Identifying Foreign Language Learning Styles in Spanish Undergraduate Students

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Identifying Foreign Language Learning Styles in Spanish Undergraduate Students. *This article presents the findings of a study on the identification and perception of learning styles conducted among first-year students (n=58) reading for a degree in English Studies at a Spanish university. The data were gathered from three instruments that measure learning styles – Barbe and Milone's Sensory Modality Strength Assessment (1981), Gregorc's Mind Styles Model (1984) and Keirsey's Temperament Type Sorter (1998) – as well as an opinion questionnaire that determines the value the students perceived in identifying their own learning styles. Findings indicated strong visual learning preferences among participants as well as a presence of Concrete Sequential, Guardian and Idealist types. A low percentage of Kinesthetic students was also found. Favorable attitudes towards learning styles' awareness were encountered whilst previous low exposure to learning styles inventories was identified. The implications for tertiary education regarding learning styles' identification as an essential procedure in the learning process are discussed.*
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Key words: *Foreign Language Learning; Learning Styles; Temperament Type Sorter; Sensory Modality Strength Assessment; Mind Styles Model*

Anotácia: Zisťovanie štýlov učenia sa cudzieho jazyka u španielskych vysokoškolských študentov. *Článok prináša zistenia z výskumu identifikácie a percepcie učebných štýlov u študentov prvého ročníka (n = 58) študijného programu Anglické štúdie na jednej španielskej univerzite. Dáta boli získané za pomoci troch výskumných nástrojov: Sensory Modality Strength Assessment (Barbe, Milone, 1981), Mind Styles Model (Gregors, 1984) a Temperament Type Sorter (Keirsey, 1998). Študentom bol tiež zadaný dotazník zisťujúci, ako si vážia zistenia o ich vlastnom učebnom štýle. Zistila sa preferencia vizuálneho učenia sa, ale aj isté zastúpenie konkrétno-sekvenčného, ochranárskeho a idealistického štýlu učenia sa. Študenti s preferenciou kinestetického štýlu učenia sa vyskytli len v malom počte. Študenti pozitívne oceňovali možnosť spoznať svoj vlastný učebný štýl, pretože dovtedy ho nepoznali, ani si ho neuvedomovali. Aplikačné závery výskumu zdôrazňujú potrebu diagnostikovania učebného štýlu študentov ako dôležitého komponentu učebného procesu.*
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Kľúčové slová: *Učenie sa cudzieho jazyka; učebné štýly; Keirseyho nástroj na identifikáciu temperamentu; výskumné nástroje na zisťovanie učebných štýlov*

Introduction

Research on learning styles has garnered widespread recognition in the fields of psychology and education in recent years (Coffield, et al., 2004; Simonelli, 2004). Learning styles are closely related to preferred methods for processing information and generally refer to personality, cognitive style and sensory modes (Boyd, Murphey, 2004). However, cognitive styles have also been recently related to the characteristics of the learning environment (Bedford, 2006). As a result, there are many ways to classify learning styles (Dunn, Griggs, 2000) and many learning styles inventories, each with its own theoretical conceptualization of the field. The field of second language acquisition also holds many learning style classifications such as multiple intelligences, field dependence/independence or perception (Skehan, 1998).

More recently, knowledge of the different ways information is processed has been linked to improved learning episodes. Indeed, Gardner (2006) claimed for a strong relationship between attitudes and motivation with achievement in the learning of a second language. Moreover, attempts have been made to relate the identification of learning styles with instruction techniques (Tomlison, 2005; Wormeli, 2007), alleging that this may significantly boost learning. Additionally, many claims have been made to develop teaching practices which allow for a match between students and teachers' learning styles preferences. Cavanagh and Coffin (2009) reported on a study which provided evidence on learning maximization by matching students' preferred learning styles with instructors' styles.

However, consistent evidence is lacking on whether the teaching of learning styles through self-identification inventories is an extended practice in higher education contexts in Spain. In some educational settings, learning styles inventories have primarily been used to recognize cultural diversity within the classroom (De Vita, 2001). For instance, Joy and Kolb (2009) carried out a study which aimed at analyzing the role culture holds in the way individuals learn. Furthermore, not enough evidence has been found on identifying learning styles and improvement in learning episodes (Stahl, 2002). Although studying student learning styles has already been investigated in various disciplines (Alfonseca, et al., 2006), more data among Spanish foreign language learners is needed.

Thus, the objective of this paper is twofold. First, it aims to describe a class-group of Spanish first year university students' preferred learning styles, which were discovered through the use of learning style assessments by Barbe and Milone (1981), Gregorc (1984) and Keirsey (1998). Second, it aims to observe how undergraduate students perceive the identification of their learning styles. Hence, the study addresses the following research questions:

(1) What are the class-group Spanish EFL undergraduate foreign language students' learning styles according to the learning styles inventories by Barbe and Milone (1981), Gregorc (1984) and Keirsey (1998)?
(2) What are the class-group Spanish EFL undergraduate students' reactions to using the learning styles inventories by Barbe and Milone (1981), Gregorc (1984) and Keirsey (1998) in the EFL classroom?

To this end, an experimental study was conducted at the University of the Balearic Islands (UIB) in Palma de Mallorca, Spain, in which the three above-mentioned learning style assessments and an opinion questionnaire to determine students' perceptions about the identification of individual learning styles were administered to undergraduate students in the English Studies program.

Method

Participants

The sample used for this study comprised a total of 58 first-year students in the English Studies program at the University of the Balearic Islands (UIB) in Palma de Mallorca, Spain. There were 49 female informants and 9 male subjects. The sample was largely formed by females (84,4%), representing the greatest part of the student body in their degree. The participants' ages ranged between 18 and 20 (M = 18.6).

The English Studies degree at the UIB consists in 240 credits spread over a 4-year program made up of five or six core subjects a year. Most subjects deal with the analysis of the English language as well as a description of the English literature, culture and linguistics. The general linguistic and cultural issues related to the target language are covered from a theoretical and practical perspectives aiming at shaping future professionals to be devoted either to education, investigation, translation, linguistic support or communication media, among others. The aim of the classroom sessions is to introduce the students to course content as well as to spur reflection on a number of issues related to linguistic and literary content. Generally, an inductive methodology is used to introduce the basic concepts of the syllabi and interactive approaches are applied. Special attention is given to the practice of the four skills - reading, writing, listening and speaking - in the foreign language. Theory classes are generally taught to the whole-group class, while practical classes are taught to medium or small groups. Tasks are based on an active and communicative methodology focused on project and group work. Assessment is carried out by means of written exams which test students' theoretical and practical knowledge of content-related issues in the curriculum as well as by writing assignments, projects and essays.

Instruments

In order to determine the participants' learning styles and provide a full picture of their sensory, mind and temperament modalities, three different learning styles inventories - Barbe and Milone's *Sensory Modality Strength Assessment* (1981), Gregorc's *Mind Styles Model* (1984) and Keirsey's *Temperament Type Sorter* (1998) - were administered. All three of the assessments are self-scoring.

Barbe and Milone's *Sensory Modalities Strength Assessment* focuses on visual, auditory and kinesthetic ways of processing information, which mainly refer to individuals who may exhibit a preference for one modality and depend on their sense of sight, aural or movement respectively. It consists of ten incomplete statements with three possible phrases and it measures learners' modality preferences for processing information.

Gregorc's *Mind Styles Model* examines two learning patterns: Concrete vs. Abstract and Sequential vs. Random, classified into four learning style: (1) Concrete Sequentials are accurate, factual and organized individuals and prefer structure, lecture and tradition; (2) Abstract Sequentials are analytic, thorough and systematic; (3) Abstract Random students are spontaneous, imaginative and perceptive, and (4) Concrete Random are curious, instinctive and problem solvers. The inventory consists of ten groups of four words each which are ranked by participants from 4 high to 1 low in terms of value and importance to them, then summarized by line and columns, with the highest sum indicative of mind style preference.

Lastly, Keirsey's *Temperament Type Sorter* assessment analyses the concept of temperament in life's main areas and distinguishes among Guardians, Artisans, Idealists and Rationals. Guardians are practical and concerned individuals who have a natural talent in managing, and Artisans are usually realistic and spontaneous and excel in arts and master action skills. While Idealists tend to be enthusiastic and concerned with personal development so as to attain wisdom, Rationals are skeptical and pragmatic focused on problem solving analyses. The instrument consists of 70 sentence starters with four possible completers.

Additionally, participants were asked to answer an opinion questionnaire to determine the perceived value in identifying one's learning style. The questionnaire consisted of a total of four questions. The first two questions had to be answered by means of a Likert scale and enquired the informants about their knowledge of their learning style previous to having worked with the three learning style inventories as well as their liking having identified their own learning style. Questions three and four from the questionnaire included two different parts. First, there was a Likert scale type of question which enquired about the students' opinion on the learning style inventories'

usefulness for students and teachers. Finally, the questionnaire included two open-ended questions in which respondents had to state reasons for having chosen one option from the Likert scale in the first part of the question.

Treatment

The three learning styles assessments were administered in English, the participants' target language. All students in the sample had a B2, a vantage or upper intermediate level, of English proficiency according to the Common European Framework of Reference for languages. Vocabulary questions were raised during inventories' completion, since some of the tests included colloquial expressions. Thus, the researcher's task was to check that the lexis was well understood by the participants and ensure that the answering process was clear.

The questionnaire tapping into the learners' perceived value in identifying their learning styles was written in English; however, students could answer the questions either in English or in their own first languages (Spanish or Catalan). As for procedure, first, students completed the three learning styles inventories and then answered the questionnaire. Participants were taught how to score each test for themselves. All the test scores recorded by the sample were then checked by the researcher. All in all, students worked during five one-hour sessions on identifying their own learning styles. General group discussions on learning styles were held after tests' self scoring.

Analysis

To ensure reliability, the three learning styles inventories and the questionnaire tapping into students' perceived value in identifying their learning styles were piloted prior to their administration to avoid comprehension or interpretation problems. These instruments had been used in previous research with satisfactory results (Ehle, Salazar, 2008), which on the whole indicated the internal consistency of the results across all the items on each of the three different inventories, pointing to most tests' items measuring similar constructs on how the respondents perceived their way of learning. To guarantee validity, items in the opinion questionnaire were carefully worded to ensure that they measured tertiary learners' perceptions to having identified their learning styles.

The three inventories: Barbe and Milone's *Sensory Modality Strength Assessment* (1981), Gregorc's *Mind Styles Model* (1984) and Keirsey's *Temperament Type Sorter* (1998) were chosen because they have been proved to be suitable to gather data on the way individuals receive and process information. A chi-square contrast was run for each individual learning style inventory as well as among the three inventories by Barbe and Milone (1981),

Gregorc (1984) and Keirsey (1998), with significance being set at the 0.05 level.

Results

This section presents the quantitative and the qualitative results obtained from the three learning style inventories – Barbe and Milone's *Sensory Modality Strength Assessment* (1981), Gregorc's *Mind Styles Model* (1984) and Keirsey's *Temperament Type Sorter* (1998) – and from the opinion questionnaire to determine the perceived value of identifying one's learning style administered to Spanish undergraduate students. No significant differences were found between all the different variables analyzed in the three learning style inventories and gender, mainly due to the lower number of male subjects (15.5%) who participated in the present study.

As shown in Figure 1 below results corresponding to Barbe and Milone's learning style inventory show that most students (female 69% and male 56%) processed information visually. A lower percentage of the respondents (female 22% and male 33%) processed information auditorily and a much lower percentage (female 8% and male 11%) processed information kinesthetically. Thus, most students were visual, signaling that they are meticulous, they visualize types and scenes and that they organize their thoughts by writing them down.

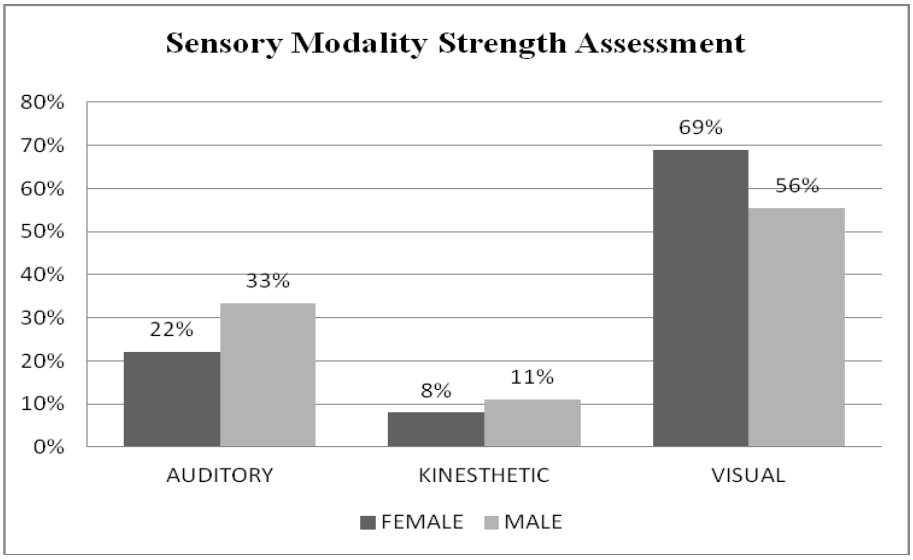

Figure 1: **Barbe and Milone's *Sensory Modality Strength Assessment* (1981)**

Since the p-value is equal or higher than 0.10 (see Table 1 below), we cannot reject the hypothesis that the rows and columns are independent. As a result, the row observed in a particular case may not be related to its column.

Table 1: **Chi-square contrast Barbe and Milone's Sensory Modality Strength Assessment (1981)**

Chi-square contrast		
Chi-square	GL	P-value
0,69	2	0,7083

The results related to Gregorc's mind style test indicate that the Concrete Sequential mind style accounted for most of the sample (female 51%), as can be seen in Figure 2 below, and that the remainder of the female sample was split among the other mind styles, i.e., Concrete Random, Abstract Sequential and Abstract Random, with a higher percentage of these being Concrete Random students (20%). Male students in this study were mainly Abstract Sequential (44%) and Concrete Random (33%). These results indicate that most female participants in this study preferred structure lecture, tradition and routine while most male participants preferred rational and analytical type of learning activities.

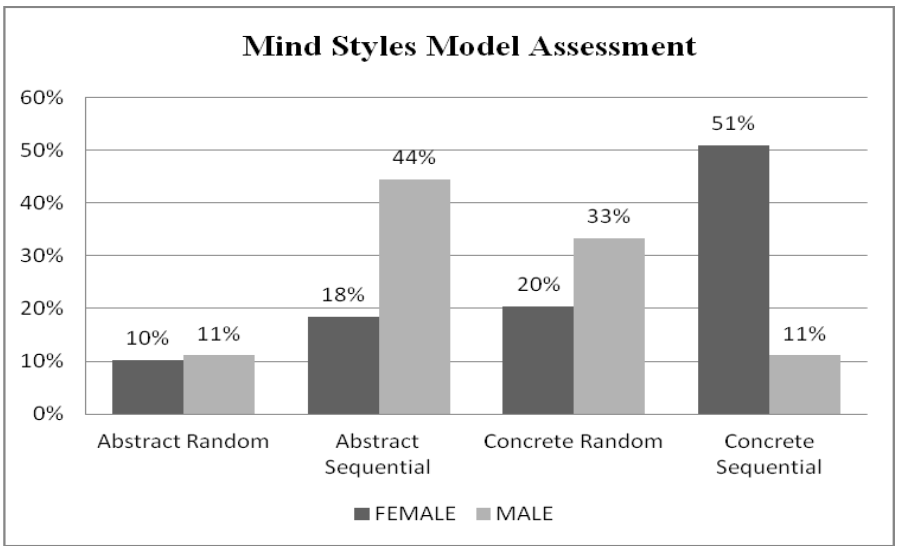

Figure 2: **Gregorc's *Mind Styles Model Assessment* (1984)**

From the chi-square test (see Table 2 below) the hypothesis that the row and column selected are independent is rejected. As can be seen in Table 3 below significant differences among the four categories, CS, CR, AS and AR are shown as the p-value is 0,163467308.

Table 2: **Chi-square contrast Gregorc's *Mind Styles Model Assessment* (1984)**

Chi-square contrast		
Chi-square	GL	P-value
2,71	3	0,4380

Table 3: **Chi-square contrast for CS, CR, AS and AR**

Concrete Sequential Concrete Random Abstract Sequential Abstract Random				
Chi-square contrast				
Inferior limit	Superior limit	Observed frequency	Expected frequency	Chi-square
Smaller or equal	1,5	35	17,75	16,76
1,5	2,5	7	17,75	6,51
2,5	3,5	9	17,75	4,31
3,5		20	17,75	0,29
Chi-square =27,8732 P-value= 0,163467308				

Findings corresponding to Keirsey's learning style inventory indicate that most participants had a Guardian and an Idealist temperament (female 37% and 35 respectively), while the rest were primarily Rational or Artisans (see Figure 3 below). Male respondents in this study however were mainly Idealists, Artisans or Rationals, while Guardian male students were non-existent. These results signal that most female participants were cooperative and concrete while most male learners were skilled at diplomatic integration, tactical variation and abstract learning.

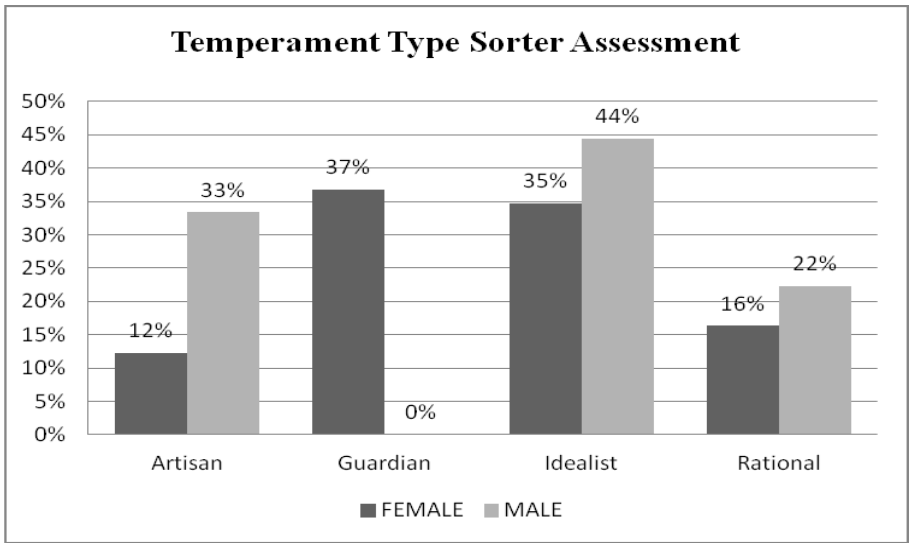

Figure 3: **Keirsey's *Temperament Type Sorter Assessment* (1998)**

As shown in Table 4 below, the row observed in a particular case cannot be related to its column. Global results are also significant as the p-value is 0,001 (see Table 5 below).

Table 4: **Chi-square contrast Keirsey's *Temperament Type Sorter Assessment* (1998)**

Chi-square contrast		
Chi-square	GL	P-value
0,07	3	0,9950

Table 5: **Chi-square contrast A, I, G and R**

Artisan Idealist Guardian Rational				
Chi-square contrast				
Inferior limit	Superior limit	Observed frequency	Expected frequency	Chi-square
Smaller or equal	1,5	12	17,75	1,86
1,5	2,5	39	17,75	24,44
2,5	3,5	14	17,75	0,79
3,5		6	17,75	7,78
Chi-square= 35,8732 P-value= 0,001				

No significant correlations between Spanish EFL undergraduate students learning styles' results on the learning styles inventories by Keirsey (1998),

Barbe and Milone (1981) and Gregorc (1984) were found, except for the characteristics of CR and kinesthetic. A correlation of 0,298 is found between CR and Kinesthetic informants, which is significant at the p-value of 0,0061.

Participants' answers to the questionnaire that determines the perceived value of identifying one's learning style unveiled that almost half the students had had only vague notions about their learning styles and approximately one-fourth of the sample had known very little or nothing about how they learned, as Figure 4 shows. Thus, exhaustive generalized knowledge of the students' own ways of processing information was lacking.

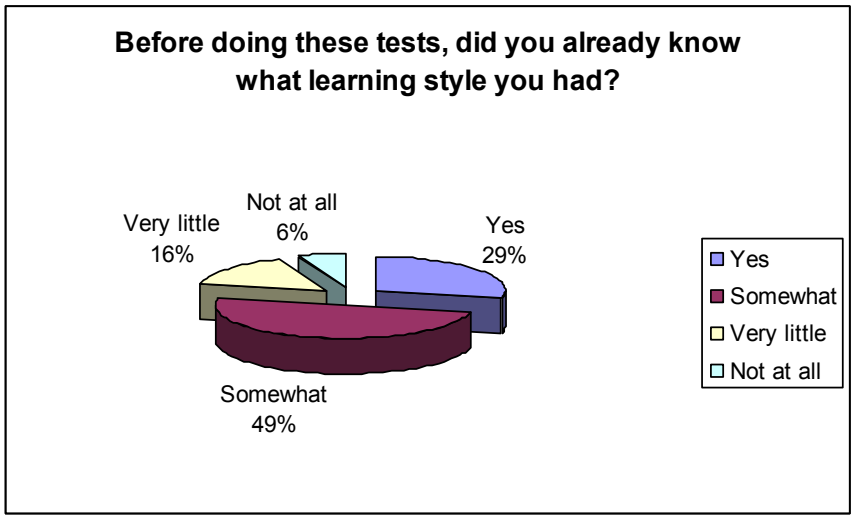

Figure 4: **Students' previous knowledge of their learning styles**

Additionally, while most participants exhibited unfamiliarity with learning styles measurements and superficial knowledge of their preferred learning mode acquired through informal estimations, they reportedly enjoyed having identified their learning styles through the inventories by Barbe and Milone, Gregorc and Keirsey (see Figures 5).

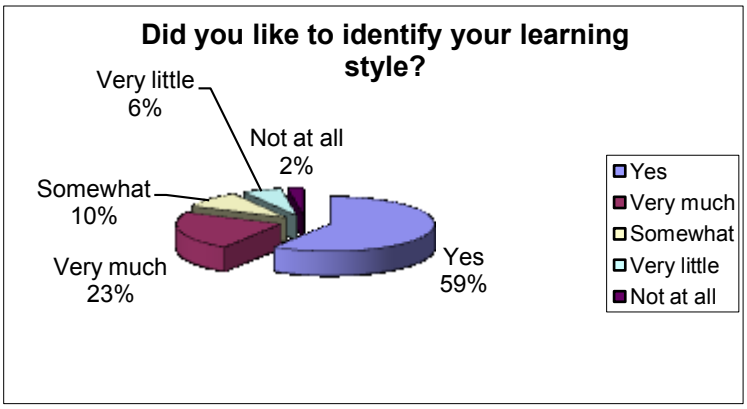

Figure 5: **Liking or disliking identifying one's learning style**

As regards the main reasons for most learners' positive response to learning styles identification, these relate to an awareness of their strengths as well as an improvement of their learning. The following quotation provides insight into this issue: "Now I know which learning style I can strengthen during the course in order to improve in a practical and effective way"[1] (Participant 61, female).

Similarly, most students responded positively to the usefulness of having identified their learning styles (see Figure 6 below).

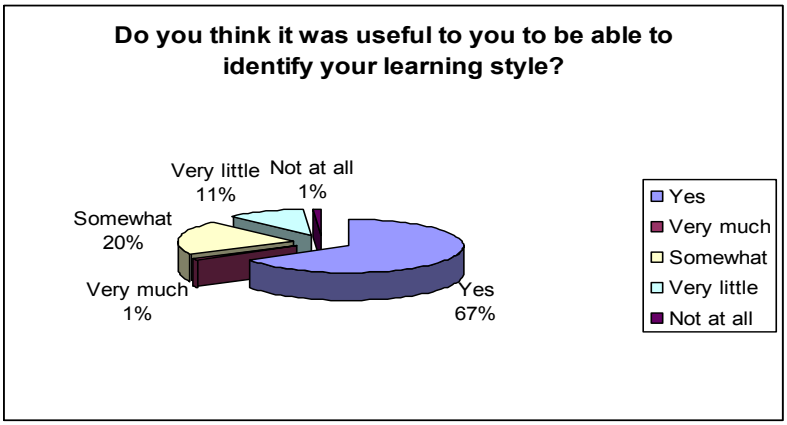

Figure 6: **The usefulness of students knowing their own learning styles**

[1] 'Students' comments, which were written in English, the students' target language, have been included in their original version.

As for the reasons to finding learning styles identification useful, most participants expressed that this helped them to know more about themselves as well as to learn in a more efficient way. The following quotes reveal the usefulness students found in discovering their learning styles: "It has been useful because it is a way of identifying your own attitudes and learn how to use to exploit my qualities and improve my weaknesses" (Participant 54, male); "Because it makes me aware of certain aspects about the way I learn which I had not thought of before" (Participant 11, female); "Because now I know which is the best way for me to understand things" (Participant 6, female).

With regard to the teachers' usefulness of knowing their students' learning styles, most participants' answers were positive (see Figure 7), indicating that knowledge of students' learning styles was relevant information for instructors to have.

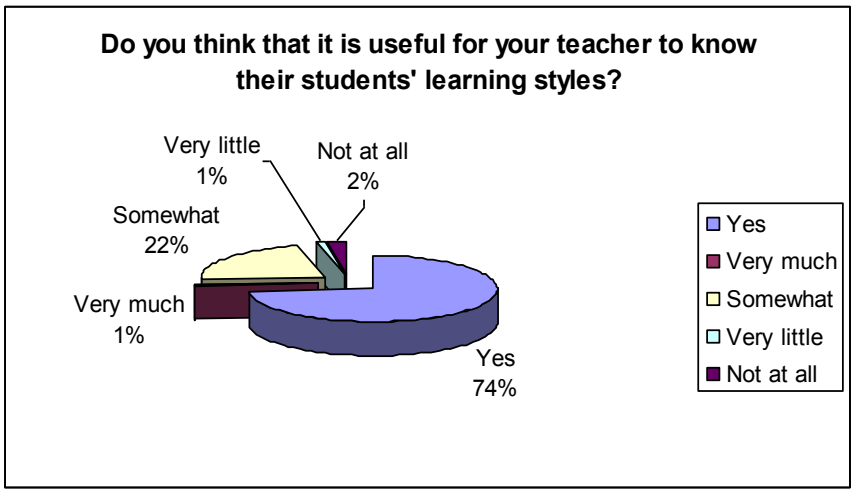

Figure 7: **The usefulness of teachers knowing their students' learning styles**

Most students put forward a range of reasons why they considered that teachers' knowledge of their students' learning styles was extremely positive for both teachers and students. The following quotes provide insight into how teachers might be able to present course content better and explain it more efficiently: "It is useful in order that the concepts are better taught to all students" (Participant 19, female); "Because if you know how your students learn it will be easier for you to teach them" (Participant 41, male).

Another reason put forward as regards usefulness of teachers' knowledge about student learning styles was the instructors' adoption of appropriate teaching methodologies. The following quotes illustrate this reflection: "It will

help the teacher avoid getting frustrated trying to force wrong ways of teaching" (Participant 58, female); "Because the teacher can better use the different methods depending on the characteristics of the class" (Participant 40, female).

Concerning how teacher knowledge of student learning styles is to students, most participants claimed that teachers would be able to better approach all students' needs, better academic performance could be reached and motivation to learn would be fostered. The following quotes illustrate this point: "Yes, because the teacher can approach better the student and adapt to his/her way of learning and do classes oriented to students" (Participant 17, female); "Because she will be able to do activities according to the students' learning styles and she can guide her students much better than if she doesn't know anything about their way of learning" (Participant 36, female); "Because it will help the teacher understand each student individually and she will give us material according to our needs" (Participant 52, female); "She can therefore prepare the class, materials and tools so as students can get the highest achievement" (Participant 47, female); "The teacher can modify the way she/he is teaching and make the class more enjoyable while we are learning and she/he can motivate their students" (Participant 4, female).

On the whole, data obtained from the opinion questionnaire revealed that most undergraduate students exhibited positive attitudes to unfolding their learning preferences through the inventories by Barbe and Milone, Gregorc and Keirsey. Identifying students' learning styles was reportedly useful to instructors so as to accommodate teaching methodology accordingly, equally reach all students, influence student achievement, and thus, motivate students.

Discussion

In the first place, this study has attempted to ascertain a class-group of first-year Spanish undergraduate students' learning styles by means of three instruments that measure learning styles - Barbe and Milone's *Sensory Modality Strength Assessment* (1981), Gregorc's *Mind Styles Model* (1984) and Keirsey's *Temperament Type Sorter* (1998). Second, the study used an opinion questionnaire to determine the students' perceptions of identifying their own learning styles.

In reply to the first research question, which enquired into the participants' learning styles, results on the Barbe and Milone (1981) inventory indicate that most undergraduate students in the English Studies degree program at the University of the Balearic Islands appear to be visual, signaling their preferences to learn either through images, demonstrations and descriptions. This is consistent with findings by Barbe and Milone (1982), who found that 30% of the population builds their knowledge bases primarily through visual

processing. The results of our study also reveal a low percentage of kinesthetic learners, which might due to their unfamiliarity to instruction types favoring natural discovery, not generally encouraged in Spanish tertiary contexts.

The results of the Gregorc's (1984) inventory show that the prevailing mind style among most Spanish foreign language students is Concrete Sequential, pointing to their learning preferences being characterized by structure, order, practicality, product-orientation and the literal use of meaning in language. These results may be due to earlier teaching influences on these students, namely traditional foreign language teacher-centered approaches (Krashen 1987; Ellis 2002; Radwan 2004), which may have shaped their favorite way to learn. Our findings are congruent with the results obtained by Gould and Caswell (2006) and Thompson et al. (2002,) who found Concrete Sequential to be the dominant mind style. Similarly, the findings by Gregorc (1984) revealed that the predominant mind-style group was also Concrete Sequential (40%).

The results of the Keirsey's (1998) inventory show that most students were also revealed to be Guardians and Idealists, which might be due to the participants' young age (M= 18.6) or the fact that most Idealists are good at teaching and counseling and in general, enroll in Humanities degrees, which may be the case of the subjects of this study. The results may also imply that these undergraduate teaching students have a utopian bent and horizons in their future, something that could be interpreted positively in today's materialistic society. Results also reveal a lower percentage of Rational and Artisan students. This may be because these inventories were administered to undergraduate students working towards a degree in the social sciences, such as a foreign language degree. These results should be interpreted within their context – English Studies – since the results might have been different if these learning style assessments had been administered to science students with a more rational learning style (A. Esa, et al. 2009). Our results are in line with those obtained by Keirsey (1998), who found that the Rational group accounted for 5% of the sample he analyzed. Nevertheless, the Idealist group in his study corresponded to the third group (8%).

The results have shown that there are no significant correlations between Spanish EFL undergraduate students learning styles' results on the learning styles inventories by Keirsey (1998), Barbe and Milone (1981) and Gregorc (1984) except for the Concrete Random and Kinesthetic students. Concrete Random students learn experientially stimulating environments featuring novelty and change and kinesthetic learners learn best when movement is involved and do well as performance, thus dimensions concerning movement and change could be interrelated. However, both Concrete Random and kinesthetic learning styles are the categories which display the lowest percentages in the present study. Thus, this result reveals that the three tests are

independent learning styles inventories which measure different aspects of information processing, all included under the vast term of learning styles.

With regard to the second research question, which tapped into the students' perceived value of identifying their learning styles, our findings reveal that before undergoing these assessments, most students were not familiar with the learning styles assessments by Barbe and Milone, Gregorc and Keirsey. Our findings are in line with Rausch (1996), who also yields evidence of students' lack of self-knowledge on learning preferences.

Our results also indicate that most participants enjoyed identifying their learning styles and considered that knowing the way in which they learn helped them to become better learners. Above all, most students considered it very useful for their teachers to know their students' learning styles, mainly because it would help instructors teach more efficiently, use more appropriate teaching methods and engage students' motivation for learning. Similar findings were obtained by Thomas and McKay (2010) who studied the positive relationship between instructors' awareness of their students' learning styles and classroom didactical resources' improvement. Equally, the findings by Lashley and Barron (2006) describe positive reflective teaching practices through the detection of students' learning needs. Additionally, our findings are in accordance with the results of Cavanagh and Coffin (2009) who claimed a learning outcome improvement when instructional material is matched to students' cognitive styles.

Concluding remarks

In sum, our study has shown that visual and Concrete Sequential styles predominate and that kinesthetic learners are less favored, which may reveal a need for more active, holistic methodological approaches within the context of higher education in Spain. Our findings also reveal that it is not very common for Spanish undergraduate students in the English Studies degree to identify or work with learning styles inventories in the classroom. Nevertheless, most participants displayed a positive attitude towards identifying and reflecting on their learning styles and found them very useful for both students and teachers.

All in all, the findings of this experimental study may have implications for undergraduate students and university instructors. Teachers should attempt to include more learning tasks that involve students in action such as simulations and group breakout sessions during the foreign language teaching processes so as to create more optimal learning environments. Further research includes not only making steady use of various learning styles inventories in tertiary education, but also exploiting information on student learning styles to promote self-knowledge and enhance weaker personality modes. Moreover, further

work should address how teaching practices are designed and tailored after an awareness of student learning styles has been garnered.

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