Self–Directed Learning
Strategies in Adult
Educational Contexts

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The chapter presents significant considerations for pacing amid directing own learning in an open distance e-learning environment (ODeL), assuming principles to achieve learning outcomes through processes that support learning style/s in leading own learning. Looking at a variety of factors, the prototypes for self-directedness and elements for self-pacing are presented. A case of an ODeL institution was explored and interviews conducted (n=57) to examine self-directed learning contextual factors in relation to the speed at which learners assume leadership in achieving learning outcomes within an (ODeL) context and gaining independence towards enhancing learning experience. The outcomes reveal that learners gain independence through adopting suitable speed, adopting core values, collaborating, support provided, and will to improve their skills. Finally, a self-directed paced learning framework for adult learners is offered.

**Chapter 2**  
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The purpose of this chapter is to provide information about the use of caring and trust within the undergraduate classroom as it may apply to self-directed learning. Some evidence of the relationship between caring and trust is provided through a recent study by the author. Malcolm S. Knowles’ Designs for Adult Learning demonstrates the use of both caring and trust within the self-directed learning framework. The method used by Knowles takes a caring approach to student learning that is based in trust between the educator and student.
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As the nexus between personalized learning and technology-mediated learning, self-regulated learning is a topic of great research interest and a range of issues are still open for investigation. There is a substantial interest in the instructional tools supporting SRL in digital learning environment. In this chapter, the authors present an empirical evidence of self-regulated learning experiences dwelled in a blended learning environment in higher education. In this particular context, the experiences obtained from two intervention groups who engaged in the same blended learning course were examined. The purpose is to provide an insight regarding the current trajectories of learning in terms of student-centered approach with relation to emerging pedagogical practice. Results show that pedagogical approach does not guarantee a pleasingly improved learning; rather, there is a need for additional mechanism that might raise students’ interest. Subsequently, imperative implications for educators, researchers, and curriculum developers are forwarded.

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This chapter explores teachers’ perceptions of learners’ readiness to adopt autonomous roles and to develop their critical and analytical thinking. The chapter reports on an ethnographic study investigating teachers’ views on whether the notions of learner autonomy and critical and analytical thinking can be developed in the Libyan cultural context. The reason behind this exploration is that Libyan culture is one of the Middle Eastern cultures in which some educationalists believe learner autonomy to be inappropriate. The study’s findings suggest that notions of autonomy, critical and analytical thinking, and creativity can well be fostered in the context of this study.

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Doctoral attrition rates have remained around 50% for nearly four decades at significant costs to the student, department, institution, and society. In this chapter, the author analyzes the literature and make an argument for three critical strategies of degree completion: 1) the nature of the adult doctoral student, which involves an identity
shift from dependent student to independent scholar; 2) the nature of the doctoral advisor, which involves more holistic supervision and support; and 3) the nature of goal-setting, which acts to organically link the two and focus effort and attention. Taken together, they provide a holistic framework that can counter the pervasive attrition rates and lead to greater doctoral student success.

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Adult learning experiences seem to be influenced by the activity of self-direction on the part of their learners. Adult learners come to educational encounters motivated and possessing a strong sense of self and learning objectives. However, other educational experiences require teachers of adults to assist in the development of self-directed learning (SDL) in their learners. This chapter explores the possibility of how Leonard Nelson’s theories concerning the Socratic method can initiate the possibility of SDL (self-teaching) in adult learners.

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Roaa Aljafari, Saint Louis University, USA

Self-directed learning is a teaching model where the learning content which is predetermined by the educator as well as the students tends to learn at their own pace to enable them to master the content provided. The features of self-directed learning may include individual autonomy, learner control, and autoindexing. In addition, self-directed learning has grown to become a generic training model for medicine, business, and adult education. Problem-based learning also tends to involve elements of self-directed instructions in its model. Self-directed learning also has evaluation tools that enable it to measure the impact of the self-directed learning on the students such as the ability for the students to perceive themselves as having the skills as well as attitudes required for successful learning.

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Cihad Şentürk, Karamanoğlu Mehmetbey University, Turkey
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Because it was difficult to find information during the last century, it was significant to raise individuals who acquired, learned, and memorized it and had basic level skills. Currently in our world, memorizing information has lost its significance.
Thanks to the technological developments, reaching the desired information has become extremely easy. Therefore, what is being expected from the individuals today is to question the accuracy of the information they reached, to produce new information from the one in hand, and to realize the change and transformation with the information they acquired by the help of self-directed learning skills. Nowadays, the changes occurring in technology and information every single day have made lifelong learning and in this direction self-directed learning important, which is one of the basic elements of it. The societies that bring up individuals who assume their own responsibility by seizing the transformation in education and execute the necessities of it have a voice around the world and direct the future.

Chapter 9
Learning How to Clarify Complex Concepts for Children Through Naturalistic Inquiry: Moving Beyond Simplification

William Farrelly, Letterkenny Institute of Technology, Ireland
Caroline Linse, Queens University Belfast, UK

The authors infer that pre-adolescents don’t perform to their intellectual potential because they aren’t taught how to think and research independently. Teaching to the curriculum has become a requirement, and this imposes restrictions on what can be achieved. The contention of this chapter is that a child can formulate effective thought independently through naturalistic inquiry. The question is posed: How do we teach a complex concept to a six-year-old child? The authors hypothesize an experiment thus: given an academic paper, is it possible to explain, without ambiguity, the essence of that paper to a child? The ideas encapsulated in this chapter can be extrapolated for returning adult learners and are particularly relevant to second language acquisition.

Chapter 10
Designing Innovative Faculty Development Initiatives Through the Lens of the Adult Learner

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As adult learners, faculty bring a range of experiences, content knowledge, and motivations with regard to the learning environment. With the continued growth of online enrollment, colleges and universities are focusing on learning theory, course design, and pedagogical shifts for teaching in today’s classroom. Faculty development staff can use adult learning theories to guide the creation of alternative ways to deliver professional development. The authors highlight instructional design and program
assessment as critical areas in supporting quality faculty development programs. This chapter will discuss trends in online education, adult learning theory research, the role of the instructional designer, and assessment of faculty development programs.

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ABSTRACT

Because it was difficult to find information during the last century, it was significant to raise individuals who acquired, learned, and memorized it and had basic level skills. Currently in our world, memorizing information has lost its significance. Thanks to the technological developments, reaching the desired information has become extremely easy. Therefore, what is being expected from the individuals today is to question the accuracy of the information they reached, to produce new information from the one in hand, and to realize the change and transformation with the information they acquired by the help of self-directed learning skills. Nowadays, the changes occurring in technology and information every single day have made lifelong learning and in this direction self-directed learning important, which is one of the basic elements of it. The societies that bring up individuals who assume their own responsibility by seizing the transformation in education and execute the necessities of it have a voice around the world and direct the future.

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INTRODUCTION

In the 21st century, what are expected from the human beings that the information and communication society requires are; adapting the life by updating their information in accordance with their necessities, keeping pace with the changes and innovation around the world and becoming qualified individuals. Hence, the lifelong learning skills of individuals have to be enhanced in order to create learning opportunities for themselves in terms of personal growth, career development and requirements. In the information age of today, where rapid alterations and conversions occur in information and communication technologies, the qualities and abilities anticipated from the individuals altered concomitantly. Being called as the “information age” together with those developments in the information and technology; the individuals are desired to take part in knowledge formation and interpretation actively, not be the ones who directly acquire the presented information and feel the need to be directed.

These alterations and conversions along the earth require the individuals to have a number of qualifications. These are designated as the 21st century skills and they can be complied as follows; learning and innovation skills, critical thinking and problem solving skills, communication and collaboration skills, information, media and technology skills, social responsibility, cultural and universal awareness skills, daily life, professional tendency and career skills, initiative and self-directing skills, entrepreneurship skills and self-orientation skills, change and transformation leadership skills and innovation skills. Along with these skills, it also has an importance that the individuals especially take responsibility of themselves, plan their own learning, sustain, evaluate and turn it into a lifelong learning. In this part; the topics of “learning” as a term, the view of learning and theories, models and approaches to teaching/learning from past to present, developments around the world and their effects on learning process, self-directed learning, self-directed learning models and strategies, alternative learning/teaching approaches and improvement of self-directed learning will be discussed.

THE TERM “LEARNING” AND AN OVERVIEW TO LEARNING FROM PAST TO PRESENT

Along with being an essential necessity in human nature, learning is a key element for an individual to sustain his/her life and to harmonize with the changing conditions. None of the living beings manage to survive for a long time without learning how to exploit the environment to meeting their basic needs. The living creatures are
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constantly exposed to learning since they always have to fulfill their needs in various environments and be effective for adapting their environment in order to maintain their life, and it is observed that the majority of their behaviors are learned ones (Senemoğlu, 2012). For this reason, the need to define and explain “learning” emerged to unveil how the behaviors of the living ones are formed and why they act that way. In accordance with this need, various research have been made on how learning materializes; and diverse ideas, discussions, definitions and explanations on learning have come until today from the age-old times.

Since the time that psychology was established as an independent discipline, learning has virtually been a fundamental subject in a lot of pedagogical and psychological research (Houwer, Barnes-Holmes, Moors, 2013). Some of the foremost researchers who have studied on learning from past to present and contributed to the world literature with their discoveries are; Ivan Pavlov (1849-1936), Edward Thorndike (1874-1952), John Broadus Watson (1878-1958), Clark Leonard Hull (1884-1952), Edwin Ray Guthrie (1886-1959), Jean Piaget (1986-1980), Lev Semyonovich Vygotsky (1896-1934), Burrhus Frederic Skinner (1904-1990), Donald Olding Hebb (1904-1985), Abraham Maslow (1908-1970), Albert Bandura (1925-...). The studies that the aforementioned social scientists conducted, have helped us better understand how we learn, and also provided us the opportunity to catch the basics of learning and accordingly shape the conditions more effectively so that a successful learning would come true. Hereby, these studies have served as guides for the individuals to perform more effective, more perpetual and more qualified learning (Dumont, Istance and Benavides, 2010).

Different definitions on learning are encountered within the literature. For instance, while Hilgard and Bower (1975, p.3) define learning as; “…the developing or alteration process of the behaviors by the influence of the environmental interactions excluding the inborn behaviors, tendencies, maturation and the temporary changes of the organism occurring due to effects such as fatigue, drugs, etc.” Brubaker (1982 p.17) designates it as; “the things that occur in the lives of individuals due to the experiences of them as the results of their interaction with themselves, others and their environments.” To Gage and Berliner (1984, p.252), it is “the changing process of an organism arising from the experiences of it”, while Gagne (1985, p.2) states that it is: “a change in human disposition or capability that persists over a period of time and is not simply ascribable to processes of growth.” According to Jarvis (2005, p.4), learning is: “the permanent changes in the behaviors of an individual resulting from his/her experiences and adaptation process to the environment”, while to Woolfolk (2011, p.198) it is; “the process of permanent behavior or knowledge changing of an individual during his/her life”. Slavin (2006, p.134) states
that learning is: “the changes in individuals resulting from the experiences”, while Ertürk (2013, p.23) defines it as: “the intentional generation of desired changes in an individual’s behavior by his/her own experiences”. To Piaget, learning is the building-up a cognitive form by an individual who endures an imbalance resulting from a new case, through digesting and accommodating or shaping the existing forms to reach back to balance. (Brooks and Brooks, 1999).

When the definitions on learning are examined, it can generally be said that learning can be defined as: the relatively permanent changes of an individual resulting from his/her own experiences, excluding the temporary alterations like growth, sickness, fatigue or drugs (Senemoğlu, 2012). Although one can face many different definitions of learning in the literature, it can be observed that the diversions between them are not too much and they all have common aspects. In the literature, learning is defined as the changes in the behavior stemming from the experience. In other words, it is the effect of the experience over the behavior (Lachmann, 1997). Thus and so, when the aforementioned definitions are analyzed, the common characteristics of learning might be complied as follows: (1) An observable alteration in the behavior, (2) that alteration in the behavior shall be relatively permanent (3) that alteration must stem from the organism’s own life and experiences (4) the alteration should not be a temporary one resulting from reflex, instinct, growth, drugs, sickness, fatigue etc. According to this, some educational psychologists consider learning as a change in the behavior, while some other like Piaget regard it as a change in the type and amount of information (Long, Wood, Littleton, Passenger and Sheey, 2011). It is the learning theories that explain and describe how the learning comes true, under which circumstances it realizes or not. In the part below, various theories, models and approaches that explain learning from past to present will be discussed.

THE LEARNING/TEACHING THEORIES, MODELS AND APPROACHES FROM PAST TO PRESENT

From past to present, there have been various theories that explain the learning concept. It is possible to categorize these theories in question into two main groups; one of them are the behaviorist theories which try to explain learning with directly observable behaviors and with the relation between the stimulus and response; the other ones are the cognitive theories which deal with the directly unobservable inner processes of learning like perception, memory, creativity, recalling, reasoning, and these processes’ ways of affecting the individual’s behavior. While the behaviorist
theoricians pay attention to the changes in the behaviors and the stimulus that cause them, cognitive theoreticians propose that learning is an inner process and it cannot be observed directly (Ulusoy, 2003). Apart from these two main groups, there are Humanistic Theories, Constructivist Approach and Neurophysiologic Theory.

There are 5 basic learning theories within the scope of behaviorist theories and these may be compiled as; Pavlov’s Classical Conditioning Theory, Skinner’s Operant Conditioning Theory, Watson and Guthrie’s Contiguous Conditioning Theory, Thorndike’s Connectionism Theory and Hull’s Systematic Behavior Theory. The Cognitive Weighted Behaviorist Theories, which serve as a bridge between behaviorist and cognitive theories, are Tolman’s Sign Learning Theory and Bandura’s Social Learning Theory. The cognitive learning theories are the Gestalt Theory, which was developed by Wertheimer, Koffka and Kohler, and the Information Processing Theory put forth by Miller. The Humanistic Theories are Maslow’s Hierarchy of Needs Theory and Roger’s Personality Theory. In addition to these theories, we come up with Constructivist Approach and Neurophysiologic Theory as the modern learning theories. The taxonomy of the learning theories from past to present is submitted in Figure 1. In the following part, some principal ones of the mentioned theories will be touched upon shortly.

Figure 1. Learning theories
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Behaviorist Learning Theories

The first empirical studies on learning date back to the beginning of the 20th century; when Pavlov in Russia and Watson and Thorndike in the United States of America, conducted various research on how human beings and animals behave under certain cases in the laboratory environment. The focal point of these psychologists’ studies were the observable behaviors of human beings and animals, and accordingly the adopters of this approach were called “behaviorists” and their theories “behaviorist theories” (Good & Brophy, 1990; Erden and Akman, 2001; Spillane, 2002). Emphasizing the human behavior’s observability and quantifiability, they argued that the human being’s and other living creatures’ learning are similar, the research on animals are able to explain the human beings’ learning and the learning is predicated on the relations between the stimulus and the response. The behaviorist theoreticians state that, learning comes true when a change occurs in the observed behaviors of the organism (Cheetham & Chivers, 2001; Ormrod, 1990. Briefly, the behaviorist theoreticians resorted the way to interpret learning with observable and quantifiable behaviors.

There are two basic elements in the behaviorist theory; stimulus and response. The stimulus means the inner and outer happenings that impel the organism, and response means the physiological and psychological changes in the organism that emerge from the stimulus. The focal point of the behaviorist theories is not what an individual thinks but what he/she does. The behaviorists define the aimed learning goals independent from the individuals. These behaviors can be shaped with predetermined reinforcers. The behaviorist theoreticians acknowledge that learning is achieved by establishing a bond between the stimulus and the response. In the behaviorist theory, the learners are passive individuals, they feel the need to be motivated and they are attracted by the reinforcers (Ulusoy, 2003). The significant things for the behaviorist theoreticians are the observable behaviors. Since they cannot be observed during the stimulate-response process, behaviorists are not interested in what goes on in mind (Özden, 2003, Selçuk, 2007, Senemoğlu, 2012). For the behaviorist approach the results of the behaviors are important. Consequently, the reinforced behaviors sustain, and the unreinforced behaviors are cut out (Hartley, 1998). Although this approach is insufficient in explaining the sophisticated learning, which include cognitive elements, it presented useful methods to structure the simple learning and had dominantly kept its force until 1950s (Karaırmak and Sahranç, 2011).

Cognitive Weighted Behaviorist Learning Theories

The cognitive weighted behaviorist learning theoreticians underline that the cognitive processes are in force during learning, beside the stimulus and response relation. The
social learning theory that is developed by Albert Bandura (1925-...), is based on the idea that some rules and basic principles of the behaviorist theories are too strict, and they fail to explain the human behaviors and learning completely. According to the social learning theory, it is mentioned that the way people think, plan, perceive and believe constitutes a significant part of learning. This theory argues that the learning comes true by the mutual interaction of individual, environmental and behavioral factors (Bandura, 2001). To social learning theory, people are active contributors for the course of their lives, they are not living creatures who merely observe their brain mechanisms being directed by the incidents in the environment. As to the social learning theory, the individuals follow other people’s behaviors by observation and shape their own according to the conclusions of them (Bandura, 1999). The basic principles of social learning theory can be compiled as follows:

1. People are able to learn by observing others’ behaviors and the conclusions of them.
2. During the observance, the behaviors of the model are encoded in the cognitive structure. These codes provide an insight to the individual about his/her following behaviors.
3. The learning can actualize without a change in the behavior. While the behaviorists think that it is obligatory for learning to generate a permanent alteration in the behavior; the followers of the social learning theory argue that the reflection of learning to the performance (behavior) is not obligation since the individuals are able to learn by observing.
4. Cognition has a significant role in learning. For the last three decades, the social learning theory has been approaching to the human’s learning process in a cognitive way.
5. The people have control over their environment and actions (Bandura, 1977, 1999, 2001).

The social learning theory can be perceived as a bridge or passage between behaviorist and cognitive learning theories. This theory takes both behaviors and cognitive processes into consideration. It mentions that the cognitive processes are active in performing the behavior. Bandura brought in some concepts by this theory, such as modeling, indirect learning, indirect reinforcer, indirect punishment, indirect emotion and self-sufficiency.

**Cognitive Learning Theories**

Through the late 1950s, the learning theories had changed into cognitive learning theories from behaviorist theories. Psychologists and pedagogues underlined their
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commits on overemphasizing the observable behaviors and touched the significance of more sophisticated cognitive processes such as thinking, problem solving, language, concept formation and information processing (Ertmer and Newby, 2013). The social scientists with this understanding, had upheld that the behaviorist theories ignored the cognitive processes and merely focused on observable and quantifiable behaviors. These drawbacks that had been uttered regarding the behaviorist theories, paved the way for learning to be defined and examined with a new approach. Being called as the Cognitive Learning Theories, this new approach began with the development of computers in late 1950s and dominated the field. The researchers, who adopted this approach, have tried to explain the cognitive activities with computer model (Smith and Kosslyn, 2014).

In the context of Cognitive Learning Theories, since learning is perceived as a cognitive process that a human being uses to understand the world, it is defined as the alterations observed in individuals’ cognitive structures. These cognitive processes are used in various cases ranging from recalling someone’s name to solving a complicated problem (Senemoğlu, 2012). The specialties of this learning case are storing the new information and adding new meanings and connections to the previous ones (Morgan, Eski and Karakaş, 2011). For the cognitive theories, the inner processes come in the front such as memory, attention, perception, remembering, grouping and coding. The out pictures of these inner processes are the behavioral changes. Unlike behaviorism, this theory is interested in what a student knows and how he/she learns it, beside what he/she does. In other words, it deals with both behaviors and cognitive processes (Jonassen, 1991). The cognitive theories assume that some of the learning processes are typical for human beings, and depending on that assumption, all of the cognitive research can be done on people and the cognitive incidents are the focal point of the research. In addition to this, they argue that the individuals actively contribute to the learning processes, one has to be objective and rational in the research of human learning, the information is reorganized in memory and learning is achieved by associating the previously learned information with the new one (Ormrod, 1990). Moreover, they state that the thoughts, beliefs, attitudes and values of individuals have influences on learning processes (Winne, 1985).

Being one of the Cognitive Learning Theories, Information processing Theory seeks answers for the following questions; (1) how the new information is taken to the memory from outside? (2) How the newly acquired information is processed? (3) How the information is stored for a long period? (4) How the stored information is restored and recalled? Below in the figure, it is depicted that how learning comes true according to the Information Processing Theory.

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As described in Figure 2., the information processing course begins with the reception of the stimulus in the environment by the help of receivers, and then the information is recorded via sensual registration. After that the information is elected and passed on to the short-term memory, and this is how the process goes on. In the short-term memory, mental repetitions are conducted, and the meaningful encoding of the information is ensured. By the help of repetitions and meaningful encoding, the storage of the information in the long-term memory is rendered, then the information is taken back to the working memory (short-term) and the response is conveyed to response producers. The response producers transmit the information to muscles and the learner’s response performing around the environment is assured. At the same time, all of the process is controlled by the executive control (Gagne, Briggs and Wager, 1998). As it can be understood here, the Cognitive Theoreticians analyze the changes in the memory during learning and explain them with the cases occurring in cognitive processes.

**Humanistic Learning Theories**

Humanistic Theoreticians are interested in individual’s unique emotions, perceptions, beliefs and goals, which make him/her different from the others. The prominent names

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*Figure 2. Learning by information processing theory*
of theories are Carl Rogers and Abraham Maslow. To humanistic approach, human being is one and only, he/she is special and has innate goodness and positive potential (Bilge, 2005). Humanists are known with different names such as; “phenomenalists”, “self-psychologists”, “existentialists” or “perception theorists” and they are affected by the existentialist and phenomenalist views of philosophy; and Gestalt theory of psychology (Kuzgun, 1985). Abraham Harold Maslow (1908-1970) is the founder of humanistic psychology. His most significant contributions are the hierarchy of needs and the concept of self actualization (Griffin, 2006).

Maslow believes that the human beings were not directed only by stimulus (behaviorism) and instinctive motives (psychoanalysis) (Koltko-Rivera, 2006). In the development of Maslow’s theory, it is effective that he focuses on the factors that repels the human being to a new behavior and gives him/her the energy (Maslow, 1943b; Koltko- Rivera, 2006). Maslow, who explains what lies behind the human motivation by focusing the needs, underlines that the needs and the desire to satisfy them are effective on the motivation and this directs the behavior. To Maslow (1954), the basic and the psychosocial needs of the individual must be met in order to keep the improvement process sustaining. While Maslow (1954) defines the basic instincts as the needs that have to be satisfied for an individual to pursue his/her life, he expresses the other instincts as the ones that the individual gains in the social environment.

In his theory of hierarchy of needs, Maslow (1943a) states that the human beings have some basic needs and without satisfying them enough, cognitive and aesthetic needs cannot be met and so, one cannot proceed on the path to self-actualization. For example, the first basic needs are physiological needs. The next step after them is put forward as the safety needs and it tells that without satisfying them one cannot move to the next step. Therefore, without fulfilling the safety needs of an individual, it is assumed impossible that he/she attempts to meet the social needs such as belonging, love, self-esteem, knowing-understanding (learning), aesthetic and self-actualization (Maslow 1943a, 1943b). As a matter of fact, during World War II, many scientists living in Germany and other parts of Europe did not conduct scientific research since their safety needs are not satisfied, and they moved to various countries and kept their studies in those places. Maslow (1943a, 1943b) states that in case people could not satisfy their basic needs, they cannot meet the other needs like learning, aesthetics or self-actualization. To Maslow (1971), for an individual to meet his/her need of learning, the majority of the physiological, safety and social (belonging, love, respect, etc.) needs should be fulfilled. The individual, proceeding by satisfying the needs in each step, makes progress on the way to self-actualization and transcendence.
Maslow (1943a, 1943b) indicates that the individual who actualizes himself/herself can perceive the reality as it is, act as he/she desires, thinks problem-oriented, is self-sufficient, can make decisions independent from the environment, knows how to appreciate, identifies with the humanity, has a democratic personality, is averse to rude and insulting jokes, is creative and has the power to stand against stereotypes.

Being the other founder of the Humanistic Theory, Carl Ransom Rogers (1902-1987) divides learning into two; cognitive and experiential. While cognitive learning stands for the academic one that we execute while learning the numbers, concepts, words, etc.; the experiential learning is about the learning acquired after experiences. The application of Rogers’ views in education is conceptualized as “learner centered instruction.” According to this point of view, the learning experiences underlie learning (Rogers et al., 2013). In addition to this, highlighting the significance of the attitudes displayed during the learning process, Rogers (1967) states that they make learning easier. Rogers (1967) specifies these attitudes as realness, prizing, acceptance, trust and empathy. As it is understood, Humanistic Theoreticians argue the view that the needs, experiences and attitudes play an important role in learning process.
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Constructivist Approach

In the previous centuries, the information was esteemed as something to be gained and used by storing it in the memory. As a result of this, the student was in a passive position in which the information was transferred to him/her. In the last quarter of the 20th century, that is the globalization and the age of information society; the information evolved to a position that it is sought, interpreted and constructed in the memory. Consequently, instead of information transferring, the interpretation and construction of it through cognitive processes, and in this way, obtaining new information out of the previous ones gained importance.

The constructivism, which initially tried to explain how the learners learn the information, has turned into an approach that deals with how learners structure the information in their memories. Learning does not depend on memorizing the current information but structuring it in the memory, interpreting it, transferring it to new cases and producing new ones out of it. The learner implements the information on solving any kind of life problems (Perkins, 1999). Constructivism is a cognitive based learning approach which realizes after the individual’s “memory structuring”. Gathering and hearing the information does not mean the same thing with memory structuring. When the learner comes across with new information, he/she uses the previously set rules to define the world or explain this problem or confrontation; or he/she constitutes new rules to better explain the perceived information (Brooks & Brooks, 1999). Today, constructivism is rather more embraced as a learning theory. In this context, according to the constructivist learning theory, the new information is built on the previously learned ones. This does not mean the storage of the information over and over, but conversely the formation of meaningful relations and aggregates among them (Brooks & Brooks, 1999).

Marlowe and Page (1998) have set forth some basic principles, which are considered as the part of the constructivist learning approach. According to Marlowe and Page (1998), the following are grounded on in constructivist learning; i. researching, interpreting and analyzing the information, ii. developing the information and process of thinking, iii. integrating the former experiences with the new ones. On the other hand, Brooks and Brooks (1999) have also revealed some basic principles that they believe the constructivist learning approach contains. Being remarked with their similar views to Marlowe and Page (1998), these principles are as follows according to Brooks and Brooks (1999); i. creating open problems directed at the learners, ii. structuring learning around the basic principles, and so searching for the essence, iii. revealing the thoughts of the learners and caring about them, iv. adjusting the teaching schedules compatible with the estimations and opinions of the learners, v. evaluating the learners consistently in the context of teaching-learning process. With reference to the above mentioned basic principles of the constructivist learning
approach, it can generally be set forth that the constructivist based learning is an experience based, situational/contextual fact in which the relations are established between the foreknowledge and new information of the learners, the learning realizes with social interaction, the teaching-learning process and learning environments are designed in a learner based view that are flexible, independent from time and place and the understanding is built with active contribution of the learners.

**Brain-Based Learning**

The innovations and developments in our century pave the way for us to explore ourselves and the environment better. As we get to know ourselves, being a living creature with some aspects still waiting to be discovered, we produce many improvements to facilitate the life in terms of health, education and success. When we have a look at educational aspect, since it is known to carry out the cognitive processes of the human being and renders learning; finding out the structure and working principles of the brain is one of the primary issues. This is why the scientists have been conducting countless research on the brain. As a result of these research’ reflection to the educational realm, one of the learning approaches that emerged recently is the Brain-Based Learning Approach (Demir, 2016). Donald Olding Hebb (1904-1985) who rendered the Brain-Based Learning approach to a systematic level, states that it is not possible to understand the essence of learning without knowing the working principles of the brain.

In order to fulfill Brain Based Learning, the rules of the brain have to be accepted and teaching has to be organized according to these rules in the memory. In other words, the aims of this approach are, prior to anything else, finding out the biological structure and working principles of the brain and rendering the construction of the teaching process according to these principles in order to have a meaningful teaching-learning process (Caine and Caine, 2002). Tileston (2005) explains learning as a chemical process. The electricity energy that is produced by the senses comes to thalamus via the midbrain and transmitted to the various areas of the brain from here. When the cell wall stimulates the axon with electricity energy, the axon conveys the other chemicals to synaptic clefts. Learning comes true when the neurons communicate with each other. The cells communicate through cell wall, dendrites and axons. Neurons communicate with each other by transmitting the information to their axons. The message arrives at the receiver neuron’s dendrite from the axon of the transmitter neuron via spaces called synapse. When neurons ensure the connection, the brain enlarges the dendrites and empowers the synapses. The successive installment of the connection among neurons, form the neural connection patterns that run together. So, by the connection among neurons the learning realizes.
In the Brain- Based Learning, the following are in question; the nature of the brain, the ways it is affected by conditions and experiences, the ways of designing the class in order to meet the needs of it and the ways of using the strategies that motivate the individual (Hileman, 2016). As a result of the research made on the brain, 12 principles are detected regarding the affect of brain’s functioning over learning and these principles underlie this learning approach. They have seriously significant contributions on designing the teaching-learning process (Jensen, 2000). These principles are; (1) the brain is a parallel processor, (2) learning is about all of the physiology, (3) the search for meaning is innate, (4) the search for meaning occurs through patterning, (5) emotions are critical to patterning, (6) the brain as a whole and its’ parts works simultaneously, (7) learning requires both focused attention and peripheral attention, (8) learning always involves conscious and unconscious processes, (9) we have at least two types of memory (spatial memory system and systems for mechanical learning), (10) we best understand and recall when the skills and facts are structured in natural spatial memory, (11) learning is enhanced by challenge and inhibited by threat, (12) learning is unique to the individual (Caine & Caine, 1990, 2002).

It is really significant to organize and actively use the both flocculuses for the brain-based learning. Especially the graphic organizers, information presented both in visual and auditory formats, combined use of stories, figures and written materials are the strategies that activate both sides of the brain. Thus and so, the sophisticated thinking of the students’ and effectively usage of their brains is ensured. For this reason the techniques mentioned below should be applied frequently; graphic organizers, concept maps, mind maps, Venn diagrams, cluster diagrams, cause-effect diagrams, spider diagrams, double bubble diagrams and cycle diagrams. The following strategies are also useful for the students to make them recall the information and form pieces in the classroom; graphic organizers, peer teaching, asking strategies, summarizing, role playing, negotiations, draft planning, timelines, anticipation guides, PreP teaching technique, metaphors, analogies and imagery, complex projects, hands- on learning activities, confidence logs and mnemonics (Prigge, 2002).

SELF-DIRECTED LEARNING

Self-directed learning is one of the quickest developing and most researched subjects in educational field recently and it is also a key characteristic that the individuals should have in the 21st century (Guglielmino, 2003). It is defined by Knowles (1975), as attempting to learn with or without someone else’s assistance, determining one’s own educational needs, setting the educational goals, detecting the human and
material resources for learning, electing the suitable learning strategy according to the target information and evaluating the learning results. In self-directing learning process, the individuals determine their learning goals, make their own decisions on achieving the information, and actively use the ways to achieve information, realize their own learning and evaluate it. The characteristics of the individuals who learn in a self-directed way are: lifelong and independent learning, having the ability to self-regulate, having control over their learning, determining the right resources and learning goals and evaluating their own learning process. Shortly the self-directed learning is assumption of the responsibility of their own learning by the individuals, planning regarding their learning process, actualizing their learning and evaluating it (Caffarella, 2000; Candy, 1991; Kegan, 1994).

Spencer and Jordan (1999) define the self-directed learning as a process in which the learners attempt to learn and identify their needs, set their goals, determine the resources, choose the correct activities, start the learning process and evaluate the results. Self-directed learning is explained as a process that the individuals are able to choose suitable strategies and methods to accomplish their learning goals (Hollis, 1991). One of the most significant gains that this process provide to the individual is to establish a bond between the things he/she knows and does not know and to speed up learning by designing new strategies. (Eggen and Kauchak, 2001). To Bharathi (2014), the basic principles of self-directed learning are as follows:

- The learners are responsible for their own learning processes.
- The learners collaborate with their teachers and classmates.
- The learners have some information and also have the ability to transfer them to different fields.
- Motivation and willpower are significant in commencing and sustaining the learning efforts

Individuals with the self-directed learning can establish good relations with others and by so, they make use of the others while directing their learning processes. In addition to this, they are self-confident. They are aware of their learning necessities and so, they can set learning goals and exploit various resources to accomplish them. Moreover, the self-directed learners assume responsibility of their own learning with the decisions they make during the learning process. They execute the necessary information and skill transfer for learning by using sophisticated learning strategies. They acquire information from various resources such as self-guided reading and researching, attending to educational programs and information and communication instruments (Hiemstra, 1996; Knowles, 1975). According to Candy (1991), the self-directed learning is one of the essential ways that help the individuals to learn lifelong. On the other hand, one of the main objectives of lifelong learning is to
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bring in the necessary skills and efficiencies that assist the individuals to learn on their own. Accordingly, it could also be said that the self-directed learning is the meaning and the conclusion of lifelong learning.

Self-Directed Learning Models

In the literature, there are various theories that explain self-directed learning and a number of self-directed learning models are set forth based on these theories. Some of the foremost of these models are; Tough (1971), Long (1989), Jarvis (1990), Piling and Cormick (1990), Grow (1991), Brockett and Hiemstra (1991), Candy (1991), Garrison (1997), Song and Hill (2007).

Tough’s Sequential Model

Designed for the learners to plan the self-directed learning and clear them up in the applications of it, the sequential model of Tough (1971) is comprised of the following steps respectively:

- Deciding the educational objective
- Designing and planning the learning
- Obtaining the physical and financial sources to observe learning project
- Selecting a suitable environment for learning
- Selecting the sources and materials
- Finding the appropriate key people
- Motivating
- Overcoming the learning challenges
- Reducing the self-doubt to a minimum level
- Setting the new learning objectives emerging after the learning (Quote: Baumgartner, 2003)

Long’s Self-Directed Learning Model

The self-directed learning model of Long (1989) consists of three dimensions; social dimension, mental dimension and educational dimension. The social dimension refers to the isolation of the learner, in other words, the execution of the learning duties independently; the educational dimension refers to the educational applications, these are the activities carried out by the learner during the learning process; the mental dimension indicates the learner’s mental situation.
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Jarvis’s Self-Directed Learning Model

Emphasizing mostly the adult education, Jarvis’s model deals with learning in general. According to this model, the learner can opt for studying alone or with others depending on his/her interests, needs and expectations. The steps of this model are as follows:

- Estimation
- Ignorance
- Rejecting
- Preconscious
- Practicing
- Recalling
- Thinking
- Reflective exercising
- Experimental learning

Piling - Cormick’s Self-Directed Learning Process Model (SDLP)

According to the model developed by Piling-Cornick (1990), self-direction means the determination of the priorities by individuals and selecting among many available resources. These resources play an effective role in designing a system to interpret the incidents, ideas or cases. The model, which attributes the process of self-directed learning to the interaction between the learner and teacher, has three dimensions.

- Factor control (task control)
- Contextual effects on the relation between the instructor and learner (task control)
- Relation between the instructor and learner (cognitive responsibility)

Sequential Self-Directed Learning Model of Grow (SSDL)

The assumptions of Grow (1991) are as follows:

- The aim of the education process is to bring up lifelong self-directed learners. However, many schools or universities keep raising learners that are dependent, instead of ensuring the self-directed learning.
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- There are more than one way of effective education, a good education is generally situational and varies according to the learners’ reactions.
- The ability to learn self-directed may vary depending on the situation or the individual. A learner may be self-directed in one case and may not be in another. The ability to learn self-directed, can be transferred to new cases once it is developed.
- This model is built upon the idea that the self-directed learning provides lots of advantages in many cases.
- As dependency and desperation can be learned, self-direction can be learned, too.
- It is not obligatory for a theory to be true in order to be useful. Many actions stem from an applicable approach of the concept mistakes.

The basic phases and the steps of each phase are given in the Table 1.

Brockett and Hiemstra’s Personal Responsibility Managing Model

Brockett and Hiemstra (1991) embrace the model that they set forth, in two dimensions; objective and process. In this model, self-directed learning is observed as a process during which the learner esteems planning, executing and evaluating the learning process as his/her principal responsibility. And it is also observed as

Table 1. Sequential Self-Directed Learning Model (SSDL)

<table>
<thead>
<tr>
<th>Phases</th>
<th>Student</th>
<th>Teacher</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>Dependent</td>
<td>Authority, instructor</td>
<td>• Returning quick feedbacks</td>
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<td></td>
<td></td>
<td></td>
<td>• Exercising</td>
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<td>• Conducting informative presentations</td>
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<td></td>
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<td>• Overcoming the deficiencies and resistance</td>
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<tr>
<td>Phase 2</td>
<td>Interested</td>
<td>Motivator, guide</td>
<td>• Conducting inspiring presentations and organizing discussions by guiding</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Determining the objectives and learning strategies</td>
</tr>
<tr>
<td>Phase 3</td>
<td>Active</td>
<td>Facilitator</td>
<td>• Designing equal discussion environments</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Organizing seminars</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Executing group projects</td>
</tr>
<tr>
<td>Phase 4</td>
<td>Self-directed</td>
<td>Advisor, enabler</td>
<td>• Internship</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Writing up a thesis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Individually studying or forming self-directed learning groups</td>
</tr>
</tbody>
</table>
an objective, in which the learner’s preference to be responsible and his/her will to learn is emphasized. Brockett and Hiemstra (1991) draw together the process and personality traits dimensions in the model, and also added the social context as an element, based on the limitedness of today’s teaching and learning processes’ focusing on face to face learning environment. The social context mentioned here are the various physical institutions, where learning actualizes such as state universities, libraries or museums.

**Candy’s Four-Dimensional Model**

Candy (1991)’s model is a first in the world since it sets forth that the learners have different self-directions in different field of contents. According to this model, the self-directed model contains four dimensions:

- Self-direction as a personality trait
- Self-direction as the individual’s desire and capacity to sustain learning
- Self-direction as a way of regulation in formal environments
- Self-direction as following the learning opportunities in the society in an individual and non-institutional way

**Garrison’s Three-Dimensional Model**

Garrison (1997)’s self-directed learning model contains the personality trait dimension beside the learning process. With this aspect, it is similar to the Brockett and Hiemstra (1991)’s model. In this model, the learning consists of three dimensions that are linked to each other; self-direction, self-monitoring and motivation. Self-direction in learning environment means the exploitation of learning resources by the learners for the context of learning. The focal points of the model are source utilizing, executing the strategies of learning and motivation to learn. Garrison (1997) describes self-direction as the control of learning context by the learners in order to fulfill the learning objectives. In addition, he states that the learner’s control does not stand for the independence but for the collaboration with the other people in context.

**Song and Hill’s Self-Directed Learning Model**

Song and Hill’s (2007) model is the newest one regarding self-directed learning and it is designed on the basis of the previously developed models on the corresponding subject. In this model, concepts related to the learning processes and the relations
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among them remain in the forefront. These are personal variables such as resource utilizing, execution of strategies, motivation, planning, observation and evaluation; and terms such as resources, structure, essence of the subject, feedback and collaboration. In other words, the model shows the relation between learning processes and personal characteristics. Learners rely on the utilization of resources and strategies to control the planning and evaluation of the learning process; and they trust their ability to motivate themselves for taking part in the learning process.

SELF-DIRECTED LEARNING STRATEGIES

In some sources, self-directed learning is esteemed as a major learning strategy and in some others, it is welcomed as an approach and some tactics are requested depending on it. The self-directed learning strategy is a type of the autonomous learning, which plans and directs itself. This strategy is derived from a mentality, which basically esteems the learners as directors responsible for their learning experiences. Self-directed learning strategy realizes when the students design their own learning processes and experience the self-actualization by deciding their learning objectives, materials and methods (Oyibe, Edinyang and Effong, 2015).

Knowles (1975) defines the self-directed learning strategy as a process in which “with or without someone else’s help, the individuals take initiative to detect learning necessities, to formulate the learning objectives and to define the human and mental resources.” This process contains the learning, selection and implementation of the learning strategies and evaluating the learning outputs. Borich (2001) explains the reasons of self-directed learning implementation in teaching and learning cases as follows:

• To unleash the creative and intuitional skills of the students.
• To ensure that the students assume responsibility for their learning.
• To teach them how to move beyond the given content, critically think, reason and solve problems.
• To include the students to project based learning strategy.
• To encourage the objectives of self-directed learning by using the differentiated instruction model.

In order to be an effective learner, the strategies have to be adopted, through which the students develop learning skills and are able to direct themselves. Below, a number of strategies are suggested in this direction.
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- **Cognitive Strategy:** It is to use the mind skills in learning. This learning strategy includes the ways the student applies within cognitive skills such as; memorizing, visualizing, scanning, reflecting and associating. The cognitive strategy enables the student to use mind maps, to find clues while reading and to scan a text. The student can monitor accuracy, authenticity and consistency, and he/she can self evaluate (Ramani, 2013).

- **Repetition and Memorizing:** Being esteemed among the cognitive strategies, repetition means replicating of certain statements, defining, reading and combining the related sentences in a text. The strategy of memorizing includes learning the material by heart, both in explicit and implicit ways. For example, “while getting ready for the Math exam, I should write down the formulas until I learn them by heart” (Zimmerman and Martinez-Pons, 1986).

- **Organizing and Transforming:** Being another one of the cognitive strategies, organizing and transforming includes processes such as; regulating the instruction materials by students to improve learning, grouping according to the similarities and differentiations, making classifications, exploiting graphics and models, deducting the main topics of a subject, mapping the major ideas, making analogies, associating the new information with former ones, note taking and restating (Weinstein and Mayer, 1986). For instance, “I should prepare an outline before writing my essay”. Borich (2014) embraces this strategy as detailing/regulating.

- **Detailing/Regulating:** Detailing is teaching the students how to establish an inner bond between the new information and the current one. On the other hand, regulating is about teaching the students how to systemize the new information to use effectively. In order to teach detailing and regulating, one can make the students take notes. Note taking may process the information in several ways. Not only it helps the students to pay more attention to what they hear and read, but also it renders the establishment of inner bonds among the information and outer bonds with the information in the memory (Borich, 2014).

- **Metacognitive Strategy:** It is a high-level thinking that ensures the individual’s understanding, analyzing and controlling of his/her cognitive processes, while he/she is dealing with learning. Here the student analyzes on which step his/her cognitive skills (understanding, memorizing, reflecting, thinking) stand. The teacher, on the other hand, develops various strategies by motivating the student to plan, prepare and improve his/her learning skills. By so, the student learns determining priorities, setting objectives and
fulfilling various obligations and commitments successfully (Ramani, 2013). The metacognitive studies regarding self-directed learning can be transferred to the students by a process called “mental modeling”.

- **Mental Modeling:** This strategy assists the students in internalizing the learning element, recalling and generalizing the solution of the problems for different times and contexts. Here, the teacher is suggested to follow 3 steps while showing the real-time decision-making process. These are; showing the students the related reasoning, making them be aware of it and focusing them to apply the reasoning (Borich, 2014). Mental modeling gains importance especially when the students are asked to contribute to complicated tasks. For example; to build up a scanning strategy in an internet research involves high-level skills such as the evaluation of the returning results, eliminating irrelevant and synthesizing the necessary findings. Each of these tasks can be performed by ways of modeling that are directed to the organization of students’ thinking (Keene, 2007; Rekrut, 1999; Quote. Borich, 2014).

- **Objective Setting and Planning:** Being shown among the metacognitive strategies, objective setting and planning includes the determination of objectives and sub-objectives and planning of what should be done regarding them and the completion and timing of the related activities. For instance; “I am going to start working two weeks before the exams and bring an order to myself” (Zimmerman and Martinez-Pons, 1986).

- **Recording and Monitoring:** Recording and monitoring strategy as one of the metacognitive strategies, contains the recording of incidents and results, and deciding if the activities carried out are effective or not. For example: “I should take notes from the discussions in the class and record the cases I am wrong” (Zimmerman and Martinez-Pons, 1986).

- **Monitoring of Understanding:** Borich (2014) defines the monitoring of understanding which is another metacognitive strategy, as the one in which the students learn to evaluate how much they understood by continuously controlling their proceedings during the classes. It has similar features with self-evaluating in this aspect.

- **Scanning the Records:** This metacognitive strategy is about the revision of the notes, books and other sources to prepare for exams. For example, “I revise my notes once again while I am getting ready for the exam” (Zimmerman and Martinez-Pons, 1986).

- **Guided Learning Strategy:** The teacher helps the students for analyzing and synthesizing the new concepts. He/she makes a way for them to use their ability to solve problems and think critically. By so, the students can deeply and clearly understand the concepts, principles and generalizations, and the
application and sharing of the information is ensured. After acquiring new concepts and skills, the learners can easily attend to group activities and move on with learning. The student comprehends the procedures, outputs and anticipations regarding his/her tasks. Within this strategy, reading, speaking and writing activities may be performed (Ramani, 2013). Borich (2011) defines the restructuring of the students’ learning and their proceeding through the conclusion as “teacher mediated learning”.

- **Teacher Mediated Learning:** The information and skills that the learners have acquired are not given to them in a ready to use form. Instead, cognitive stimuli are presented to them with suitable periods so that they can reach the final outputs by their own reasoning. Here, the utilization of reciprocal teaching and in-class dialogue strategies are suggested (Borich, 2014).

- **Reciprocal Teaching:** This strategy is a way to apply self-directed learning in classroom environment and it transforms a typical discussion to a more productive and self-directed learning experience. On the center of reciprocal teaching, there are the group discussions in which the teachers and students take turns to lead them. The final goal of reciprocal teaching is contributing the students to the learning processes in an adequate level to make them be aware of their own reasoning. This strategy paves the way to discover the learning content by in-class dialogues (Borich, 2014).

- **In-Class Dialogue:** The in-class dialogues among the teachers and students play a significant role in self-directed learning. Self-directed learning uses this strategy in a different way. Instead of the verbal statements that confirm the authority of the teacher, the responsibility is passed on to the student step by step. The teacher shapes the outline of the information, builds up the dialogue and gradually increases the volume of the difficulty to think independent from the previous structures set by him/her. If the verbal statements of the student are suitably supported, they eventually turn into self-talks that will substitute for teacher’s infusions and help the student to guide himself/herself against similar confrontations (Borich, 2014).

- **Self-talks:** The verbal interactions that the teacher asks from the students in a gradually increasing way are internalized by the student as self-talks in cases where no direct teacher intervention exists. At this point, the teacher’s role turns into a spectator role. The teacher gives only clues when the student is needed to be kept in the right direction (Borich, 2014).

- **Seeking for Social Support:** This means getting assistance from an adult, the teacher or peers. For instance, “I can ask for help from my classmate if I had problems with my math homework” (Zimmerman and Martinez-Pons, 1986).
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- **Social Strategy:** Being used more commonly in language teaching, social strategies help the students to improve their linguistic skills since they provide more field of communication (Ramani, 2013).

- **Information Collecting:** Contains the association of resources that are not grouped together. For example, “I have to go to the library to get more information on the subject” (Zimmerman and Martinez-Pons, 1986).

- **Estimation Strategy:** Estimation helps the learner to recall the former experiences, links it with the context and sets forth its meaning clearly. The teacher has the student experience the information and its meaning by making use clues such as sounds, images, videos, etc. (Ramani, 2013).

- **Affective Strategy:** Helps the learner overcome the negative emotions that hinder the learning process such as anger, disappointment, low self-esteem or lack of confidence. This way the student has an idea about his/her teacher and peers. The learner can regulate the emotions, attitudes and concerns successfully by meditating, listening to music or self-encouraging prior to the learning activity (Ramani, 2013).

- **Shaping the Environment:** Choosing and regulating the physical environment to facilitate learning. For example, “I should keep myself away from what distracts my attention, I should turn off the radio to concentrate while studying” (Zimmerman and Martinez-Pons, 1986).

- **Self-finalization:** The rewarding of the student when he/she is successful, and punishment of him/her in case of unsuccessfulness, by the student himself/herself. For instance, “I will reward myself by watching a movie if I succeed in the exam” (Zimmerman and Martinez-Pons, 1986).

- **Self-evaluation:** Evaluations done by the students are directed at the quality and process of the work, determining whether the objectives are acquired or not, and comparing the results with the corresponding standards. For example; “I shall check this again to make sure I am right” (Zimmerman and Martinez-Pons, 1986). Knowles (1975) suggests various methods to be used in teaching and learning process, according to the type and level of the objectives set.

ALTERNATIVE LEARNING/TEACHING APPROACHES AND SELF-DIRECTED LEARNING

Critical Thinking and Self-Directed Learning

The people who make use of critical thinking are generally self-directed and ask the following questions frequently; “How do you know that?”, “Does this depend
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Table 2. Methods Related to the Objectives

<table>
<thead>
<tr>
<th>Types of Objectives</th>
<th>Suitable Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information</td>
<td>Television, discussion, dialog, interview, symposium, panel, group discussion, movie, slide show, recordings, discussions on books, reading, programmed instruction</td>
</tr>
<tr>
<td>Comprehension</td>
<td>Audience contribution, demonstrations, Socratic discussion, problem solving, project, case studies, simulation games</td>
</tr>
<tr>
<td>Skills</td>
<td>Skill exercises, role playing, participative studies, simulation games, human relations training groups, non-verbal exercises, coaching</td>
</tr>
<tr>
<td>Attitudes</td>
<td>Experience sharing, sensitivity education, role playing, case studies, simulation game, participative studies, group therapies, advisory</td>
</tr>
<tr>
<td>Values</td>
<td>Value explaining, biographic readings, discussions, symposium, drama, role playing, simulation games, sensitivity training</td>
</tr>
</tbody>
</table>

(Knowles, 1975)

on evidences?”, “Are there alternative possibilities when we are given new pieces of information?” Critical thinking is a process during which the information is effectively and artfully analyzed, interpreted, conceptualized, synthesized and evaluated to reach a conclusion or an answer. Besides interpreting, analyzing, evaluating and deduction; this strategy relies on a self-regulating, goal-oriented provision stemming from the explanation of evident, conceptual, methodological, critical or contextual thoughts, which are set forth by a decision on a specific concept, subject or incident. In addition to having strong skills of critical thinking, making decisions and solving problems by using these skills are also important. This aspect of the critical thinking is in close connection with self-directed learning. Self-directed learning uses reasoning together with many intellectual criterions such as clarity, credibility, accuracy, precision, meaningfulness, profoundness, openness and justice. Organizing the individual’s own thinking and clarifying it, thinking in a way to detect the mistakes and prejudices are the reflections of self-guidance (Oyibe, Edinyang and Effiong, 2015).

Problem Based Learning and Self-Directed Learning

In the problem-based learning literature, self-directed learning means the readiness of a student to contribute to the learning activities that are defined not by a teacher but himself/herself (Schmidt, 2000). Self-directed learning also includes the learning needs and the abilities of critically evaluating the literature sources, effective planning and time management and critically evaluation of the individual’s own self-directed skills. For this reason, personal autonomy, self-direction and student control evidently play a role in problem-based learning. It is believed that the learning environments
which improve problem-based learning like self-directed learning, support the deep level learning since the students are free to choose what and how they learn (Candy, 1991). Moreover, Hmelo and Lin (2000) argue that the principal characteristics of problem-based learning substantiate the development of self-directed learning. The student centric nature of the problem-based learning, the learners’ studying on the problem without having any kind of curriculum inputs previously, detection of the information gaps, shaping their own learning topics, individual working, evaluation of the resources, application of the new information on the problem and the collaborative reflection of the self-directed learning skills are all significant features that support self-directed learning. Especially by the help of independent literature reviewing, the students can improve their skills of seeking information and become flexible and well-adjusted learners. Unless the students understand a problem and solve it with the resources they reached, they can formulate additional learning topics and repeat the literature scanning and critical evaluating processes. This case might be seen as a reflection of the students regarding their self-directed learning skills (Loyens, Magda and Rikers, 2008).

**Project Based Learning and Self-Directed Learning**

Project-based learning does not only explain the product to students, it also tells about the significance of the learning process, helps them set objectives and makes use of the others’ collaboration while carrying out a project. The projects have to indicate a real challenge in the world, leave a field for the students to make choices and control, be executable, require a specific collaboration and produce a perceptible conclusion. When we take a look at the characteristics of the project-based learning, we can recognize that features such as goal setting, having a field to choose and control, process management and finalization are similar to the self-directed learning’s basic principles (Borich, 2014).

**IMPROVING THE SELF-DIRECTED LEARNING SKILLS**

The improvement of self-directed learning skills is one of the permanent and authentic universal missions of education to contribute to the learning skills of people, and this mission is shared among instructors of all ages; ranging from the pre-school education to post-graduate education and from the distant past to undiscovered future. As a result of this widespread concern to increase the ability of learning, some educational approaches are put forward. Some of these approaches aim to teach these learning skills directly such as curriculum content. These contain lessons on
time management, objective setting, note taking and even critical thinking, workshop activities and application sessions. In addition, it is gradually being accepted that these skills are contextual gains and they can only be taught and learned by real learning tasks. Consequently, the learning skills are generally embedded into other curriculum contents and by so, the students can develop their efficiencies both in the fields of content and process (Candy, 1991).

In the general concern to improve the students’ learning abilities, self-directed learning also takes place, and this concern paves the way for a series of approaches, which emphasize the assumption of the learning responsibilities of students by themselves. That is why besides the abilities that can be perceived as general learning skills such as listening, reading, note taking, questioning, seeking for information; some other skills such as time management, objective setting, problem solving, that are in the center of the self-directed learning are set forth.

**Improving Autonomous Learning Skills**

In the realm of adult education, it is a common belief that the adult learners can considerably actualize their own learning. However, there are different groups of views about how to shape this skill. The first group is the one which believes that the ability of self-direction has a universal characteristic and accordingly, nothing special has to be done to improve this skill. The ones who think this way assume that the tendency to learn self-directed will unleash naturally, so the restrictions in learning environments should be removed and minimum structuring is required in adult learning (Candy, 1991).

The other group believes that the self-directed learning can be improved intentionally. This group is divided into two. The first one argues that the independent learning skills can be determined and taught by direct education. The efficiencies called academic skills such as note taking, listening, reading and conducting mathematical operations can be inserted to the curriculum in any level. Moreover, the assumption that all adults have those basic skills is welcomed, too. However, adult instructors can assist the learners in developing their efficiencies. According to this approach, other high-level skills that are identified as self-direction skills such as information acquiring, time management, objective setting, problem solving and critical thinking, should be given isolated and mostly without content (Candy, 1991). On the other hand, there are people who argue that the independent learning skills cannot be taught and learned as regular curriculum contents, they can only be achieved by individual’s own discretion in learning position. To them, autonomous behavior cannot be taught or learned as an ordinary content in the curriculum. For example, while an individual can give information on autonomy, independence or
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responsibility, these facts cannot be realized in his/her thoughts or actions. A person learns self-direction and responsibility by the experiences he/she has, by having the opportunity to direct himself/herself for his/her own actions and by being responsible for them. Therefore, if the students who can make free and autonomous decisions are desired, then a learning environment, in which they can make autonomous decisions, has to be provided for them (Dittman, 1976).

The Approaches That Increase the Independence in Learning

There are many teaching and learning approaches that are developed generally for learning and more specifically for self-directed learning and they are claimed to be effective (Kirschenbaum and Perri, 1982). Among these; agreement-based learning, experiential learning and other types learner-controlled learning that encumber responsibility to the learners in some phases of learning, can be mentioned. As it is stated before, these approaches are generally based on the idea that the best way to direct oneself is to act autonomously. Providing such opportunities for developing the ability of directing oneself is necessary but not sufficient. So, together with the control of the learners over the specific aspects of learning positions, adult instructors may also improve their own self-direction skills. In order to facilitate all of these, various strategies are suggested (Brockett and Hiemstra, 1991):

• Utilizing the current information structures of students
• Encouraging deep learning
• Increase the learners’ questioning
• Developing the critical thinking
• Improving the reading skills
• Developing monitoring the understanding
• Creating a supportive environment for learning

These strategies have the potential to encourage self-directed learning, but they may not enable the autonomously acting of the learners immediately (Brockett and Hiemstra, 1991).

Improving the Abilities by the Individual Control of the Learning Variables

Along the borders of any formal or individual learning experience, there are various ways for the students to take their self-directed learning to a high level. In this direction, there are at least nine learning variables that can be controlled by the students.
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- Learning needs
- Learning objectives
- Results expected
- Evaluation/Approval methods
- Documentation methods
- Correct learning experiences
- Variety of the learning resources
- Suitable learning environment
- Learning speed

It can change from time to time that, at what rates the control is shared between learner and the facilitator. But it is set forth after various experiences that these variables are significant in encouraging the self-directed learning in general (Hiemstra, 1988). The thing that is referred as self-direction in learning, contains an improving process moving on inside the individual. But, can the adult instructor make contributions on this development process? It is for sure the adult instructor who can serve as a catalyst for the learners to discover their unused potential and improve it. Here, we may mention 3 strategies that the instructors can apply to make the learners notice their self-directed learning potentials (Brockett and Hiemstra, 1991).

- **Facilitating the Critical Reflection:** This strategy includes helping the learners to reflect their experiences in a critical way to make them exploit the information that would be gained from future activities. Mezirow (1985) uses the concept of self-reflecting learning as the better understanding of the individuals thanks to the lack of functionality of the addictive psychological assumptions (which were gained in the earlier ages) in adulthood. To Brookfield (1987), being closely related to the critical reflection, critical learning includes the determination and refusal of the assumptions, noticing the affects of the concept on thoughts and actions, taking the current thinking and living alternatives into consideration, development of the reflective skepticism, reducing the tendency to accept a behavior or thought just because of the reasons like “it has always been done this way” or “an expert told this”. In order to improve critical thinking, he suggests the following strategies:
  - Approving the own truths of critical thinkers
  - Listening carefully to the critical thinkers
  - Making clear that we support the efforts of critical thinkers
  - Reflecting the thoughts and actions of the critical thinkers
  - Motivating the people for critical thinking
  - Evaluating the critical thinking regularly
Overview of Learning From Past to Present and Self-Directed Learning

- Helping the critical thinkers to form a communication network
- Being critical teachers
- Rendering the people to notice how they think critically
- Modeling the critical thinking

Apps (1985) suggests the participation of cultural and artistic activities such as reading, writing, discussing, role playing to improve critical reflecting and critical thinking skills.

- **Encouraging the Rational Thinking:** Since rational thinking promotes the connection between self-direction and personal responsibility, it may be a significant tool for developing self-direction. Because many people, especially the ones who aim to achieve an extraordinary success, prefer to guide themselves rather than being controlled.

- **Utilizing the Helping Skills in Facilitating Process:** This strategy includes the application of basic helping skills regarding the student-facilitator (instructor) relation. There are some basic skills for the facilitators that they can use to increase their efficiencies. Egan (1986) suggests a 2-dimensional model; core values and communication skills. Being two of the elements of the core values in the model, respect means an unbiased attitude in which the facilitator accepts the student as a unique individual and reality is the quality of being an individual. By being real, the facilitator can arouse self-confidence and comfort in the individual and so, can contribute to learner self-direction. Egan (1986) mentions 4 elements under the dimension of basic communication skills; contribution, listening, empathy and researching. Contribution means paying attention to the corresponding person, while listening includes the understanding of the verbal communication of him/her. Empathy necessitates to feel the other one’s world while keeping being objective. Researching, on the other hand, is helping to discover the situation of oneself and others.

SELF-DIRECTED LEARNING IN LIFELONG LEARNING PROCESS

The self-direction concept can be seen in the center of many different contexts, especially in adult education. Self-directed learning generally emerges from the desire to learn life-long. Lifelong learning becomes widespread for various reasons.
First of these is the preparation of the primary and secondary school students’ for the upper levels of education such as vocational training, higher education or adult education, through which the need to study independently is more. The assumptions here are the ideas that lifelong learning obliges the educational contribution which sustains through the whole life, and it is best to reach to high levels of education as much as possible. The focal point is acquiring the skills that would help learning (Bolhuis, 2003).

The second reason for the popularity of lifelong learning is basically economical and esteems the informational effectiveness as a significant economical power (Kessels, 1996). The information-based economy, the new technologies, the increasing speed of technological developments and globalization, affect the population’s needs of improving the skills and efficiencies (Bjornavold, 2004). This situation is effective only under the conditions where enough people can produce new information and where the others are able to access the informational change. Although many educators do not wish to focus on the economical outcomes, it should be accepted that the production and utilization of the new information unveiled a wider perspective for learning and information. This case requires researching the new possibilities and learning as a way to deal with the unknown situations (Boud, 2001). Globalization and the growth of the rapidly changing information economy mean that the people have developed their skills through their adulthood to cope with the modern life, both in their works and private lives. Today, there is a basic skill, which gained more importance in the continuously changing environment; the ability to comply with the needed developments, education and training (Organization for Economic Co-operation and Development [OECD], 2007).

The third reason is that the world has become “a global village” by the affects of economy, mobility and media. This village means a multi-cultural area where people face with others who have different backgrounds of information, beliefs, views and habits. Facing those economic and cultural confrontations stemming from the socio-economical situation, ethnicity, globalization and social gender inequality made way for the necessity to deal with these realities (Bolhuis, 2013). The world that we live in is changing so quick that it will surpass all of us soon. Therefore, in the 21st century, all of us have to change our lives, enhance them, and in order to keep pace with the innovation, we have to update our learning skills and be lifelong learners (MarjanLaal and Peyman Salamati, 2011). Lifelong learning is something that all of us have to contribute; we have an obligation to learn through all of our lives (Eggelmeyer, 2010).

The questions of what self-direction and lifelong learning mean in social context and also what they should mean; pave the way for the fourth and most comprehensive
reason: the teaching of lifelong and self-directed learning contributes to a democratic society (Bolhuis, 2003). Democracy can only function if the people can inform themselves, solve problems and make well-thought choices. The basic assumption of a democratic society is the equal rights and for this reason, the inequality of education is a serious problem in any democracy. Teaching self-guided learning is not a perfect solution but it can provide a hopeful approach to some problems (Bolhuis, 2003). In addition to this, it helps the people to have an active role in the public life, have a more sustainable way of life, improve their health and prosperity and achieve other types of objectives. Moreover, it reduces the crime and contributes to society by encouraging the public activities (Dunn, 2003).

Self-direction is one of the most rousing issues occurring in the basis of adult education over the last two decades. Self-direction is more than a trend; it is a way of life especially for the adults. It is important to see the self-directed learning from the perspective of lifelong learning. Lifelong learning is not a special space of the adult instructors, it means the learning that sustains all over the life (Brockett and Hiemstra, 1991). Cropley and Dave (1978) mentions 5 characteristics of lifelong learning system:

- **Integrity**: Under the system of lifelong learning, the opportunities of the individuals have to be available for all of their lives.
- **Integration**: Fragmentation and disintegration of the educational sub systems in many societies have always been underlined by a lot of authors. Home, school, job and media; all of these include the basic education functions, but they generally work independently and sometimes, transversely. The integration of them is significant in lifelong learning.
- **Flexibility**: The training objectives, curriculums and learning processes have to be adjusted consistently to meet the new information and efficiency needs in a modern society. The education has to include the technological developments, too. The principles of lifelong learning argue the idea that there is more than one place for learning, beside the belief that there are more than one way for learning.
- **Democratization**: The principles of lifelong learning require the education to be adapted in order to meet the necessities of the people with different capacities and backgrounds.
- **Self-Actualization**: The final objective of lifelong learning is to enhance the life qualities of each individual.

Lifelong learning encloses all kinds of learning; formal, non-formal and informal. It also includes the attitudes, information, skills and behaviors that people gain through their daily lives (Dunn, 2003). Mocker and Spear (1982) have embraced
self-directed learning in two dimensions; objectives and processes. They also have defined 4 categories that contain lifelong learning: the formal learning in which the learners have no control on objectives and process, the non-formal learning where the learners are able to control the objectives but not the process, the informal training in which the learners control the process but not the objectives and the self-directed learning where the learners control both dimensions.

The recent learning theory is esteemed as all of the activities that sustain throughout the whole life. Schools have to assist the students in self-directing and being lifelong learners. The authority that the student has for his/her own learning is the base for encouraging the self-directed learning. Education could be helpful to improve learning skills and attitudes for empowering this authority (Salema and Valente, 1996). This might be valid for the less skilled students who have problems in improving themselves but the differences among the students depend on their backgrounds and social capitals. Therefore, the self-directed learning cannot be esteemed as an independent, inner and individual effort; it also includes the political and cultural context in the vicinity (Brookfield, 2000). Self-direction means the advancement of the individual to his/her objectives and his/her loneliness. Supporting the self-directed learning is criticized by some fractions because it seems like self-direction means an individual effort regardless of his/her social, economical and political position (Bolhuis, 2003). While discussing on the self-directed lifelong learning, it should be stated that the education is not an impartial attempt and it requires an ethical discourse on its objectives (Veugelers, 2000).

The lifelong learning which has been topical for more than 25 years, requires the connection of the learning outputs from various contexts and environments (Friesen and Anderson, 2004). The aim of the adult education or any kind of education is raising students who are self-directed and who can study on their own (Kidd, 1973). The self-direction in adulthood is frequently defined as a gradual learning process in which the learner assumes the primary control (Brockett and Hiemstra, 1991).

The studies on adult learning are less in comparison to the ones on children's leaning, but they put forward two points of views. One of them argues that the adults have the same patterns with children in learning. For example, interest is motivating for both children and adults. It is for sure that the children have different expectations but both of them can be motivated by showing interest. However, the adults’ skills are more disorganized than children’s. It is not expected for a child to have distant grades from mathematics and reading, but it does not work for adults. One possible reason for that is, the adults have more time to improve their strong skills and they neglect their weak skills. For example, people who read so much keep enhancing their vocabulary sets even after the school, but the other ones cannot improve that skill (Cromley, 2000). Furthermore, the children have more time for learning compared to the adults. That’s why learning can seem easier for children, even if the same
processes are followed. On one hand, the assumptions on children are extended without advising to the adults; on the other hand, the lessons learned from the research of children learning are neglected for the research of adult learning (Venezky, 1991). Of course, it cannot be deducted from this case that the adult education programs should be like averaged K-12 classes. This is because the majority of these classes do not use the things known about learning. But the mentioned things are not good reasons to neglect the information on learning, memory and motivation acquired from the large-scale studies (Cromley, 2000).

The other point of view is the belief that the adults learn differently from the children, as Knowles (1975) puts forward. This view paved the way for a new field of research and brought up the term “andragogy”. Andragogy is built up on 5 assumptions related to the characteristics of adult learners that are different from the children learners’ specialties in classical pedagogy (Smith, 2002):

- **Self-Concept**: As a person matures, his/her self-concept moves from one of being a dependent personality toward one of being a self-directed human being.
- **Experience**: As a person matures, he/she accumulates a growing reservoir of experience that becomes an increasing resource for learning.
- **Readiness to Learn**: As a person matures his/her readiness to learn becomes oriented increasingly to the developmental tasks of his/her social roles.
- **Orientation to Learning**: As a person matures his/her time perspective changes from one of postponed application of knowledge to immediacy of application. As a result, his/her orientation toward learning shifts from one of subject-centeredness to one of problem centeredness.
- **Motivation to Learn**: As a person matures the motivation to learn is internal (Knowles, 1984).

When Knowles introduced andragogy to the adult instructors, self-directed learning came out as a different model, which helps the identification of adult students differently from children.

**CONCLUSION, DISCUSSION AND RECOMMENDATIONS**

The change is an inevitable reality of life. Countries, cultures, manners of thinking and production, relations and the nature are continuously changing. Even the human being himself/herself leads a life by getting through alteration from the birth until the death. (Erdoğan, 2012). As a natural result of that, the world is also getting an information-oriented change and transformation with the combined effect of the
### Table 3. Comparison of the assumptions of pedagogy and andragogy

<table>
<thead>
<tr>
<th>About</th>
<th>Pedagogy (Teacher Guided Learning)</th>
<th>Andragogy (Self-Directed Learning)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner concept</td>
<td>Dependent. The teacher determines how and when a subject will be learned, and he/she tests it.</td>
<td>Proceeds to independence. Self-directed. The teacher encourages and maintains the behavior.</td>
</tr>
<tr>
<td>Role of the learner</td>
<td>A little worthless. That is why the teaching methods are didactic.</td>
<td>...is a wealthy resource for learning. For this reason, it includes problem solving, discussion, etc.</td>
</tr>
<tr>
<td>Readiness for learning</td>
<td>Changes according to the maturation levels. People learn what the society anticipates from them.</td>
<td>Develops from the experiences and problems. People learn what they need to. Accordingly, the learning programs designed around the life are achieved.</td>
</tr>
<tr>
<td>Orientation for learning</td>
<td>Topic oriented. Depends on the acquiring of the topic. Curriculum is built around the topics.</td>
<td>Duty and problem centered. Learning should depend on experiences because people are performance oriented in their own learning.</td>
</tr>
<tr>
<td>Motivation</td>
<td>Extrinsic rewards and punishment comes in the forefront.</td>
<td>Intrinsic motivators and curiosity comes in the forefront.</td>
</tr>
</tbody>
</table>

(Jarvis 1987; Knowles, 1984)

### Table 4. Comparison of process elements of pedagogy and andragogy

<table>
<thead>
<tr>
<th>Elements</th>
<th>Pedagogy (Teacher Guided Learning)</th>
<th>Andragogy (Self-Directed Learning)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>Formal, authority oriented, competitive, verdictive</td>
<td>Informal, including mutual respect, optional, collaborative, supportive</td>
</tr>
<tr>
<td>Planning</td>
<td>Previously by the teacher</td>
<td>Participatory deciding</td>
</tr>
<tr>
<td>Definition of necessities</td>
<td>Previously by the teacher</td>
<td>Mutual evaluation</td>
</tr>
<tr>
<td>Setting of objectives</td>
<td>Previously by the teacher</td>
<td>Negotiation</td>
</tr>
<tr>
<td>Design of the learning plan</td>
<td>Content units, curriculum, logical sequence</td>
<td>Learning projects, learning agreements, prioritized according to readiness</td>
</tr>
<tr>
<td>Learning activities</td>
<td>Transferring techniques, specific readings</td>
<td>Research projects, independent studying, experiential techniques</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Previously by the teacher</td>
<td>Mutual evaluation of the self collected evidence.</td>
</tr>
</tbody>
</table>

(Knowles, 1975)
Overview of Learning From Past to Present and Self-Directed Learning

social, economic and technological developments (Gürbüz, 2011). This change and transformation in the world, affect the educational systems and learning processes with no doubt, and as a result of the new research and discoveries, various findings are set forth related to a more effective and productive learning. In consequence of the scientific and technological developments occurring from past to present along the world, a transformation process is being experienced from the teachers with teaching responsibilities through the students with learning responsibilities. In consideration of these developments, today it comes in the forefront to raise individuals who assume the responsibility of learning and who plan, execute, evaluate and keep the learning process for a lifetime. Shortly, raising individuals with self-directed learning skills became one of the elements that drive the countries and societies forward.

In the light of the technological developments the learning has exceeded the borders of class environments and reached to universal levels. By the help of the opportunities that electronic devices provide, individuals of any ages became able to carry on their learning activities regardless of time and place. By this way, it is very easy to reach the information today. However, it gained more importance to reach the right information, interpret the new information in mind, establish bonds among the current and new information, and to produce new information from the former ones. The unprecedented pace of the developments occurring in our time is propelling the individuals to read, research and in this direction learn lifelong to keep pace with the order of the day. Therefore, studies have to be executed to improve self-directed and lifelong learning abilities of the individuals beginning from the early ages.

Many scientists have different views on self-directed learning. Harrison (1978) considers self-directed learning as a process of regulating teaching and focuses on the learner’s self-management level in the educational process. Candy (1991) esteems self-management; same as Guglielmino (1977) and Kasworm (1988), this to be a personal trait, with moral, emotional, and mental self-management as an emerging individual. Many models have been developed to explain self-directed learning. These models start with the Sequential Model developed by Tough (1971) and continue until the model of Song and Hill (2007). The self-directed learning model of Long (1989) consists of three dimensions: social dimension, spiritual dimension and educational dimension. Jarvis (1990) who mostly focuses on adult education proposes a model that is concerned with learning in general. According to the model, learner can decide whether he/she wants to work alone or with others according to his / her interests, needs and expectations. According to the model
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developed by Piling-Cormick (1990), self-management is defined as determining the priorities of individuals and making choices from many accessible sources. In the model proposed by Brockett and Hiemstra (1991), self-directed learning is seen as a process that the learner considers as the first responsibility of planning, implementing and evaluating the learning process, and as an aim focused on the wish and learning of the learner. The model of Candy (1991) is a first in which the learners have different self-management in different content areas. Garrison’s (1997) self-directed learning model includes the personal dimension of learning as well as the learning process. In this respect, it is similar to the model of Brockett and Hiemstra (1991). Song and Hill’s (2007) model is the newest model for self-directed learning and has been developed by taking the previous models of self-directed learning into consideration.

Various research have been conducted on self-directed learning so far. Some of them are handled within the framework of lifelong learning, informal adult education, andragogy, learner autonomy, learning to think and learning to learn. Others are related with self-managed learning skills, learning styles, learning strategies, self-regulation, learning achievement, critical thinking tendency, general self-efficacy, problem solving skills and problem-based learning, reading comprehension, emotional intelligence, attitude and motivation. Additionally, readiness in self-directed learning, self-direction in mobile learning, and self-directed learning in online environments are the important studies on self-directed learning. A lot of research reveal many positive cognitive and affective effects of self-directed learning on the learner.

In classes that are based upon self-directed learning, the teacher has a role to guide, not to be the sole possessor of the information. For this reason, it is really significant to establish an interactive and interconnected relation between the teacher and student. The teachers have to design a supportive environment for self-directed learning along with preparing a program for improving that. This can only be achieved by the preparation of a program that will ensure the collaboration of teachers and students in terms of planning, implementing and evaluation processes, and by taking the interests and desires of the students (Idros et al., 2010; Silen and Uhlin, 2008). Nowadays, the information itself is also changing very quickly. The information that individuals acquire in their school lives could become inoperative and lose its timeliness in the business life. Accordingly, it became significant in today’s world for the individuals to have the ability of learning to learn, which will be helpful for them throughout their lives.
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**ENDNOTE**

1 These scientists who work on learning are ranked according to their date of birth.
Self-Directed Learning Strategies in Adult Educational Contexts

Today's global educational environment includes the emergence of adult learners participating in formal and informal educational encounters for the purposes of professional development or personal enrichment. These learners must possess the conceptual and attitudinal idea of self-directed learning in order to be skilled workers and fulfilled human beings.

Self-Directed Learning Strategies in Adult Educational Contexts is a critical scholarly publication that examines the impacts of self-directed learning methods and strategies on adult learning in various formal and informal learning situations and educational encounters. Featuring topics such as andragogy, learning analytics, and educational technologies, this book is geared toward adult educators, administrators, principals, professors, human resource managers, educational professionals, and researchers working in the fields of andragogy, adult learning theory, professional development, instructional technology, and curriculum development.

Topics Covered
- Adult Learning
- Andragogy
- Assistive Technology
- Blended Learning
- E-Learning
- Educational Technologies
- Learning Analytics
- Learning Environments
- Metacognition
- Project-Based Learning