Perceptual learning styles and multimodality in EFL education:

the digital learning style and social networks

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I. Abstract

Learning English as a Foreign Language (EFL) is one of the greatest challenges for Spanish students. It is a complex process that involves many individual variables that need to be considered by teachers and learners. Since the late 1990s, research in the field of Applied Linguistics has been focused on learning styles as one of the internal individual variables describing the way learners process the information provided in class. Despite the growing interest in learning styles, research is recent and, therefore, limited. Besides, technology has been a revolution in educational contexts. In this sense, the integration of Information and Communication Technology (ICT) at educational centres has created a new technological context that must be taken into account in analyses. This work examines the impact of learning styles in the language classroom setting. In particular, it deals with student's preferable perceptual channels in the new technological context. More specifically, it aims to demonstrate that a new perceptual learning style has emerged in the EFL classroom: the digital learning style. Finally, this work shows a teaching proposal that intends to demonstrate that social networks are a useful tool to be used in class because they create a multimodal context that makes language teaching and learning processes easier and more effective, as it promotes the students' digital learning style in the language classroom.

Keywords: English as a Foreign Language, perceptual learning styles, digital learning style, social networks.

II. Introduction

Learning foreign languages has become important due to the current internationalisation and globalisation (Tynjälä 2008). Therefore, the rapid development of information and technology offers learners the possibility to communicate using foreign languages. In this sense, the four language skills (i.e. listening, reading, speaking and writing) can be developed in many different real situations. This opportunity takes place in a new learning environment that has been playing an important role in education during the last decades (Pudichery 2003). Indeed, the Internet is at present one of the main sources of information and communication among the educational community (Sharples 2000, White 2007).

Although learning foreign languages is one of the greatest challenges for today's society, students have different ways of learning. Learners process information in different ways and they

need materials that are designed according to their new demands (Franzoni and Assar 2009). In other words, it is necessary to adapt the curriculum to the new technological environment by employing materials considering (1) this recent and modern context and (2) students' preferable perceptual channels. Coffield *et al.* (2004) and Li, Chen, and Tsai (2008) have empirically proved that the learning process improves with pedagogy that matches learning styles with an environment that considers, among other factors, the teaching materials.

Different experts have defined the expression *learning styles*. On the one hand, learning styles are the ways through which learners interact and respond to the learning environments according to their cognitive, affective and psychological characteristics (Duff and Duffy 2002). On the other hand, it also refers to «the view that different people learn information in different ways» (Pashler et al. 2008, 106). However, although this term has increasingly gained influence at all educational levels, research on learning styles is recent and therefore limited (Peacock 2001, Zapalska and Brozik 2006).

Since the late 1990s, technology in the classroom has become a revolution (Zhang 2002). The term Information and Communication Technology (ICT) in education refers to «the use of computer-based communication that incorporates into daily classroom instructional process» (Ghavifekr and Rosdy 2015, 175). In this respect, different technological tools (e.g. websites, electronic dictionaries or CD-players) have been applied in order to improve language learning skills (Nomass 2013). Some of their benefits are that they help foreign language learners (1) strengthen their language skills, (2) improve positive attitude and (3) build self-instruction strategies and self-confidence (Lai and Kritsonis 2006). Further, students become familiar with the use of technology and its integration in the educational contexts (Ghavifekr and Rosdy 2015).

Finally, this new technological period offers both teachers and learners multiple possibilities to implement and develop the four language skills in an EFL context. In this sense, teachers need to teach students how to analyse, deconstruct and design multimodal texts (Martínez Lirola 2016). This work shows a pedagogical proposal that may be implemented with Spanish students that use EFL in a Spanish learning context. With this proposal, the aim is to demonstrate that a new perceptual learning style has emerged in the EFL classroom: the digital learning style. Furthermore, this new channel of perception seems to include the five senses and it can be fostered through multimodal approaches. In this sense, the aforementioned teaching proposal focuses on social networks as the main tool in the classroom. Then, this study is intended to demonstrate that the integration of texts, videos and images make the language teaching and learning process easier and more effective

because it promotes the students' digital learning style in the language classroom.

III. Perceptual or physiological learning styles

The interest in individual variables has increased since 1970s. This interest is reflected in the amount of publications devoted to some individual differences (Ellis 2006). This fact seems to indicate that researchers and educators have recently become concerned about the complexities of the learning and teaching process, and, therefore, about the difficulties learners may experience in the education context. Moreover, it is essential that learners are also aware of these variables. Consequently, they would have opportunities to gain increased control over their own learning and they would become more effective solving any problems that may appear (Coffield et al. 2004, Kazu 2009). Some of the most investigated variables are: personality, intelligence, aptitude, motivation, anxiety, age, and learning styles (Lightbown and Spada 2006).

There is ample evidence to support the idea that each student has his or her own capacities, habits, and preferences for accessing and managing new information (Kozhenvnikov, Carol, and Kosslyn 2014). Hence, students do not interpret the language input in the same way, but subject to the aforementioned variables. One of the variables that directly impacts learners' interpretations and perceptions is *learning styles*. This term refers to the mode of instruction or study they prefer (Pashler et al. 2008). In this sense, Dunn and Griggs (1988, 3) defined learning styles as «the biologically and developmentally imposed set of characteristics that make the same teaching method wonderful for some and terrible for others».

Students vary enormously in the rhythm and manner with which they perceive and therefore process information. Thus, there is a strong intuitive appeal in the idea that teachers should consider students' learning styles (Arbuthnott and Krätzig 2015). For instance, educators can encourage students to reflect upon their strengths and weaknesses and work on them with teaching materials that match them. For this reason, the central aim of the learning styles theory is to match individual preferences with instructional methods and learning environments to improve students' language learning (Baeten, Dochy, and Struyven 2008). By doing so, students' responsibility for their own learning increases and there is a higher interest and motivation. Moreover, it promotes effective learning as they integrate their perception to sharpen the learning process (Vaishnav 2013). Besides, teachers should consider these preferences to strengthen students' weaker learning styles by

balancing class activities that include the five senses (Gargallo-Camarillas and Girón-García 2015).

Finally, perception varies among learners and therefore the learning process is experienced in a different way according to the perceptual or physiological learning styles. For example, people prefer to learn in different ways: by listening, reading, working with people in a group, and working things out on their own (SKILLS 2007).

3.1. Dunn & Dunn's physiological learning styles

Research on the Dunn and Dunn model of learning styles is one of the most extensive and it has been conducted in more than 60 institutions at multiple grade levels, including every level of academic proficiency. Some of their studies have received international awards and citations for its quality (Arbuthnott and Krätzig 2015). Dunn and Dunn (1992) define learning style as «the way in which individuals begin to concentrate on, process, internalise and retain new and difficult academic information». The model places a strong emphasis on biological and developmentally imposed characteristics and measures preferences rather than strengths. Furthermore, it examines four variables: environmental, emotional, sociological, and physiological. These variables refer, respectively, to (1) the individuals' preferences for the elements of sound or light; (2) the students' levels of motivation or responsibility; (3) the students' preference for learning alone or in pairs; and (4) the perceptual strengths (i.e. visual, auditory, tactile or kinaesthetic) (Arbuthnott and Krätzig 2015).

Regarding the physiological learning style variable, four sensory preferences are stressed: visual, auditory, tactile and kinaesthetic. They refer to the perceptual learning channels with which the student feels more comfortable in the learning process (Gargallo-Camarillas and Girón-García 2015). This model indicates that learners use all four senses, but some of them may be more dominant than others (Gantasala and Gantasala 2009). In this sense, the dominant way of learning refers to the best way a person learns, processes and interprets the input.

Firstly, visual learners take in messages through the eyes, enjoy reading books for knowledge and organise knowledge in terms of spatial interrelationships among ideas (Gargallo-Camarillas and Girón-García 2015). They like colour on the page and like to work in silence. Moreover, they must visualise the information in their mind in a clear way in order to understand it correctly. Apart from that, they also like to take notes while reading and are quick problem-solvers. Some materials that generally work with visual learners are: pictures, animation, videos, flashcards or maps (Naimie et al. 2010).

Besides, they prefer to learn about a concept before trying to understand its parts and in order to make sense of something new they usually require outlines, charts or diagrams (Zapalska and Brozik 2006).

Secondly, auditory learners take in messages through the ears, prefer to learn by listening, enjoy group work and avoid studying with disturbing noises (Gargallo-Camarillas and Girón-García 2015). In addition, they interpret information by means of pitch, emphasis and speed (Pourhossein Gilakjani 2012). In this sense, auditory learners enjoy music and the sounds of words and can remember speech by picking up rhythm of the sentence (Gantasala and Gantasala 2009). They also need time to process the information and they usually expand on topics orally by requesting additional information through repetition and rephrasing (Zapalska and Brozik 2006). Besides, they like to listen to lectures and to take part in class discussions (Moharrer 2012).

Finally, tactile learners take in messages by touch or physical contact with their hands and work well using computers (Gargallo-Camarillas and Girón-García 2015). They like to write ideas and principles into other words, write out the words again and organise any game or chart into words (Moharrer 2012). This sensory modality is sometimes mixed with the kinaesthetic modality. However, kinaesthetic learners like multisensory experiences that involve all senses (i.e. sight, touch, taste, smell, and hearing). Then, learning happens when experience and reality are considered. In this sense, the key point is that the learner cannot be isolated from real situations. Consequently, they remember case studies or real things that happened and put a lot of examples into summaries (Zhang 2002, Moharrer 2012).

Considering the previous assumptions, the following section introduces the importance of new technologies in the foreign language classroom, focusing on their effect in students' learning styles.

IV. ICT in the language classroom

Students are facing new learning challenges due to the rapid development of information and communication technology. However, this process does not end once they leave school. Lifelong learning has become important due to the growing body of knowledge and the technology improvements (Tynjälä 2008, Naimie et al. 2010). In this sense, education should consider using technology to facilitate learning to the multiliterate students and provide them with the right skills to work in a globalised word.

During the last few decades, teachers have reconsidered their attention to new methodologies that include technology into the

learning environment (Moharrer 2012). For instance, World Wide Web has been playing an important role because it offers huge amounts of sources to obtain information (Pudichery 2003). Although the implementation of new technological resources is not easy, their accessibility has developed multiple teaching possibilities in different education settings (Sharples 2000). However, students need to know how to use them appropriately according to different factors such as reliability. Therefore, some studies have found that some websites such as Google or Wikipedia have been excessively used (White 2007). Moreover, some universities in which English is used as a target language have faced new problems that need to be solved. For example, some university learners have problems in grasping the concepts given in English. Others, although they understand the content to pass the course, do not attain an acceptable level of proficiency in English to express what they have learned (Naimie et al. 2010).

Technology provides both teachers and students with unprecedented opportunities to learn foreign languages in real-life contexts. In this sense, students can watch demonstrations, experience simulations, get feedback, try out instructed procedures or look up additional information (Zhang 2002). Besides, it is suggested to match the new teaching methodologies with the students' learning styles (Franzoni and Assar 2009). If schools and universities consider learners perceptual preferences when implementing the activities, students will show positive results such as increasing motivation, self-confidence, self-esteem and effective performance (Felder, Felder, and Dietz 2002). Mulalic, Mohd Shah, and Fauziah (2009, 102) state that:
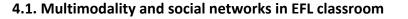
> «Teaching and learning styles should become one of the greatest interests of the educators, particularly their relationship. However, one of the weaknesses of the research into LS is the lack of the investigation into the matching of teaching and learning styles. Theoretically, many variables exist in the educational literature but few researches dealt with the matching of teaching styles and learning styles»

In other words, considering the impact of learning styles in the learning process, research on this topic is scarce and therefore needed. Effective learning requires both students' learning styles knowledge and an instruction that meets their needs with an appropriate use of technology (Moharrer 2012).

Technology has introduced a revolution in the education context. It facilitates effective learning and therefore lifelong learning and considers learners as multiliterate. On the one hand, it has created new challenges for both teachers and learners such as the learning of foreign languages and the acquisition of digital

competences. On the other hand, they have generally become the main tool of the learning process in some education centres, which face a new learning environment. Given the importance of learning styles and ICT in the language classroom, the following subsection explains the role of multimodality in the foreign language classroom.

4.1. Multimodality and social networks in EFL classroom

Apart from the introduction of technology in the new learning context, the curriculum requests the development of new techniques such as the use of multimodal resources. Multimodality is defined as «the integration of semiotic resources such as language, image, sound, video, and music» (Van Leeuwen 2014, 281). This term refers to the combination of various communicative modes within one text. Therefore, the understanding of a multimodal text implies the interpretation of all its components. In this sense, meaning is created through interaction. Kress (2010, 1) affirms that understanding multimodal texts is not as complex as it seems because:

> «Each mode does a specific thing: image shows what takes too long to read, and writing names what would be difficult to show. Colour is used to highlight specific aspects of the overall message. Without that division of semiotic labour, the sign, quite simply, would not work. Writing names and images shows, while colour frames and highlights; each to maximum effect and benefit.»

Globalisation has changed the way people communicate with each other. This has lead to a multimodal communication (Christie 2005). Hence, it is important to regard the classroom as a multimodal environment that makes the learning process creative and dynamic (Martínez Lirola 2016). In addition to the creativity and dynamism, promoting multimodality in the EFL classroom means promoting autonomy among students. In this sense, they become aware of the different strategies they can use considering their perceptual learning preferences (Benito et al. 2005).

In order to develop multimodal communication, students can use different multimodal tools such as Power Point presentations, videos or web pages. These allow students to write and read in multimodal virtual environments, which also contributes to the development of critical thinking (Martínez Lirola 2016). Modern learners already use social networks in their personal lives for social purposes and this presents educators an opportunity to harness this motivation and to reutilise these resources with pedagogical purposes (McCarroll and Curran 2013). Following Simpson and Walsh (Simpson and Walsh 2010, 37): «Now with interactive, multiple authoring and social networking facilities provided by Web 2.0 technologies, new pedagogical possibilities can be utilised in the

classrooms». For example, social networks such as Facebook, Twitter or Instagram can be used for educational purposes and to promote the use of multimodal texts (Martínez Lirola 2016).

There is a growing emphasis on exploiting technological devices in education (Olson et al. 2010). These devices, such as smartphones or tablets, give learners anytime access to social networks. Students often use them to coordinate both their social and school lives. For instance, they text each other to communicate about their studies (McCarroll and Curran 2013). Hence, the most prominent benefit of using social networks in the language learning context is the creation of an authentic social environment in which learners can communicate using multimodal texts (Prichard 2013). For instance, social networks' members can create personal profiles, modify their privacy, and upload videos or pictures. Besides, they can search for friends, post public comments or sent private messages, or show their preferences with '*likes*'.

To sum up, the previous theoretical background seems to indicate that we are facing a new learning style: the digital learning style. In other words, students spend most of their time in front of screens, so they receive the information in a new multimodal way. In this sense, according to the aforementioned information, it is important that educators consider students' physiological preferences in the classroom and therefore adapt their methodology. Therefore, the following pedagogical proposal includes one activity that can be implemented in the classroom setting, considering both the new technological context and the students' perceptual learning styles. The aim of this proposal is to show that *Instagram* can be used as a pedagogical tool to develop foreign language learning among University students. This application seems to foster all the physiological learning styles (e.g. visual, auditory, kinaesthetic, and tactile), and more specifically the digital learning style, throughout multimodal communication.

V. Pedagogical proposal

This section presents one activity that can be used at University. More specifically, the activity has been designed for second year History students. The main purpose is to teach the content by using English in a multimodal approach that fosters their four senses. Therefore, students learn content and language at the same time in real-life situations. Moreover, *Instagram* is the main tool for the activity that reinforces the digital learning style.

Before dealing with the following subsections, it is important to mention that students should create an *Instagram* account following the pattern: *nameUJI_history* (i.e. *noeliaUJI_history*). With this user's name, they are asked to add all their classmates and also their

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teacher to the same social community. The teacher monitors the activity and provides feedback. Students receive the feedback and see their classmates' work and feedback too. Then, they can reflect upon the learning process and can send feedback to their classmates if they want to. This collaborative feedback and shared knowledge enriches the language learning process.

5.1. Activity 1: Pictures as a history mirror

The purpose of this activity is to describe a picture that is relevant in the history of Spain. For example, students can describe 'the Guernica'. In this description, students need to include (1) the present simple and a wide range of adjectives, and (2) the past simple and make reference to the history fact that it shows.

The steps that students need to follow in order to complete the activity are:

- Step 1: students surf the net and look up information about Arts and History of Spain.
- Step 2: they save the picture in their mobile phones.
- Step 3: they go to their Instagram accounts and upload the picture.
- Step 4: the comment they include below the picture corresponds to its description.
- Step 5: the teacher comments the post giving feedback about the description and the picture chosen.
- Step 6: the student checks the feedback and clicks '*like*' to the teacher's comment to indicate that feedback has been successfully received.

5.2. Conclusions

The aim of the previous activity is to show that social networks can be used with pedagogical purposes. More specifically, this activity been designed to improve the foreign language learning process. They have considered: (1) the technological environment, (2) the curriculum, (3) the multimodal approach, and (4) the digital learning style.

VI. General conclusions and rurther research

The purpose of the present work focuses on providing some evidence of the importance of using social networks regarding the digital learning style. To do so, one activity has been designed and presented. The activity is based on the relevance that multimodality and physiological learning styles have in the language learning process. In this revolutionary technological context, students complete different activities in an innovative way so they acquire the

content that the curriculum establishes at the same time they focus on some foreign language aspects in real-life situations. This innovative pedagogical approach promotes some positive aspects such as lifelong learning, multiliteracy, and effective learning.

Along these lines, it is important to stress that these previous assumptions seem to indicate that educators are facing a new perceptual learning style: the digital learning style. In other words, technology has supposed a revolution not only in students' personal lives but also in education. Therefore, the education setting should take this advantage into account and also consider the new students' needs and reflect them in the curriculum. In addition, the proposed activity helps teachers match the students' preferable learning channels with a multimodal pedagogy that fosters their senses and therefore the foreign language learning process. Accordingly, social networks are a great tool to be used in class as part of the foreign language curriculum.

At this point, it has been stressed that students have more than one learning style. This work also aims to demonstrate that social networks integrate all the perceptual learning styles in the classroom (e.g. visual, auditory, kinaesthetic, and tactile). Accordingly, the digital learning style may be described as a combination of all of these. Using *Instagram* as pedagogical tool promotes all of students' senses.

Considering the conclusions drawn and the suggestions made above, the following ideas for further research are proposed:

1. It is necessary to consider students' learning style in the language classroom and match the methodology with their preferable perceptual ways of learning.
2. It is essential to investigate in depth the possible benefits of integrating social networks in the curriculum.
3. Regarding the pedagogical proposal, it could be implemented in the future to check if the digital learning style exists. To do so, the proposed activity would be implemented with some more activities and questionnaires that would be designed to check students' perceptual learning styles.

This work has stressed that technology has created new ways of perceiving the information. For instance, people generally prefer to use a screen rather than a piece of paper to communicate with their friends. Accordingly, education should not ignore the effects that, for example social networks have on students. Therefore, this work is only a first step towards the design of more complex future studies that demonstrate the existence of a new learning style (i.e. the digital learning style) and the benefits of matching methodologies.

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