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A Review on Learning Style Preferences for EFL Language Learners in Online Context

Zahra Moharrer, Ph.D. Student

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Abstract

The developments in technology with prompt growth of the Internet use in education have resulted in a proliferation in distance education. Distance learning can be a real alternative to on-campus learning provided that programme designers do not neglect the core issues of education, i.e., the accommodation of learners' needs and requirements. Addressing learning styles of individuals help the instructor respond appropriately to learners' expectations and recognize the patterns in which learners tend to concentrate more. Lack of close monitoring of learners in distance education and observing their step by step progress can create problems for those students who are not properly equipped to take charge of their own learning process. Undoubtedly, this adjustment for EFL learners involving in conventional face-to-face English classrooms is not easy and may lead to more challenges and struggles on the part of learners. The current research on different learning style models aims at investigating which of the

frequently cited models might be more appropriate to an EFL context. Therefore, it may be of particular interest to e-instructors and instructional designers of online education, especially in the context of the study, Iran, to find out which learning style model might be more suitable.

Keywords: EFL context, learning styles, learning style models, online learning

Introduction

During the last few decades, the infusion of technology into teaching and learning environments has made educators reconsider their focus of attention to educational pedagogy and methodologies for the new channels of online learning. However, a review of literature on distance education and, in particular, on online learning in Iran has unveiled that enough attention has not been paid to learners' characteristics, their expectations and requirements, and their adaptation to online learning contexts. In Iran, English is taught as a foreign language (EFL) and to great extent in conventional face-to-face (FTF) classrooms. These might refer to different reasons such as lack of long history behind online learning in Iran as it is at the infancy stages of development (Yaghoubi, Malek Mohammadi, Iravani, Attaran, & Gheidi, 2008, p. 90); critical problems in system and the Internet emphasised by Dilmaghani (2003) and Noori (2003) in the same research; and the importance of system evaluation and e-learning like teaching methodology of distance learning, framework in educational system, educational policies, distance learning management, and curriculum in the context of the study (e.g., Montazer & Bahreininejad, 2004; Gharehbakloo, 2005; Sarlak & Jafari, 2006; Sarlak & Aliahmadi, 2008; Tabatabaie, 2010).

In other words, there are only a few studies on Iranian e-learners and their learning process. Indeed, as Banathy (1991) mentions learners are key entities locating at the core of online education systems (in Khan & Smith, 2007, p. 320). So their role cannot be ignored in learning environments.

Technology can be utilized for more purposeful reasons as it can be viewed as a driving force which provides learners with more resources than conventional contexts (Sparkers & Williams, 2000, p. 71). Needless to mention that the nature and characteristics of learners and the

influence of online system on e-learners' potential success are undoubtedly essential. Learners should adjust the appropriateness of online instruction with their individual learning behaviours (Kaminiski, 2002, p. 1). Effective learning, therefore, requires both knowledge of learners' learning styles and preparation of the instructor to meet learners' needs. In other words, understanding the learners' expectations and identifying their patterns of learning are crucial to design courses according to learners' preferred learning styles and to bridge the gap resulting from unfamiliarity of a triangular community members i.e. learners, instructors, and contents of online settings (Du & Simpson, 2002, in Cooze & Barbour, 2005, p. 3).

It is believed that technology can help learners improve different kinds of skills from the basics to higher-order of thinking. As such, technology can also assist learners to develop these skills to overcome the difficulties that they might encounter in online mode of instruction only when they are appropriately equipped. This challenge is more critical in the case of Iranian learners who extensively engage in FTF contexts. The controversial issue in e-learning is that learners who have experienced teaching and learning methods in conventional FTF classrooms and just collected the ready-made information from the instructor may not feel comfortable to replace traditional methods with those of online teaching and learning methods. That is, the shift in the style of delivery may not receive the approval of all learners since the pedagogical characteristics of an online learning context might not be in line with learners' traditional experience (Shawa & Marlow, 1999, p. 224).

Moreover, the shift of pedagogy from teacher-centrism to student-centrism and locating learners' characteristics at the locus of attention stress more exploration on different learners' variables. Identifying learners' learning style preferences has been considered as vital element which, in turn, should be fitted with online instruction and delivery, and therefore, led to enhancement in learning process and performance (Shih & Garmon, 2002).

Language learners are good cases for further research on learning styles in online learning. Due to occasional/absent interaction on the real time and lack of proper support from the instructor in distance contexts (e.g. in Web-based Training), distance language learners experience more difficulties than learners of other subject matters (Sussex, 1991, in Zhang &

Cui, 2010, p. 30). Dravis (2002) believes that "the heart and soul of the online courses are the interaction between learners" (in Fisher, Coleman, Sparks, & Plett, 2007, p. 39). Nevertheless, Hurd (2006, p. 303) maintains that the acquisition practice and assessment of foreign language e.g. speaking skill (either with peer classmates or the instructor) are the most pervasive problems which are attributed to the physical absence of the instructor, the isolated context, and reduced opportunities for interacting in the target language. Thus, distance language learners require improving skills and a greater degree of self-regulation or autonomy than learners of other subjects (White, 1995, p. 208).

On Learning Style Preferences

Years of research have revealed that due to some factors such as heredity, educational background, age, requirements and needs; people comprehend and process information differently (Decapua and Wintergerst, 2005, p. 2). Learning styles are defined differently with more or less having consensus on absorbing, processing, and retaining new information and skills (e.g., Reid, 1987; 1995; Celcc-Murcia, 2001; Riazi & Riasati, 2008, p. 157). In this regard, Keefe (1979, p. 4; 1987), for instance, indicates that "learning styles are characteristic cognitive, affective, and physiological behaviours that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment". Furthermore, Willing (1988) asserts that learning styles refer to "any individual learner's natural, habitual, and preferred ways of learning" (p. 1). More on learning styles are presented by Dunn, Beaudry, and Klavas (1989, p. 50) who consider learning style as "a biologically and developmentally imposed set of personal characteristics that make the same teaching method effective for some and ineffective for others". However, to keep pace with the main objectives of the present study which are to find out the frequently cited learning style models and to discover a more appropriate model for a larger scale study conducted in a Web-based Training (WBT) programme, a brief literature review on this issue and number of learning style models will be discussed.

A Brief Literature Review on Learning Styles

Learning styles are different approaches to learning taken by learners. Marton (1986) puts an emphasis on having knowledge about learners' learning styles since it is considered as an

effective approach to guide learners, to enable them to be more oriented towards their own learning styles, and to assist them to manage their own learning based on educational goals and objectives (in Pouryahya, 2009, p. 5); and in the case of online learning environments, to provide a supportive means for designers to organize an optimized system (Dağ & Geçer's, 2009, p. 862). According to Bostrom, Olfman, and Dein (1993), learning style could be a good predicator of an individual's preferred learning behaviour (in Manochehri and Young, 2006, p. 314) and a good indicator of a successful distance learning (Simonson, Albright, and Zvacek, 2000). In this line, Hosenfeld (1979) and Reiss (1983) indicate that inappropriate learning styles may lead to encountering frequent failures in language learning. According to Sternberg (1995), there are at least twenty dimensions of learning styles. Usually better language learners utilize suitable styles to learn language more effectively (p. 267). Likewise, Messick and Associates (1976) also account for more than twenty dimensions of cognitive styles including those of Witkin, Kagan, and perceptual preferences.

Decapua and Wintergerst's (2005, p. 2) study enumerates various learning styles models and instruments for native speakers and second/foreign language learners. For native speakers: the Learning Style Inventory (Dunn *et at*., 1975, 1989), the Grasha-Riechmann Student Learning Styles Scales (Riechmann and Grasha, 1974), the Gregorc Learning Style Delineator (Gregorc, 1982), the Kolb's (1976, 1985) Learning Styles Inventory; and for second/foreign language learners: Reid's (1984) Perceptual Learning Style Preference Questionnaire (PLSPQ), O'Brien's (1990) Learning Channel Preference Checklist, and Oxford's (1993) Style Analysis Survey are the prevailing learning styles instruments in the ESL/EFL field. These models either focus on perceptions or cognitive styles. For instance, Decapua and Wintergerst (2005, p. 1) believe that Reid's (1984) PLSPQ has been widely applied in ESL/EFL research to investigate learning styles with reliability and validity established on high intermediate or advanced ESL classrooms; or Brown (1987) claims that Witkin's (1971) field-independent/dependent theory, engaging in cognitive style, is one of the most extensively researched style which is highly relevant to the field of second language learning.

Cognitive style is a person's perceiving, remembering, thinking, and problem-solving pattern. However, cognitive styles are mostly measurable through observable behaviours such as

learning performance and learning achievements (Karahoca and Karahoca, 2009, p. 368). Nevertheless, although the concept of learning styles defined variously by various scholars, it is important to bear in mind that only a few number of learning style instruments are reliable and valid (Curry, 1987). As such, Dunn *et al*. (1989) underline the existence of just three comprehensive models of learning style i.e. the models of Hill *et al*. (1971), Keefe *et al*. (1986), and Dunn *et al*. (1975, 1979, 1981, 1985). To them, other models addressed only one to four elements which are presented in a bipolar continuum. For instance, the bipolarity and neutral character of the field dependent/independent (FD/DI) cognitive styles make them to be value neutral (Witkin, Moore, Oltman, Goodemogh, Friedman, Owen, & Raskin, 1977, p. 198) that is, there is no positive or negative value for being FD/FI. The scale just moves on a continuum (from FD to FI) and neither of them is considered as an advantage i.e. they are not value laden.

Though, in spite of wide range of usage, even the Dunn *et al*.'s (1981, 1989) framework, has received its critics. For instance, the validity of the learning style instrument, the high emphasis on 'environment' factors, and considering learning styles as a 'panacea' to realise and hint at students' learning preferences (Curry, 1990; Davidman, 1981, in Ramburuth & McCormick, 2001, p. 336). In another view, it is stated that Dunn's learning style inventory is a popular commercially accessible questionnaire design for primary school children and not ESL/EFL (Willing, 1988, p. 64). In addition to Dunn's model, Willing ascertains that Kolb's LSI, although, has extensively been administered in research and management training seminars which might be an indicative of its justifiable appeal; the test, unfortunately, containing a list of single-word personality descriptions (e.g., accepting, reserved, evaluative, pragmatic, receptive, and etc) (Willing, 1988, p. 69). Consequently, it seems that there is not a consensus on the suitability of a learning style instrument inasmuch as other learner variables might not be taken into account. That is, just focusing on a very limited number of variables such as cognitive, perceptual, or environmental variables may not be promising.

Learning Style Models

The most frequently used learning style models in native and second/foreign language learning are Kolb (1984) and Reid (1884) (in Decapua & Wintergerst, 2005, p. 2). However, in

available database, cognitive learning style models have received more attention in online education within the last decade. Dağ and Geçer (2009, p. 867) investigated the most frequently applied learning style models in last decade and found out they were those of Kolb (1984), Felder and Silverman (1988), and Witkin, Oltman, Raskin, & Karp (1971). Therefore, in the current study, there is a brief description on the models of Reid (1987), Kolb (1984), Felder and Silverman (1988), Witkin *et al*. (1971) as well as Willing (1988) as it is considered an effective alternative to other presented learning style models.

Perceptual Learning styles

One of the most popular categorisation of learning style preferences is sensory or perceptual learning styles which are classified under cognitive styles. Individuals rely on these different sensory modalities to experience the world (Messick, 1976). To interact with the world and to organise information, three sorts of these sensory styles are pinpointed: the visual leads to figural thinking; the auditory leads to verbal thinking; and kinaesthetic leads to physical or motoric thinking (Willing, 1988). One of the popular researchers emphasising sensory modes is Raid (1987). She focuses on 'perceptual' and 'sociological' learning style preferences. The perceptual learning style dimension measures the learner's preferences for one or using a combination of sensor modes of experiencing learning such as auditory or verbal, visual or spatial, tactile or hands-on, and kinesthetic or psychomotor. Moreover, the sociological learning style dimension refers to learners' preferences to work in different patterns of being alone, or with one or two friends, with a small group, or as part of a team (Dunn and Dunn, 1978, in Ramburuth & McCormick, 2001, p. 337). Reid identifies these two different preferences as individual preferring and group preferring sociological learning styles. Further, Reid (1987) developed her model and presented it in a questionnaire called Perceptual Learning Style Preference Questionnaire (PLSPQ). She divides her learning style instrument into six categories to address visual, auditory, kinaesthetic, tactile, as well as group and individual learning (Raid, 1987, p. 88) as illustrated in Table 1.

Table 1 Definitions of Reid's Perceptual Learning Style Preference Questionnaire

Learning Styles	*Definition*
Auditory	Listening to lectures, oral explanation, audio tapes, and discussions in class
Visual	Reading or studying from texts and notes, requiring less oral explanation
Tactile	'Hands-on' experiences in classroom learning, for example, taking notes
Kinesthetic	experiential learning, active participation, or physical movement in learning activities such as role-play, drama, or moving around
Individual Preferring	studying alone such as self-directed study or independent reading and study
Group preferring	studying with others and group interaction

Kolb's Learning Styles Inventory

It seems quit essential to indentify different dimensions of learning styles introduced by Kolb (1976, 1985). Kolb believes "learning is the process whereby knowledge is created through the transformation of experience" (p. 38). Kolb (1984) proposes a four-stage cyclical model including concrete experience, reflective observation, abstract conceptualisation, and active experimentation. They were explained as follows: *concrete experience* (CE) refers to a stage in which a learner actively experiences an activity; *reflective observation* (RO) refers to a stage in which a learner consciously reflects back on that experience; *abstract conceptualisation* (AC) refers to a stage in which a learner attempts to use logic and ideas rather than feeling to understand problems and solve them; and *active experimentation* (AE) refers to a stage in which a learner tries to plan for testing a model or theory or plan for future works and experiences (Kolb & Kolb, 2005, p. 184).

Kolb's model leads to presenting Experiential Learning Theory (ELT) which is a holistic perspective and combines experience, perception, cognition, and behaviour. The term experiential is addressed to make distinction between ELT and cognitive learning theories which

do not consider any room for subjective experiences in learning processes. Kolb identifies four learning styles which correspond to these dimensions. These prevalent learning styles have identified as converging, diverging, assimilating, and accommodating (Kolb, 1984, 1999a, 1999b, in Kolb, Boyatzis, & Mainemelis, 2001, p. 934). Kolb's different learning styles are presented in Table 2.

Table 2 Kolb & Fry's Learning Styles (Adapted from Tennant, 2006, p. 89)

Learning style	***Learning characteristic***	***Description***
Converger	Abstract conceptualization + active experimentation (AC+AE)	· strong in practical application of ideas · can focus on hypo-deductive reasoning on specific problems · unemotional · has narrow interests
Diverger	Concrete experience + reflective observation (CE+RO)	· strong in imaginative ability · good at generating ideas and seeing things from different perspectives · interested in people · broad cultural interests
Assimilator	Abstract conceptualization + reflective observation (AC+RO)	· strong ability to create theoretical models excels in inductive reasoning · concerned with abstract concepts rather than people
Accommodator	Concrete experience + active experimentation (CE+AE)	· greatest strength is doing things · more of a risk taker · performs well when required to react to immediate circumstances · solves problems intuitively

Felder & Silverman's Learning Style Model

Felder and Silverman (1988) propose their model including 32 learning styles. They also consider dimensions of learning styles in their model. There are five dimensions and each dimension includes two variables: *perception* (sensitive & intuitive); *input* (visual & verbal); *processing* (active & reflective); *understanding* (sequential & global); and *organisation* (inductive & deductive).

Felder and Silverman address particular specifications for each variable of each dimension. For instance, (a) sensitive students like facts, data, and experimentation. They are patient with details but do not like complexities. On the contrary, intuitive students prefer principles and theories and get bored by details but like complications. (b) Visual learners better remember things when they are in the form of pictures, diagrams, time lines, films, and demonstrations while verbal learners remember much of what they hear, read, and talk about. (c) Active students cannot learn in passive situations and like to work in groups whereas reflective students are not able to learn in the situations that opportunities for thinking about the presented information are not provided. Moreover, reflective learners prefer to work with themselves or at most with one other person. (d) Sequential students follow linear reasoning process in problem solving situations and they can manage their work even when they understand the material partially or superficially. On the other hand, global students make intuitive leaps and perhaps are not able to explain how they reach the solutions. (e) Regarding Organisation dimension, induction is on the opposite pole of the continuum with deduction. In the former, reasoning progression moves from particulars to generalities where in the latter, the direction of progression is reversed (Felder & Silverman, 1988, in García, Schiaffino, & Amandi, 2008, p. 307). This learning style model is designed mostly for engineering students who deal with science courses such as Maths and Computer Sciences.

Witkin, Oltman, Raskin, and Karp's Group Embedded Figures Test

There is a variety of dimensions of cognitive styles; however, DeTure (2004) mention that the most widely investigated cognitive style is Witkin's 'field-dependent/independent'. Group Embedded Figures Test (GEFT) is an instrument through which students can be categorized into field-dependent/independent (FD/FI). The difference between field-dependent/independent individuals are of three types 'global vs. analytical', 'external vs. internal', and 'passive vs. active' (Witkin, Moore, Oltman, Goodenough, Friedman, Owen, & Raskin, 1977, pp. 197-8). It is believed that field-dependent students have global perception and they perceive objects wholly and holistically while field-independent ones are good at analytical thought, pay attention to separate parts of the object, and their attitude towards learning is more serialistic (Witkin *et al*., 1977; Chen & Macredie, 2005, p. 3). Regarding 'external vs. internal', Witkin *et al*. (1977) maintain that field-dependent individuals rely on external environment and referents as guides in information processing while field-independent individuals tend to be more autonomous and focus on internal referents.

Likewise, to be external/internal in field-dependent/independent influence learners' performance on cognitive restructuring tasks (Chen & Macredie, 2005, p. 73) In other words, field-independent students like solitary impersonal domains requiring cognitive skills (e.g., Sciences) conversely field-dependent learners prefer interpersonal domains which do not stress such skills (e.g., Elementary Education). In addition, field-dependent individuals are attentive to social cues where field-independent people are relatively insensitive to social cues (Witkin *et al*., 1977). Moreover, format-structure easily affects FD learners on contrary with FI who are less influenced by format-structure (Wang, 2007, p. 3). With respect to "passive vs. active', Witkin *et al*. (1977) explain that field-dependent students have propensity towards passive cognitive strategies whereas field-independent individuals like to use active cognitive strategies. In summary, "the bipolarity and neutral character of the field-dependent/ independent cognitive styles make them distinctively different from abilities and intelligence which are both unipolar and value laden" (p. 198).

Willing's Learning Style Model: 'How Do You Learn Best'

Homayouni, Kadivar, and Taghypour (2009, p. 446) assert that in psychological domain of learning and, in effect cognitive learning and language theories, Kolb's learning styles on the basis of experiential learning theory and Witkin's cognitive styles are very important in learning English. Willing (1988) also highlights perceptual and cognitive styles as well as physiological styles in the constructs of his model. In other words, his learning style construct has roots in the work of Witkin and Goodenough (1981) and Kolb's (1976) learning style models. Willing's construct is described Witkin and Goodenough's (1981) conceptualization as "autonomy of external referents in perceptual and social behaviour", and Kolb's learning style model as "an interaction between two dimensions ... could be interpreted as: a) cognitive styles, and b) all other personality factors grouped into a single scale" (Willing, 1988, p. 68). Further, he resembles the Kolb's abstract-concrete dimensions of learning styles to that of the Witkin's field-independent/dependent continuum. In other words, Kolb's abstract conceptualization equals to an analytical style of cognition and concrete experience to the holistic, direct, and relatively undifferentiating styles of cognition (ibid). Moreover, Willing (1988) recommends that the other dimension of Kolb's like active versus reflective can be corresponded to a personality factor of active versus passive (p. 69). It is noteworthy to mention that the Keefe's (1979) definition of learning styles can be adjustable to constructs of this model. The description of Willing's learning style model is categorised into four different style learner groups: analytical learners, authority-oriented, communicative learners, and concrete learners. The learning groups are shown in Table 3.

Table 3 The Characteristics and Description of Willing's Learning Style Groups

Characteristics of Learning Style Group	***Willing's Description of Groups***
Analytical learners (active with FI tendency)	These people's cognitive strengths lead them not only to analyse carefully and show great interest in structure, but also put a great deal of value on showing their independence by doing these things themselves, autonomously (Willing, p. 155).
Authority-oriented learners (Passive with FI/FD tendency)	These people are probably not predisposed to actively organise information, they probably

	perceive that they need the teacher's direction in the provision of explanations, patterns to follow (Willing, pp. 159-161).
Communicative learners (active with FI/FD tendency)	This group has "a desire for a communicative and social learning approach, probably because they feel that this would be most useful for their needs in relation to language learning" (Willing, p. 159).
Concrete learners (passive with FD tendency)	These people use very direct means of taking in and processing information ('Absorption'). They also people-oriented, though in a spontaneous and unpremeditated way (e.g. 'games', 'excursions'), or in close interaction (e.g. 'pairs'), not in terms of organized pointed class 'conversation' (Willing, p. 155).

Discussion

Asian students have been stereotyped as rote learners, depending on memorisation rather than understanding, and text-book dependent (Ballard & Clanchy, 1991; Kaputin, 1988; Phillips, 1990; Samuelowicz, 1987a, b, in Ramburuth & McCormick, 2001, p. 336). However, focusing on different sorts of learning approaches might not be the mere solution to discover how students deal with their own learning. In the area of subjective needs, probably the most essential concept known to date is the notion of 'learning style' (Willing, 1988, p. 5). In the same line, the researcher of this study also intends to pinpoint the importance of learning styles. More notable attempt is to find which of above mentioned model(s) is/ are more appropriate to apply to online contexts, though, overgeneralization might not put us at the safe side. It is noteworthy to mention that the suitability of a model refers to this capability to cover a wider range of learners with diverse learning styles. To put it in another way, to investigate how effectively learners are doing their own learning tasks, more aspects of learning styles should be taken into consideration.

Since the 1940s, learning style has not just stressed 'mental phenomena' or on memory and visual or oral teaching methods (Keefe, 1987, p. 5). Learning style has addressed broader

scopes including "the mental, the physical, and the affective realms" to explain differences in learning (Willing, 1988, p. 52). This notion is in line with the definition of learning styles by Keefe (1979) as they refer to

> characteristic cognitive, affective, and physiological behaviours that serve as relatively stable indicator of how learners perceive, interact with, and respond to the learning environment... Learning style is a consistent way of functioning that reflects the underlying causes of learning behaviour (p. 4).

Likewise, in the case of language, learning styles are not merely involved in perceptual senses or it cannot be restricted to just cognitive styles (Thang, 2003, p. 6). Accordingly, learning style is considered as a blend of cognitive, affective, and behavioural elements (Oxford and Ehrman, 1988, p. 23). In the same line, Bloom (1976) proposes a salient model of school learning. He emphasises the role of three important elements i.e. students' characteristics, instruction, and learning outcome. In fact, Bloom identifies three independent variables that explicate the greatest variance in student learning including cognitive entry behaviours, affective entry characteristics, and quality of instruction (Keefe, 1979, pp. 2-3). As a result, what has already been mentioned is to great extent in congruence with Keefe's definition of learning styles. Hence, one can recognise that a model of learning style which just estimates perception or cognitive styles does not suffice rather all styles including cognitive, affective, and physiological styles should be stressed in language learning (Thang, 2003). Among the concurrent models, it appears that the Keefe's definition of learning styles is in more harmony with Willing's (1988) psychological model of learning styles which is the focus of this study.

This definition makes the 'tripartite' division between cognitive, emotional, and physiological or sensory aspects of individual differences (Willing, 1988, p. 40). Regarding cognitive styles, Willing contends that cognitive and mental psychological functioning lead to individual differences. In teaching, various constructs (all usually conceived as polarities) have appeared as single bi-polar model of cognitive style. He exemplifies the scales running from simultaneous/syntactic to sequential/successive processing (Das, 1975, 1979); from holistic to serialist (Pask, 1976); from impulsive-global to analytic-reflective (Zelincker & Jeffrey, 1977);

and from holistic to analytical (Hartnett, 1981) (in Willing, 1988, p. 41). In fact, these scales have inclination to be in accordance with the field-dependence/independence which already put into plain words.

Additionally, the role of physiological differences among individuals is quite essential. These diversities elucidate the way information is searched and the way information is processed (Barbe & Swassing, 1979). The physiology of environment may bring about complex patterns of preferences such as being receptive or cerebrally sensitive which, in turn, represent interactions between genetic predisposition and learning habits (Willing, 1988, pp. 52-53). Besides, being aware of learners' learning style assists organisations to prepare learning settings more fitting with the cases of temperature, light, etc. The learner's preferences of physiological conditions help educators recognising the most effective patterns in which individuals can concentrate more, as an example, being alone or in group. Also, knowing the senses assists researchers to discover how individuals remember various types of information, for example, by hearing, seeing, manipulating, etc. or a combination of them (Dunn *et al*., 1989, p. 50). Of course, it should be mentioned that these preferences cannot act in isolation. That is, they interact with some factors of personality to form a whole which can be identified as distinct learning styles.

Integrating technology and computer into curriculum, content, and teaching can be considered as a profitable tool in educational contexts. It helps learners keep pace with the materials and be in contact with the tutor without the constraint of space and time. Technology is a medium through which abstract materials can be transformed into visual or auditory content; an authentic, real, and native like world can be experienced, the potential for more exposure to different forms and structures or illustrations can be provided; different levels of understanding can be motivated leading learners to deep learning; more chances can be obtained to listen to what have already mentioned, if there is the recoding facility; learners can be kept up-dated with the development of technology and motivated; and the capability of learners for autonomous learning and self-evaluation have been fostered.

To sum up, although not all types of learners feel at ease to pick up the materials taught and learn them beneficially and equally in online contexts, online learning can definitely be more

fruitful for a well-equipped learner. In other words, learners should be trained how to develop their learning process independently; otherwise, learning online will be frustrating and suffering moments of life. As a matter of fact, learners cannot be evaluated based on specific variables and then generalise the findings to an individual whole whereas it requires estimating the most influential sources of impetus.

Conclusion

Research has revealed that there has been an emphasis on learners' "different cognitive styles and habitual information-processing strategies that determine a learner's typical mode of perceiving, remembering, thinking, and problem solving" (Messick, 1976, in Zapalska & Brozik, 2006, p. 326). In addition, it is proposed by some researchers that cognitive styles should be taken into consideration in evaluation of web-based utilisations (Chen & Maredie, 2004; Spicer, 2004; Mullany, 2006; Wang, 2007; Cewley, 2010). Other attempts have been made to explain the underlying process of learning; however, research shows that not only cognitive styles but also affective and physiological styles are of utmost importance to describe the unique process of learning (Messick, 1976, in Zapalska & Brozik, 2006, p. 326; Keefe, 1987; Oxford & Ehrman, 1988; Thang, 2003).

Since the online education can offer different channels for instruction with different facilities, Willing's model is promising to explore different learning styles through various types of deliveries. As was noted above, research proposes that both Kolb's learning styles on the basis of experiential learning theory and Witkin's cognitive styles are essential in language learning (Homayouni *et al*., 2009). So, Willing's (1988) model is not a model specific because it is based on a solid foundation (Witkin and Goodenough, 1981; & Kolb's, 1976 works), takes its guidelines from a fully detailed learning style definition (Keefe, 1979), and therefore, takes into account the different types of styles i.e. cognitive, affective, and physiological.

For language learners who are involved in language learning via different types of distance education rather than those of conventional face-to-face classrooms, paying attention to their mere perception or cognition dose not suffice. In other words, as different channels are designed to accommodate various learning styles, different sources which can have an effect on

the learner's degree of receiving input, processing and evaluating data, and also making connection with prior knowledge through construction of knowledge should be outlined. The sensitivity in online learning is much greater due to lack immediate feedback from the instructor. Therefore, an e-learner should grasp how to be a good learner, what to do to be more engaged in the process of learning independently, how to solve problems, how to read and write critically and creatively, and how to utilise the utmost potential of a self that is cognitive, affective, and physiological respects affecting the levels of comprehension, understanding, analysing, evaluating, and etc.

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Zahra Moharrer, Ph.D. Student
Department of English Language
Faculty of Modern Languages and Communication, Univesiti Putra Malaysia,
UPM Serdang, 43400, Selangor
Malaysia

Department of English Language
Islamic Azad University, Shiraz Branch, Shiraz, Fars Province, Iran
z.moharrer@gmail.com