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Perceptual Learning Styles and
Teaching Methods in Foreign
Language Classrooms:
A Case Study.

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Table of Contents:

List of Abbreviations

EAP English for Academic Purposes

EFL English as a Foreign Language

ELT English Language Teaching

ESL English as a Second Language

ICT Information and Communications Technology

IWB Interactive WhiteBoard

LSI Kolb's Learning Style Inventory

LSS Learning Stlye Survey

PLSPQ Reid's Perceptual Learning Style Preference Questionnaire

TIC "Technology In the Classroom" questionnaire

TSQ Teaching Style Questionnaire

VARK Visual, Aural, Read/write, and Kinaesthetic

VLE Virtual Learning Environment

List of Appendices

List of Tables

Abstract

The present research explores the learning styles preferences of seventy-two secondary school students of italian mother tongue dealing with English as a foreign language, and examines whether traditional teaching methods do or do not match the pupils' favoured perceptual styles. Students completed both a learning style (visual, auditory, kinesthetic, tactile, group and individual) self-assessment tool, and a questionnaire on technology, whose data were subsequently collected and analysed through a mixed quantitative and qualitative methodology. An experimental didactic approach was introduced, based on different activities and multiple teaching modalities to better meet the different necessities of each type of learners. Consistently with many previous case studies, findings indicate touch is the perceptual modality students most preponderantly rely on, and this study explores the possibility technology may be both one of the reasons behind it as well as a potential educational answer. The role teachers hold is also discussed, together with the necessity of a more varied and malleable teaching approach.

Introduction

The concept of learning styles was introduced in the early seventies with David Kolb's Experiential Learning Theory, and subsequently reinforced by his Learning Style Inventory (LSI). In the last few decades, language education has undergone a significant change by gradually replacing the teacher-centred paradigm with a new approach, focused on the learner as an active participant in the learning process. Because of the great interest such a shift aroused, considering both the limitations of the previous pedagogy and the resulting necessity of improving higher education learning, several theoretical contributions and case studies followed. While learning style models differ significantly from one another, there is one aspect they all seem to be more or less attentively considering, which is perception, described as an ensemble of sensory modalities and cognitive processes that collects information. The four most commonly identified sensory preferences (visual, auditory, kinesthetic and tactile) refer to the main perceptual learning channels. Together with personality types, learning environments and biological differences, they imply that no instructional methodology is ever going to be equally suitable for all students. Thus, the focus shift from the language itself to the learners and the learning situation requires different teaching approaches, supposedly meant to increase the students' interest and success rate and, consequently, to reduce their failure and anxiety. This is why assessing which types of learners they are facing is such a pivotal step for teachers: it will allow them to both promote their pupils' learning autonomy by helping them explore various learning strategies in order for them to better exploit their own strengths and to overcome their vulnerabilities, as well as to adjust their teaching methodology according to their students' necessities.

Although there have been many studies and proposals in this field, both regarding the

new role that teachers are called to fill, and activities and lesson plans that would match teaching and learning styles, we have been able to observe how far these theories are from being put into practice, and how different the reality of the schools still is, in many cases. The lack of adequate means and facilities, having to deal with too numerous and heterogeneous classes, the increasingly dense programmes and the limited time available are all factors that work against the diffusion of approaches appropriately designed to meet the educational needs of the different learners. The present research fits into this context, as it does not only gather or compare data, but it confronts them with the educational system, with the intention of understanding whether the students' learning styles are taken into account or not, and to which degree. A three-month internship in a public high school focusing on humanities has allowed the close observation of a group of seventy-two students between the ages of fourteen and seventeen belonging to three different classes. They were introduced to the concepts of learning and teaching styles and of learning strategies, and embarked on an experimental approach, designed in order to be appropriate for the objectives and needs of each class, made up of stimulating and varied activities involving different sensory channels to different extents, so as to both comply with the diverse characteristics of the style every learner favoured, and to enable them to simultaneously challenge themselves with new approaches and strategies.

The current paper focuses therefore on a learning style case study, briefly examines characteristics and necessities of the various language learners, and provides data obtained from self-assessment questionnaires. Besides, starting from a statistical analysis which reveals the tactile and kinesthetic channels to be the pupils' predominant sensory preferences, it explores whether secondary school is able to respond to its learners' needs in a suitable way or not and to which extent, it discusses key factors, such as interest, when it comes to working towards lifelong

achievement instead of learning, and considers the new role the teachers are supposed to be holding. Moreover, it reflects on the growing relevance technology holds within the students' learning process, and on the reality of everyday teaching compared to the respective theories. The last section concisely concludes the paper by presenting a brief recapitulation based on how such findings relate with previous studies in the field, it discusses their implications and proposes recommendations for future research.

Part One

Now that some background information and the main objectives of the present research have both been supplied, this section will focus on examining some of the theories behind learning and teaching styles, as well as on some factors related to them both, with particular attention for some definitions, classifications and models; the concept of learning and teaching style matching, and the use of technology within EFL (standing for English as a Foreign Language) classrooms will also be discussed. This chapter will then proceed to enumerate a selection of learning style case studies more or less strongly related to all of the notions above, in order to provide the readers with a definite context in which to insert this research. However, since most of the previous studies taken into consideration focus on ESL (English as a Second Language) learning situations rather than on EFL or EAP (English for Academic Purposes) environments, more investigation in that direction could be beneficial.

Literature review

Several decades of research in the educational area spent analysing how the mind processes information, as well as those factors differentiating the ways students learn and are affected by their own perceptions, have resulted in a vast amount of distinct learning style theories, models and interpretations. According to De Bello (1990), this field of research counts nearly as many definitions as it does theorists. In their critical literature review, Coffield, Moseley, Hall and Ecclestone identify seventy-one different models, and classify thirteen of them as major ones (Coffield, Moseley, Hall and Ecclestone, 2004, page 1). However, we shall only be reporting some definitions in order to better contextualize the case studies that will be examined below and the direction which this research is moving towards.

Theories

Since their definitions are potentially infinite, learning styles can be simply described as different approaches to learning, including those methods that each individual favors in order to process information. According to Ehrman and Oxford (1990), in time they can be acquired, adapted, and even modified. Many organize them into four different categories, specifically cognitive, affective, sensory and behavioural, referring to the learners' mental functioning, attitudes, perceptual tendencies and their search for learning situations compatible with their strengths and patterns. Kolb's Experiential learning model argues that learning is "the process whereby knowledge is created through the transformation of experience" (Kolb, 1984, page 26), and the four learning styles he identifies (accommodator, diverger, converger and assimilator) delineate the differences students show in their learning process and in the way they approach it. Gregorc's 1979 learning style model, which introduces four different learning styles as well, considers them as distinctive behaviors explaining how people learn and interact with the world surrounding them, alongside their mediation abilities and capacities. In that same year, Keefe provides a similar definition: he considers learning styles as "cognitive, affective, and physiological traits that are relatively stable indicators of how learners perceive, interact with, and respond to the learning environment" (Keefe, 1979, page 4). Fleming makes use of similar words while describing his model, called VARK (which stands for Visual, Aural, Read/Write and Kinesthetic), which, he states, "deals with perceptual modes" (Fleming, 2001, page 1). Perception is a recurring term in this field, as it is considered a key factor when it comes to learning: according to Keefe, it is "the process by which the brain systematically collects information" (Keefe, 1988, page 1). This implies learning comes through our perceptual channels: the most relevant one are thought to be sight, hearing and touch, even though students do not usually exploit them

equally.

The present study, therefore, mostly relies on Reid's Perceptual Learning Style model (1987), which assesses students into one category between visual, auditory, kinesthetic and tactile according to their favoured perceptual channels, and considers them either individual or group learners depending on whether they prefer studying alone or with others. A few years later, in 1995, Reid went on to propose two further hypothesis, regarding the fact that all students approach language learning through to the strengths and weaknesses consistent with their own styles, and that matching them with the most appropriate teaching methods increases educational success.

We shall now provide one last definition: according to Dunn, learning style is "a biologically and developmentally imposed set of personal characteristics that make the same teaching method effective for some and ineffective for others." (Dunn, 2002, page 76). This means different students do benefit from different teaching styles, which can be considered as "a teacher's personal behaviors and media used to transmit data to or receive it from the learner" (Kaplan and Kies, 1995, page 29). Many believe that matching learning and teaching styles leads to a higher success rate, and even more so when teachers try to find a good balance and to avoid using only the modalities the students favour. It would prove more beneficial if, instead, they managed to help them exploit a broader spectrum of different strategies besides the ones they already rely on because of their personal learning preferences, with strategies being defined as those "specific actions, behaviours, steps, techniques (...) used by students to enhance their own learning" (Scarcella and Oxford, 1992, page 63). Coming from the Greek word strategia, they occupy a key position when it comes to enhancing the learners' skills and knowledge of a foreign language. Whether they are called behaviors or actions (Oxford, 1990), skills or operations or plans (Rubin,

1975), or techniques (Stern, 1975), their role as "tools for active, self-directed involvement, which is essential for developing communicative competence" (Oxford, 1990, page 1) is rather universally recognised.

In order to properly do so, however, teachers need to be aware of their own teaching styles as well as of their students' learning styles, which implies both parties would first of all benefit from becoming acquainted with such notions themselves. This would enable teachers to meet the learners' necessities, to avoid discrepancies between their own teaching style and the learning style of some or many students; they, in turn, when made aware of their own limitations and strengths, would be more motivated and conscious when facing the learning environment.

Previous studies

Despite the wide acceptance it has gained throughout the last few decades, the learning style concept still requires robust documentation, especially considering the fact several appropriately designed researches found evidence that actually contradicted the learning styles hypothesis. The development of several different paradigms resulted both in various self-assessment tools and case studies that have been carried out according to the numerous existing learning style models, instruments and theories.

Case studies on learning styles

In 1984, Dunn described how, especially when there happened to be a strong preference, research findings indicated that most students were able to correctly identify their learning strengths, while Farr (1971), who had submitted self-reporting

questionnaires to postsecondary students, found a direct correspondence between their learning style preferences and their actual learning strengths. Dunn and Dunn, who had previousty drafted a questionnaire, called The Learning Style Inventory (Dunn, Dunn, & Price, 1975), that would enable students to identify their learning preferences, published a research in 1979 which demonstrated that the majority (40%) of school aged children appeared to be visual learners, 20-30% were auditory, while the remaining 30-40% belonged somewhere between a tactile/kinesthetic or a visual/tactile combination. A few years later, as mentioned above, Dunn (1983) went on to state how students fit into four basic learning modalities (Visual, Auditory, Kinesthetic and Tactile) according to the perceptual channels they relied on the most. Reinert (1976) worked in the same direction by examining two hundred and eighty Seattle students so as to identify the way each respondent learned best, starting from the assumption that different methods and modalities are not supposed to be as effective for every learner, as each individual is programmed to be more susceptible to certain ways rather than to others when it comes to learning. After an explanatory introduction, the students were required to take an exercise twice with a two months gap between the two sittings; results were subsequently analysed both on an individual and on a group level, and they showed that individual performances usually remained consistent. More or less considerable variations from the average scores each of the four aforementioned categories obtained would indicate the concerned student's predisposition for, respectively, a weaker or a stronger approach towards that specific learning modality and the strategies it entailed.

After inspecting the learning difficulties college students experience while dealing with a foreign language, Castro and Peck (2005) claimed that learning styles had the power to either help or hinder language classroom achievements. Muñoz (2014) was keen on investigating whether this could be held true in the case of primary school

students, as well as on exploring their foreign language learning awareness. After various months of observation, a total of seventy-four bilingual third and sixth graders attending several different schools and studying English in a Catalan and Spanish environment were examined through individual oral interviews. The children were asked how they perceived themselves as learners, as well as their insights regarding their learning process and which conditions they considered favourable for it. Their answers varied slightly according to their age: sixth graders seemed more aware of the difficulties English language learning entailed, or of the activities they regarded as more helpful. Nevertheless, it turned out they were, on the whole, quite conscious when it came to explaining their viewpoints and the reasons behind them. Results showed how young students are actually able to form their own opinions considerably early on and to compare themselves to their classmates; their outlooks are usually influenced by their performances, school experiences and the environment surrounding them.

Hainer, Fafan, Bratt, Baker, and Arnold (1990) confirmed that ESL learning styles are "the results of a complex interaction of age, educational experience, and cultural background" (Hainer, Fafan, Bratt, Baker, and Arnold, 1990, page 1). A good deal of factors may play a role when it comes to learning styles, and, as we have seen, to academic achievement as well. For examples, Gee (1990) described two groups of students which were taught for the same amount of time and through the same course content, but one of them attended classes at a distance learning site. Subsequent examinations suggested that distance education settings are susceptible to the influence of learning style preferences, and this affects achievement and attitude. Jones (2003), on the contrary, was interested in examining the relationship between disciplines and learning styles, and to understand whether elements such as gender and academic performances might impact on the students' learning style preferences.

One hundred and five college students were observed for one semester, assessed through a modified version of the Kolb Learning Style Inventory (Kolb, 1995), and evaluated in English, science, mathematics and social studies. While gender did not appear to be of great consequence, results revealed different disciplines entailed significantly different learning preferences.

A similar research was conducted in 2011 at the English Language Center at The Arab American University in Palestine. Three hundred and eighty-six beginning, intermediate and advanced students of English as a foreign language took part in this study in order to determine which were their predominant perceptual styles, and whether their gender, English knowledge or academic level could significantly influence them. Whilst most of the learners perceived themselves as mainly auditory, it turned out that, amongst the considered variables, academic level was the only one that actually affected learning, as the results obtained by students belonging to different academic years were consistent within their own group but would differ with others. Researchers Naqeeb and Awad reckon a deeper learning style knowledge to be indispensable in determining which teaching styles need to be prioritised.

In her exploratory study (2008), Renou examined the relationship between perceptual learning styles and academic success. The reported data came from the examination of eighty-two English-speaking students, attending four regular first semester introductory university-level French courses. The group, which was taught by the same instructor, consisted of either second or third year university students of several different faculties, whose mother tongue was Spanish. They were submitted the Barsh Learning-Style Inventory Questionnaire, a self-assessment tool composed of 24 items categorizing them as either visual, auditory or tactile learners. Almost half of the respondents proved to be visual, 23% of them were auditory, 7% were tactile, and

the remaining 21% obtained mixed results. Even though the students' success was determined by performances and course grades, which may not necessarily be considered accurate proficiency indicators, no statistically analised correlation was found between academic success and perceptual learning preferences. Several hypothesis are provided as plausible explanations, such as the possibility the language course's teaching styles were compatible with numerous different learning modalities, in order to favour a positive learning outcome for every type of learner. Besides, students may have previously been introduced to both the learning style notions and the importance of a varied teaching method, so that they were able to exploit different learning strategies and to better meet the modalities used in class. This leads us to Dunn's claim (1990), according to which the best academic performances pertain to those students who are familiar with the learning style concept and whose preferences and strategies are compatible and endorsed. Entwistle, in fact, considers higher education success and failure directly proportional to "the match between how material is presented and how students process it" (in Drysdale & Ross, 2001, page 272).

Case studies on the relationship between teaching and learning styles

To this end, Gilakjani (2012) suggested learning styles should be incorporated into both everyday classes and curricular activities. His study assessed over one hundred Iranian EFL university students majoring in translation via Reid's Perceptual Learning Style Preference Questionnaire with the purpose of determining the effect learning styles have on the teaching process. Dunn and Dunn (1978) are quoted, as they had formerly enumerated the students' physical and sociological needs, their emotionality, as well as the surrounding learning environment, as deeply affecting elements. They went on to state teachers should operate accordingly, strengthening weaker strategies

and proposing new ones, creating multiple learning opportunities, incorporating students' ideas and necessities into the educational context, even rearranging the classroom, if necessary. This requires a great deal of awareness and understanding: this is why Evans (2008) asked one hundred and twenty-two elementary and secondary school teachers of different age, gender, teaching experience, and with different types of expertise, to complete, amongst other questionnaires and demographic surveys, the Teaching Styles Questionnaire (TSQ). Besides the relevance cognitive styles were found to be holding, the necessity for teachers to become aware of their own teaching methods in order to better understand the relationship between teaching and learning styles and the learning process, as well as to deal with different learning situations, became evident.

However, Benson (2010) reports on the teaching autonomy of four Hong Kong English language secondary school teachers. Findings reveal that many school systems tend to limit teaching experimentation within the classrooms, even though it might be beneficial in terms of success and achievement. Generally, findings from previous studies involving EFL students have indicated clear preferences for kinesthetic, tactile and individual learning styles above others (Reid, 1987; Melton, 1990; Hyland, 1993; Jones, 1997 and so on), despite the fact, as Peacock stated in 2001, that teaching methods are usually geared towards auditory learners. Various studies (Abdulwahed & Nagy, 2009; Gaur, Kohli, & Khanna, 2009; Pfeifer & Borozan, 2011) report that study environments oriented towards learning style awareness and matching are usually more valid and successful than others. Learning styles are believed to have significant educational implications anyhow, but it looks like teaching and learning style convergence will enhance both the students' accomplishments and their flexibility concerning learning strategies and varying circumstances. According to Dunn (1988), statistically higher motivation and success rates are achieved when the

students are taught through modalities that match their own rather than with others that do not, especially so if they are reinforced by the addition of strategies and resources that meet their less prominent modalities as well. Willing (1988) reiterated the matching learning and teaching styles concept, and Felder (1995) added that proposing a balanced teaching style aimed at suiting all learning styles may help overcoming eventual mismatches.

Kara's 2009 research explored this hypothesis: participants in this study where twelve teachers and one hundred of their second year students in the Anadolu University ELT Department. Two different questionnaires were submitted to the two different categories in order to collect the necessary data on teaching and learning styles, respectively. Interviews followed, and, despite Wallace and Oxford (1992) stating the high majority of the learning environments is habitually characterised by style conflicts of some kind, results showed there actually was a match in this case, as both seemed to favour visual and auditory styles. The teachers did not usually assess their teaching style, but affirmed they still tried to change methods and activities according to the learners' needs, as the latter claimed to feel frustration otherwise.

Opposite examples, however, are easy to find: in 2009, Juris investigated several public and private institutions in Colombia, detecting no match betwen the learners and teachers' learning styles. There was a definite preference for the kinesthetic and tactile styles on the students' part, but the teachers were not prone on either assessing them or on adhering to their inclinations. Some researchers (Felder, 1995; Oxford & Lavine, 1991) actually argue that deliberately mismatching teaching and learning styles may prove beneficial for the students, but most of them (Oxford, Hollaway, & Horton-Murillo, 1992; Jones, 1997; Reid, 1987; Peacock, 2001; Stebbins, 1995) consider it harmful instead.

A third option exists: to some scholars, matching teaching and learning styles might indeed produce some benefits, but this does not necessarily implicate greater learning achievements. Gilakjani's 2012 study, which we mentioned above, concerned one hundred English Language Translation students attending the Islamic Azad University of Lahijan, Iran: in spite of the mostly visual responses, 90% of secondary school teaching appeared to have been addressed towards auditory students. Accordingly, he underlined the necessity for the teaching styles to be more balanced in order for the discrepancy to be reduced. There already exist a considerable amount of variables, such as age or motivation, able to impact on the students' learning preferences, and they must therefore be enabled to determine their strengths and weaknesses as precisely as possible, and to take them into account in order to better deal with different didactic situations. So many mixed results on style matching, however, can be explained as a direct consequence of it not being the most functional teaching method. Tight took advantage of Cohen's Learning Style Survey (LSS) in order to assess the learning styles of one hundred twenty-eight English native speakers undergraduates, regarding their learning of Spanish as a second language; visual was by far the most common perceptual channel, followed by the auditory one, and, way below, by the tactile/kinesthetic one. As the study focused on the retention of concrete nouns, they all took both pretests and posttests and, in the meantime, studied words in matching, mismatching and mixed learning conditions; although 64% of the participants had expressed a clear preference towards a specific perceptual learning style, mixed modality proved to be the one stimulating learning and retention the most, and the present study will be exploring this aspect as well.

Case studies on the relationship between learning styles and technology

Through Reid's PLSPQ assessment tool and Oxford's Strategy Inventory for Language

learning, Rossi-Le (1995) focused on ESL students' learning styles and strategies; results showed a deep correlation between them. This branch requires some specific considerations, as strategies may clearly be influenced by the available instruments and tools, and over the past few decades technology has been evolving and presenting the potential not only for the renewal of the preceding techniques, but for the introduction of many new devices as well. Despite the fact that, "over the past few years, digital media have enriched the teaching and learning experiences and have become commonplace with university students and lecturers" (Paechter and Maier, 2010, page 292), research is still necessary in terms of how styles and learning preferences relate to this new environment. Research findings reveal the virtual learning environment (VLE) is no different than a classroom, and that different learners have different preferences (Johnson, 2007). Their characteristics "influence their preferences for using technology and (…) the use of appropriate technology positively influences the academic performance" (Saeed, Yang and Sinnappan, 2009, page 100). As for the teaching process, several studies have addressed the issue of whether learning styles do or do not affect the use of learning technologies. Heaton-Shrestha, Gipps, Edirisingha and Linsey (2007) concluded that most of the times the students' styles do shape the use of ICT (which stands for Information and Communications Technology), as they tend to handle the VLE according to their preferred learning modalities. Now, Fleming (2001) argues that almost half of his online questionnaire respondents had one single style preference, while the remaining 59% split between favouring two (27%), three (9%) or all four styles (21%). Furthermore, it looks like preferred learning conditions, as long as they are mild (Kinshuk, Liu and Graf, 2009), increase academic success.

According to Krichen (2007), learning style awareness may increase online learning satisfaction just as much as with traditional learning, as it allows students to make

better use of their strengths and favoured learning stragegies in order to better handle activities and circumstances. Jordanov (2001) explored the relationship between the students' learning styles and their interaction with technology and with online learning; Kolb's (1984) Learning Style Inventory, administered to three hundred participants, revealed that learners do not exploit the same learning style when attending traditional and online classes. Aliweh (2011) too investigated this specific branch of learning by submitting an adaptation of Reid's Perceptual Learning Style Preference Questionnaire to fifty-one EFL college students and examining their satisfaction with web-based learning afterwards. Kinesthetic, tactile and visual turned out to be their preferred online-related learning styles. Kinesthetic learners, in particular, are not only the ones that favoured the online environment the most in general, as it allows a different, more active and hands-on approach to learning, but also the ones that seemed to experience a direct correlation between their learning style and their web-based learning satisfaction.

The sixty online course students West, Rosser, Monani and Gurak evaluated (2006) were divided into three groups (excelling, passing and failing) according to the grades they received. While age, grade point average and background did not seem to significantly impact on their achievements, excelling learners clearly showed a pattern when it came to the strategies and study habits they favoured, to the amount of time spent online and the use they made of it. Out of the thirty-seven people who chose to answer learning style assessment and Internet-related questions, it appeared passing and failing students spent most of their time on the Internet connecting with friends instead of focusing on work-related matters or on contacting their instructors. Excelling students were more likely to have more experience in dealing with virtual working environments, and more awareness of which learning strategies were the most helpful and efficient for them. Failing students, curiously, spent more time

working on their assignments overall, but were less methodical, and adopted ineffective study habits, focusing on the content rather than on the learning process. Findings relate that learning styles and previous online working experiences clearly do impact on achievement and grades, and that there are remarkable differences between successful and unsuccessful students in terms of the strategies they employ.

Learning style assessment

In order to properly identify their students' learning styles, though, teachers need to adopt appropriate and reliable instruments and devices (Curry, 1987). Because of inapt statistical analyses, restricted samples and misinterpreted conclusions, early studies used to provide contradictory data and results; the tactile and kinesthetic categories were often considered interchangeble; individual scores were by far regarded as less meaningful than mean scores, which failed altogether to determine singular achievements; finally, the contemporary use of diverse tools, methods and terminology could not supply reliable evidence and required some standardization efforts.

The growing need of certified methods to gather data, as well as of legitimate learning style evaluation instruments brought along by the increasing number of theories and studies, resulted in several self-assessment questionnaires being developed throughout various decades. As mentioned before, the present exploratory study makes use of an adaptation of Reid's Perceptual Learning Style Preference Questionnaire (1987), a self-reporting device constructed and validated together with linguistic and educational consultants for non-native speakers, made up of thirty statements aimed at assessing whether the respondents' favoured learning style is visual, auditory, kinesthetic or tactile, and whether they prefer individual or group

learning. Reid's own study with secondary students resulted in a general preference for kinesthetic, tactile and individual learning styles, with variables such as sex, age, amount of exposure to the foreign language and field of education influencing their learning process. According to Hodges, though, "approximately 90% of traditional classroom instruction is geared to the auditory learner. Teachers talk to their students, ask questions, and discuss facts. However, only 20% to 30% of any large group could remember 75% of what was presented through discussion" (Hodges, 1982, pages 30-31).

It might be possible, however, to raise awareness on the fact that assessing learning styles is a concrete and relatively simple and rapid possibility, as well as to promote a deeper knowledge of the various channels that might be more or less exploited in order for all types of learners to make the most of the learning experience. Teachers can benefit from it just as much as students can: a stronger consciousness of which types of learners they are facing may prove extremely helpful for them and their day-to-day work; simultaneously, it might also allow them to help students discover the best learning strategies for them to apply, according to their perceptual inclinations, to become more successful learners. So, even if it is impossible to approach each student with different activities and teaching methodologies to better suit their learning preferences, teachers may try to vary their teaching styles as much as possible according to the predominant perceptual learning spheres of each class they face.

Addressing the characteristics and requirements that distinguish the various different styles is the first step that needs to be taken: visual learners exploit sight the most, have strong sense of color and may have trouble following lectures; graphs, maps and diagrams, as well as note-taking, images, slides and illustrations

might prove extremely helpful. Auditory students retain information best through hearing, may have difficulties following written directions and might instead benefit from repeating notions out loud and actively participating in class. Kinesthetic learners need to move and rely on physical memory, thus body movements and objects to manipulate may help them focus. As for tactile students, they learn primarily through the sense of touch and hands-on tasks, so that role plays and exercises involving the use of computers are probably the best activities for them. We also need to consider the fact that most students are actually multi-sensory learners: the preference of a learning style does not automatically implies excluding the others, and it often happens that students rely on more than one style, and they can therefore benefit, although perhaps to a different extent, from several strategies and activities even outside of their favoured perceptive sphere. Finally, there are students who learn better on their own, while others prefer cooperation. Individual learning builds self-discipline and allows pupils to work on their own time and pace, but it might prevent shy learners from interacting with the rest of the class. Group learning, instead, encourages the creation of support systems and enhances communication and active participation, while it usually does not stimulate learning autonomy.

The results Reid obtained show some similarities with the present research, and, together with what Hodges stated, constitute a good starting point for our own study and reflections.

Part Two

This section is composed of two different chapters: first of all, the research questions the present study focuses on are laid out; the first chapter goes then on to report the study's participants, exposing its methodology and reiterating its purpose, procedures, background and context. The second one provides instead a precise account of the experimental didactic approach the participants were exposed to.

The Study

The present study investigates the relationship between the perceptual learning styles favored by a group of secondary school students and the traditional educational methods, to see whether they are suitable to match the needs of different types of learners or not.

It specifically examines the following research questions:

1. Which are the predominant learning styles of secondary school students that are: a. focusing on humanities, and b. aged between fourteen and seventeen?

2. Does the way English as a foreign language is usually taught to such students comply with their preferred learning styles?

Participants

The reported data was obtained while working alongside a teacher of English as a

foreign language (EFL) during a three months internship experience in a public secondary school focusing on humanities, or 'liceo classico'. Italian high school has an overall duration of five years: these surveys, however, were only submitted to those students who were not working towards the final exams yet, and who could thus be more easily led towards new approaches and experimental activities. Participants in this study were, therefore, seventy-two EFL students native speakers of Italian and whose age, according to the first research question, ranged between fourteen and seventeen.

Participants								
	A		B		C		Total	
Males	7	28%	7	28%	6	27.3%	20	27.8%
Females	18	72%	18	72%	16	72.7%	52	72.2%
Total	25	100%	25	100%	22	100%	72	100%

Table 1. Participants.

They belonged to three different classes composed of twenty-five first-years, twenty-five second-years and twenty-two third-years, respectively: such groups will henceforth be referred to as A, B and C. The twenty males were abundantly outnumbered by the fifty-two females, both on the whole and within each group, with a ratio only slightly lower than one to three. Fifty-five-minute lessons were held for each group twice a week, with a further third session usually involving a change of setting, as it was carried out in the language laboratory the school provided. Besides the fact they were all taught by the same group of teachers and were exposed to the foreign language for the same amount of time, these three classes had little in common. In fact, while all students were born in Italy and considered themselves native speakers of Italian, A and B also featured bilingual learners, whose families had

immigrated from India and South America a few decades before. A and B, moreover, focused on grammar and communication skills, while C dealt primarily with literature. Finally, B was scheduled to carry out a fourth lesson of extracurricular activities per week: it was a support language laboratory, aimed at uniforming a class characterised by extremely heterogeneous performances. This is a project which first-year students, who need to adjust to the new learning environment and to the amount of work it requires from them, are usually not submitted to. The same applies to more advanced classes, as they should be appropriately focusing on curricular tasks, and whose most critical cases have for the most part already been recovered.

Methodology and instruments

This research was conducted by collecting, classifying and interpreting information and data through a combination of quantitative and qualitative methodology, also referred to as a mixed method approach. The quantitative data were obtained via two different questionnaires and were later combined with direct qualitative observation in order to provide a more complete and comprehensive report. Such findings, once collected and statistically analysed, supplied both the answer to the first research question and the starting point for reflections and considerations as regards to the second one. Additionally, learners were introduced to a different didactic approach that would stimulate their interest and engage them in activities that, whilst remaining within the programme, could better meet each learning style; more will be said about this in the following chapter.

After having been introduced to the notion of learning styles, the students involved in this study were asked to complete the two aforementioned questionnaires, each consisting of approximately thirty statements, by rating every item according to

which extent they held it to be true referring to their English language learning preferences. This is rather important to mention since, as we have seen in the previous section, the exact same learners answering these very same tests but with respect to different subjects would have probably produced different responses.

The first one, a modified version of Joy Reid's Perceptual Learning Style Preference Questionnaire (hence PLSPQ) was designed in 1987 as a self-assessment tool to help respondents identify their preferred ways of learning; this questionnaire includes five statements for each of the six learning styles Reid classifies (visual, auditory, kinesthetic, tactile, group and individual). Students could choose between five possible options while ranking every item, each corresponding with a numerical value based on how truthful they considered it to be: Strongly Agree (SA, worth five points), Agree (A, four points), Undecided (U, three points), Disagree (D, two points) and Strongly Disagree (SD, one point). Moreover, perceptual learning styles could afterwards be labelled as major, minor or negligible according to the final score they obtained once the test results were elaborated and analysed. The data acquired from this first questionnaire had the dual function of helping the students realise which learning styles held dominant roles in their learning process, so that they could focus on better exploiting their strong points, and, at the same time, of allowing the teacher to assess which were the receptive channels each of the three classes made greater use of as a whole, in order to be able to adapt the teaching styles so that they would at least partly match the learners' preferred perceptual ones.

The first task after their completion was to organise the thirty questions randomly provided by the PLSPQ questionnaire according to the perceptual style they were related to, and they were therefore distributed into six different groups: questions 6, 10, 12, 24 and 29 referred to the visual style, and questions 1, 7, 9, 17 and 20 to the

auditory one; questions 2, 8, 15, 19 and 26 concerned the kinesthetic sphere, whereas questions 11, 14, 16, 22 and 25 belonged to the tactile one. Finally, the remaining ten questions established which between individual (questions 13, 18, 27, 28 and 30) and group learning (questions 3, 4, 5, 21 and 23) appeared to be more suitable for each respondent (see Appendix B for a full account of the PLSPQ items organised per learning style preference). As we have mentioned before, there were five possible answers for each statement, equivalent to a score of five to one points, respectively. Determining which learning style preferences were to be considered major ones (with a score ranging between 38 and 50 points), minor ones (25 to 37 points) or negligible ones (10 to 24 points), required two different steps: the score obtained by every item needed to be added to the other ones belonging to the same set of questions, and the resulting digit would then have to be doubled.

Although conveniently adapted, the second test, called Technology In the Classroom (or TIC), was taken from Dudeney and Hockly (2007). Divided into three sections, this questionnaire asks the learners to evaluate which ways work best for them when it comes to learning a foreign language in the classroom and which are the activities they mostly like to indulge in when using technology in English. Besides, it includes a section designed to investigate their attitudes towards the use of technology both within the classroom and without. This test was submitted to the students for various reasons: first of all, technology is an integral part of the experimental approach the various classes were submitted to, though to differing degrees. Secondly, it is increasingly present in the students' lives even beyond the school walls, but, as we will be able to observe, often enough the educational system does not manage to take full advantage of its potential. The basic concept behind it is that technologies can both facilitate learning and enhance the students, whether appropriately exploited. Both questionnaires are reported in their entirety in Appendices A and C, respectively.

The educational system, however, still tends to follow extremely standardised patterns. Since secondary schooling first became obligatory, teachers have been dealing with large classes composed of learners with different aspirations, different necessities and coming from different backgrounds, all the more so today, as it may no longer mean merely a different economic or social environment, but perhaps different countries, cultures and customs. Despite the fact the need of conveying the same notions to heterogeneous groups of people highlights the necessity of standard paths for every teacher to adhere to, there is one aspect that fails to be taken into consideration. Diversity, in all its forms, is a characteristic which is deeply interconnected with the concept itself of human nature, and while analyzing the social and psychological implications of the above is not within the aims of this study, such conceit provides a good starting point for it. The idea of an individualised schooling is, of course, impossible to put into practice even remaining within the standard programme and school hours, as the lack of teachers and special needs teachers, staff, structures and so forth makes it impracticable.

Both previous researches and direct observation reveal that the way English lessons are traditionally conducted allows students to use the target language in class working either on their own, or in pairs or in groups. Classes especially focus on oral work, whereas learners are often required to carry out most written exercises at home and correct them in class the following time; while in the laboratory, finally, they usually complete listening exercises and practice their pronunciation. It is evident, then, how both environments tend to match visual and auditory learners the most.

Experimental didactic approach

Starting, therefore, from the assumption that individualised teaching is impracticable, we were interested in understanding whether it was possible to actualise a different educational path that, while remaining within the framework of the syllabus, would feature characteristics which could better adhere to the preferred learning styles of each group of students, or, at least, be a little more varied and stimulating. There clearly is no single correct teaching method for all circumstances, but rather different strategies and tools, and skillful teachers thoroughly examine their advantages and limits so as to apply them consciously, since the use of appropriate strategies contributes to better results. One essential ability for teachers, and this concept will be resumed and investigated in depth further on, lies in knowing how to constantly reinvent their teaching styles and adapt their modalities to better match their students' needs. As mentioned above, A, B and C all have different characteristics, different learning styles, which we will examine shortly, and aim to the achievement of different objectives by the end of the school year, so that they obviously require different approaches.

A and B's features and goals allowed the implementation of similar methodologies. Drawing following the teacher's instructions, for example, allowed the students to expand their vocabulary and listening skills, whilst simultaneously enabling the teacher to meet the needs of visual, auditory, tactile and individual learners. Lyric videos were introduced in order to help the students learn specific language structures or grammar forms through music and songs, which is a medium they could easily relate to: afterwards, to make sure the concept was clear, they were also asked to provide similar examples choosing from songs they already knew or liked. They had to grapple with games and quizzes as well, such as trivia, to be played with cards

and in teams, to allow kinesthetic learners more movement within the classroom and tactile ones to have a physical object they could rely on: when it comes to finding the correct answer to a question, especially in a timed game, students are compelled to practice listening as much as speaking in the target language, to cooperate, and to challenge themselves. The language laboratory turned out to be a profitable environment for activities such as these, thanks to the potentially infinite database internet provides: for example, learners were asked to practice the conditional tense through several timed computer games which had been previously selected by the teacher, and were eventually required to create appropriate PowerPoint presentations featuring both rules and examples and based on their recent exercises as well as on what they had learnt in class. Beside varying activities and teaching methods in order to better satisfy the different learning styles, in fact, one of our aims was to increase the students' interaction with technology, and, at the same time, to raise their interest, wich is a fundamental motivational factor, and the keyword behind the whole concept of integrative motivation. This is why, especially in the case of younger and less experienced students, canonical lessons focusing on grammar rules and exercises were alternated as much as possible with activities proposed mostly as games, so students would be intrigued and more willing to challenge themselves. More about this will be said further on, as interest is crucial to develop competence and to work towards lifelong acquisition, instead of mere learning.

An altered version of the hangman game proved to be another good option: once they recognized the word in question, learners were asked to take turns proposing new terms to play with; to do so, though, they needed to keep inventing a story that would work as a thread, in order to reasonably connect them to the previous ones. Such an activity forced students to work individually to continue the tale and to invent new words, but at the same time allowed them to work together as a class to guess

them. Besides, as it was played on the board, it enabled kinesthetic learners to move, and it frequently offered excellent opportunities to inspect grammatical forms, verb tenses and so on.

Role plays were proposed as well: students were organised in groups of either six or seven people, and were asked to write their own lines based on a loose scenario the whole class shared. The complete scripts, usually no longer than a couple of pages each, were eventually corrected by the teacher, and then the various groups took turns in acting their little scenes in front of a camera and the rest of the class. Each representation lasted approximately five minutes and allowed the students to arrange their own setting and costumes. Particularly suitable for kinesthetic, tactile and group learners, this activity was enjoyed by the entire class: students were able to work together, but held responsibility for their own lines, and this proved to be rather challenging for the more reserved ones. They helped each other, learned to correct their own mistakes, and were engaged in the success of the other groups just as much as in their own. It needs to be mentioned, though, that only B members were introduced to this activity, as they were the only ones with an extra hour per week at their disposal: organising, writing, rehearsing and finally performing these role plays ended up requiring four full lessons, and it would have been impossible to insert such a time-consuming activity within the usual school hours without affecting the programme. Limited time and crammed programmes, in fact, are two extremely restrictive elements when it comes to organizing lessons in general, especially so with experimental approaches, and their influence will be discussed more in depth further on.

As for C, its situation was different, as the fact that the students were to focus on literature required a considerably different approach. During the months in which the

research took place, the programme required the study of Shakespeare. Learners were thus brought to examine some general information concerning the characteristics of the theatre of the time and the historical context, as well as several sonnets and finally some plays, including Othello, Macbeth, Romeo and Juliet, A Midsummer Night's Dream, and Richard III. Although some works were analysed more thoroughly than others, all posed a common difficulty: relating to their style, phrasing, themes and contents was often hard for the students. For this reason, the plays were usually accompanied by some articles on current events that could help them better understand issues that are not actually that far away from us, even after centuries: for example, some passages of Othello were read and commented together with various articles dealing with the difficulties that interracial relationships are still facing today, in some more than in other countries. The same applied to Romeo and Juliet, which was analyzed alongside articles concerning relationships hampered by families and relatives, and so on.

Given the fact students liked the idea of connecting to the texts, we decided to challenge them with an activity that we had not originally planned: they spent a full lesson organising and rehearsing a scene they eventually acted in front of the camera to eventually upload it online and send it to the website of the radio station called Caterpillar, which had been promoting a virtual event in honour of Shakespeare's 400th death anniversary, called Funeral Party. They worked on Romeo and Juliet, and the whole play was condensed within few lines. Despite being an improvised activity, the whole class actively took part in it, and kept asking for similar ones to be carried out for other texts as well, claiming they found activities such as these helpful to learn, focus and concentrate.

In addition, the laboratory, and sometimes the Interactive Whiteboard (IWB), were

extremely important tools to watch movies (either whole or clips) and documentaries: as we shall see, movies are one of the means through which students claim they learn best. But their function went even further, since taking advantages of the internet connection allowed using websites such as YouTube and enabled the teacher to introduce literature to students under a very different light. We bring the example of Shakespeare's Sonnet 18, which was set to music many times and in several different ways: if David Gilmour made a well-known piano version out of it, countless are the rap versions available online, most notably Akala's, showing how its phrasing is perfectly adaptable to a rhythm and to a modern musical style that many learners appreciate nowadays, and which is, by its very etymology, quick, vigorous and sharp.

The value and significance of this approach, alongside further details and considerations, will be discussed afterwards. To knowledgeably do so, however, it is necessary to have a clearer picture of the data collected from the respondents. We shall now proceed to analyse them.

Part Three

The following chapters examine both quantitative and qualitative findings with regards to the two primary research questions outlined in Part One, aimed at identifying the perceptual learning style preferences of an EFL students sample with extremely specific characteristics in terms of age and course of study, and at exploring whether the traditional teaching methods manage to properly meet them all or not. This section addresses both issues, and results are compared with relevant previous studies and literature on learning and teaching styles as well as on learning strategies and E-learning. Wider inferences for EFL classroom language learning will eventually be drawn in the last few paragraphs, and the limitations of this research, as well as the possible contributions it can make to this field of language education, will be highlighted. Finally, some recommendations regarding future research in the learning and teaching style area will be proposed.

Results

Once collected, the students' responses to the items on the two questionnaires were examined, statistically analysed and taken into consideration both on a class level and on the whole. The results obtained from each questionnaire are presented below, in terms of both numbers and percentages.

Perceptual Learning Style Preference Questionnaire

A is the first class we are going to take into consideration. Out of a total of twenty-five students, fourteen express a preference for individual learning, while only nine of them seem to favor group learning; the two remaining respondents appear to have no

prevailing inclination, as they obtained the same score in both styles. In terms of percentages, 60% of the students lean towards individual study, with two of them actually reaching the maximum available score of 50 points, while the remaining 40% settle for group study.

This is what the following chart illustrates, together with their perceptual preferences.

Legend:
- Visual - 12%
- Auditory - 21.3%
- Kinesthetic - 25.3%
- Tactile - 41.3%
- Group - 40%
- Individual - 60%
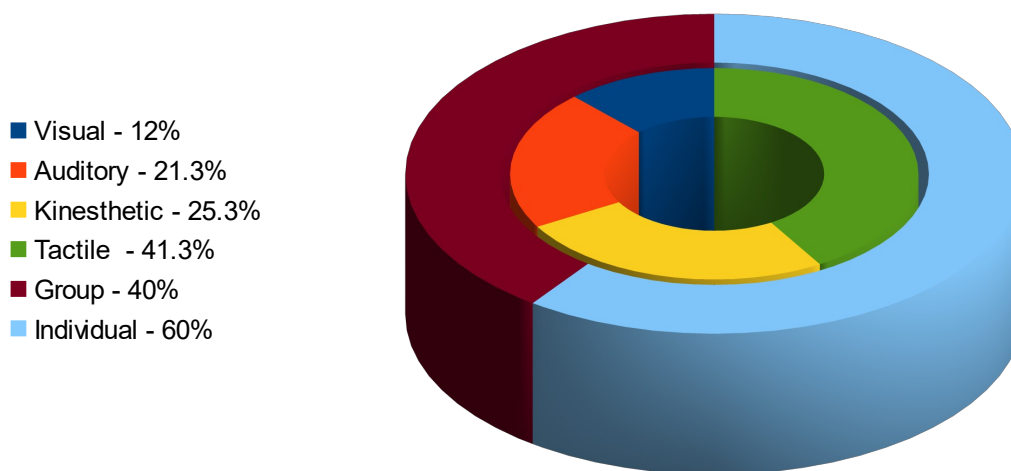
Table 2. A's PLSPQ preferences.

The analysis of the perceptual learning style preferences, however, is slightly more articulated: six are the cases of draw between the scores earned by two (and sometimes even three) sets of questions, which ended up making percentage and other calculus more complex. Out of the remaining nineteen people, nine seem to learn best through the tactile style, five through the kinesthetic one, three exploit the auditory sphere the most, and two the visual one. With a 40% preference, the tactile style is clearly the one the respondents adhere to the most, both in terms of individual and of average score. Two are the students whose responses collected 48 points out of 50, the highest score earned by a perceptual learning style (with 44 being the second

highest score, shared by the tactile, auditory and visual styles). Besides, since the questions were grouped into sets of five, as we have seen before, each style could be assigned from a minimum of 10 to a maximum of 50 points for every student, and 37.2 was the average rating the tactile one obtained. This is the result that comes closest to being a major common learning style, given that the other average scores drop to 35.7 points for the auditory style, 35.1 for the kinesthetic style, and 33.4 for the visual one; group and individual learning preferences (31.8 and 35.8, respectively), are just as far from the 38 points that would label them as major perceptual learning style preferences.

This aspect requires further investigation, and the table below shows just how large the gap between major and minor preferences is.

	Learning Style Preference		Group/Individual Learning Preference		Total	
Major Preferences	38	38%	15	30%	53	35.3%
Minor Preferences	58	58%	31	62%	89	54.4%
Negligible Preferences	4	4%	4	8%	8	5.3%

Table 3. A's major, minor and negligible preferences.

Aside from the number of negligible preferences, which is extremely low, 53 out of the 150 learning style preferences the respondents expressed (six different learning styles for each of the twenty-five students, that is) are major ones and 89 are minor ones. Nine are the respondents whose answers indicate the presence of a single major learning style preference, while four of them appear to have none, and the remaining twelve, on the contrary, show several. A complete account of A's PLSPQ results can be found in Appendix D.

B, on a general level, obtained pretty similar results. The only significant difference stands in the fact that this is not only the class with the highest average scores in general, but also the only one that shares a major perceptual learning style preference:
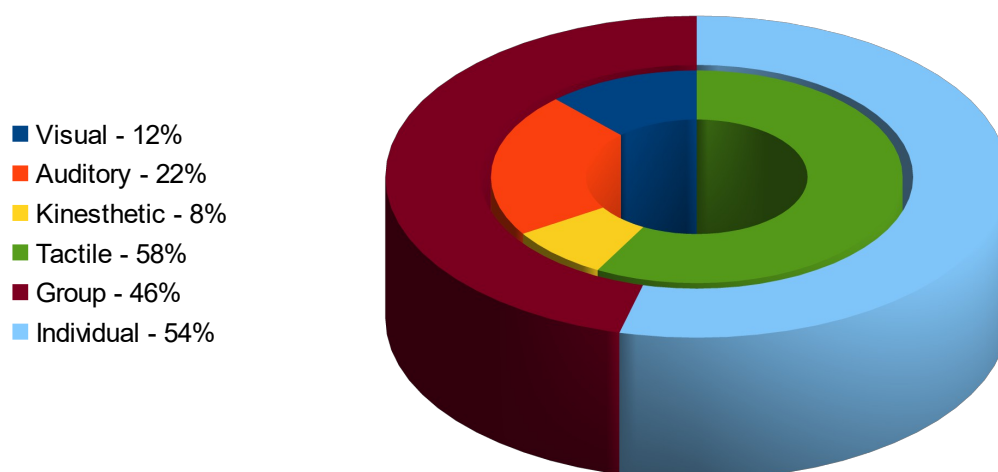
Table 4. B's PLSPQ preferences.

The chart above shows how the style that manages to trespass the 38-points threshold is, once again, the tactile one, with a massive average score of 40.4 points. Fourteen students seem to favor this style, with three of them reaching the peak of 48 points out of 50, while the remaining half of the class splits amongst the three remaining perceptual channels: the auditory sphere counts five preferences, the visual one enumerates three, and the kinesthetic style only counts one (although it is present in both cases of draw between two different styles). Such low amounts imply reduced average scores (37.4, 36.4 and 32.6 respectively) and percentages. Moreover, individual learning once again prevails over group learning, even though the gap between the two percentages is not as wide as it was in A. Three draws aside, twelve respondents out of twenty-five favor individualism while ten learn better through cooperation. The almost insignificant disparity between the average scores the two obtained (32.3 against 31.7 points) can probably be explained due to the fact that five

out of the ten negligible preferences detected overall concern the individual learning style, thus offsetting some of the highest results it obtained, and affecting the ultimate average score.

While there is no relevant difference between the total amount of major and minor preferences in A and B, the way they are distributed is clearly dissimilar (which might be inferred both from the table below and from Appendix E):

	Learning Style Preference		Group/Individual Learning Preference		Total	
Major Preferences	47	47%	10	20%	57	38%
Minor Preferences	51	51%	32	64%	83	55.3%
Negligible Preferences	2	2%	8	16%	10	6.7%

Table 5. B's major, minor and negligible preferences.

The number of multi-sensory learners, that is to say those students featuring more than one major perceptual learning style preference, infact, increases substantially (68% of the students, namely seventeen of them); six are those who only have one, while the remaining two show none. Altough it could have been deduced from the fact the average score these styles obtain are the lowest ones, the table above attests how students especially lack major learning preferences when it comes to individual or group learning.

C is the group of respondents whose results differ the most from the previous ones. The following table lists the major, minor or negligible preferences of the twenty-two respondents involved:

	Learning Style Preference		Group/Individual Learning Preference		Total	
Major Preferences	38	43.2%	14	31.8%	56	42.4%
Minor Preferences	46	52.3%	22	50%	68	51.5%
Negligible Preferences	4	4.5%	8	18.2%	12	9.1%

Table 6. C's major, minor and negligible preferences.

First of all, it displays the highest percentage in terms of students lacking a major perceptual learning style preference (27.3%, against the significantly lower results of 16% and 8% A and B obtained). Since this, however, does not prevent the overall percentage of major preferences expressed from exceeding the corresponding ones of the other classes, we infer that their distribution among students is different, and therefore there is a greater gap between those who can rely on various major learning styles, and those who only employ minor ones instead.

As for their perceptual learning preferences, they are described by the chart below:

Visual - 18,2%
Auditory - 18,2%
Kinesthetic - 54,6%
Tactile - 9%
Group - 47,7%
Individual - 52,3%
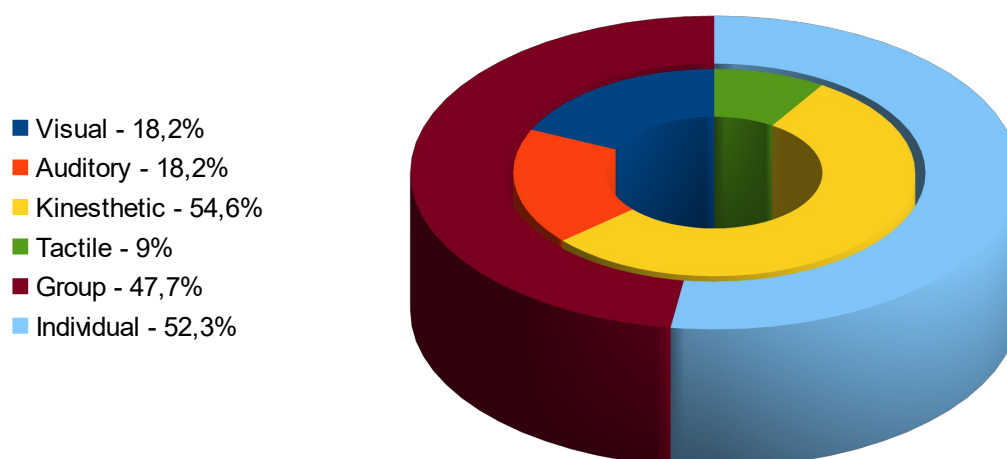
Table 7. C's PLSPQ preferences.

Half the students achieved their highest score in the kinesthetic style (peaking, once

again, at 48 points out of 50), which, with 37 points, is also the one that gets the highest average score. The cases of a tie are as many as six, with a predominance of visual and auditory learning preferences; two of the five remaining students prefer the visual style, two the auditory one and only one the tactile style. In spite of such different percentages, average scores are all quite close to one another, with ratings of 36.4, 35.6 and 32.8 for the visual channels, the auditory one and the tactile one, respectively. In proportion, the scoring ontained by individual (34.2 points) and by group learning (31.6) are slightly inferior, and both data and percentages show no significant gap between them: except for one draw, eleven are the students who prefer individual study, while ten favor cooperation. Once again, an exhaustive report of C's PLSPQ preferences is provided, and can be consulted in Appendix F.

If we take into consideration the totality of the students instead of each single class, we obtain a reliable summary of what we have examined so far in more detail. Appendix G gathers all the data obtained by the examination of A, B and C's members, while their favoured perceptual learning styles are examined in the table below:

■ Visual - 13,9%
■ Auditory - 20,6%
■ Kinesthetic - 28,3%
■ Tactile - 37,2%
■ Group - 44,4%
■ Individual - 55,6%
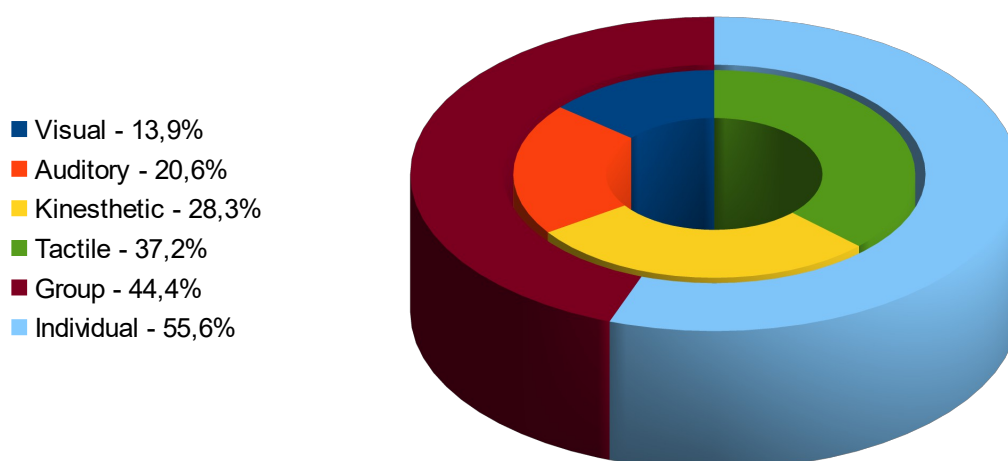
Table 8. A, B and C's PLSPQ preferences.

The tactile style turns out to be the one the students undergoing this test rely on the

most. Percentages such as these, however, only take into account which learning style was attributed the highest score by each respondent, and fail altogether when it comes to consider the fact there actually is no large discrepancy between the various results, in general as well as in many specific cases. In order to get a clearer picture of the situation, we need to examine the average scores the different learning styles attained: we can see how they actually are quite close to one another, especially the tactile, auditory and kinesthetic ones, with their scores ranging between 36.1 and 37 points. The visual sphere proves to be the one students employ the least, and this is especially relevant with regard to some considerations that will be made further on. As for individual and group learning, percentages and average scores essentially reiterate what had already been previously demonstrated through the tendential preference each class showed for individualism.

Finally, what emerges through the analysis of the data and percentages related to major, minor or negligible preferences, gathered in the table below, is that their distribution is uneven:

	Learning Style Preference		Group/Individual Learning Preference		Total	
Major Preferences	123	42.7%	39	27.1%	162	37.5%
Minor Preferences	155	53.8%	85	59%	240	55.5%
Negligible Preferences	10	3.5%	20	13.9%	30	7%

Table 9. A, B and C's major, minor and negligible preferences.

As we can see from the chart above, for example, although the major preferences expressed about the perceptual styles are 123, which means an average of approximately a couple apiece for each of the seventy-two respondents, eighteen of

them (25%) actually have just one, and twelve (16.7%) only rely on minor or negligible learning preferences. This means that the remaining forty-two students get to share out a total of 105 major perceptual learning preferences.

We leave further investigation and consideration to the next chapter, and we shall now proceed to report the data obtained from the second questionnaire on technology.

Technology In the Classroom

As we have previously asserted, the main purpose of this test was to assess the relationship between the students and technology, focusing on the way it influences their learning of English as a foreign language. The scores that they assigned to each of the twenty-nine statements the test was composed of have been used to determine how many of the respondents either agree or disagree with every single one of them, and to which extent. Once again, the rating they could attribute ranged from a minimum of one point to a maximum of five, depending on whether they were strongly disagreeing (SD, worth one point), disagreeing (D, two points), agreeing (A, four points), strongly agreeing (SA, five points), or undecided (U, three points) about what was being stated. The members of each class were then grouped into the five aforementioned categories according to their answers, and we shall now proceed to report the results.

As for their attitude towards technology, fifty-seven respondents out of a total of seventy-two state that they enjoy using it, with thirty-five of them agreeing (48.6%) and twenty-two strongly agreeing (30.5%). Considering most of the remaining learners place themselves in the Undecided category, very few are those who actually

disagree. With its rate of 86.4%, C is the class that reaches the highest consensus percentage. On the contrary, when asked whether technology intimidates them, 88.8% of the students either mildly (51.3%) or strongly (37.5%) deny it. A is almost unanimous in its response, with the sudents' disagreement reaching a peak of 96%. 68% of them even go as far as to state they believe their language skills would improve if they were to take full advantage of the benefits supplied by the internet. Despite the above was generally met with a rather united front, though, the other statements obtained mixed results. Twelve are the respondents who state they do not consider the use of technology while learning languages necessary, and there are several others, in fact, who do not appear to feel entirely confident when it comes to using technology, both at home and within the classroom, with only thirty-three of them (45.8%) asserting as much.

Having said that there is not a single student opposing the concept according to which they should either know or be taught how to properly use technology in the classroom, the amount of people who seems to believe it breaks down too often to actually be of any help (56.9%) and that its use requires too much time (41.6%) ends up being quite impressive. If such results were to be added up with the pretty elevated percentages made up of undecided respondents (16.7% and 26.4%, respectively), there would not be much room left for the disagreeing students. More will be said about this in the next chapter.

The chart below collects the feedback given by all the students about the last part of the questionnaire, covering the various activities the lessons can be composed of.
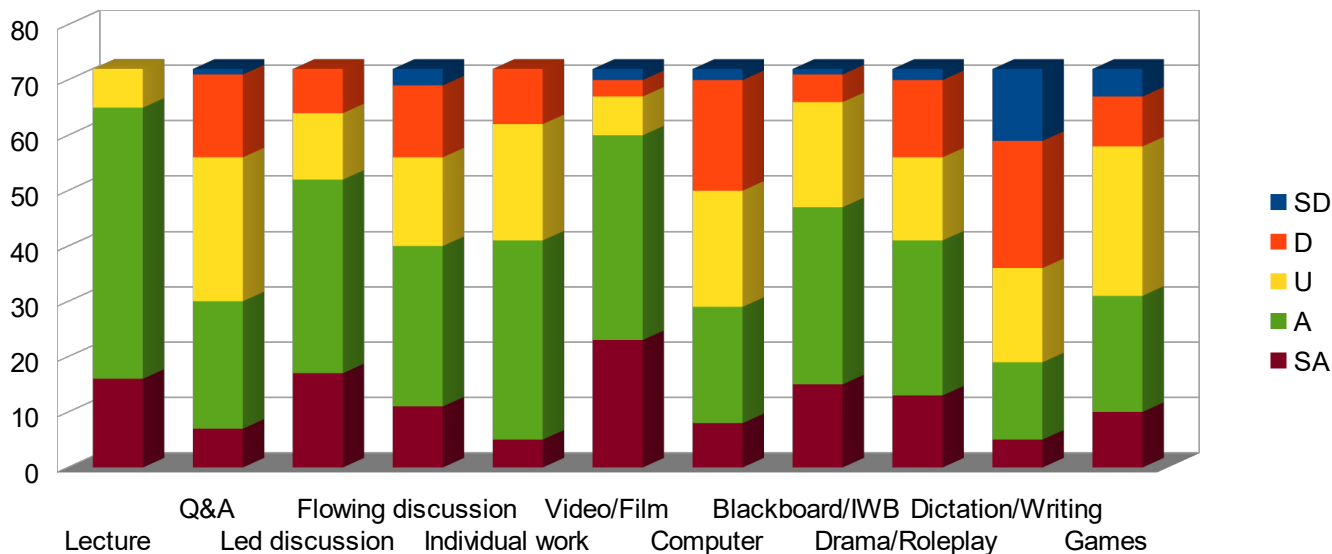
Table 10. A, B and C's feedback on didactic activities.

It is, however, necessary to emphasise that these results are, in fact, the outcome of data that differ a lot from class to class and that are much less homogeneous than the ones regarding the previous questionnaire. For example, there is huge difference between the way A and B consider dictation and writing, which obtain a consesus of 56% and 4%, respectively; with such a percentage, it proves to be the least favorite learning activity for B members, and the same can be said for C, despite its higher score of 18.1%. The gap may not be as wide, but there is quite a variance even between the number of students affirming that learning through the use of a computer works for them in C (54.6%) and in B (28%). Although A almost unanimously dismissed the idea technology could be intimidating, computer-related activities turn out to be the learning method students employ the least, even if ten respondents out of twenty-five (40%) consider it a good alternative. As for the best learning modalities, there are a couple of options all three classes seem to agree upon, as either lectures or watching movies are awarded by each group with the highest scores by far.
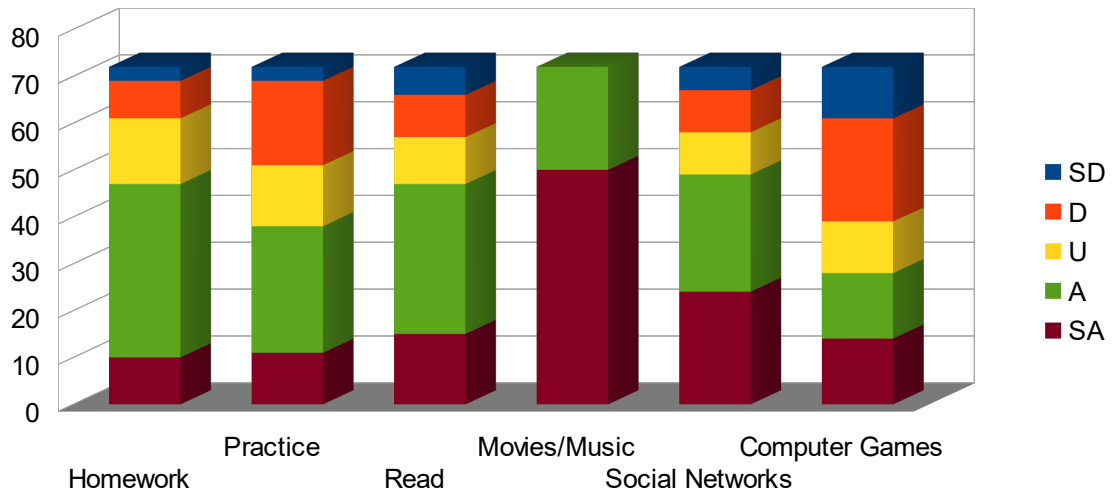
Table 11. The use of technology in English.

Movies and music are some of the main reasons for students to use technology in English: this is the only item within both questionnaires that obtained full consensus. Social networks, as well as preparing home assignments, follow in terms of agreement, while computer games and such obtain the highest percentage of dissent. The graph above depicts all the collected data, and while records of the answers each class provided with regards to this questionnaire can be found in Appendices H, I and J, a full account for the seventy-two students involved is reported in Appendix K.

Discussion

Once the completed PLSPQ questionnaires were collected and examined, they supplied the answer to our first research question: secondary school students focusing on humanities and aged between fourteen and seventeen definitely prefer the tactile style, which is closely followed by the kinesthetic one. On the whole, they seem to favour individual over group learning, but the gap between the two is not that wide, while the visual and auditory channels clearly appear to be the least exploited sensory preferences. Providing an articulate answer to our second research question proved way more complex. Both issues, however, although perhaps to different extents, could benefit from some further considerations, which we shall now proceed to express.

Addressing the research questions

Even though this issue will be properly addressed towards the end of the end of the chapter, it is worth mentioning that the entirety of the data obtained through both questionnaires comes from self-assessment, which, according to Wintergerst (et al., 2002), means they may not be as reliable, as it is extremely difficult to find "assessment instruments that actually measure what they purport to measure" (Wintergerst, DeCapua, & Verna, 2002, page 19). Besides, Peacock (2001) reveals that some students may find it difficult to understand the wording of some statements, given they belong to EFL classrooms and thus are non-native speakers of English. Some learners did, in fact, ask for clarifications, regarding both the meaning of specific terms within the various sentences and of entire items, especially in A and B, which consisted of the youngest and least experieced students. For this reason, it is essential for the surveys to be as clear as possible in order for the responses to be given knowledgeably and, therefore, to be valid. Besides, according to Reid (1998), for

example, some respondents might prefer to avoid giving extreme answers such as "Strongly Agree" or "Strongly Disagree", and might instead choose more moderate ones. Our analysis, which can be fully examined in Appendix L, shows how, in the present research, this turned out to be true for all three classes:

A	ER		MR		NR	
PLSPQ	181	24,1%	356	47,5%	213	28,4%
TIC	158	21,8%	404	55,7%	163	22,5%
Total	339	23%	760	51,5%	376	25,5%
B						
PLSPQ	152	20,2%	401	53,5%	197	26,3%
TIC	181	24,9%	387	53,4%	157	21,7%
Total	333	22,6%	788	53,4%	354	24%
C						
PLSPQ	130	19,7%	356	53,9%	174	26,4%
TIC	192	30,1%	340	53,3%	106	16,6%
Total	322	24,8%	696	53,6%	280	21,6%
A, B and C						
PLSPQ	463	21,5%	1113	51,5%	584	27%
TIC	531	25,4%	1131	54,2%	426	20,4%
Total	994	23,4%	2244	52,8%	1010	23,8%

Table 12. A, B and C's extreme, moderate and neutral responses.

With ER standing for Extreme Responses (consisting of SA plus SD answers), MR for Moderate Responses (including Agree and Disagree answers) and NR for Neutral ones (the Undecided, that is), the table above demonstrates how A, B and C, considered either individually or on the whole, found it easier to choose medium answers for both questionnaires. There also exist frequent cases in which the Undecided answers alone exceed the sum of the more radical SD and SA. Maybe a questionnaire allowing six possible answering choices instead of five would not have substantially increased

the amount of extreme responses, but it might at least have prevented the high amount of undecided students, compelling them to express some sort of preference, even if mild.

As to our perceptual findings, first of all we need to mention they are consistent with several other researches conducted within EFL and ESL classrooms, such as Reid's (1987), Melton's (1990), Hyland's (1993), Rossi-Le's (1995), Jones' (1997) and Wintergerst et al. (1998, 2001, 2002). According to their studies, non-native speakers of English often happen to lean towards individual learning, and to favour the tactile and kinesthetic styles. Reinou (2008), in fact, explicitly states most ESL/EFL students favour kinesthetic and tactile learning, while Vigna and Martin (1982) claim 84% of secondary school students prefer individual study. So, whether it is because of biological characteristics, of external influnces and experiences, or the result of a mixture of both, Restak (1979) and Thies (1979) both claim that everyone has some sort of preference when it comes to learning, with Dunn adding that 70% of students are specifically affected by perceptual preferences. However, Dunn, and Sanders (1980) found that very young children are usually the most tactile/kinesthetic, while visual and auditory styles are often favoured by more experienced students (especially so, Reid adds, in the case of native speakers). This sort of learning style parallelism between young native speakers of English and more experienced non-native students is, presumably, intuitively explainable because the level of knowledge they might possess of the said language is in all likelihood somewhat similar. Some further research could be useful in this field, as some very interesting reflections could be drawn from it.

Anyhow, Dunn (1990) states that students need to be informed about their own learning style preferences and to be taught through compatible strategies in order to

enhance their achievements: besides, matching approaches seem to allow a more positive learning attitude (Griggs and Dunn, 1996). Now, first of all, various researches demonstrate how students specializing on different academic fields show significantly different learning style preferences as well. According to Kolb (1981), in fact, learners tend to choose those learning environments and academic areas that better suit their own styles. Besides confirming previous findings, then, the overall outcome retrieved from the items the third section the TIC questionnaire is composed of ought to be thought-provoking in terms of how the lessons are still generally carried out, as the students' opinions seem to be expressing a rather widespread lack of information when it comes to several teaching methods they are yet to try and understand.

This brings us to the examination of our second research question. As Reid (1987) herself reported, a good 90% of the traditionally imparted lessons usually favour auditory students the most, with the remaining percentage probably focusing on visual ones. To create some activities that would benefit tactile and kinesthetic students as well, we had to try and find either new ways in order to still follow the programme through different tasks, or some sort of balance between the time that needed to be dedicated to said programme and some that could be devoted to experimental didactic exercises instead. This is where the true value of our experimental didactic approach lies: a teaching method including activities and suggestions suitable for every learning style and combination, and as diverse as the timetable, circumstances and tools would allow it to be is, we believe, the key to a more functional interaction between teachers and students, and to a more succesful learning environment. Students were way more confident and engaged when they were required to handle games and roleplays, never as attentive and responsive as when they were watching videos and learning through music, and used to remember

those activities and information way more than any other lesson, as it captured their attention and their interest. Unfortunaly, finding a balance so as not to leave the programme behind proved challenging, and sometimes some extra time would have helped. This was the case of B: as it had been granted an extra hour per week, it was much easier to combine the two. However, despite the fact such supplementary language lessons, if regularly carried out for every class, could prove extremely beneficial, it is not a request that would be easy to take into account: were it actually accepted, it would probably prompt other teachers to submit it as well, and so many extracurricular hours would be impossible to reconcile with a suitable scholastic timetable.

It seems pretty obvious that the educational system is still not able to provide the students with lessons and teaching methods able to meet the needs of their learning style preferences. First of all, as we mentioned before, there is a general lack of instruments, possibilities and knowledge, on both parts. Everyone might intuitively understand there are certain aspects, whether perceptual, emotional or environmental, that may affect their learning, making it either easier or harder for them; nevertheless, neither teachers nor students are generally aware of the fact such factors and preferences might actually be assessed, and therefore influence the way each lesson is built. Hence, there is no thorough perception of how to properly exploit some tools and activities yet: this can be inferred from the fact results tell us that technology is still way more used to watch movies or connect with friends on social media rather than to prepare home assignments or to practice, or from the relatively low consensus rate using the computer or engaging in roleplays obtained. Secondly, and perhaps most importantly, we believe there is no sufficient time, but, as we mentioned in the paragraph above, there probably is no feasible solution for this issue except perhaps reconsidering and redistrubuting the amount of material that

programmes include in view of the actual time available; however, this goes beyond the power of teachers and researchers. Finally, should we take the two previous points for granted, finding an approach that manages to individualise teaching, at least partly, in order to better meet preferences and necessities for each class without proving to be too much time-consuming and still allowing to meet schedules and deadlines is extremely difficult. The ensemble of these factors, together with the data gathered during the period of observation this research was granted, support Hodges' and Reid's statements according to which most lessons are still traditionally oriented towards visual and auditory learners, despite them being a minority. Consequently, despite the efforts made in such direction, it appears that the present study's student sample is still not taught English as a foreign language through teaching methods able to appropriately comply with their favoured perceptual learning styles preferences.

Reflections on technology

Technology requires a few considerations in its own right. The results obtained from the second questionnaire indicate that, with the exclusion of a good third of undecided students, almost half of them actually feel extremely confident when using technology, both inside and outside the classroom. On the whole, however, it seems they use it way more to embark on non-scholastic activities, and the percentage of learners who actually consider it beneficial during language lessons is considerably lower.

In the last few decades, mobile learning, meaning a constantly available connection to the network, has helped to subvert the former idea of teaching: digital environments require from the brain a new type of interaction both between texts and images, and between analysis and synthesis processes. Howard Gardner claims that technology

provides students with many different ways of studying and managing materials, thus individualizing education. Since there exist different types of intelligence (which Gardner himself theorised) as well as cognitive and learning styles, it is necessary for the teachers to organise their work through clear learning objectives, a meticulous selection of available virtual sites and databases, and a good integration between online and traditional learning materials. Ghillebeart's study (1999) demonstrated how employing computer-assisted activities may prove beneficial to various types of learners: they meet the needs of visual students through the screen, the interactive devices related to the computer allow the tactile learners a better employment of their favoured learning style, and so on. She claims technology is an extremely flexible tool when it comes to adapting to different learning modalities, and able, often enough, not only to provide support for them all, but also to allow multi-method instruction, which she considers more helpful than being taught in a specific learning style, preferred as it may be.

It is a relatively new, versatile and attractive resource, capable of adapting and meeting the needs of each student; moreover, since these new generations of learners are considered "native" when it comes to using technology, it can easily stimulate their interest. This is in fact considered a "digital generation", thanks to Mark Prensky that, in 2001, drew a distinction between digital natives and digital immigrants, native or non-native speakers, respectively, of the computer's digital language. The interaction between "native" students and "immigrant" teachers leads both to a natural reconfiguration of roles through an enhanced exchange of skills, so that now more than ever it is necessary for teachers to question themselves and their approach. Nowadays, those who were previously considered to be the sole holders of knowledge are seen rather as guides, tutors, allowing and even encouraging collaboration and interaction, thereby increasing the students' self-esteem, and contributing to create a

more harmonious learning environment. In this regard, we report an interesting quote by George Bernard Shaw: "If you have an apple and I have an apple and we exchange these apples then you and I will still each have one apple. But if you have an idea and I have an idea and we exchange these ideas, then each of us will have two ideas". The time will come for digital immigrants to be replaced by natives within a few decades, and those are the students of today: meanwhile, working towards a more diverse and engaging learning environment might require combining knowledge and competences from both parties. Despite the large number of theories and studies, however, the implementation of a different management of both classrooms and roles is still very far from everyday reality.

The single devices are constantly evolving, but the key change that technology has introduced lies in having given access to an measureless amount of data and information, to anyone, anywhere and at any time. Technology offers potentially infinite databases, provides students with many different ways of studying and managing materials, and allows them to individualize the learning process depending on what their favorite learning styles are. This, however, leads to a more complex responsibility of choice, as it is indeed important to choose what kind of input the students are going to be subjected to. Defining clear educational objectives, selecting tools, sifting through the available data and integrating online and traditional teaching materials will enable the students to make the most out of both.

Ideally speaking, the possibilities it offers are virtually endless, and it all depends on the use made of it. Reality, however, is different: the school the present research was conducted in, as many schools do, only provided one language laboratory. There were two more multimedia laboratories, technically destined to different types of activities, but given the fact the institute was composed of more than fifty classes, it often was

neither easy nor probable to be able to book one of the labs and to access the computers. The teacher I worked with, however, at the beginning of every school year wisely tried to make sure her own classes would get to spend about an hour per week in the language laboratory. Nevertheless, there often happened to be sovrappositions; changing hours was always problematic, as there rarely were unoccupied laboratories.

There are several other considerations to make: because of how overfilled programmes are, it was sometimes necessary to skip the lab hour in order to meet deadlines. This was especially true with C, as it was way easier to involve technology in the grammatical and notional lessons A and B required, for the mere reason the books themselves requested the use of supports of some kind, particularly for listening exercises. Most of the times, the IWB was used in order for such activities to be carried out, as every school text is now supplied with a CD rom and with an online version, for both the teachers and the students: Kroonenburg (1995), in fact, affirms more and more language textbooks are being arranged in order to help teachers meet as many learning styles as possible. It should thus have been relatively easy to combine the classroom-conveyed lessons with laboratory activities.

The several difficulties encountered each and every day explain the use of the conditional tense: first and foremost, the internet connection the school had available was extremely weak. It often happened, both in class and in the language laboratory, that there was no connection at all, so that programmed activities requiring the use of an online dictionary, of youtube, or of any other web-related tool had to be reconsidered entirely. The fact itself about one computer per class was switched on at approximately the same time in the morning at the beginning of the school day entailed an extra challenge, as the system was probably overloaded and it was almost

impossible to use the computers, let alone internet. This was indeed problematic, not too much in terms of lessons and activities perhaps, but because paper records are no longer in use, and everything, from the absent students to marks and homework need to be registered online. It is often a waste of time, since the devices do not always function properly and the process must be repeated every hour in each different class. In addition, the school is supposed to have an activated web filter to shield the students from certain types of advertising, websites and so on that might not be appropriate for their age. I know from personal experience that it does not always work, which, of course, requires presence of mind and speed of action, especially if the IWB is on.

Internet connection, however, was only one of the problems: very often the physical devices were the first ones not to work. The same IWB could be not responding to the remote control, or have audio issues for some reason, so that a lesson without problems was difficult to fathom. The laboratory, then, was not equipped with particularly recent computers or posts, so it was normal to have issues with either one or more computers, with headphones, or with the reference computer, the one the teacher worked on, equipped, among other things, with CD and DVD players, which were very often not recognized as valid devices by the computer.

The teacher's role

Technology, however, is not the only aspect of teaching requiring alertness and readiness from the teachers, so that a wider parenthesis should be opened on the role that they hold. Many papers and studies have dealt with it and have examined the question in detail, which, although it is not the focus of this research, still requires some considerations. According to Kinsella (1995), for instance, teachers tend to teach

the way they used to learn best themselves, and to propose the learning strategies that better suited their own learning styles. James' study (1973) even attests that they are often brought to think that students they share their preferred learning styles with can better understand lessons and materials and deserve higher grades.

Assuming that, once the concept of learning styles is introduced to the students, it would be appropriate for the teachers to be aware of the specific requirements and needs of each of them as well as of their own teaching style, we shall now consider a feature of even greater importance. It is necessary for teachers to possess inventiveness, initiative, ability to vary, primarily in view of the fact that, as already mentioned, the coexistence within the class of very different learning styles, characterized by different degrees of intensity, and the presence of multisensory – or so-called "combination" – pupils, requires, in order to better meet the needs of everyone of them, an approach that blends tactics and strategies of each perceptive sphere as much as possible. Grasha (1972) first, and Friedman and Alley (1984) then, state that, were teachers able to help students experience a variety of different teaching methods, they would be more aware, motivated and ready to face activities and assignments. While Fourier (1984) declares that the more mature students are, the more they "learn intuitively to adjust to instructor cognitive styles" (page 153), Scarcella and Oxford (1992) highlight, instead, the relevance of "stretching the comfort zones" of the students. Tight's (2007) research showed how mixed-modality teaching produced greater learning, even though to different extents, than being taught either in one's favoured modality or in one's less-favoured modalities. Specht (1991)'s case study confirms how important exposure to diverse learning situations and methodologies can be for students, confirmed by Sadler, Plovnick, & Snope (1978)'s research as well, and how findings indicate short-term learning is not particularly affected by different teaching styles, while the traditionally lectured class

experienced a significant decrease in terms of long-time knowledge retention. According to Nilson (2003), in fact, "all learners learn more and better from multiple-sense, multiple-method instruction" (page 86), but teachers themselves, "who feel that they are engaging directly with learners' needs rather than delivering a prescribed curriculum" (Hall and Moseley, 2005, page 248), might find shifting their focus from one strategy to another just as beneficial.

Secondly, it is useful to keep in mind the fact that teachers constantly have to deal with a whole series of variables that involve unpredictability. First of all, the human component: although, in fact, we may try to consider every possible element beyond the learning styles on which this study focuses, such as possible different backgrounds, affective filters and so on, controlling and predicting everything goes beyond the reach of any teacher. Preparing lessons and ideas is a great starting point, but it is important to be aware of the fact that this may not be enough. Teaching is an interactive act, made of the transmission as well as of the reception of notions, and as it is impossible to foresee both sides of a conversation, it is just as impossible to think the necessity of having to change approaches, activities, and so on in the running will not present itself pretty frequently. What works for a student or for a class does not necessarily work for another, especially in a context in which teachers deal with learners whose age still does not allow a full maturity when it comes to approaching study, and whose personality (and consequently whose learning characteristics, even merely within the school environment) is undergoing rapid change and transitioning from childhood to youth. Being inventive and reactive is therefore essential to be able to present a concept or a task in different ways depending on the situation.

The way teachers behave and approach each class, as well as teaching itself, impacts on preparation, activities and so on, as they have a lot of power in the classrooms:

more or less influenced by programmes and guidelines, they select topics, plan and gather ideas, provide students with materials and with the necessary tools in order for them to master the subject, and monitor them through testing and evaluation. As we have mentioned before, the last few decades have witnessed an important change when it comes to the teacher's role, as they are now seen as language facilitators rather than as controllers of knowledge. While many different factors may influence their teaching, such as their own personal preferences, the common goal for them all seems to be enhancing their students' learning autonomy, with autonomy being described by Benson as "a capacity – a construct of attitudes and abilities that allow learners to take more responsibility for their own learning" (Benson, 1997, page 19).

According to Fisher (1993), computers are partly responsible for this change, as they end up modifying the interaction both between students and between students and teachers. The fact itself the pupils have direct access to sources, materials and so forth at school as well as at home changes both the way they perceive themselves as learners and the way they relate to their tasks and the school environment, and this is something teachers have really no control upon.

However, the period of observation the present research allowed showed how this is not an easy transition to put into practice. First of all, I do believe many theories are perhaps well known in some specific contexts, mainly academic ones, but are not as widespread elsewhere. The notion itself of learning and teaching styles is still foreign to most. Secondly, some teachers may have been caught in the transition from traditional methods to the new ones which, often enough, recur to technology, and may either not be able to properly exploit them, or not able to correctly use them at all. If we add the fact that, as of today, the italian public educational system is extremely complex and slow when it comes to hiring, no generational replacement

has been occurring in quite a while, and, as mentioned in the previous section, there consequently is a widening gap between students and teachers in general (especially so if we consider the digital native pupils are being taught largely by digital immigrants), it is therefore clear that there is plenty of room for improvement.

Most teachers are only intuitively aware of the fact students - and instructors themselves - usually prefer specific perceptual learning modalities, and usually ignore the fact that assessment tools exist and that approaches can be appropriately adapted through specific activities and tasks in order to better suit them all, so that, obviously, they end up being lacking of some attentions and considerations that would improve the success rate of their classes.

In order to improve such a situation, there are a few steps that need to be taken: first of all, learning style awareness must be spread between both teachers and students; updating courses must be held; structures, instruments and staff should be made available, and a change of mentality must occur, in order for new methodologies and activities to be introduced. Here are some tips we consider both interesting and functional to try and accomodate the different learning styles in class: lessons entailing illustrations and diagrams, the use of the board as well as of lists and movies meet the needs of visual learners. To better involve auditory students, commenting them out loud, employing audio materials of any kind, repeating and summarizing key points will do. Physical learners such as tactile and kinesthetic students need frequent brakes, so that changing exercises and activities every ten or fifteen minutes will help, as well as organizing games, roleplays and tasks requiring objects, movement, and computers. The aim is certainly to facilitate students and to enhance their competences and skills, but also, and perhaps most importantly, to create an environment which keeps their motivation alive.

Further considerations

When it comes to motivation, there is very little agreement on a clear definition: the only thing all researchers seem to agree upon is that motivation is an eclectic construct, "dependent", as Dornyei highlights, "on who learns what languages where" (Dörnyei, 1994, page 275). The socio-psychological model of Gardner and Lambert, which differentiated between integrative and instrumental motivation, dominated the scenario, almost unchallenged, for a few decades; essentially, it stated that an integrative motivation, connected to personality traits and to the desire to identify oneself with the language and its culture, would lead to a lasting retention of learning, while the instrumental one is based on mere utilitarian reasons, and therefore might bring to knowledge, but hardly to competence. They focused on the important role an open and positive attitude plays while learning a second or foreign language, on individual factors such as integrativeness, attitude towards the learning situation, motivation and language anxiety, as well as on the social milieu (meaning the environmental factors influencing the learners) the individuals grow up into. While an instrumental motivational subsystem focuses on practical aspects other than inherent interest, and is chiefly goal-oriented, an integrative orientation, which is usually associated with a stronger form of motivation, is driven by interest and curiosity, regarding both the foreign language and its community. The 2014 study conducted by Ghaedi and Jam on ninety Iranian EFL university students demonstrates (via two questionnaires, PLSPQ being one of them) that there seems to exist a strong relationship between learning styles and motivation for higher education.

Schumann (1998) emphasises stimulus appraisal, claiming that there are five criteria affecting the evaluation that the brain operates on input perception: novelty, pleasantness, goal/need significance, coping potential and self and social image.

Roleplays, games, technology-based activities of some kind (whether they involve using computers, streaming movies and videos, listening to music, taking quizzes and so forth) can have an extremely positive influence on learning processes, and can certainly be more attractive, for a young digital generation at least, than lectures and traditionally imparted lessons.

Contributions of the study

Despite some limitations, which shall be discussed in the next paragraph, conducting these learning style assessment tests is important: though they may not be entirely conclusive, they are gathering data in a period that witnesses several changes and evolutions when it comes to both students, teachers, and the relationship between these two categories. In addition to bringing to this field of research new samples and new findings, which also confirmed many of the case studies previously carried out, they are evidence of a process, an evolution regarding the educational approach. They also lead to some reflections by comparing the choices that are made everyday and those that should be made in order to enhance the learning environment.

Apart from the theory, which clearly need to precede the practice, in this particular school environment this research assessed the perceptual learning styles of three different classes which still have a few years of study ahead of them, and explored different teaching methodologies through an experimental didactic approach. Consequently, this favoured the adjustment of the teaching style held up to that time in favor of a more mixed methodology to better meet their needs. Hopefully, it will also open a door for the concept of learning and teaching styles to be spread, and other teachers may become aware that there is an actual possibility, though subject to many limitations, to improve the way they approach their classes. Besides, this case

study reports how having access to appropriate devices and knowing how to properly exploit them is pivotal in order for new methods and improvements to be introduced.

Limitations of the study

We have seen how results proved to be quite consistent between the three classes, despite the many differences characterising each of them; given the relatively small number of students involved, though, it is hard to legitimately draw definite, concrete conclusions. More participants would mean acquiring more data, which would lead to sturdier statistical analyses; a longer period of observation and more experimentation opportunities would have allowed for a more meticulous examination, and would have made final evaluations and reflections more accurate; finally, broadening the age spectrum would have given us a clearer picture of both the preferred learning styles of secondary school students, and of the educational answers schools are able to supply. Also, examining learners undertaking different subjects and focusing on diverse academic paths could allow researchers to gather a wider amount of information.

Besides, the fact itself both questionnaires were self-reporting instruments rests on the assumption that the respondents needed to provide a viewpoint as honest and valid as possible while filling them out in order for their reliability not to be affected. It is essential to be aware of the fact there exist many factors, such as mood or stress, which could have influenced the students' completion of the tests. The incredibly high number of "Undecided" responses, as we mentioned above, may explain why the high majority of learning styles were categorised as minor ones, but we also need to cite the fact many learners more or less deliberately avoided selecting the most extreme options ("Strongly Agree" and "Strongly Disagree") as a concurrent factor. Corbett

and Smith (1984) questioned the trustworthiness of such self-assessing learning style tools, with Gregorc (1979) enumerating their exclusivity (as focusing on specific variables) and their lack of accuracy (learners may either misinterpret the questions and wrongly assess their preferences, or accidentally report the ones they have over time adapted to the teaching environment they found) as their weaker points. Itzen (1995), as well as Wintergerst and DeCapua (in press), specifically analysed Reid's PLSP Questionnaire, and respectively found it to be an inappropriate measuring instrument for both native and non-native speakers of English, whose results frequently did not match other types of gathered data and findings. PLSPQ, although slightly modified, was chosen for the present study as it "has been normed on non-native speakers of English" (DeCapua and Wintergerst, 2005, page 3), especially for ESL/EFL high intermediate and advanced students. Besides, it does not present too many difficulties in terms of wording, nor does its completion require too much time.

Clearly, different researchers exploit different measuring instruments: however, none of the models Hall and Moseley (2005) examined seems to have been considered fully valid and reliable. Questionnaires which, were they taken twice, would supply identical results, and findings whose validity researchers can be entirely certain about are therefore nearly impossible to come across. Reid herself recommends caution when using learning style assessment tools, and proposes the employment of multidimensional instruments.

Pedagogical implications

Introducing the students to the learning style concept and giving them the possibility of assessing themselves and their learning style preferences quite early on would help their awareness as language learners, and as learners in general. According to Hall

(2005), it would be appropriate for teachers and instructors to make them aware of their way of processing information and of the strategies that come along with them. Many different factors and variables may have an impact on both learning process and outcome, such as age, discipline, learning environment, motivation, and so on. Learners, some claim, should be assisted in finding study habits and methods that suit their preferences by comprehending what helps their learning and what does not (Cutolo and Rochford, 2007). In order to achieve such an educational goal, Joyce and Hodges claim teachers should be able to propose a varied ensemble of approaches, since "a teacher who can purposefully exhibit a wide range of teaching styles is potentially able to accomplish more than a teacher whose repertoire is relatively limited" (Joyce and Hodges, 1966, page 411). Now, in the previous chapter the limitations imposed by programmes too ambitiously crammed (if one considers the heterogeneous classes and the insufficient time, personnel, devices and so forth) have been thoroughly discussed. To this we must add the fact that teachers are indeed subject to many limitations, that many regulatory and organizational decisions are made above their heads, and that therefore their range of action is often rather limited. Anyhow, it's pivotal for instructors to try to the best of their possibilities to engage the students in different types of activities, promoting a variety of strategies that are not specifically tied to one learning style (Sarasin, 1998). Although students might express a preference for one perceptual style, Nilson (2003) claims they may benefit, perhaps to a lesser extent, from the other modalities as well, and this is why helping them expand their range of learning modalities and strategies to move towards the goal of becoming more indipendent learners may prove extremely helpful. However, since researches show that more proficient learners are more flexible when it comes to experimenting and accepting teaching styles they are not familiar with, teachers need to be very careful in assessing not only their students styles, but their language level as well, so as not to cause them anxiety or discomfort

when introducing new approaches and methodologies they are still not ready for.

Further research

Further studies might benefit from longer periods of observations and larger student samples, possibly spread between several different disciplines, schools and age ranges; besides, employing multiple self-evaluation instruments would bring more conclusive findings and thus allow some generalizations to be drawn. Replicating the same study, perhaps even with the same students, would be useful to see to which extent the obtained results would remain consistent. Researchers may want to improve the validity of the gathered data as well by modifying self-assessment instruments so that they provide a six-point evaluation scale instead of a five-point one: this would inevitably reduce the hesitation many students showed when it came to expressing viewpoints and preferences by selecting the "Undecided" option. Finally, students need to be as involved as possible in the learning process, or so Gardner (1983) claimed. To support this statement, we conclude by quoting Confucius: "Tell me, and I will forget. Show me and I may remember. Involve me, and I will understand".

Conclusion

This study aimed at collecting data on the preferred learning styles of secondary school students with extremely specific personal and academic characteristics. It turns out, from direct observation as well as from a comparison with previous studies and theories, that the educational system is not yet able to properly address the strengths and weaknesses of the various different learners, especially considering the high majority of them appears to be leaning towards tactile and

kinesthetic methodologies, whilst traditional teaching is still mostly geared towards visual and auditory students. New instruments and devices are available to help teachers diversify their approaches and teaching modalities, but the key point is that awareness needs to be spread so that the learning style concept will be more widely known and that lessons, tools and programmes will be appropriately exploited or adapted.

Appendix A: Perceptual Learning Style Preference Questionnaire.

Perceptual Learning Style Preference Questionnaire

strongly agree	agree	undecided	disagree	strongly disagree
(SA)	(A)	(U)	(D)	(SD)

Learning Styles:	SA	A	U	D	SD
1. When the teacher tells me the instructions I understand better.					
2. I prefer to learn by doing something in class.					
3. I get more work done when I work with others.					
4. I learn more when I study with a group.					
5. In class, I learn best when I work with others.					
6. I learn better by reading what the teacher writes on the chalkboard.					
7. When someone tells me how to do something in class, I learn it better.					
8. When I do things in class, I learn better.					
9. I remember things I have heard in class better than things I have read.					
10. When I read instructions, I remember them better.					
11. I learn more when I can make a model of something.					
12. I understand better when I read instructions.					
13. When I study alone, I remember things better.					
14. I learn more when I make something for a class project.					
15. I enjoy learning in class by doing experiments.					
16. I learn better when I make drawings as I study.					
17. I learn better in class when the teacher gives a lecture.					
18. When I work alone, I learn better.					
19. I understand things better in class when I participate in role-playing.					
20. I learn better in class when I listen to someone.					
21. I enjoy working on an assignment with two or three classmates.					
22. When I build something, I remember what I have learned better.					
23. I prefer to study with others.					
24. I learn better by reading than by listening to someone.					
25. I enjoy making something for a class project.					
26. I learn best in class when I can participate in related activities.					
27. In class, I work better when I work alone.					
28. I prefer working on projects by myself.					
29. I learn more by reading textbooks than by listening to lectures.					
30. I prefer to work by myself.					

Appendix B: PLSPQ items organised per learning style.

	VISUAL STYLE
6	I learn better by reading what the teacher writes on the chalkboard.
10	When I read instructions, I remember them better.
12	I understand better when I read instructions.
24	I learn better by reading than by listening to someone.
29	I learn more by reading textbooks than by listening to lectures.
	AUDITORY STYLE
1	When the teacher tells me the instructions I understand better.
7	When someone tells me how to do something in class, I learn it better.
9	I remember things I have heard in class better than things I have read.
17	I learn better in class when the teacher gives a lecture.
20	I learn better in class when I listen to someone.
	KINESTHETIC STYLE
2	I prefer to learn by doing something in class.
8	When I do things in class, I learn better.
15	I enjoy learning in class by doing experiments.
19	I understand things better in class when I participate in role-playing.
26	I learn best in class when I can participate in related activities.
	TACTILE STYLE
11	I learn more when I can make a model of something.
14	I learn more when I make something for a class project.
16	I learn better when I make drawings as I study.
22	When I build something, I remember what I have learned better.
25	I enjoy making something for a class project.
	GROUP LEARNING STYLE
3	I get more work done when I work with others.
4	I learn more when I study with a group.
5	In class, I learn best when I work with others.
21	I enjoy working on an assignment with two or three classmates.
23	I prefer to study with others.
	INDIVIDUAL LEARNING STYLE
13	When I study alone, I remember things better.
18	When I work alone, I learn better.
27	In class, I work better when I work alone.
28	I prefer working on projects by myself.
30	I prefer to work by myself.

Appendix C: "Technology In the Classroom" Questionnaire.

Attitudes to technology:	SA	A	U	D	SD
1. I enjoy using technology.					
2. I avoid using technology when I can.					
3. I think using technology in class takes up too much time.					
4. I think that technology can help me to learn new things.					
5. Technology intimidates me.					
6. Students should know how to use technology in class.					
7. I would be a better learner if I knew how to use technology properly.					
8. I'm very confident when it comes to working with technology at home/at school.					
9. I want to learn more about using technology at home/at school.					
10. I believe that I can improve my language skills using the benefits of the Internet.					
11. Using technology in learning languages is not necessary.					
12. Technology breaks down too often to be of very much use.					

I use technology in English:	SA	A	U	D	SD
To prepare home assignments (e.g. projects, web quests..).					
To practice (e.g. online courses, online dictionaries..).					
To read (e.g. newspapers, articles, blogs..).					
To watch movies/listen to music.					
To use social networks/chat with friends.					
To have fun (e.g. computer games..)					
Other (...)					

In class, I learn better through:	SA	A	U	D	SD
Lecture/Teacher talk.					
Question & Answer.					
Teacher led whole class discussion.					
Free flowing whole class discussion.					
Individual assignments.					
Watching a video/film.					
Using the computer.					
White/blackboard/LIM.					
Drama/Roleplay.					
Dictation/writing.					
Games/Other.					

Appendix D: *A'*s PLSPQ preferences.

PUPIL	VISUAL		AUDITORY		KINESTHETIC		TACTILE		GROUP		INDIVIDUAL	
QUESTIONS	6,10,12,24,29		1,7,9,17,20		2,8,15,19,26		11,14,16,22,25		3,4,5,21,23		13,18,27,28,30	
1	34	m	**42**	**M**	26	m	34	m	32	m	**46**	**M**
2	34	m	28	m	38	M	**42**	**M**	40	M	24	n
3	**44**	**M**	28	m	26	m	42	M	28	m	**50**	**M**
4	36	m	30	m	**40**	**M**	38	M	32	m	**46**	**M**
5	34	m	24	n	**40**	**M**	34	m	30	m	**44**	**M**
6	32	m	32	m	36	m	**44**	**M**	**30**	**m**	**30**	**m**
7	24	n	32	m	**40**	**M**	36	m	**40**	**M**	28	m
8	32	m	38	M	44	M	**48**	**M**	**36**	**m**	**36**	**m**
9	34	m	32	m	**40**	**M**	34	m	**36**	**m**	26	m
10	40	M	40	M	**42**	**M**	28	m	**38**	**M**	36	m
11	26	m	38	M	34	m	**40**	**M**	32	m	**34**	**m**
12	30	m	**34**	**m**	**34**	**m**	**34**	**m**	24	n	**46**	**M**
13	**34**	**m**	30	m	**34**	**m**	26	m	22	n	**42**	**M**
14	30	m	**38**	**M**	**38**	**M**	36	m	**38**	**M**	32	m
15	**42**	**M**	38	M	36	m	40	M	34	m	**38**	**M**
16	26	m	**44**	**M**	40	M	42	M	28	m	**32**	**m**
17	32	m	32	m	36	m	**38**	**M**	**44**	**M**	30	m
18	36	m	38	M	28	m	**42**	**M**	26	m	**40**	**M**
19	26	m	**36**	**m**	28	m	**36**	**m**	28	m	**30**	**m**
20	32	m	**44**	**M**	30	m	**44**	**M**	34	m	**36**	**m**
21	38	M	38	M	36	m	**42**	**M**	**40**	**M**	32	m
22	34	m	44	M	32	m	**48**	**M**	**32**	**m**	26	m
23	**36**	**m**	**36**	**m**	30	m	20	n	10	n	**50**	**M**
24	36	m	34	m	36	m	**38**	**M**	**30**	**m**	28	m
25	32	m	**42**	**M**	34	m	24	n	32	m	**34**	**m**

	VISUAL	AUDITORY	KINESTHETIC	TACTILE	GROUP	INDIVIDUAL
TOTAL	834	892	878	**930**	796	**896**
AVERAGE	33,4	35,7	35,1	**37,2**	31,8	**35,08**

M: Major Learning Style Preference   n: Negligible Learning Style Preference

m: Minor Learning Style Preference   Bold: Highest score per student

Appendix E: *B*'s PLSPQ preferences.

PUPIL	VISUAL		AUDITORY		KINESTHETIC		TACTILE		GROUP		INDIVIDUAL	
QUESTIONS	6,10,12,24,29		1,7,9,17,20		2,8,15,19,26		11,14,16,22,25		3,4,5,21,23		13,18,27,28,30	
1	34	m	36	m	36	m	**44**	**M**	**28**	**m**	26	m
2	34	m	32	m	**46**	**M**	42	M	**40**	**M**	28	m
3	30	m	**42**	**M**	34	m	36	m	**40**	**M**	36	m
4	28	m	**42**	**M**	36	m	38	M	26	m	**30**	**m**
5	34	m	34	m	32	m	**38**	**M**	**34**	**m**	24	n
6	28	m	42	M	**44**	**M**	44	M	**30**	**m**	**30**	**m**
7	38	M	38	M	36	m	**40**	**M**	32	m	**36**	**m**
8	28	m	40	M	34	m	**44**	**M**	26	m	**34**	**m**
9	40	M	30	m	32	m	**48**	**M**	**34**	**m**	26	m
10	34	m	38	M	36	m	**44**	**M**	**36**	**m**	24	n
11	32	m	38	M	32	m	**44**	**M**	**36**	**m**	20	n
12	**34**	**m**	32	m	32	m	30	m	**38**	**M**	30	m
13	**40**	**M**	28	m	26	m	34	m	12	n	**50**	**M**
14	34	m	32	m	44	M	**48**	**M**	34	m	**46**	**M**
15	26	m	36	m	38	M	**42**	**M**	**36**	**m**	24	n
16	22	n	38	M	42	M	**48**	**M**	50	M	22	n
17	30	m	40	M	38	M	**42**	**M**	32	m	**38**	**M**
18	44	M	36	m	38	M	**46**	**M**	30	m	**40**	**M**
19	34	m	38	M	32	m	**46**	**M**	**32**	**m**	32	m
20	30	m	**42**	**M**	34	m	34	m	22	n	**32**	**m**
21	**38**	**M**	36	m	36	m	30	m	34	m	**40**	**M**
22	36	m	**42**	**M**	40	M	40	M	34	m	**36**	**m**
23	30	m	34	m	34	m	**38**	**M**	18	n	**36**	**m**
24	34	m	**48**	**M**	46	M	44	M	30	m	**40**	**M**
25	22	n	**32**	**m**	**32**	**m**	26	m	**28**	**m**	**28**	**m**

	VISUAL	AUDITORY	KINESTHETIC	TACTILE	GROUP	INDIVIDUAL
TOTAL	814	936	910	**1010**	792	**808**
AVERAGE	32,6	37,4	36,4	**40,4**	31,7	**32,3**

M: Major Learning Style Preference   n: Negligible Learning Style Preference

m: Minor Learning Style Preference   Bold: Highest score per student

PUPIL	VISUAL		AUDITORY		KINESTHETIC		TACTILE		GROUP		INDIVIDUAL	
QUESTIONS	6,10,12,24,29		1,7,9,17,20		2,8,15,19,26		11,14,16,22,25		3,4,5,21,23		13,18,27,28,30	
1	28	m	40	M	**48**	**M**	40	M	28	m	**34**	**m**
2	34	m	24	n	**36**	**m**	28	m	22	n	**42**	**M**
3	**46**	**M**	42	M	34	m	32	m	40	M	**46**	**M**
4	38	M	38	M	**40**	**M**	28	m	28	m	**36**	**m**
5	36	m	36	m	**42**	**M**	34	m	**30**	**m**	22	n
6	**38**	**M**	**38**	**M**	32	m	30	m	**36**	**m**	32	m
7	34	m	36	m	**38**	**M**	26	m	28	m	**30**	**m**
8	34	m	30	m	**36**	**m**	30	m	**36**	**m**	24	n
9	34	m	**40**	**M**	38	M	34	m	26	m	**38**	**M**
10	**38**	**M**	**38**	**M**	36	m	26	m	24	n	**40**	**M**
11	**36**	**m**	32	m	18	n	26	m	36	m	**40**	**M**
12	**36**	**m**	34	m	**36**	**m**	26	m	22	n	**44**	**M**
13	38	M	36	m	**40**	**M**	38	M	**32**	**m**	26	m
14	38	M	42	M	**44**	**M**	34	m	**40**	**M**	28	m
15	34	m	**38**	**M**	32	m	**38**	**M**	34	m	**34**	**m**
16	36	m	30	m	32	m	**40**	**M**	36	m	28	m
17	36	m	42	M	**44**	**M**	38	M	**42**	**M**	32	m
18	44	M	44	M	**48**	**M**	38	M	**44**	**M**	36	m
19	34	m	**42**	**M**	**42**	**M**	38	M	**38**	**M**	32	m
20	**30**	**m**	22	n	24	n	**30**	**m**	10	n	**50**	**M**
21	30	m	40	M	**44**	**M**	42	M	**44**	**M**	18	n
22	32	m	**36**	**m**	30	m	26	m	20	n	**40**	**M**

	VISUAL	AUDITORY	KINESTHETIC	TACTILE	GROUP	INDIVIDUAL
TOTAL	784	800	**814**	722	696	**752**
AVERAGE	35,6	36,4	**37**	32,8	31,6	**34,2**

M: Major Learning Style Preference   n: Negligible Learning Style Preference

m: Minor Learning Style Preference   Bold: Highest score per student

Appendix G: *A, B* and *C*'s PLSPQ Preferences.

	A	B	C	TOTAL	AVERAGE
VISUAL	834	814	784	2432	33,8
AUDITORY	892	936	800	2628	36,5
KINESTHETIC	878	910	**814**	2602	36,1
TACTILE	**930**	**1010**	722	**2662**	**37**
GROUP	796	792	696	2284	31,7
INDIVIDUAL	**896**	**808**	**752**	**2456**	**34,1**

Students' Perceptual Learning Style Preferences

	A		B		C		TOTAL	
	A.P.	Ties	A.P.	Ties	A.P.	Ties	N°	%
VISUAL	2	2	3	0	2	4	10	13,9
AUDITORY	3	5	5	1	2	4	14,8	20,6
KINESTHETIC	5	3	1	2	**11**	2	20,4	28,3
TACTILE	**9**	3	**14**	1	1	2	**26,8**	**37,2**
GROUP	9	2	10	3	10	1	32	44,4
INDIVIDUAL	**14**	2	**12**	3	**11**	1	**40**	**55,6**

Students' Major Style Preferences

Perceptual Learning Style Preferences					
	A	B	C	Total	%
None	4	2	6	12	16,7
One	9	6	3	18	25
More than One	12	17	13	42	58,3
Total	25	25	22	72	100
Group/Individual Learning Style Preferences					
	A	B	C	Total	%
Both Minor	10	15	9	34	47,2
One Each	15	10	12	37	51,4
Both Major	0	0	1	1	1,4
Total	25	25	22	72	100

Appendix H: *A*'s "Technology In the Classroom" responses.

Attitudes to technology:		SA		A		U		D		SD
1. I enjoy using technology.	8	32%	13	52%	3	12%	1	4%	0	0%
2. I avoid using technology when I can.	2	8%	2	8%	3	12%	13	52%	5	20%
3. I think using technology in class takes up too much time.	2	8%	6	24%	6	24%	9	36%	2	8%
4. I think that technology can help me to learn new things.	4	16%	16	64%	4	16%	1	4%	0	0%
5. Technology intimidates me.	0	0%	0	0%	1	4%	13	52%	11	44%
6. Students should know how to use technology in class.	4	16%	13	52%	8	32%	0	0%	0	0%
7. I would be a better learner if I knew how to use technology properly.	0	0%	6	24%	9	36%	6	24%	4	16%
8. I'm very confident when it comes to working with technology at home/at school.	7	28%	4	16%	11	44%	3	12%	0	0%
9. I want to learn more about using technology at home/at school.	1	4%	8	32%	8	32%	8	32%	0	0%
10. I believe that I can improve my language skills using the benefits of the Internet.	4	16%	7	28%	9	36%	4	16%	1	4%
11. Using technology in learning languages is not necessary.	0	0%	4	16%	9	36%	9	36%	3	12%
12. Technology breaks down too often to be of very much use.	4	16%	7	28%	4	16%	8	32%	2	8%
I use technology in English:										
To prepare home assignments (e.g. projects, web quests..).	1	4%	8	32%	10	40%	4	16%	2	8%
To practice (e.g. online courses, online dictionaries..).	2	8%	8	32%	5	20%	8	32%	2	8%
To read (e.g. newspapers, articles, blogs..).	3	12%	12	48%	4	16%	3	12%	3	12%
To watch movies/listen to music.	16	64%	9	36%	0	0%	0	0%	0	0%
To use social networks/chat with friends.	6	24%	11	44%	2	8%	5	20%	1	4%
To have fun (e.g. computer games..)	2	8%	4	16%	2	8%	13	52%	4	16%
In class, I learn better through:										
Lecture/Teacher talk.	7	28%	16	64%	2	8%	0	0%	0	0%
Question & Answer.	1	4%	10	40%	9	36%	4	16%	1	4%
Teacher led whole class discussion.	4	16%	15	60%	4	16%	2	8%	0	0%
Free flowing whole class discussion.	3	12%	11	44%	5	20%	5	20%	1	4%
Individual assignments.	2	8%	12	48%	7	28%	4	16%	0	0%
Watching a video/film.	9	36%	14	56%	2	8%	0	0%	0	0%
Using the computer.	3	12%	7	28%	8	32%	7	28%	0	0%
White/blackboard/LIM.	5	20%	11	44%	7	28%	2	8%	0	0%
Drama/Roleplay.	6	24%	7	28%	5	20%	7	28%	0	0%
Dictation/writing.	4	16%	10	40%	4	16%	6	24%	1	4%
Games/Other.	4	16%	8	32%	12	48%	0	0%	1	4%

Appendix I: *B*'s "Technology In the Classroom" responses.

Attitudes to technology:	SA		A		U		D		SD	
1. I enjoy using technology.	5	20%	12	48%	5	20%	2	8%	1	4%
2. I avoid using technology when I can.	1	4%	3	12%	5	20%	13	52%	3	12%
3. I think using technology in class takes up too much time.	3	12%	8	32%	7	28%	7	28%	0	0%
4. I think that technology can help me to learn new things.	1	4%	17	68%	6	24%	0	0%	1	4%
5. Technology intimidates me.	1	4%	2	8%	1	4%	13	52%	8	32%
6. Students should know how to use technology in class.	5	20%	16	64%	4	16%	0	0%	0	0%
7. I would be a better learner if I knew how to use technology properly.	2	8%	8	32%	5	20%	7	28%	3	12%
8. I'm very confident when it comes to working with technology at home/at school.	2	8%	8	32%	10	40%	3	12%	2	8%
9. I want to learn more about using technology at home/at school.	2	8%	10	40%	6	24%	6	24%	1	4%
10. I believe that I can improve my language skills using the benefits of the Internet.	9	36%	8	32%	4	16%	3	12%	1	4%
11. Using technology in learning languages is not necessary.	0	0%	6	24%	5	20%	7	28%	7	28%
12. Technology breaks down too often to be of very much use.	11	44%	8	32%	3	12%	2	8%	1	4%
I use technology in English:										
To prepare home assignments (e.g. projects, web quests..).	4	16%	16	64%	2	8%	2	8%	1	4%
To practice (e.g. online courses, online dictionaries..).	6	24%	7	28%	5	20%	6	24%	1	4%
To read (e.g. newspapers, articles, blogs..).	6	24%	7	28%	4	16%	6	24%	2	8%
To watch movies/listen to music.	18	72%	7	28%	0	0%	0	0%	0	0%
To use social networks/chat with friends.	7	28%	7	28%	4	16%	3	12%	4	16%
To have fun (e.g. computer games..)	4	16%	4	16%	6	24%	5	20%	6	24%
In class, I learn better through:										
Lecture/Teacher talk.	8	32%	15	60%	2	8%	0	0%	0	0%
Question & Answer.	2	8%	9	36%	11	44%	3	12%	0	0%
Teacher led whole class discussion.	8	32%	11	44%	4	16%	2	8%	0	0%
Free flowing whole class discussion.	3	12%	10	40%	6	24%	5	20%	1	4%
Individual assignments.	1	4%	11	44%	9	36%	4	16%	0	0%
Watching a video/film.	6	24%	13	52%	3	12%	2	8%	1	4%
Using the computer.	1	4%	6	24%	8	32%	8	32%	2	8%
White/blackboard/LIM.	4	16%	12	48%	7	28%	1	4%	1	4%
Drama/Roleplay.	2	8%	11	44%	8	32%	3	12%	1	4%
Dictation/writing.	0	0%	1	4%	8	32%	10	40%	6	24%
Games/Other.	3	12%	8	32%	9	36%	3	12%	2	8%

Appendix J: *C*'s "Technology In the Classroom" responses.

Attitudes to technology: C		SA		A		U		D		SD
1. I enjoy using technology.	9	40.9%	10	45.5%	2	9.1%	0	0%	1	4.5%
2. I avoid using technology when I can.	1	4.5%	3	13.6%	2	9.1%	12	54.5%	4	18.2%
3. I think using technology in class takes up too much time.	3	13.6%	8	36.4%	6	27.3%	4	18.2%	1	4.5%
4. I think that technology can help me to learn new things.	6	27.3%	1	4.5%	14	63.6%	1	4.5%	0	0%
5. Technology intimidates me.	1	4.5%	1	4.5%	1	4.5%	11	50%	8	36.4%
6. Students should know how to use technology in class.	10	45.5%	11	50%	1	4.5%	0	0%	0	0%
7. I would be a better learner if I knew how to use technology properly.	6	27.3%	9	40.9%	2	9.1%	5	22.7%	0	0%
8. I'm very confident when it comes to working with technology at home/at school.	4	18.2%	8	36.4%	6	27.3%	3	13.6%	1	4.5%
9. I want to learn more about using technology at home/at school.	5	22.7%	9	40.9%	3	13.6%	3	13.6%	2	9.1%
10. I believe that I can improve my language skills using the benefits of the Internet.	11	50%	10	45.5%	0	0%	0	0%	1	4.5%
11. Using technology in learning languages is not necessary.	1	4.5%	1	4.5%	3	13.6%	11	50%	6	27.3%
12. Technology breaks down too often to be of very much use.	4	18.2%	7	31.8%	5	22.7%	5	22.7%	1	4.5%
I use technology in English:										
To prepare home assignments (e.g. projects, web quests..).	5	22.7%	13	59.1%	2	9.1%	2	9.1%	0	0%
To practice (e.g. online courses, online dictionaries..).	3	13.6%	12	54.5%	3	13.6%	4	18.2%	0 –	0%
To read (e.g. newspapers, articles, blogs..).	6	27.3%	13	59.1%	2	9.1%	0	0%	1	4.5%
To watch movies/listen to music.	16	72.7%	6	27.3%	0	0%	0	0%	0	0%
To use social networks/chat with friends.	11	50%	7	31.8%	3	13.6%	1	4.5%	0	0%
To have fun (e.g. computer games..)	8	36.4%	6	27.3%	3	13.6%	4	18.2%	1	4.5%
In class, I learn better through:										
Lecture/Teacher talk.	1	4.5%	18	81.8%	3	13.6%	0	0%	0	0%
Question & Answer.	4	18.2%	4	18.2%	6	27.3%	8	36.4%	0	0%
Teacher led whole class discussion.	5	22.7%	9	40.9%	4	18.2%	4	18.2%	0	0%
Free flowing whole class discussion.	5	22.7%	8	36.4%	5	22.7%	3	13.6%	1	4.5%
Individual assignments.	2	9.1%	13	59.1%	5	22.7%	2	9.1%	0	0%
Watching a video/film.	8	36.4%	10	45.5%	2	9.1%	1	4.5%	1	4.5%
Using the computer.	4	18.2%	8	36.4%	5	22.7%	5	22.7%	0	0%
White/blackboard/LIM.	6	27.3%	9	40.9%	5	22.7%	2	9.1%	0	0%
Drama/Roleplay.	5	22.7%	10	45.5%	2	9.1%	4	18.2%	1	4.5%
Dictation/writing.	1	4.5%	3	13.6%	5	22.7%	7	31.8%	6	27.3%
Games/Other.	3	13.6%	5	22.7%	6	27.3%	6	27.3%	2	9.1%

Appendix K: *A, B* and *C*'s "Technology In the Classroom" responses.

Attitudes to technology: *A, B, C.*	SA		A		U		D		SD	
1. I enjoy using technology.	22	30.5%	35	48.6%	10	13.9%	3	4.2%	2	2.8%
2. I avoid using technology when I can.	4	5.5%	8	11.1%	10	13.9%	38	52.8%	12	16.7%
3. I think using technology in class takes up too much time.	8	11.1%	22	30.5%	19	26.4%	20	27.8%	3	4.2%
4. I think that technology can help me to learn new things.	11	15.3%	34	47.2%	24	33.3%	2	2.8%	1	1.4%
5. Technology intimidates me.	2	2.8%	3	4.2%	3	4.2%	37	51.3%	27	37.5%
6. Students should know how to use technology in class.	19	26.4%	40	55.5%	13	18.1%	0	0%	0	0%
7. I would be a better learner if I knew how to use technology properly.	8	11.1%	23	32%	16	22.2%	18	25%	7	9.7%
8. I'm very confident when it comes to working with technology at home/at school.	13	18%	20	27.8%	27	37.5%	9	12.5%	3	4.2%
9. I want to learn more about using technology at home/at school.	8	11.1%	27	37.5%	17	23.6%	17	23.6%	3	4.2%
10. I believe that I can improve my language skills using the benefits of the Internet.	24	33.3%	25	34.7%	13	18.1%	7	9.7%	3	4.2%
11. Using technology in learning languages is not necessary.	1	1.4%	11	15.3%	17	23.6%	27	37.5%	16	22.2%
12. Technology breaks down too often to be of very much use.	19	26.4%	22	30.5%	12	16.7%	15	20.8%	4	5.5%
I use technology in English:										
To prepare home assignments (e.g. projects, web quests..).	10	13.9%	37	51.4%	14	19.4%	8	11.1%	3	4.2%
To practice (e.g. online courses, online dictionaries..).	11	15.3%	27	37.5%	13	18%	18	25%	3	4.2%
To read (e.g. newspapers, articles, blogs..).	15	20.8%	32	44.4%	10	13.9%	9	12.5%	6	8.3%
To watch movies/listen to music.	50	69.4%	22	30.6%	0	0%	0	0%	0	0%
To use social networks/chat with friends.	24	33.3%	25	34.7%	9	12.5%	9	12.5%	5	7%
To have fun (e.g. computer games..)	14	19.4%	14	19.4%	11	15.3%	22	30.6%	11	15.3%
In class, I learn better through:										
Lecture/Teacher talk.	16	22.2%	49	68.1%	7	9.7%	0	0%	0	0%
Question & Answer.	7	9.7%	23	32%	26	36.1%	15	20.8%	1 –	1.4%
Teacher led whole class discussion.	17	23.6%	35	48.6%	12	16.7%	8	11.1%	0	0%
Free flowing whole class discussion.	11	15.3%	29	40.3%	16	22.2%	13	18%	3	4.2%
Individual assignments.	5	7%	36	50%	21	29.1%	10	13.9%	0	0%
Watching a video/film.	23	32%	37	51.3%	7	9.7%	3	4.2%	2	2.8%
Using the computer.	8	11.1%	21	29.2%	21	29.2%	20	27.8%	2	2.8%
White/blackboard/LIM.	15	20.8%	32	44.4%	19	26.4%	5	7%	1	1.4%
Drama/Roleplay.	13	18.1%	28	38.9%	15	20.8%	14	19.4%	2	2.8%
Dictation/writing.	5	7%	14	19.4%	17	23.6%	23	32%	13	18%
Games/Other.	10	13.9%	21	29.1%	27	37.5%	9	12.5%	5	7%

Appendix L: A, B and C's Strong, Mild and Neutral Responses

A

	SA		A		U		D		SD	
PLSPQ	143	19%	255	34%	213	28,4%	101	13,5%	38	5,1%
TIC	114	15,7%	259	35,7%	163	22,5%	145	20%	44	6,1%
Total	257	17,4%	514	34,8%	376	25,5%	246	16,7%	82	5,6%

	ER		MR		NR	
PLSPQ	181	24,1%	356	47,5%	213	28,4%
TIC	158	21,8%	404	55,7%	163	22,5%
Total	339	23%	760	51,5%	376	25,5%

B

	SA		A		U		D		SD	
PLSPQ	131	17,5%	283	37,7%	197	26,3%	118	15,7%	21	2,8%
TIC	125	17,2%	261	36%	157	21,7%	126	17,4%	56	7,7%
Total	256	17,4%	544	36,9%	354	24%	244	16,5%	77	5,2%

	ER		MR		NR	
PLSPQ	152	20,2%	401	53,5%	197	26,3%
TIC	181	24,9%	387	53,4%	157	21,7%
Total	333	22,6%	788	53,4%	354	24%

C

	SA		A		U		D		SD	
PLSPQ	100	15,2%	260	39,4%	174	26,4%	96	14,5%	30	4,5%
TIC	154	24,1%	232	36,4%	106	16,6%	108	16,9%	38	6%
Total	254	19,6%	492	37,9%	280	21,6%	204	15,7%	68	5,2%

	ER		MR		NR	
PLSPQ	130	19,7%	356	53,9%	174	26,4%
TIC	192	30,1%	340	53,3%	106	16,6%
Total	322	24,8%	696	53,6%	280	21,6%

A, B and C

	SA		A		U		D		SD	
PLSPQ	374	17,3%	798	37%	584	27%	315	14,6%	89	4,1%
TIC	393	18,8%	752	36%	426	20,4%	379	18,2%	138	6,6%
Total	767	18%	1550	36,5%	1010	23,8%	694	16,3%	227	5,4%

	ER		MR		NR	
PLSPQ	463	21,5%	1113	51,5%	584	27%
TIC	531	25,4%	1131	54,2%	426	20,4%
Total	994	23,4%	2244	52,8%	1010	23,8%

SA: Strongly Agree; PLSPQ: Perceptual Learning Style Preference Questionnaire;

A: Agree; TIC: Technology in the Classroom Questionnaire;

U: Undecided; ER: Extreme Responses (sum of SA and SD);

D: Disagree; MR: Moderate Responses (sum of A and D);

SD: Strongly Disagree; NR: Neutral Responses (U).

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