Chapter - I

Theoretical Background of the Study
CHAPTER I

THEORETICAL BACKGROUND OF THE STUDY

This chapter presents the details of the theoretical background of the study and it is presented here under the following headings: Introduction, Self-Regulated Learning (SRL), Internet Competency (IC), Academic Achievement (AA), Need and Importance of the Study, and Chaptrization.

1.1 INTRODUCTION

One of the topics in today's society related to educational researches is how students learn the subjects. As our world is developing so fast, the educational researchers and specialists are trying to find the ways for coinciding learning improvements with development improvements. The mankind will grow along with learning and can be afford this to its abilities (Azizi & Yeshodhara, 2013 b).

One of the main Components of quality in higher education is the quality of teaching - learning process. The quality of this Component depends on the quality of teaching and learning performance. The approaches vicissitude of learning psychology from behaviorism to cognitivism and constructivism have provided theoretical foundation for teacher towards the selection of appropriate strategies of teaching and achieve the desired level of learning. But in practice, it is necessary for teachers and students to be familiar with teaching-Learning Strategies and learning principles. On the other hand vast improvements in the learning science and application of information and communication technologies in higher education, and use of active learning
methods have facilitated both teachers and learners to result in effective learning (Azizi & Yeshodhara, 2013 a).

The self-regulated learners are those who regularize their learning ability effectively and help themselves through different methods (Schunk, & Zimermen, 1994). From visionary point of view, the self-regulated learner uses wide Cognitive and Metacognitive Strategies for their successful education. Also he/she is able to adjust his/her goals and motivations, proportionate with educational environment and effort properly for reaching to it (Schunk, 1994). These people can manage and control arrangement of their educational activity and if it is necessary for reaching to their learning goals, they take advisable decisions (Butler, & Winne, 1995). Totally, researchers approve the importance of self-regulation in relation to prosperity education e.g. Pintrich and De Groot (1990) and Latifian (1998) have shown that students who were using more statement from Self-Regulated Strategies have better intrinsic motivation, self-confidence, perception and better Academic Achievement (AA).

The recent studies in relation to Cognitive and Metacognitive Strategies have demonstrated that the person’s ability for learning depends on how much he/she uses these strategies. More usage of these will be more successful for learning subjects. Data has shown that when university or educational environment knows these relations, the learning environment will be designed for helping students more in learning. As higher education system, especially computer science and other science subjects changed remarkably and increased their responsibilities for their activities, it seems that this process will grow increasingly; therefore, universities and teachers have important responsibility toward better student’s learning.

The productive use of information technology is one of the most significant indices of national and economic development. The improvements in technology,
especially computer technology, bring changes and make things easier for every part of daily life. It is a reality that the role of technology is highly significant and globally discussed issue in contemporary education policy (Jegede, 1990). In the educational sphere, most specialists, agree that when Information and Communication Technology (ICT) is properly utilized, it fosters and enhances teaching and learning. Usha (2002) states that the emergence of the Internet, especially the World Wide Web (WWW) added a new dimension to information creation and delivery which also globally triggered digitization programmes. According to Ojedokun and Owolabi (2003), as new technologies transform classrooms over the next 20 years, teachers will have to change their teaching styles and acquire Internet skills. Teachers will need to learn new skills to teach students how to search for and use information from the Internet and about superhighway safety. This is already happening in some developed countries. The education sector and tertiary institutions in particular are becoming primary users of ICT and this trend has been driven by the recognition of the fact that ICT provides for flexible teaching and learning approaches. The web is becoming hegemonic as an interface for information particularly that of an academic nature. Individual articles can be found scattered around the web on authors’ own web sites. Scholarly journals are increasingly available online either in subscription-based publishers’ digital libraries or posted in publicly accessible web sites (Kling, & Callahan, 2004).

The Internet has broken down barriers of communication access from anywhere in the world. It is fast, reliable and does not have restrictions on content or format (except in certain countries). It also has a limitless range of facilities which assist users to access the almost infinite information on the net. It has changed the nature of publishing. The Internet offers the opportunity to access up-to-date research reports and knowledge globally in topics as diverse as science and technology, business and
finance, music and the arts. Thus, it has become an important Component of electronic services in academic institutions and thereby an invaluable tool for learning and research. For Internet resources to be used effectively, students and scholars need to develop a set of new skills that include strategies for searching relevant materials, skills in evaluating the quality of documents found, knowledge of web design, skills in using discussion forums and chat rooms, as well as basic understanding of how to send e-mail attachments (Newezeh, 2010).

1.2 SELF-REGULATED LEARNING STRATEGIES (SRLS)

1.2.1 Self-Regulation

Zimmerman (2000) expanded and developed Bandura's Social Cognitive Theory (SCT) by applying it specifically to the field of education. As Self-Regulated Learning (SRL) has been shown to be effective in the field of education (Boekaerts, 1999), Zimmerman's contribution to SCT is particularly relevant to this study since it further developed the concept of self-regulation. For Zimmerman (1989) self-regulation (as restated by Schunk 1994, p. 1) can be defined as "the process whereby students activate and sustain cognitions, behaviors, and affects, which are oriented toward the attainment of goals".

In his later research, Zimmerman redefined and expanded self-regulation. As he stated (2000, p. 14) self-regulation consists of “self-generated thoughts, feelings, and actions that were planned and cyclically adapted to the attainment of personal goals.” He also recognized that the quality and presence of actions and covert processes depended on one's beliefs and motives.
Pintrich defined SRL as “the strategies that students use to regulate their cognition as well as the use of Resource Management Strategies that students use to control their learning” (1999, p. 459). Pintrich also defined self-regulation as “an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features in the environment” (2000, p. 453). Pintrich (2000) describes the importance of the environmental influences on the study of self-regulation through his definition.

Wolters, Pintrich, Karabenick (2003) reviewed three areas of self-regulation strategies; cognition, motivation, and behavior and defined self-regulation based on three assumptions. They proposed that the assumptions in any model of self-regulation include: (a) learners are active and constructive participants in the learning process; (b) learners can monitor, control, and regulate their environmental features and certain aspects of their own cognition, motivation, and behavior; and (c) Cognitive, motivational, and behavioral self-regulatory activities are mediators among person, context, and eventual achievement.

To sum up, Zimmerman offered guidance regarding the planned and cyclical nature of goal attainment. However, his conceptualization gives fewer details about the role of the contextual features in the environment during the SRL processes in attaining the goals.

Zimmerman suggested three elements that must be present for a student to utilize SRL: (a) students' Self-Regulated Learning Strategies (SRLS); (b) self-efficacy perceptions; and (c) goal commitment (1989a). SRLS, defined by Zimmerman (1989, p. 329), refer to “actions and processes directed at acquiring information or skill that involve agency, purpose, and instrumentality perceptions by learners.” Self-efficacy
refers to people's beliefs about “their capabilities to organize and execute courses of action required to attain designated types of performance” (Bandura, 1986, p. 391). Students' goal commitments are required for them to be self-regulated and those academic goals such as grades, social esteem can vary extensively in nature and in time of attainment.

Through the distinction among personal, environmental, and behavioral determinants of SRL, Zimmerman (1989) viewed SRL as assuming reciprocal causation among three influence processes. He argues that SRL occurs “to the degree that a student can use personal (i.e., self) processes to strategically regulate behavior and the immediate learning environment” (p. 330). Students' strategies emerged from the learning process as means to control behavior and the environment, and covert self-regulatory processes.

Zimmerman (1989) retains Bandura's (1977) triadic form to illustrate the role of SRL. That is, the key elements include the person, the environment, and behavior. However, his model adds new levels of complexity. Zimmerman's innovation entails the overlay of feedback loops and the consequent strategies resulting from the learning process itself.

Zimmerman (2000) adapted the triadic reciprocal indicating self-regulation shown in Figure 1.1. The figure includes behavioral self-regulation, environmental self-regulation, and covert self-regulation. The figure illustrates how self-regulation interacts with the three social Cognitive determinants of behavior, the person, and the environment. A person can use self-regulation through behavior to adjust the environment, such as organizing materials for study or turning off the TV. The interaction of the behavior with the environment in turn supports the person.
Figure 1.1 Triadic forms of self-regulation. Source: Attaining self-regulation: A social Cognitive perspective (B. J. Zimmerman, 2000). In M. Boerkaets, P. R. Pintrich, & M. Zeidner (Eds.), Handbook of Self-regulation. San Diego Academic Press.

One example of self-regulation could be a student checking his/her homework, which gives information on the correctness of his/her work and, through enactive feedback, determines if he/she should repeat checking the homework. The student's action to check homework was “initiated personally and implemented through use of strategies, and inactively regulated through perceptions of efficacy”. Zimmerman referenced Carver and Scheier's (1981) research to state that self-efficacy worked as a controller through a feedback loop to regulate which strategies should be used to acquire knowledge and skill. The student's behavior of checking homework was due to the student's self-efficacy and a feeling that he/she controlled the learning. Self-regulation was the action of the student to use strategies to take control of his/her learning by controlling self, environment, and behavior.

Environmental Self-Regulation Strategy is students' proactive use of an environmental management strategy. Zimmerman gave an example of a student who arranged a study area for completing schoolwork. The student controlled the environment by eliminating noise, or arranging adequate lighting or a place to write. Zimmerman found that once the student perceived the effectiveness of this environmental setting in assisting learning, the student repeated this behavior and modified the environment for successful learning. This was carried reciprocally through

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Strategic use
Feedback Loop

Person

Behavioral Self-Regulation

Covert Self-Regulation

Environment

Environment Self-Regulation

Behavior
an environmental feedback loop. Zimmerman insisted that SRLS are only those that come under the influence of key personal processes such as self-efficacy perceptions or goal setting.

Student uses covert Self-Regulation Strategies by monitoring and adjusting the Cognitive and affective state. Zimmerman suggested that when a student uses an Elaboration Strategy such as integrating and connecting new information with prior knowledge, the use of strategies is reciprocally regulated through a covert feedback loop. For instance, when a student learns a new word, booklet, he/she recalls the word book and easily associates the meaning of the new word booklet (yangkim, 2009).

1.2.2 Social Cognitive Theory and Self-Regulation

Not only cognition determines self-regulation of learners, but also environmental and behavioral events have an important influence on learning as well. Self-regulation learner is influenced by self-efficacy learner, outcome and expectation goal. Therefore, it covers three areas: metacognition (thoughts), motivation (feelings) and behavior (actions) (Zimmerman, 2001). Bandura (1991) identifies three processes of academic self regulation: self-monitoring, self-judgment and self-reflection. Self-monitoring provides information for setting realistic goals and evaluating one’s progress. It serves as a diagnostic and self-motivating function. Self-judgment provides the basis for self-reaction through judging one’s progress against personal and collective standards. Self-reaction creates self-incentives for one’s anticipated affective reaction to one’s own behavior and internal standards. Zimmerman and Schunk (2001) provide another way to view the interactive SRL processes through a three-phase cyclical model, which consists of forethought, performance and self-reflection. Each phase leads to the next one.
Based on psychological analysis of academic learning through his work suggests a more comprehensive conceptual framework for future research of self-regulation. It provides a blueprint for future development of assessment instruments of self-regulation strategies, some of which can already be measured by the “Motivated Strategies for Learning Questionnaire” (MSQL). Pintrich explains that SRL can be identified through four phases in four areas of self-regulation. Together, they explain how SRL operates in the classroom. They are:

Phase 1: Forethought, planning and activation: It “involves planning and goal setting as well as activation of perceptions and knowledge of task and context and the self in relation to the task”.

Phase 2: Monitoring: It involves “various monitoring processes that represent Metacognitive awareness of different aspects of the self and task or context”.

Phase 3: Control: It involves “efforts to control and regulate different aspects of the self or task and context”.

Phase 4: Reaction and reflection: It involves “various kinds of reactions and reflections on the self and the task or context” (Pintrich, 2004, p. 398).

Pintrich clarifies that although these four phases present a time-honored sequence, they are not hierarchically or linearly structured. In fact, they may occur simultaneously. At each phase, SRL cuts across four areas/domains: cognition, motivation or affect, behavior and context. The first three are typical psychological functions whereas the last one (context) reflects social context. Some of the activities, tactics and strategies of students are involved in at each phase in each domain. Schunk (2005) explains that some of the activities within these areas require “little if any self-
1.2.3 Structure and Function of Self-Regulatory Processes

This brings us to the essential question of how a student's use of specific learning processes, level of self-awareness, and motivational beliefs combine to produce Self-Regulated learners? Social learning psychologists view the structure of self-regulatory processes in terms of three cyclical phases. a) The forethought phase refers to processes and beliefs that occur before efforts to learn; b) the performance phase refers to processes that occur during behavioral implementation, and c) self-reflection refers to processes that occur after each learning effort. The processes that have been studied in each phase to date are shown in Figure 1.2.

(a) **Forethought phase**

There are two major classes of forethought phase processes: task analysis and self-motivation.

Task analysis involves goal setting and strategic planning. There is considerable evidence of increased academic success by learners who set specific proximal goals for themselves, such as memorizing a word list for a spelling test, and by learners who plan to use spelling strategies, such as segmenting words into syllables.

Self-motivation stems from students' beliefs about learning, such as self-efficacy beliefs about having the personal capability to learn and outcome expectations about personal consequences of learning. For example, students who feel self-efficacious about learning to divide fractions and expect to use this knowledge to pass a college entrance exam are more motivated to learn in a self-regulated fashion. Intrinsic interest refers to the students' valuing of the task skill for its own merits, and learning goal orientation refers to valuing the process of learning for its own merits. Students who find the subject matter of history, for example, interesting and enjoy increasing their mastery of it are more motivated to learn in a self-regulated fashion.

(b) **Performance phase**

Performance phase processes fall into two major classes: self-control and self-observation. Self-control refers to the deployment of specific methods or strategies that were selected during the forethought phase. Among the key types of self-control methods that have been studied to date are the use of imagery, self-instruction, attention focusing, and task strategies. For example, in learning the Spanish word pan for "bread," an English-speaking girl could form an image of a bread pan or self-instruct using the phrase "bread pan." She could also locate her place of study away from
distracting noises so she could control her attention better. For a task-strategy, she could group the Spanish word pan with associated words for foods. Self-observation refers to self-recording personal events or self-experimentation to find out the cause of these events. For example, students are often asked to self-record their time used to make them aware of how much time they spend studying. A boy may notice that when he studied alone, he finished his homework more quickly than when studying with a friend. To test this hypothesis, the boy could conduct a self-experiment in which he studied parallel lessons alone and in the presence of his friend to see whether his friend was an asset or a liability. Self-monitoring, a covert form of self-observation, refers to one's Cognitive tracking of personal functioning, such as the frequency of failing to capitalize words when writing an essay.

(c) Self-Reflection phase

There are two major classes of self-reflection phase processes: self-judgment and self-reaction. One form of self-judgment/self-evaluation refers to comparisons of self-observed performances against some standard, such as one's prior performance, another person's performance, or an absolute standard of performance. Another form of self-judgment involves causal attribution, which refers to beliefs about the cause of one's errors or successes, such as a score on a mathematics test. Attributing a poor score to limitations in fixed ability can be very damaging motivationally because it implies that efforts to improve on a future test will not be effective. In contrast, attributing a poor math score to controllable processes, such as the use of the wrong solution strategy, will sustain motivation because it implies that a different strategy may lead to success. One form of self-reaction involves feelings of self-satisfaction and positive affect regarding one's performance. Increases in self-satisfaction enhance motivation, whereas decreases in self-satisfaction undermine further efforts to learn (Schunk, 2001).
Self-reactions also take the form of adaptive/defensive responses. Defensive reactions refer to efforts to protect one's self-image by withdrawing or avoiding opportunities to learn and perform, such as dropping a course or being absent for a test. In contrast, adaptive reactions refer to adjustments designed to increase the effectiveness of one's method of learning, such as discarding or modifying an ineffective LS. This view of self-regulation is cyclical in that self-reflections from prior efforts to learn affect subsequent forethought processes (e.g., self-dissatisfaction will lead to lower levels of self-efficacy and diminished effort during subsequent learning) (Zimmerman & Bandura, 1994). In support of this cyclical view of self-regulation, high correlations were found among learners' use of forethought, performance, and self-reflection phase processes (Zimmerman & Kitsantas, 1999). For example, students who set specific proximal goals are more likely to self-observe their performance in these areas, more likely to achieve in the target area, and will display higher levels of self-efficacy than students who do not set goals (Bandura & Schunk, 1981). Other studies have revealed that experts display significantly higher levels of self-regulatory processes during practice efforts than novices (Cleary & Zimmerman, 2000). The self-regulation profile of novices is very distinctive from that of experts. Novices fail to engage in high quality forethought and instead attempt to self-regulate their learning reactively. That is, they fail to set specific goals or to self-monitor systematically, and as a result, they tend to rely on comparisons with the performance of others to judge their learning effectiveness. Because typically other learners are also progressing, their performance represents a constantly increasing criterion of success that is very difficult to surpass. Furthermore, learners who make comparative self-evaluations are prompted to attribute causation to ability deficiencies (which are also normative in nature), and this will produce lower personal satisfaction and prompt defensive reactions. In contrast, the self-regulation
profile of experts reveals they display high levels of self-motivation and set hierarchical goals for themselves with process goals leading to outcome goals in succession, such as dividing a formal essay into an introduction, a body, and a conclusion. Experts plan learning efforts using powerful strategies and self-observe their effects, such as a visual organizer for filling in key information. They self-evaluate their performance against their personal goals rather than other learners' performance, and they make strategy (or method) attributions instead of ability attributions. This leads to greater personal satisfaction with their learning progress and further efforts to improve their performance. Together these self-reactions enhance various self-motivational beliefs of experts, such as self-efficacy, outcome expectations, learning goal orientation, and intrinsic interest. Knowing the differences in the structure and function of self-regulatory processes between experts and novices has enabled researchers to formulate intervention programs in schools for children who display lower levels of self-regulatory development (Zimmerman, 2002).

1.2.4 Development of Learner Self-Regulation

In their model of the social cognitive development of self-regulation, Zimmerman and Bonner (cited in Schunk & Zimmerman, 1997) identify four levels of the development of self-regulation competence: observational, imitative, self-controlled and self-regulated. The origins of self-regulation are social. Therefore, the first two levels are developed through social sources available for learners such as social modeling, verbal description, social guidance and feedback. The second two levels are reached through self-sources, through internal standards, self-reinforcement, self-regulatory processes and self-efficacy. It is important to note the interaction between both sources of self-regulation. Both are influenced by social environment. This model of self-regulatory development recognizes the motivational Component of self-

Table 1.1 Developmental levels of Self-Regulation

<table>
<thead>
<tr>
<th>Levels</th>
<th>Developmental Changes</th>
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<tbody>
<tr>
<td>Observation level</td>
<td>Distinguishing major features of a model’s behavior</td>
</tr>
<tr>
<td>Emulative level</td>
<td>Imitate a model’s behavior</td>
</tr>
<tr>
<td>Self control level</td>
<td>Perform a behavior using a mental representation of the model’s behavior</td>
</tr>
<tr>
<td>Self regulation level</td>
<td>Learners can adapt their behavior with changing conditions</td>
</tr>
</tbody>
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1.2.5 Self-Regulation as a Contributor to Academic Achievement

Research on early predictors of self-regulation development takes on particular meaning. In that many self-regulation processes in children exhibit clear relations with school outcomes (Bull & Scerif, 2001; Fuchs et al., 2003). Emotion regulation, effortful control and executive function make unique contributions to adaptation to school and early AA (Blair & Razza, 2007; Howse, Calkins, Anastopoulos, Keane, & Shelton, 2003). Research to date suggests that children who have difficulty in regulating emotions may also have difficulty in regulating their behavior in a variety of settings, and as a consequence may have difficulty in learning and acquiring some of the fundamental social and Cognitive skills necessary for AA (Eisenberg, Sadovsky, & Spinrad, 2005; Ladd, Herald, & Kochel, 2006). This may occur through different interface of emotional and Cognitive development pathways. The ability to control emotional arousal allows children to engage in challenging tasks that provide opportunities for using and practicing executive function skills (Calkins & Dedmon, 2000). Furthermore, difficulty in managing emotional arousal may exert its influence on children’s school readiness through a biological mechanism in which problems with emotionality limit children’s use of higher order Cognitive processes important for
learning (Blair, 2002). Moreover, children who are skilled at maintaining a positive mood are more capable of completing difficult school-related tasks, which often require executive function such as inhibition, working memory, and planning (Kuhl & Kraska, 1989). The study of self-regulation in research on effortful control and executive function in young children has important parallels in the study of self-regulation and AA in educational psychology. Research on self-regulation in developmental psychology reviewed above provides some background or foundation for the development of some of the regulatory abilities that are the focus of interest in educational research. For example, educational psychologists describe a process through which children internalize information from the learning environment to develop a sense of self as an effective or ineffective learner (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996; Schunk, 1999). Educationally minded developmentalists have also shown that children’s perceptions of control and beliefs about effort have direct effects on academic outcomes and are malleable; that programs that increase perceived control and beliefs about effort have effects on achievement (Fuchs et al., 2003; Mueller & Dweck, 1998; Skinner, Zimmer-Gembeck & Connell, 1998). This sense of self is then understood to contribute to the amount and type of effort that children expend and expectations for success that children hold. Effort and expectancy, which are aspects of the construct termed Achievement Motivation (Eccles & Wigfield, 2002), then feedback on both the learning environment and the child’s sense of self, leading to a propitious or vicious cycle of effort, learning, and achievement across the school years (Blair, Calkins, & Kopp, 2010).

### 1.2.6 Self-Regulated Learning

A main feature of SRL is metacognition. Metacognition refers to the awareness, knowledge, and control of cognition; the three processes that make up Metacognitive
self-regulatory activities are planning, monitoring, and regulating (Pintrich, Smith, Garcia, McKeachie, 1991). Other aspects of SRL include time management, regulating one’s own physical and social environment, and the ability to control one’s effort and attention (Pintrich, 1995).

"SRL is an active constructive process whereby learners set goals for their learning and monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features of the environment" (Nicol, & Macfarlane-Dick, 2006).

Corno and Mandinach (1983) have defined SRL as an effort to deepen and manipulate the associative network in a particular area and to monitor and improve that deepening process. It refers to the deliberate planning and monitoring of the Cognitive and affective processes that are involved in the successful completion of academic tasks. Bandura (1977) defined self-regulation, as the ability to control our own behavior and it is the workhorse of human personality. Bandura suggests three steps: (1) Self-observation, we look at ourselves, our behavior, and keep tabs on it; (2) Judgment, we compare what we see with a standard; (3) Self-response, if we did well in comparison with our standard, we give ourselves rewarding self-responses. If we did poorly, we give ourselves punishing self-responses. Strategies include self-evaluation, organizing and transforming, goal setting and planning, seeking information, keeping records and monitoring, environmental structuring, self-consequating, rehearsing and memorizing, seeking social assistance, and reviewing records (Zimmerman, 1989). Yang (1993) has found that with respect to self-regulatory learners: i) high regulatory students tend to learn better under learner control than program control; ii) high self regulatory students are able to monitor, evaluate, or manage their learning effectively during learner controlled instruction with embedded questions; iii) learner control reduces
instructional time required to complete the lesson; and iv) high self-regulatory students manage their learning and time efficiently.

There are several characteristics of computer technology that make it a desirable vehicle for examining the concept of SRL. SRL is not a mental ability, such as intelligence, or an academic skill, such as reading proficiency; rather, it is the self-directive process through which learners transform their mental abilities into academic skills (Schunk, & Zimmerman, 1998). Computers make it possible to independently store data collected via interaction with the student thus providing the possibility for following student moves as a source of data and later providing feedback to them. This capability has instructional benefits: (i) learner interaction with concepts can be stored and retrieved for later analysis; and (ii) the immediate feedback that the learner receives allows a greater degree of learner control by providing individualized opportunities for review. McDonald and Ingvarson (1995) found that independent learning of this type has a strong chance of success due to the extended resources that the computer offers. Theoreticians seem to agree that the most effective learners are self-regulating (Zimmerman, 1996; Winne, 1995). In an academic context, self-regulation is a style of engaging with tasks in which students exercise a suite of powerful skills: setting goals for upgrading knowledge; developing strategies; and, as steps are taken and the task evolves, monitoring the accumulating effects of their engagement. As these events unfold, obstacles may be encountered. It may become necessary for self-regulating learners to adjust or even abandon initial goals, to manage motivation, and to adapt and occasionally invent tactics for making progress. Self-regulated students are thus aware of qualities of their own knowledge, beliefs, motivation, and Cognitive processing. This awareness provides grounds on which the students judge how well unfolding Cognitive engagement matches the standards they set for successful learning (Corno, 1994;
Howard-Rose, & Winne, 1993). Remember if you give a man a fish, you feed him for a day. If you teach a man to fish, you feed him for a lifetime. One of the best reasons why the Internet should be used in educational settings follows a similar pattern. If you give a person a computer, you frustrate them for a lifetime. If you teach them how to use the computer and the Internet, you empower them (Hargis, 2000).

1.2.7 Self-Regulated Learning Strategies

Pintrich (1995, p.7) stated that “SRL is a way of approaching academic tasks that students learn through experience and self-reflection.” Pintrich assumed that “students can learn to be self-regulated” (p. 8). Pintrich also suggested that “self-regulation is controllable, is appropriate to the college context, and is teachable” (p. 8). Furthermore, Pintrich believed that self-regulation fits well with the notion that students contribute vigorously to their learning and are active recipients of information.

Zimmerman (1989, p. 329) describes self-regulated learners as the students who “personally initiate and direct their own efforts to acquire knowledge and skills rather than relying on teachers, parents, or other agents of instruction.” The self-regulated learner is aware of his/her own efforts to accomplish the intended outcome. This awareness makes an effective learner as one who recognizes the relationships between the different Learning Strategies and the social and environmental outcomes (Zimmerman & Martinez-Pons, 1988). The self-regulated learner can effectively regulate his/her behaviors (Pintrich, 2000; Zimmerman, 1995) through environmental influences or by covert self-regulation or internal processes such as intrinsic motivation. Effectiveness of self-regulation is determined by the quality and quantities of student's own self-regulatory strategies (Zimmerman, 2000).
Weinstein, Husman, and Dierking (2000) suggest a slightly different view of an effective learner in a review of the literature on the self-regulation interventions focusing on Learning Strategies. They suggest that the effective learner should know when the Learning Strategies would be effective or not. Knowing the proper Learning Strategies and how to use them is important, but knowing the appropriate situation in which to apply the strategies is more important.

McKeachie (2000) discusses five elements for becoming an effective learner in each of the possible ways of learning such as reading, listening, observing, talking, and writing. Those elements are: (a) motivation; (b) a knowledge base that provides a conceptual structure for further learning; (c) skills for further learning; (d) strategies for efficient learning; and (e) Metacognitive Strategies. McKeachie notes that Metacognitive Strategies include planning, self-monitoring, and self-regulation. All are highly important to the other four elements and important for becoming an effective lifelong learner. Metacognitive Strategies include having organized and conceptual knowledge, having skills for learning, maintaining the knowledge, and planning, monitoring, and regulating learning (YangKim, 2009).

The Inventory of Metacognitive Self-Regulation (IMSR) was developed by Howard, McGee, Shia, and Hong (2000) from studies with other instruments in order to more clearly define the factors involved with Metacognitive Self-Regulation relevant to problem solving. They reported in a literature review that the subcomponents of Metacognitive Self-Regulation appear to be knowledge of cognition, problem representation, subtask monitoring, evaluation, and objectivity. The IMSR was developed to measure the knowledge and regulation of cognition.
Pintrich et al. (1991) developed and constructed the Motivated Strategies for Learning Questionnaire (MSLQ) designed to measure fifteen constructs in the areas of cognition, behavior, and motivation. It categorizes the strategies in the area of cognition and behavior such as Rehearsal, Elaboration, Organization, Critical Thinking, Metacognitive Self-Regulation, Effort Regulation, Peer Learning, and Help Seeking. It consisted of two parts: i) Motivation ii) Learning Strategies. The MSLQ was developed to measure the awareness and control of cognition. The Learning Strategies are all important for learning, but Metacognitive Self-Regulation is critical. Metacognition refers to “the awareness, knowledge, and control of cognition” and the processes of Metacognitive self-regulatory activities are “planning, monitoring, and regulating” (1991, p. 23). Students plan, monitor, and regulate their cognition. Planning activities are “goal setting and task analysis,” and monitoring activities are “tracking one's attention as one reads, and self-testing and questioning”. Regulating refers to “the fine-tuning and continuous adjustment of one's Cognitive activities”.

Zimmerman and Martinez-Pons (1986 & 1988) constructed self-regulated processes through structured interview with high school students. The SRLS were self-evaluating, organizing and transforming, goal setting and planning, seeking information, keeping records and monitoring, environmental structuring, self-cons equating, rehearsing and memorizing, seeking social assistance, reviewing tests, reviewing textbooks, and preparing for class or further testing.

(a) Cognitive Strategies

Cognitive Strategies include Learning Strategies to enhance memory such as Rehearsal, imagery, Elaboration, and transformation or Organization of materials (Zimmerman & Martines-Ponz, 1986). Rehearsals help students sustain information in
their working memory. For example, students may repeatedly write down new vocabulary words in their notebooks to remember the spelling. They may also read aloud a text over and over to memorize phrases. Imagery refers to mental pictures that students form to enhance their memory. For example, to remember a group of vocabulary words, students may create a fictional story that represents the meanings of each vocabulary word. Students who use Elaboration strategies relate a new concept to an old concept they learned previously. Transforming and Organizing Strategies include summarizing, outlining, or rearranging materials to make learning easier (Zimmerman & Martines-Ponz, 1986). For example, students may create a table to organize concepts they learned in class. They may write outlines before writing a term paper. Effective note taking is also an Organizing Strategy; while listening to a lesson, students identify and write down key ideas.

Although knowledge of these Cognitive Strategies is essential to enhance learning, students may not use such strategies effectively in an academic context. Various motivational factors such as self-efficacy and intrinsic interest significantly influence Cognitive Strategy use.

(b) Metacognitive Strategies

Metacognitive Strategies generally involve planning, monitoring, and regulating. The most important planning strategies are task analysis and goal setting, which have been discussed earlier. These activities help students plan their Cognitive Strategy use and organize information, and also activate prior knowledge related to the task (Garcia & Pintrich, 1994). As noted earlier, commonly used monitoring strategies are self-recording and self-experimenting. Many researchers view self-monitoring as the most critical process in self-regulation (Butler, 1997; Butler & Winn, 1995; Lan,
Schunk (1983) examined the effects of self-monitoring on student achievement in elementary math class. The results showed that students who self-recorded their progress performed better and produced a higher level of self-efficacy and persistency than other students. The effectiveness of self-recording has also been evidenced in high school. Self-experimentation is used when information obtained through monitoring is not sufficient. Students systematically vary their performance and test different strategies to find the most effective one for them (Zimmerman, 2000). Self-testing is also a Metacognitive Strategy associated with self-monitoring and self-evaluation. Students may generate possible test questions and answer them to prepare for a test. Research shows that students who were trained to use self-testing strategies are more likely to achieve higher on a test than students who do not use the self-testing strategy (King, 1992). Self-instruction and attention focusing are strategies to monitor or control attention. Self-instruction refers to self-verbalization that students describe their learning processes either covertly or overtly as they engage in a task (Zimmerman, 2000). For example, students may verbalize the steps of multiplication while solving a math problem. Self-instruction is one form of a Rehearsal Strategy that helps students focus on a task and enhance their encoding and retention of materials (Schunk, 1998). Research shows that self-instruction is most effective when it is used at the early stage of learning new skills or when students face difficulty in learning materials (Schunk, 1982). Attention focusing is a strategy to eliminate distraction in order to concentrate on a task (Garcia & Pintrich, 1994). This is probably one of the most important self-control strategies in current adolescents’ learning environment because students need to manage so many distractions to concentrate on study. Kuhl (1985) found that low achieving students are easily distracted during tasks and tend to ruminate about prior failure more than high achieving students. Strategies to
control mind state and screen out extraneous events enhance student achievement. Finally, regulating strategies refer to the regulation of cognition and behavior for improving learning. General self-regulatory strategies in academic learning can fall into this category. For example, when students face difficulty with understanding materials, they may go back and read a particular chapter in the textbook or review class notes. Test taking strategies such as skipping a difficult question and going back later are also regulating strategies.

(c) **Resource Management**

Resource Management Strategies generally include control of study environment, time management, and Help Seeking. Self-regulated learners can manage their study environment effectively and choose a less distracting place to complete assignments. A student's management of academic study time also influences AA. High achieving students usually have effective time management skills. They know how much time is needed to complete a task, so they allocate more time for difficult asks and less time for relatively easier ones. To improve time management skills, self-recording is generally used. Students trained to use effective time-management skills tend to continue to use such skills and maintain higher grade seven after the intervention.

Help Seeking refers to students' behaviors to obtain social help from others when they encounter academic difficulties. Research shows high achieving students use Help Seeking skills more frequently than low achieving students and they are likely to go to adults to obtain academic support (Zimmerman & Martinez-Pons, 1986). Newman and Schwagner (1992) have identified factors affecting students' Help Seeking behaviors. High self-efficacy students tend to seek help more often than low
self-efficacy students. Students who believe that their AA is not controllable and who do not expect positive outcomes are less likely to display Help Seeking behaviors. Also, personal relationships, closeness between teacher and students, or between students, affect student’s selection of helpers. In addition, a teacher’s instructional strategies such as encouraging students to ask questions increase students’ Help Seeking behavior. Classrooms with mastery goal orientation encourage students to ask for help without feeling embarrassed. The structure of the classroom, including feedback and interaction, also affects students’ Help Seeking (Kobayashi, 2006).

Of the definitions and theories of SRLS by different experts, the theory of Zimmerman, Pintrich, Smith, Garcia and McKeachie seems to be better and comprehensive and this forms the base for the present study. Zimmerman generally emphasized Cognitive Strategies, Metacognitive and Resource Management. But Pintrich, Smith, Garcia and McKeachie emphasized 15-fold strategies including 6-fold motivational (Intrinsic Goal Orientation, Extrinsic Goal Orientation, Task Value, Control of Learning Beliefs, Self-Efficacy for Learning and Performance and Test Anxiety) and Strategies 9-fold Learning Strategies (Rehearsal, Elaboration, Organization, Critical Thinking, Metacognitive Self-Regulation, Time and Study Environment, Effort Regulation, Peer Learning and Help Seeking). In this study only 9-fold Learning Strategies of Pintrich, Smith, Garcia and McKeachie have been considered as they are found more suitable to the college students.
1.3 INTERNET COMPETENCY

1.3.1 Internet

The Internet is defined by the Merriam-Webster Online Dictionary (2004) as “an electronic communications network that connects computer networks and Organizational computer facilities around the world”.

The Internet is a worldwide network of computers, which is often explained as the world’s largest computer network as well as the fastest growing worldwide system. Computer network means the connection of many computers together for communication (Al-Asmari, 2005). Also, the Internet can be called the network of networks based on the Transmission Control Protocol/Internet Protocol (TCP/IP).

The Federal Networking Council (1995) agreed that the following statement reflects its definition of the term “Internet”: Internet refers to the global information system that: (a) is logically linked together a globally unique address space based on the Internet Protocol (IP) or its subsequent extensions and follow-ones; (b) is able to support communications using the Transmission Control Protocol/Internet Protocol (TCP/IP) suite or its subsequent extensions/follow-ones, and/or other IP-compatible protocols; and (c) provides, uses or makes accessible, either publicly or privately, high level services layered on the communications and related infrastructure described herein (Cited in Al-Fulih, 2002, p. 19).

Mueller (1996, p.77) has defined the Internet as “an information distribution system giving anyone connected to it instant access to an immense amount of information”.

Krol and Ferguson (1995) describe the Internet as nothing more than a worldwide local area network, or a worldwide extension of a computer hard disk,
although the technology used to connect all local area networks into one whole is complicated. According to Krol and Ferguson, the idea that the Internet is a connection of networks means little to the end user who wants to do something useful, such as, run a program or access some unique information. They further state that the basic concept of the Internet is a vast collection of libraries of information, all available online for retrieval and use. The Internet might be considered as a collection of people who act as resources themselves, and who are willing to share their knowledge with the world.

Internet is a mass medium with many hidden layers which have largely remained unexplored in comparison to other media. For example, every magazine has a specified number of pages and television or satellite programs are aired through limited number of networks. Even if those networks are 1,000, they can still be accessed and categorized, but we are facing too many layers in the Internet. The viewpoints of experts and scholars on the consequences of using the Internet can be divided into three categories. A first group believes in “determinism” and considers Internet as an external, rigid, and objective structure which shapes people’s mentalities and covers its users. A second group believes in “human will” and maintains that the Internet contains facilities to enable every person to collect as much information as they need. A third group follows “techno-realism” and takes an intermediate approach to the Internet. Ignoring existentialistic aspects of the Internet, they maintain that this technology is not the ultimate determinant. In other words, while admitting capacities and abilities of the Internet, they also believed in freedom of users (Abbas Qadi, 2007).

Internet obviates the need for teamwork. Due to personal use of the Internet at home, the user gradually distances from family environment and the chance for family dialogues, which constitute the main chance for continuation of family concepts, is gradually lost and this will strengthen individualism which is a major feature of the
modern world. This helps people to get rid of the obligations of traditional societies. Undoubtedly, individualism requires its own moral order and can be both positive and negative. Its positive aspect is to do away with social coercions and unjust conditions in communications. Wild and Emerson (2004) maintained that individualism was associated with independence and self-confidence. In its negative form, the person becomes inclined to distance from others and this will weaken a sense of mutual commitment. Negative growth of individualism will weaken family relations and this needs more thought.

Internet increases awareness and general information of young people and they can promote their knowledge by taking advantage of information available to them online. In a research conducted by Zarezadeh and Kadivar on students, they reached the conclusion that self-sufficiency and creativity was higher in students using the Internet compared to other students (Hashemi & Soltanifar, 2011).

Ordinary users, who make logical use of the Internet, are better in terms of self-esteem. Their situation is better than those who do not have access to the Internet because use of the Internet gives them a sense of modernity. In addition, they do not make excessive use of the Internet and, therefore, do not feel that they have lost control of themselves (Qasemzadeh, Shahrarai, & Moradi, 2007).

Kraut et al. (1998) have noted that use of the Internet is associated with depression and loneliness. Adolescents who see various lifestyles, thoughts and forms of communication in the vast environment of the Internet would feel a sense of tension and anxiety. Therefore, to make the most beneficent of the Internet, we must think of the ways which would suit our national and religious culture because it would not be logical to evade or be pessimistic about the Internet (Hashemi & Soltanifar, 2011).
1.3.2 Reasons for using the Internet

There are many reasons for using the Internet. Some of the reasons include a higher equity of access, an infinite resource, students as active participants, motivational influence of authentic learning activities, student inquiry and cooperative learning, and improved assessment of student progress. Technology has gained attention in education today because of its prevalence; its promise to provide low cost education; and it may help some people to participate more easily, to learn more effectively, and to enjoy learning more (Palmieri, 1997). Forman (1987) indicates that technology adds the ability for students to choose how, when, and where they participate in the learning experience and to bring together a vast wealth of previously unavailable learning resources. It has been reported that children using computers focused on tasks for longer periods; found previously boring tasks more interesting; were more eager to participate in and contribute to discussions; asked more questions; and improved their use of the standard conventions of print. There is substantial evidence to suggest that the computer also offers the advantage of making work more stimulating, thereby motivating the individual. The search for information is made considerably easier, thus making one's workload less tedious, and perhaps more interesting.

Given adequate access to technology, the Internet can provide both teachers and students with an ever-growing resource of information. Used effectively, this environment has the potential to level the playing field for individual differences that have historically provided obstacles to learning. However, if the student does not have the appropriate support or they are not able to regulate their own learning with some amount of structure and discipline, all of these positive attributes will transform into
impassable barriers. In addition, it is a mistake to emphasize connecting schools to the Internet without considering the kinds of thinking processes students need in order to learn from the information they access (Hargis, 2000).

1.3.3 Internet Characteristics

There is a strong reason to believe that the differences between the Internet and prior communication technology are much greater than the differences between pre-and-post telegraph technologies, which reduced communication time from weeks to minutes, or between pre-and-post telephone technology, which dramatically reduced the cost and enhanced the frequency of trans-jurisdictional communication. Indeed, the Internet is more than just another communication medium like the telephone, telegraph, fax or mail. While technically forming only the most recent development in a long series of technological innovations, the Internet forms a complex network that provides it with novel system characteristics, distinguishing it from other modern forms of media.

Although other forms of modern media together display many individual features of the Internet, none of them alone incorporates all of them. Generally, there are four major differences between the Internet and other communication mediums.

1) The Internet is inherently an easily accessible global market with an unprecedented variety of goods and services. Consumers can shop around the clock from merchants around the world. Likewise, businesses can reach customers world-wide quickly and at low cost. Global networks and electronic commerce, at high speed and low cost, are presenting an unparalleled opportunity to individuals and companies. They have the ability to transact twenty-four hours a day, seven days a week, regardless of constraints
of distance, time zones, local cultures, geographic borders, and legal frameworks (Heiskanen, 1999).

As much as the Internet is a network of networks, it is a network of relationships. And as much as the Internet is a collection of technologies, it is a collection of communities. For many, the Internet differs from other technological innovations in that it has, in and of itself, become a community to millions of people. The Internet now has the structure that could be associated with a real society, such as, online banking, online health care, and online education. People in virtual communities exchange knowledge, conduct commerce and do just about everything people do in real life. In this regard, Ethan Katsh, a leading writer on online alternative dispute resolution (OADR), has noticed that: Cyberspace is more than a data network… it is a community unto itself.

The Internet gives global connectivity because information technology techniques make it possible for anyone to transmit significant quantities of information to anyone else over virtually any distance, practically instantaneously. That kind of global reach is not true with older technologies such as telephone and telegraph services. Users of older technology had to make special arrangements to extend their reach across national boundaries, but this is not the case with the Internet.

II) Unlike the mass media era in which one-too-many forms of communication predominated, the potential of the many-too-many forms of communication is created by digital technology. Therefore, network communities allow for greater decentralization.

In cyberspace, communication transcends time, space, and physical reality. The Internet has effectively changed the users’ assumptions about time and space, as well as
duration and distance. Accordingly, the Internet is not simply a new channel of communication. Further, the Internet facilitates the storage, retrieval, review, comparison, annotation, classification, and reuse of information more than other communication mediums.

The Internet is the only medium that allows all elements of many types of commercial transactions to be conducted electronically. It should be noted however that such transactions could be conducted through a combination of electronic and non-electronic mediums (e.g. Internet and telephone).

III) The Internet makes it possible for participants to communicate asynchronously. Asynchronous communication takes place when parties are not communicating at the same time. Asynchronous communication has the enormous advantage of 24 hour availability. A person can send an e-mail, for instance, at any time of the day to be read at the recipient’s convenience. This is of particularly great value where time differences make synchronous contact difficult. Unlike communications media that tie up the entire channel in real time during transmission, the Internet breaks information into discrete packets of bits that can be transmitted as capacity allows. Packets are labeled with the address of their final destination, and may follow any of a number of different routes from computer to computer until reaching their final destination, where they are reassembled by the recipient machine (Rule, 2002; Tyler, 2003).

IV) Although the Internet may be perceived as an established tool of communication, research, and entertainment, the very characteristic of the Internet which offers most potential, namely, interactive characteristics, is often not fully appreciated. Interactivity implies establishment of dialogue between the distant users through e-mail, chat conference rooms, and web forums such as audio and video conferencing. The Internet makes it possible for participants to communicate interactively without being present in
the same place. Indeed, the Internet has changed the image of the computer as something that calculates and computes to an image of a machine that enables interaction between individuals. Although the level of interactivity online may not be able to match the level of interactivity in face-to-face encounters, the online environment can enable Internet users to express themselves efficiently and appropriately. Interactive technologies may bring people together and move them from behind their computer screens to a virtual setting. It is not the same quality as being in the same room, but it will bring many of the same benefits (Katsh, & Rifkin, 2001).

1.3.4 Effects of the Internet usage on Academic Achievement

Over the last couple of decades, personal computers have spread rapidly. Many scholars consider home computers a tool that reinforces or supplements school learning, and are concerned that a lack of access to a home computer maybe related to lower educational achievement. Most parents also believe that computers are an important educational resource that allows their children to discover fascinating and useful things, and that children without access are disadvantaged compared to those with access (Clemente, Espinosa, & Vidal, 2008; Turow, 1999). As a result, a growing number of parents are providing their children with access to computers at home (Woodward & Gridina, 2000).

Given the increased prevalence of access to computers and the Internet in homes and schools, the potential value of a personal computer in child development has been debated consistently among parents, educators, and researchers for decades. Students’ computer use can be conceptualized in two ways: (a) home computer use for socializing, entertainment, and educational purpose, and (b) school computer use primarily with computer based instruction and as a learning assistance tool. Despite positive expectations about computer technology, a positive relationship between the
use of computer technology and academic outcomes has only partially been supported through inconsistent research findings (Angrist & Lavy, 2002; Blanton, Moorman, Hayes, & Warner, 1997; Campuzano, Dynarski, Agodini, Rall, & Pendleton, 2009; Dynarski, et al., 2007; Li, Atkins, & Stanton, 2006; Rouse & Krueger, 2004). Some studies have revealed positive correlations (Attewell & Battle, 1999; Attewell, Suazo-Garcia, & Battle, 2003; Borzekowski & Robinson, 2005; Judge, 2005; Beltran, Das, & Fairlie, 2006; Jackson et al., 2006), between computer use and children’s fine motor skills (Christensen, 2004; Ziajka, 1983), word/letter recognition (Cuffaro, 1984; Mioduser, Tur-Kaspa, & Leitner, 2000), concept learning (Howard-Jones, & Martin, 2002; Sung, Chang, & Lee, 2008), number recognition (Cuffaro, 1984), counting skills and pre-mathematical knowledge (Clements, 2002; Hess, & McGarvey, 1987), reading readiness (Hess, & McGarvey, 1987), Cognitive development (Howell, Scott, & Diamond, 1987; Sung et al., 2008; Shute & Mksad, 1997), visual spatial skills (Subrahmanyam, Kraut, Greenfield & Gross, 2000) and self-esteem (Ellison, Steinfield, & Lampe, 2007; Haugland, 1992; Vogelwiesche, Grob, & Winkler, 2006). However, other studies have found no significant evidence of computer technology use and positive school outcomes (Malamud & Pop-Eleches. 2008; Shapley, Sheehan, Maloney, & Caranikas-Walker, 2008). A study based on a survey given to one million children by Vigdor and colleagues (Clotfelter, Ladd, & Vigdor, 2008) has revealed that high speed Internet availability is associated with less educational use of computers and lower mathematics and reading test scores.

Children and teens frequently use home computers and the Internet for their homework and run educational programs (Kraut, Scherlls, Mukhopadhyay, Manning, & Kiesler 1996; PEW Internet and American Life Project, 2001; UCLS Center for Communication Policy, 2003). Home computer use has been linked to improvements in
literacy (Attewell & Battle, 1999; Weinberger, 1996; PEW Internet and American Life Project, 2007), language (Nævdal, 2007), mathematics (Attewell & Battle, 1999) and general academic performance (Attewell, 2001; Rocheleau, 1995). Early computer exposure among young children before school years is also associated with the development of preschool concepts and cognition (Li & Atkins, 2004). It was found that children who had access to a computer had shown better performance in school readiness and Cognitive tests.

These positive effects are not, however, always the result of computer and Internet use. Internet use can be a source of non-productive activities according to the displacement hypothesis. Students with home computers are more likely to live in families with higher incomes and education, which are highly correlated with better academic performance (Li & Atkins, 2004). It has been found that children from a higher socio-economic status obtain more benefits from home computers than children from lower socio-economic statuses (Giacquinta, Bauer, & Levin, 1993). On contrary, having a home computer among low-income Romanian families has negative consequences on children’s school performance and behaviors, because children in households that own a home computer spend large amounts of time in front of the computer and show negative behavioral outcomes (Malamud & Pop-Eleches, 2008). Other research shows similar results. Giacquinta and colleagues (1993) examined home computing among seventy middle class families for three year, that children use home computers almost exclusively for playing games and that academic use of computers is almost absent.

This might be explained in terms of the contribution of parental support; findings from the Romanian study suggest that parental monitoring and supervision are important mediating factors (Malamud & Pop-Eleches, 2008). Giacquinta et al. (1993)
interpreted that children’s lack of educational use of the Internet is highly dependent on parental support and guidance. In other words, greater educational usage of computers by children might be the result of parental involvement, such as through the purchase of educational software, monitoring of computer use, and managing of the children’s computer time. Therefore, one may speculate that more affluent and more highly educated parents are better able to provide supportive learning environments and are more likely to have high expectation of their children’s educational achievement (Kim, 2011).

1.3.5 Competency

John Raven (1984) as cited (McCoy, 2001) in describes the word competency in the following way: The word “competency” is used to encompass a motivated pattern of knowledge, skills and abilities deployed to undertake a valued activity. Because values and motivation are so important it is not possible to substitute “knowledge,” “skills”, or “attitudes” on their own for this word.

A competency is a measurable human capability that is required for effective performance. A competency may be comprised of knowledge, a single skill or ability, a personal characteristic, or a cluster of two or more of these attributes. Competencies are the building blocks of work performance. The performance of most tasks requires the simultaneous or sequenced demonstration of multiple competencies. Knowledge is awareness, information, or understanding about facts, rules, principles, guidelines, concepts, theories, or processes needed to successfully perform a task. The knowledge may be concrete, specific, and easily measurable, or more complex, abstract, and difficult to assess (Lucia, & Lepsinger, 1999). Knowledge is acquired through learning and experience. A skill is a capacity to perform mental or physical tasks with a specified outcome. Similar to knowledge, skills can range from highly concrete and
easily identifiable tasks, such as filing documents alphabetically, to those that are less
tangible and more abstract, such as managing a quality improvement project.

An ability is often a constellation of several underlying capacities that enable us
to learn and perform. These are often time-consuming and difficult to develop, and
usually have a strong component of innate capacity. For example, the ability of
analytical thinking comes more naturally to some than to others, and can be quite
challenging for many individuals to develop. Competency experts note that many
personal characteristics may be re-quired for or may influence effective performance.
These characteristics, such as attitudes, values, and traits, often have an emotional or
personality component. Marrelli (1998, 2001) has argued that it is useful to define these
personal characteristics as “enabling behaviors.” These include work habits, ways of
interacting with others, or manners of conducting oneself that contribute to effective
work performance. Examples of enabling behaviors are managing work priorities and
assignments to meet schedule commitments, developing rapport with others, and
treating others with respect. Enabling behaviors can emerge through learning,
experience, innate predisposition, or a combination of these determinants (Marrelli,
Tondora, & Hoge, 2005).

1.3.6 Internet Competency

Internet Competency is the ability of an individual to use the internet properly. It
is a combination of knowledge and skills of using the Internet to improve performance.

In this study, the IC consists of the following components: Computer General
Knowledge, Computer General Ability, Communication and Collaboration, General
Webpage Using, Information Management and Information Search.
I) Computer General Knowledge: Computer General Knowledge is knowledge about many different things related to computer like application software, operating system and hardware.

II) Computer General Ability: This is the quality of being able to do something about computer, for instance: Using standard application programs, using basic features of the operating system and ability to install Operating System on a computer.

III) Communication and Collaboration: Communication means electronic communication, an ability to exchange information through the use of computer equipment and software; a collaborative tool that facilitates linking between one or more individuals together. Collaboration is working with each other to do a task. It is a recursive process where two or more people or Organizations work together to realize shared goals. Collaboration using technology encompasses an extensive range of applications that enable groups of individuals to work together including e-mail, instant messaging (IM), and several web applications collectively referred to as Web 2.0 technologies. The term Web 2.0 refers to web applications where the users interact and collaborate with each other in a collective exchange of ideas generating content in a virtual community.

IV) General Webpage Using: A web page (or webpage) is a web document that is suitable for the World Wide Web and the web browser. A web browser displays a web page on a monitor or mobile device. The webpage is what displays, but the term also refers to a computer file, usually written in HTML or comparable markup language, whose main distinction is to provide hypertext that will navigate to other web pages via links. It is the ability to coordinate web resources centered on the written web page, such as style sheets, scripts and images, to present the web page (Web Page, n.d.)
V) Information Management: Information Management entails organizing, retrieving, acquiring, securing and maintaining information on computer and Internet.

VI) Information Search: Information Search entails selection of topic, collection and access Information, Search Closure and use searching techniques of information on computer and Internet.

1.4 ACADEMIC ACHIEVEMENT

Academic Achievement is the outcome of education the extent to which a student, teacher or institution has achieved their educational goals. AA is commonly measured by examinations or continuous assessment but there is no general agreement on how it is best tested or which aspects are most important procedural knowledge such as skills or declarative knowledge such as facts. In California, the achievement of schools is measured by the Academic Performance Index (Academic Achievement, n.d.).

Crow and Crow (1969) defined “AA as the extent to which a learner is profiting from instructions in a given area of learning i.e., achievement is reflected by the extent to which skill or knowledge has been imparted to him”.

1.4.1 Factors Influencing Academic Achievement

Educators, trainers, and researchers have long been interested in exploring variables contributing effectively for quality of performance of learners. These variables are inside and outside school that affect students’ quality of AA. These factors may be termed as student factors, family factors, school factors and peer factors (Crosnoe, Johnson, & Elder, 2004). The formal investigation about the role of these demographic factors rooted back in 17th century (Farooq, Chaudhry, Shafiq, &
Berhanu, 2011). Generally these factors include: age, marital status, parents’ education level, parental profession, language, religious affiliations, type of family, family size, study habit, self-concept, socio economic status (SES), parental income, ordinal position, housing type, geographical location, ethnicity, gender, type of school, family structure and Self-Regulated Learning Strategies. These are usually discussed under the umbrella of demography (Ballatine, 1993). In a broader context demography is referred as a way to explore the nature and effects of demographic variables in the biological and social context. Unfortunately, defining and measuring the quality of education is not a simple issue and the complexity of this process increases due to the changing values of quality attributes associated with the different stakeholders’ viewpoint (Blevins, 2009; Parri, 2006). Besides other factors, socioeconomic status is one of the most researched and debated factor among educational professionals that contribute towards the academic performance of students. The most prevalent argument is that the socioeconomic status of learners affects the quality of their academic performance. Most of the experts argue that the low socioeconomic status has negative effect on the academic performance of students because the basic needs of students remain unfulfilled and hence they do not perform better academically (Adams, 1996). Influence of some of the Factors on AA is discussed below:

The efficient and effective way of learning depends upon the study habits of the students. Some investigators have sought to determine what study habits are characteristically used by pupils when left to work by themselves with little or no direction. Learning improves with planning of where, when and how much to study. Positive attitude, proper physical condition and balanced emotional states are important factors influencing study habits.
It is widely acknowledged that a student’s AA is influenced by his home and family background. Family income, education of parents, socio economic status, basic home amenities as well as cultural and psychological factors have all been studied for their influence on children’s academic performance. The children living in poor families cannot develop their potentials and skills to the maximum extent which do effect negatively on their performance in schools and achievements in social life, children from well to do families show superior Cognitive abilities, competence and other similar skills. It was researched that poor children lag behind in all the activities involving Cognitive abilities than children from middle and upper section of the society.

Ordinal position is another variable which affects the AA. The first born child occupies a unique position in the family structure. For at least a year and probably more, he is the only child and receives all the attention of the parents. Due to increased contact with adults and expected responsibility, one might expect the first born to have a high achievement motivation (Nuthanap, 2007).

Socio-economic status may therefore also be linked to family structure. Achievement of students from sole family is negatively affected when compared to children from two parents/ joint family. This maybe because of:

• Reduced contact between the child and non-custodial parent;

• The custodial parent having less time to spend with children in terms of supervision of school-work and maintaining appropriate levels of discipline;

• The lack of an appropriate role model, especially for males;

• Increased responsibilities on children such as childcare roles, domestic duties which impede the time available for school work;
• And the nature of parent-child relationships in sole parent families may cause emotional and behavioral problems for the child (Buckingham, 1999; Rich, 2000).

Portes and MacLeod (1996) has found that SES variables continue to influence educational attainment even after controlling for different school types, the school context tends to affect the strength of the relationship between SES and educational outcomes. Similarly, research Sparkes (1999) shows that schools have an independent effect on student attainment.

Performance at school has also been found to vary according to the Student's sex (Horne, 2000). In particular, reviews of the evidence suggest that boys suffer an educational disadvantage relative to girls, especially in terms of performance in literacy (Buckingham, 1999; 2000). There are several explanations for this increasing gender gap which include: biological differences; gender biases (such as reading being seen as not masculine); teaching, curricula and assessment (for instance less structured approaches to teaching grammar may have weakened boys, literacy performance); and socioeconomic factors (Buckingham, 1999, p5). That is, girls have been found to outperform boys within high or low socio-economic groups. Furthermore, the performance of boys deteriorates more rapidly than the performance of girls as they move down the socio-economic scale.

Students from non-metropolitan areas are more likely to have lower educational outcomes in terms of academic performance and retention rates than students from metropolitan areas (Cheers, 1990; HREOC, 2000). Issues affecting access to education in regional areas include costs, the availability of transport and levels of family income support.
Many research studies indicated that SRLS have influence on AA. Typically Radovan (2011) showed that goal setting, task value, self-efficacy and Effort Regulation were the main strategies that led to better AAs in the chosen distance programme. Robert Cobb (2003) indicated that the scales of Self-Regulated Learning Strategies- Time and Study Environment Management and intrinsic goal orientation have been significant relationship with their academic performance.

1.5 NEED AND IMPORTANCE OF THE STUDY

Learning is one of the most important factors of the advancement. Human beings gain his/her success in the light of leaning. There are many factors that affect the learning out of which use of SRLS and IC are found significant in the present context of computer age and thus are considered for the research study.

SRL is a theory which has been applied and investigated in many areas especially in academic learning. Research in Self-Regulated academic learning areas include student grades, university classes, computer use, Internet use, web-based courses, mathematics, language of literature, science, nutrition, accounting, and agriculture (Zimmerman, & Schunk, 2001; Zimmerman, 2001). Considerable research has demonstrated a positive relationship between Self-Regulation Strategies and AA. The measurements for Self-Regulated academic learning are also developed in many ways: self-reporting questionnaires (Pintrich et al., 1991; Wolters et al., 2003); structured interviews (Zimmerman, & Martinez-Pons, 1986, 1988); and teachers’ ratings (Zimmerman, & Martinez-Pons, 1988; Winne, & Perry, 2000).

Self-Regulation helps student utilize the Internet and computer to achieve academic goals. Self-Regulation plays the key role in the learning process and in
regulating Internet use. Students achieve their own goal if they control and manage their tools with regulated learning (YangKim, 2009).

On the other hand, the AA is dependent on several factors. One of the decisive factors in AA, is using of Learning Strategies. Learning Strategies are some processes that help individuals to learn "how to learn", "how to advance their learning issues," and "how do deeply and effectively to their learning." Learning Strategies include a broad range of strategies. One of these strategies is SRL, which consists of three Components: Cognitive, Metacognitive Strategies and Management Strategies. This concept has been introduced in recent years and many studies have been devoted to it (Zimmerman, & Martinez-Ponz, 1990).

SRL is defined as “the strategies that students use to regulate their cognition as well as the use of Resource Management Strategies that students use to control their learning”. Application of self-regulation to Internet usage can enhance the benefits offered by the Internet (Pintrich, 1999, p. 459).

The Internet seems to influence the quality of life through social individuals, consumer, leisure, economic, and community well-being (Cairncross, 1997; DiMaggio, Hargitti, Neuman, & Robinson, 2001; Israel, 2000). The Internet’s influence stems from the ease and convenience it provides to access many benefits in the context of many life domains (e.g., social life, work life, leisure life, and education life). Some authors suggested that the Internet has positive effects on AA through the use of educational software, and the provision of useful information (Borzekowski, & Robinson, 2005; Jackson et al., 2006); others suggest that the Internet provides positive effects on socialization as it stimulates the closeness of existing interpersonal relationships by reducing restrictions of time and location (Lenhart, Madden, & Hitlin, 2005; Lenhart, Rainie, & Lewis, 2001).
The importance of this study is the fact that today the Internet is pervasive in the lives of individuals, institutions, and societies especially in India. The last few decades have witnessed a dramatic increase in the use of the Internet and an unprecedented proliferation of computer-based technology. Computer technologies and the Internet bring social changes in modern society. Since computers have become a common instrument of daily living for a vast proportion of our society, the Internet has a significant influence on quality of life (Azizi, & Yeshodhara, 2013a). Statistical research tell us that Internet users in the world numbered 16 million in 1996, and increased to 500 million by 2001 (Castells, 2001). For example, almost nine out of 10 American teens use the Internet, up from seven in 2000 (PEW Internet and American Life Project, 2007). However, as stated in above, India is one of the fastest growing countries in Internet use. Adolescents and youth are more involved in Internet activities than adults (Kim, 2011).

Studies about the use of Internet and AA were examined using the motives of Internet use (Choi, Watt, Dekkers, & Park, 2004), attitude of the students' Internet use (Ebersole, 2000), online time management (Terry, 2002), supporting tools for self-regulatory skills in Web-based learning environment (Niemi, Nevgi, & Virtanen, 2003), the advantages for self-regulated learners on the Internet (Hargis, 2000), and Internet uses and technology (Young, 2001; Reisberg, 2000). The results of these studies showed that improved computer skills, better time management, and more positive attitudes of Internet use improved AA, while Internet use among students positively influences academic learning (Zenon, 2006).

Learner Progress is a complex phenomenon that be affected by several factors, including (SRLS, age, marital status, parents’ education level, parental profession, language, religious affiliations, type of family, family size, Study habit, Self-concept,
Socio Economic Status (SES), Parental income, Ordinal position, Housing Type, Geographical Location, Ethnicity, Gender, Absences, Family structure and Type of School). Using the SRLS help students learn how to adjust their own learning and how to use appropriate strategies to regulate their learning. Then if students use appropriate strategies to set their own Learning Strategies, they will enjoy higher AA. However, according to the age of computer and information and sensible advances in computers and Internet in India, today the Internet plays an important role in the storage, distribution, search and exchange of information and communication between the students. Students can have access to prompt and effective to required information on websites, databases and virtual libraries with less cost in any place and any time. As such, the Internet can play an important role in the Scientific and academic progress of students all over the world, so also among Indian students. However, if ability of students in searching information is high, it is likely that students can have higher AA.

It is the common observation that even in this computer and technological age emphasizing the use of ICT in teaching and learning at all level of education, traditional method of teaching ie lecture and laboratory work is being adopted in most of the colleges even to teach science subjects. Teachers are not bothered what Learning Strategies are being used by the students and how they are learning the subjects. Use of internet is not emphasized to improve their learning leading to high AA. It is high time that both teachers and students at least at higher education level realize the importance of SRLS and IC in enhancing AA of students. Further it is found that no research studies have been taken up in this direction. Thus the present study is thought of delimiting to Bachelor Degree Science ie B.Sc students. The present study examines the use of SRLS and IC among bachelor degree science students. The findings of this study can identify the relationship between IC and AA of students, and orient teachers and
students about the role of Internet in improving the AA. Furthermore, they can encourage students to use the Internet to increase their knowledge, and give more Internet facilities available for science students. Also by determining relationship of SRLS with AA, students can plan for better, easier and deeper learning to gain AA. However, the present study raises the following questions to be answered:

1. Is there any significant difference between Male and Female Students with different combination of subjects at Bachelor Science (B.Sc) Degree in SRLS in total and Scale wise?

2. Is there any significant difference between Male and Female Students with different combination of subjects at Bachelor Science (B.Sc) Degree in IC in total and Components wise?

3. Whether SRLS and IC are significantly related to AA of students?

4. Which of the two – SRLS and IC - predicts better the AA of students?

1.6 CHAPTRIZAITION

The present thesis consists of five chapters:

chapter 1 presents the theoretical background of the study focusing on an overview of self regulation, social Cognitive theory and self-regulation, structure and function of self regulatory processes, development of learner self-regulation, self-regulation as a contributor to AA, SRL, SRLS , Internet, reasons for using the Internet, Internet characteristics, effects of the Internet usage on AA, competency, AA, factors influencing AA, need, context and importance of the study and research questions of the study.
Chapter 2 focuses on review of related literature pertaining to SRLS and AA, IC and AA, and AA.

Chapter 3 deals with the statement of the problem and methodology of the study. This chapter presents the details of the Locale of The Study, Objectives, Hypotheses, Variables, Delimitations, Operational Definitions of the Key Terms, Tools used, Sampling Method and Sample, Design and Procedure, and Statistical Techniques used for Analysis of the Data.

Chapter 4 presents the detail of the analysis of the data, its interpretation and discussion under the following heads: i) Descriptive statistics with respect to the objectives No. 1 and 2. ii) Inferential statistics for verification of research hypotheses.

Chapter 5 gives the summary and conclusion of the study. In this chapter the details of the chapter 1 to 5 are summarized, along with the Major Finding of the study, Discussion, Educational Implications of the Study and Suggestions for Further Study.