note-taking is incorporated into academic note-taking and a sufficient practicing and reinforcement is provided, it will increase the number of words recorded which will have a significant impact on comprehension, immediate and long-term recall.

Since note-taking is a crucial skill, many educators [61, 62, 63, 38, 59, 56] believe that it should be explicitly taught in school. According to Ornstein [61] note-taking should be part of the curriculum. He argues that:

- Able students usually learn [note-taking] skills on their own as a byproduct of cognition. However, many students do not learn these skills, or learn them too late, simply because they were not explicitly taught them (p. 58).
- Ornstein [61] believes that all students would benefit if teachers deliberately trained their students in note-taking techniques, especially the lower-achieving students. On the same stock Bakunas and Holley [63] argue that note-taking skills should be taught to students in the same manner that they are taught writing or computer skills. Teachers should model the desired result and students should have the opportunity to practice and receive feedback. The teacher should not simply assume that the students know how to take good notes. Some educators believe that teaching general note-taking skills is not sufficient. Instead, they argue that teachers should provide training in a specific method or strategy of note-taking. Stahl *et al.* [37] state that the Cornell Method, the Unified Note-taking System and the Split Page Method are all effective, "time-honored tactics" (p. 615). Spires and Stone [38] and Bakunas and Holley [63] specifically recommend the Split Page Method. Eidson [62], however, believes that general note-taking procedures may be more effective than specific methods because they take individual student differences into account (p. 267).
- Some scholars have found that note-taking will be more effective if it is combined with another learning factor. Seif [64] finds notes useful if they are accompanied by the reader's own explanation and interpretations. He called these types of notes note-making and he has said "take brief notes in your own words so that the main points can be included, organized and meaningful to you". The results of a study conducted by Peverly and Brobst [65] indicated that note taking and background knowledge were generally better predictors of test performance than self-regulation. Results imply that test performance is more related to note taking and background knowledge than to self-regulation.

Miscellaneous findings are found in some other studies. Foos *et al.* [66], conducting two experiments on 260 university students, investigated the effect of self-generated materials and came to the conclusion that the students keep the self-generated materials in mind more than those generated by the others. In the experiments conducted by Di Vesta and Gray [36] it was found that a group which took notes (notes take condition) was invariably superior in passage recall to a group which did not take notes (no notes condition), thereby providing support for encoding hypothesis. However, these researchers did not find any support for the external storage hypothesis, since no advantage over a note-taking group was found for a group which took notes and also reviewed them (note have condition). Hartley [67] gathered 57 note-taking studies and found that 34 studies favored the positive effect of note-taking, 19 studies yielded non significant results and 4 studies revealed the negative effect. He concluded from this result of vote-counting that note-taking enhances learning in certain conditions.

Using a randomized pretest-posttest control group design and a survey, Karimi [68] made an attempt to understand the effect of note-taking strategy instruction and its interaction with gender on the students' academic achievement and the attitude of Iranian professors and students towards note-taking.

Using ANCOVA, he found that the average performance between the groups differed on the posttest. That is, the experimental group outperformed the control one, implying that the main effect of note-taking strategy instruction has been significant, $[F(1,55) = 50.217, p < \alpha = 0.01]$. The adjusted means (Table 1) show that the mean score of the participants in the experimental group is 16.697 which is higher than that of the control group (11.439). It was also marginally found that the main effect of sex on the academic achievement is not significant, $[F(1, 55) = 1.382, p = 0.248]$. However, the extension of the researcher's prediction, that the interaction of gender and note-taking strategy instruction would also provides achievement, was not confirmed, $[F(1,55) = 1.24], p \text{ value} = 0.269 > \alpha = 0.05]$ (Table 2).

As a result of using one-sample *t* test, it was found that there is a meaningful difference between the mean of the respondents' attitudes and that of the questionnaire itself concerning the effect of note-taking instruction on the participants' academic achievement ($t_{190} = 33.17, p < 0.01$). The mean (79.40) of the respondents' opinions was higher than that of the attitude questionnaire (60).

Table 1: The Adjusted Means of the Independent Variable (i. e. Group) in Different Levels

Group	95% Confidence Interval			
	Mean	Std Error	Lower Bound	Upper Bound
Experimental	16.697	0.507	15.681	17.713
Control	11.439	0.543	10.350	12.527

Table 2: Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	401.902	4	100.476	20.459	0.000
Intercept	482.838	1	482.838	98.316	0.000
Pre	21.957	1	21.957	4.471	0.039
G	246.620	1	246.620	50.217	0.000
Sex	6.788	1	6.788	1.382	0.245
G*sex	6.132	1	6.132	1.249	0.269
Error	270.109	55	4.911		
Total	12105.313	60			
Corrected Total	672.011	59			

Table 3: Comparing the Mean of the Respondents' Opinions With That of the Attitude Questionnaire

Variable	\bar{x}	S	df	t	P
Attitude	79.40	8.08	190	33.17	0.000

$p < 0.01$, $N = 191$

Table 4: Comparing the Mean of the Male and Female Respondents' Attitudes

Sex	N	\bar{x}	S	df	t	P
Male	71	78.37	9.27	120.802	-1.285	0.201
Female	120	80.02	7.27			

$N = 191$

Based on the t test operated for independent groups (independent t test), there was no a meaningful difference between the mean of males' attitudes and that of the females' regarding the effect of teaching note-taking strategies on the participants' academic achievement $t_{(120.802)} = -1.285$ (Tables 3 and 4). One explanation may be that both the male and the female participants had experienced the benefits of note-taking and the items of the questionnaire each has been able to elicit the respondents' judgment about a given aspect of note-taking. It is these similar beliefs of the male and the female respondents that provide the foundation of a composite theory (i.e., participants' beliefs and notions about note-taking).

The findings probably indicate that note-taking can benefit students. This may be explained in some ways. First, note-taking causes meaningful learning. Second, each note-taking strategy performs its own function in building students' cognitive structure regarding the content of the subject matter they deal with.

For instance, concept mapping causes students to visually represent their understanding of what they hear or read. Third, reviewing the notes also plays a crucial role in recalling [43] and fixing the knowledge in one's long-term memory (the author's emphasis). Finally, note-taking provides learners with security which many practitioners in teaching advocate to be the facilitator of learning.

From a theoretical perspective, there is place to claim that there is a strong bound between note-taking strategy instruction and students' academic achievement. There are several explanations to support such a theory.

As one of the findings of the present study, the teachers and the students had positive attitude towards the effect of note-taking on academic achievement. This implies that they had experienced the results of note-taking in their life; that is why such a positive attitude was formed in their minds. Logically speaking, the individuals cannot have negative attitude towards something if they see its positive results.

To see how note-taking causes learning and academic achievement, it is needed to know about its mechanisms. Note-taking performs a crucial function in the memory processes like encoding, storage and retrieval. In the process of noting down the abstract materials in a concrete form, both concrete operational intelligence and abstract or formal concrete intelligence are involved [69]. Some other mechanisms implying the effectiveness of note-taking are enhancing attention span, creating confidence in what has been learned and decreasing memory load (through summarizing verbal and/or written information).

Note-taking can generally affect learning and academic achievement in various ways. For instance, encoding and the storage processes of information result in retrieval and learning. This is due the fact that teaching note-taking strategies strengthens the processes of comprehending, noticing the materials (especially the key points) and summarizing information. When amplified, such processes facilitate and speed up understanding the materials. Moreover, reviewing and/or thinking about notes may cause learning materials to be encoded, fixed in mind and retrieved.

There is a strong bound between note-taking and memory. As it were, note-taking affects learning and academic achievement in two ways at least-while being taken (encoding) and while being reviewed. In the encoding stage, note-taking can reduce memory load via summarizing information, hence facilitating learning. There are two types of memory-short-term and long-term. Reducing the load of short-term memory, note-taking facilitates the transfer of information into long-term memory. Most of what the learners learn is lost in a short period of time. In other words, they do not enter long-term memory. The numerical span of the short-term memory is usually from 5 to 9. As information load of the short-term memory increases, its extra load is lost and is not stored in long-term memory. Note-taking compensates the lost information by causing it to enter long-term memory [70].

In addition to the aforementioned points, the act of note-taking focuses attention, encourages the association of ideas and involves a deeper level of processing than listening alone [44]. Based on Piaget's constructivist or developmental theory [71, 69, 72], intelligence develops in four stages: 1) the sensorimotor stage, 2) the preoperational stage, 3) the concrete operational stage and 4) the formal (abstract) operational stage. In the fourth stage, which is more cognitive, adolescents (from 12 onwards) acquire a form of thought via which they can think about abstract or hypothetical problems, especially in the realm of scientific ones [73]. From a developmental

point of view, the last stage which people acquire is abstract thought.

Failing to acquire note-taking, as an effective study skill, causes students not to succeed in studying and developing positive attitudes towards educational centers [74]; however, appropriate use of note-taking, as a cognitive learning strategy, will lead to better achievement in learning the target language and assists the learner to gain more independence in the process of learning a discipline, language or other [75]. As it was mentioned [47], concept mapping can be considered as one of note-taking strategies. Oloyede's [76] study showed that the students taught using this strategy had a higher retention of information than those taught using guided discovery.

To the best of his smattering knowledge, Karimi [68] has offered some practical suggestions as follows:

- The instructors are recommended to teach different note taking strategies to their students explicitly.
- Teachers and students should be cognizant to take notes when they find a new piece of information, because the act of note-taking focuses attention, encourages the association of ideas and involves a deeper level of processing than listening alone [44, 34].
- Note-taking may be included in the syllabus of different educational programs.
- Note-taking practice should be analyzed to teach students how to get the best result from their efforts.
- Notes should be revised, rearranged, rewritten and reviewed.
- Notes should not be left without citing the source where it has been taken.
- Students should try to make themselves acquainted with the function content key words (which are directly related to the subject matter), directional key words (which are related to specific things students are expected to do; they are often action verbs) and clue key words (which indicate that important information is forthcoming).
- Students are advised to compare their notes with those of their peers'.
- What the instructor writes on board is usually a cue and students should write it down, too.
- It is better to type notes to be read easier and ideas be cemented in the mind.
- Notes should be organized by using maps, diagrams, charts, etc.
- Abbreviations, symbols and drawings are recommended to make the process of note-taking easier.

Summary: What has been reviewed may be summarized in three phases: the significance of note-taking, its theoretical bases and the ways it has been approached by the scholars.

Significance: Note-taking

- affects cognitive variables;
- acts as an external memory;
- causes the learners to learn, think and create;
- serves as an artifact;
- causes meaning to be encoded;
- is useful for review;
- extends attention span;
- causes the learner to focus on the subject;
- helps remembering;
- makes the learner active including those with learning disabilities;
- causes the learner to organize ideas;
- helps writing understanding and memory;
- facilitates attending to lecture, comprehending material and recall;
- increases learning via actively processing the material and relating it to previous knowledge;
- facilitates learning through its process of recording;
- is used for later review as an external storage; and
- facilitates the selection of important points.

Theoretical Bases: Note-taking is deeply rooted in cognition and metacognition. Note-takers store information in their long-term memory by writing it down. Learning is a cognitive process which, as internal representations, regulates and guides performance. Mnemonic and nonmnemonic notations by children provide evidence to argue that cognition underlies notations. The children producing more functional notations may be more cognitively advanced [32, 33].

Note-taking is cognitively demanding. Note-takers must listen to lectures or read texts, select important ideas, hold and manipulate these ideas in working memory, interpret the information, decide what to record and then write it down [32, 33].

Metacognitive knowledge is essential for successful learning, because students' understanding of themselves, the task they engage in and the strategies available to them directly impact on their decisions about learning [27]. As metacognitively active participants in their own learning, "self-regulated learners plan, organize, self-instruct, self-monitor and self-evaluate at various stages of learning process" [28].

Approaches to Note-Taking: As our review shows different educators, commentators and researchers have focused on note-taking from different angles of visions. There are some educators [8, 41, 66, 40, 39, 36] who believe that *lecture notes* positively affect recall, the process of learning and retaining the information, academic success and higher grades.

Castello and Monereo [4] refer to different *eras* when the topic, note-taking, has been dealt with. A dominant approach in the sixties and seventies focused on the effects of note-taking and note-writing on some cognitive variables, such as attention, memory, comprehension and so on. In the eighties and nineties, interest was focused on the relationship between quality of notes and significance of learning. More specifically, these studies analyzed whether the use of different note-taking procedures improved the learning of some information. More recently, the interest of research has shifted to what really happens in the classrooms when teachers aim at prompting certain note-taking forms.

There are researchers who consider note-taking as a *strategy* or *tool*. Lee *et al.* [24] have taken note-taking into accounts as effective strategies to improve students' learning. Chularut and DeBacker's [47] findings clearly demonstrate that concept mapping, as a strategy, can benefit ESL students across a range of levels of English proficiency. Stahl *et al.* [37] state that the Cornell Method, the Unified Notetaking System and the Split Page Method are all effective, "time-honored tactics" (p. 615). Spires and Stone [38] and Bakunas and Holley [63] specifically recommend the Split Page Method.

Some commentators have emphasized the function of *reviewing* notes [42, 12, 44, 43, 46].

Researchers have not ignored the effect of *combining* note-taking with another skill on the students' performance. Peverly and Brobst [65], for example, indicated that note taking and background knowledge were generally better predictors of test performance than self-regulation. Moreover, Kiewra *et al.* [45] investigated how different note-taking formats in combination with review activities affect recall and relational learning.

Some others have geared their attention towards the *quality* of notes. Research on the qualitative dimension, based on the note completeness, indicates that the number of idea units in lecture notes is positively related to test performance [45]. Benton *et al.* [48] also presented data consistent with the conclusion that the length of lecture notes was related to both qualitative measures of essay writing. Slotte and Lonka [46] also found that taking extensive and high-quality notes is related to success in

tasks calling for deep-level discourse processing. Boyle and Weishaar [60] concluded that improved note-taking skills contribute to increasing students' comprehension, short-term and long-term recall.

In some other studies attention has been paid to the *encoding* and the *external storage* dimensions of note-taking. Rickards and Friedman [49] concluded that note-taking seemed to serve as both an encoding device and as external storage mechanism, with latter being the more important function. The external storage function not only led to enhanced recall of the notes, but also facilitated the reconstruction of other parts of the passage.

Some other educators have come to the conclusion that note-taking strategies should be *taught*. According to Meyer [57], being a crucial skill, note-taking is to be explicitly taught in school. Ornstein [61] emphasizes note-taking as part of the curriculum. Bakunas and Holley [63] argue that note-taking skills should be taught to students in the same manner that they are taught writing or computer skills.

CONCLUSION

The findings of this study are practically significant for *teachers*, *students* and *researcher*. For *teachers*, because they may raise the knowledge level of their ESL students and the students of other disciplines by both teaching various strategies unknown to them and deeply acquainting them with the wisdom underlying note-taking. Teachers may use it as a scaffold to assist their students to achieve a sound knowledge of what they are supposed to learn. To plan more successful note-taking training teachers are recommended to obtain information about the ways students take notes. For *students*, because it is a very strong learning strategy via which they may optimize their learning. When learned, note-taking strategies will be student-oriented ones and can be adopted readily without teacher's help. Moreover, the variety of these strategies requires the students to develop their metacognitive knowledge to be able to prefer one strategy over the other as the task, time and situation demand. For the *researchers*, because further investigations are recommended to deeply discover the how of the association between note-taking and cognition. Additionally, researcher may decide to compare the extent of the effect of different note-taking strategies on the students' academic achievement.

Recommendation for Further Research: In addition to the areas mentioned above, future researchers may further investigate the followings:

- The relationship between the contents of notes and what is recalled by the note takers
- The effect of the quality of notes on the quality of mental representation
- The performance of note-takers who review their notes and those of those who do not
- The effect of note-taking on cognitive load
- The test performance of trained and untrained note-takers

REFERENCES

1. Ladas, H., 1980. Summarizing Research: A Case Study. Review of Educational Research, 50(4): 597-624.
2. Piolat, A., T. Oliver and R.T. Kellog, 2005. Cognitive Effort During Note-taking. Applied Cognitive Psychology, 19(3): 291-312.
3. Nguyen, N.H., 2006. Note-taking and Sharing with Digital Pen and Paper (Unpublished master's thesis). Norwegian University of Science and Technology and information Science.
4. Castello, M. and C. Monereo, 2005. Students' Note-taking As a Knowledge-construction Tool. Educational Studies in Language and Literature, 5(3): 265-285.
5. Allen, T. and C. Reeson, 2008. Note taking: Enhancing the ability to comprehend nonfiction texts. Retrieved February 4, 2009 from <http://beyondpenguins.nsdl.org/issue/column>.
6. Department of Lifelong Learning, 2009. Study Skills Series, Note-taking Skills-from Lectures and Readings. Retrieved January 25, 2009 from the World Wide Web: http://education.exeter.ac.uk/dll/study_skills/note_taking_skills.htm
7. Cottrel, S., 1999. The Study Skills Handbook. Stella and Macmillian press Ltd.
8. Kobayashi, K., 2005. What Limits the Encoding Effect of Note-taking? A Meta-analytic Examination. Contemporary Educational Psychology, 30(2): 242-262.
9. Van Meter, P., L. Yokoi and M. Pressley, 1994. College Students' Theory of Note-taking Derived from Their Perceptions of Note-taking. Journal of Educational Psychology, 86(3): 323-338.
10. Enstein, G.O., J. Morris and S. Smith, 1985. Note-taking, Individual Differences and Memory for Lecture Information. Journal of Educational psychology, 77(5): 522-532.

11. Weishaar, M.K. and R. Boyle, 1999. Note-taking Strategies for Students with Disabilities. *The Clearing House*, 72(6): 392-395.
12. Kiewra, K.A., 1985. Learning from A Lecture: An Investigation of Note-taking, Review and Attendance at a Lecture. *Human Learning*, 4(1): 73-77.
13. White, J.C., 1996. Note-taking Strategies and Traces of Cognition in Language Learning. *RELC Journal*, 27(1): 89-102.
14. Ward, N. and H. Tatsukawa, 2003. A Tool for Taking Class Notes. *International Human-computer Studies*, 59(6): 959-981.
15. Peper, R.J. and R.E. Mayer, 1978. Note-taking As a Generative Activity. *Journal of Educational Psychology*, 70(5): 514-522.
16. Daughy, C.J. and M.H. Long, 2003. *The Handbook of Second Language Acquisition*. Blackwell Publishing Ltd.
17. Ellis, R., 1994. *The Study of Second Language Acquisition*. Oxford: Oxford University Press.
18. Larsen-Freeman, D. and M.H. Long, 1991. *An Introduction to Second Language Research*. Longman Group UK Limited.
19. Imtiaz, S., 2004. Metacognitive Strategies of Reading among ESL Learners. *South Asian Language Review*, 14(1): 44-46.
20. Goh, C., 1997. Metacognitive Awareness and Second Language Listeners. *ELT Journal*, 51(4): 361-369.
21. Slobin, D. (ed.), 1985b. *The Crosslinguistic Study of Language Acquisition*, Vol. 2: Theoretical Issues. Hillsdale, New Jersey: Lawrence Erlbaum Associates.
22. Mitchell, R. and F. Myles, 1998. *Second Language Learning Theoris*. Arnold.
23. Karmiloff-Smith, A., 1986a. From Meta-processes to Conscious Access: Evidence from Children's Metalinguistic and Repair Data. *Cognition*, 23(2): 95-147.
24. Lee, P., W. Lan, D. Hamman and B. Hendricks, 2008. The Effects of Teaching Note-taking Strategies on Elementary Students' Science Learning. *Instructional Science*, 36(3): 191-201.
25. Brown, H.D., 2000. *Principles of Language Learning and Teaching*(4th ed.). Addison Wesley Longman, Inc.
26. Cotterall, S. and G. Murray, 2009. Enhancing Metacognitive Knowledge: Structure, Affordances and Self. *System*, 37(1): 34-45.
27. Wenden, A., 2001. Metacognitive Knowledge in Second Language Acquisition: The Neglected Variable. In M.P. Breen (Ed), *Student Contribution to Language Learning: New Direction in Research* (pp: 44-46). London: Pearson Education. Harlow, Essex.
28. Zimmerman, B.J., 1986. Becoming A Self-regulated Learner: Which Are the Key Processes? *Contemporary Educational Psychology*, 11(94): 307-313.
29. Bialystock, E. and J. Codd, 1996. Developings Representations of Quantity. *Canadian Journal of Behavioral Sciences*, 28(4): 281-291.
30. Eskritt, M. and K. Lee, 2002. Remember Where You Last Saw That Card: Children's Production of External Symbols As a Memory Aid. *Developmental psychology*, 38(2): 254-266.
31. Eskritt, M. and K. McLeod, 2008. Children's Note-taking As a Mnemonic Tool. *J. Exp. Child Psychol.*, 101(1): 52-74.
32. Armbruster, B.B., 2000. Taking notes from Lectures. In R.F. Fippo and D.C. Caverly(Eds), *Handbook of College Reading and Study Strategy Research* (pp: 175-199). N.J. Mahwah, Erlbaum.
33. Stefanou, C., L. Hoffman and N. Vielee, 2008. Note-taking in College Classroom As Evidence of Generative Learning. *Learning Environmental Research*, 11(1): 1-17.
34. Wang, J., K. Spencer and M. Xing, 2009. Metacognitive Beliefs and Strategies in Learning Chinese as a Foreign Language. *System*, 37(1): 46-56.
35. Crawford, C.C., 1925. Some Experimental Studies of the Results of College Note-taking. *Journal of Educational Research*, 12: 379-386.
36. DI Vesta, F.J. and G.S. Gray, 1973. Listening and Note-taking: II. Immediate and Delayed Recall As Functions of Variations in Thematic Continuity, Note-taking and Length of Listening-Review Intervals. *Journal of Educational Psychology*, 64(3): 278-287.
37. Stahl, N.A., J.R. King and W.A. Henk, 1991. Enhancing Students' Note-taking through Training and Evaluation. *Journal of Reading*, 34(8): 614-622.
38. Spires, H.A. and P.D. Stone, 1989. The Directed Note-taking Activity: A Self-questioning Approach. *Journal of Reading*, 33(1): 36-39.

39. Kiewra, K.A. and S.L. Benton, 1988. The Relationship between Information-processing Ability and Note-taking. *Contemporary Educational Psychology*, 13(1): 33-44.
40. Dunkel, P. and S. Davy, 1989. The Heuristic of Lecture Note-taking: Perceptions of American and International Students Regarding the Value and Practice of Note-taking. *English for Specific Purposes Journal*, 8(1): 33-50.
41. Badger, R., G. White and P. Sutherland, 2001. Note perfect: An Investigation of How Students View Taking Notes in Lectures. *System*, 29(3): 405-417.
42. Carter, J.F. and N.H. Van Matre, 1975. Note-taking Versus Note Having. *Journal of Educational Psychology*, 67(6): 900-904.
43. Kiewra, K.A., 1985. Students' Note-taking Behaviors and the Efficacy of Providing the Instructor's Note for Review. *Contemporary Educational psychology*, 10(4): 378-386.
44. Mee, M.Y., 1991. Notetaking-an Overview. *The English Teacher*, 20: 94-111.
45. Kiewra, K.A., S.L. Benton, S. Kim, N. Risch and M. Christensen, 1995. Effect of Note-taking Format and Study Technique on Recall and Relational Performance. *Contemporary Educational Psychology*, 20(2): 172-187.
46. Slotte, V. and K. Lonka, 1999. Review and Process Effects of Spontaneous Note-taking on Text Comprehension. *Contemporary Educational Psychology*, 24(1): 1-20.
47. Chularut, P. and T.K. Debacker, 2004. The Influence of Concept Mapping on Achievement, Self-regulation and Self-efficacy in Students of English As a Second Language. *Contemporary Educational Psychology*, 29: 248-263.
48. Benton, S.L., K.A. Kiewra, J.M. Whitfill and R. Dennison, 1993. Encoding and external-storage effects on writing processes. *Journal of Educational Psychology*, 85(2): 267-280.
49. Rickards, J.P. and F. Friedman, 1978. The Encoding Versus the External Storage Hypothesis in Note-taking. *Contemporary Educational Psychology*, 3(2): 136-143.
50. Hult, R.E., Jr., *et al.*, 1984. Different Effects of Note-taking Ability and Lecture Encoding Structure on Student Learning. Paper presented at the Annual Meeting of the Eastern Educational Research Association.
51. Henk, W.A. and N.A. Stahl, 1985. A Meta-analysis of the Effect of Note-taking on Learning from Lecture. Paper presented at the 34th Annual Meeting of the National Reading Conference, 15: 258-533.
52. Barnett, J.E., F.J. Di Vesta and J.T. Rogozinski, 1981. What Is Learned in Note-taking? *Journal of Educational Psychology*, 23(2): 181-192.
53. Beecher, J., 1988. Note-taking: What Do We Know about the Benefits? Retrieved January 1, 2009 from the World Wide Web: <http://www.indiana.edu/~reading/ieo/digests/d37.html>.
54. Bretzing, B., R.W. Kulhavy and L.C. Caterino, 1987. Note-taking by Junior High School Students. *Journal of Educational Research*, 80(6): 359-362.
55. Peper, R.J. and R.E. Mayer, 1986. Generative Effects of Note-taking During Science Lectures. *Journal of Educational psychology*, 78(1): 34-38.
56. Meyer, J., 2002. Notetaking Training: A Worthwhile Proposal? Retrieved January 15, 2009 from the World Wide Web: www.unca.edu/~mcglinn/jaymeyerrev Paper.doc
57. Peck, K.L. and M.J. Hannafin, 1983. The Effect of Note-taking Pertaining and the Recording of Notes on the Retention of Aural Instruction. *Journal of Educational Research*, 77(2): 100-07.
58. Palmatier, R.A. and J.M. Bennett, 1974. Note-taking Habits of College Students. *Journal of Reading*, 18: 215-218.
59. Kiewra, K.A., 1987. Note-taking and Review: The Research in Its Implication. *Instructional Science*, 16(3): 233-249.
60. Boyle, J.R. and M. Weishaar, 2001. The Effect of Strategic Note-taking on the Recall and Reading Comprehension of Lecture Information for High School Students with Learning Disabilities. *Learning Disabilities Research and Practice*, 16(3): 133-141.
61. Ornstein, A.C., 1994. Homework, Studying and Note-taking: Essential Skills for Students. *NASSP Bulletin*, 78(558): 58-70.
62. Eidson, B., 1984. Make a Note of It. *Clearing House*, 57(6): 266-268.
63. Bakunas, B. and W. Holley, 2001. Teaching Organization Skills. *Clearing House*, 74(3): 151-154.
64. Seif, A.A., 2001. *Training Psychology*. Tehran: Agah publication. (Persian version).

65. Peverly, S.T. and K.E. Brobst, 2003. College Adults Are not Good at Self-regulation: A Study on the Relationship of Self-regulation, Note-taking and Test Taking. *Journal of Educational Psychology*, 95(2): 335-346.
66. Foos, P.W., J.J. Mora and S. Tkacz, 1994. Student Study Techniques and the Generation Effect. *Journal of Educational Psychology*, 86(4): 567-576.
67. Hartley, J., 1983. Note-taking Research: Resetting the Scoreboard. *Bulletin of British Psychological Society*, 36: 13-14.
68. Karimi, L., 2010. The Effect of Teaching Note-taking Strategies on Students Academic Achievement. Unpublished Ph.D thesis, Islamic Azad University, Khorasgan Branch, Esfahan, Iran.
69. Piaget, J., 1967. Language and Intellectual Operations. In H. Furth (Ed.), *Piaget Knowledge* (pp: 121-132). Englewood Cliffs, NJ: Prentice-Hall.
70. Atkinson, R.L., R.C. Atkinson, E.E. Smith, D.J. Bem and S.N. Hoksma, 2000. *Hilgard's Introduction to Psychology*. New York: Harcourt Brace Jovanovich.
71. Fletcher, P. and M. Garman, 1986. *Language Acquisition: Studies in First Language Development*. Cambridge: Cambridge University Press.
72. Vygotsky, L., 1986. *Thought and Language*. The MIT: The MIT Press.
73. Lee, V. and P.D. Gupta (Eds.), 2001. *Children's Cognitive and Language Development*. United Kingdom: Blackwell Publishers Ltd.
74. Dilekmen, M., Ş. Ada and B. Alver, 2009. An Evaluation on Study Skills of High Students. *World Applied Sciences Journal*, 6(7): 966-970.
75. Zare, P., 2010. An Investigation into Language Learning Strategy Use and Gender among Iranian Undergraduate Language Learners. *World Applied Sciences Journal*, 11(10): 1238-1247.
76. Oloyede, O.I., 2010. Comparative Effect of the Guided Discovery and Concept Mapping Teaching Strategies on Sss Students' Chemistry Achievement. *Humanities and Social Science Journal*, 5(1): 01-06.