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PROMOTING AUTONOMOUS LEARNING THROUGH THE EDMODO PLATFORM, FLIPPED CLASSROOM AND LEARNING STYLES

PROMOCIÓN DEL APRENDIZAJE AUTÓNOMO A TRAVÉS DE LA PLATAFORMA EDMODO, LA METODOLOGÍA DE AULA INVERTIDA Y LOS ESTILOS DE APRENDIZAJE

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ABSTRACT

This paper presents the results of a mixed-approach study[4] whose overall objective sought to promote autonomous learning among English and French students from the bachelor's degree in Modern Languages course of study through a teaching strategy based on the Edmodo educational platform, designed from the theory of learning styles, and on the flipped classroom methodology. On one hand, the results show that students with active-intuitive learning style make progress in their levels of autonomy easily

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when technology plays a significant role in their learning process. On the other hand, reflective learners seem to make little progress in their autonomy levels since they do not feel identified with the flipped classroom methodology. Furthermore, it was evidenced that the level of autonomy of students participating in this study is 2 (investigation-intervention), which suggests –as provided by the psychological-evolutionary approach of autonomy– that levels of autonomy are not developed at a specific moment, but it is rather a process developed throughout the learning experience. For this reason, searching for strategies to strengthen the critical and research spirit of students and the appropriate use of ICT in education processes is of utmost importance.

KEYWORDS:

Autonomous Learning, Edmodo Platform, Flipped Classroom, Learning Styles

RESUMEN

El presente artículo de investigación presenta los resultados de un estudio de enfoque mixto, cuyo objetivo general buscó fomentar el aprendizaje autónomo de estudiantes de inglés y francés de licenciatura en lenguas modernas mediante una estrategia didáctica mediada por la plataforma educativa Edmodo y diseñada a partir de la teoría de estilos de aprendizaje y la metodología de aula invertida. Los resultados encontrados permitieron evidenciar que los estudiantes con estilo de aprendizaje activo-intuitivo pueden trascender más fácilmente en los niveles de autonomía cuando el uso de la tecnología juega un papel protagónico; por su parte, los estudiantes reflexivos, al no sentirse identificados con la metodología aula invertida, reflejan un progreso lento en su autonomía. De igual modo, fue posible evidenciar que los participantes de este estudio se encuentran en un nivel 2, intermedio, de autonomía (investigación-intervención), lo que sugiere, tal como se contempla desde el enfoque psicológico-evolutivo de la autonomía, que ésta no se construye en un determinado momento, sino más bien que es un proceso que se va desarrollando a lo largo de las experiencias de aprendizaje, de allí la importancia de continuar en la búsqueda de estrategias para el fortalecimiento del espíritu crítico e investigativo de los estudiantes y el uso apropiado de las TIC en los procesos educativos.

PALABRAS CLAVE:

aprendizaje autónomo, aula invertida, estilos de aprendizaje, plataforma Edmodo

INTRODUCTION

The current dynamics of society, and hence, the most recent pedagogical approaches, have emphasized the importance of achieving autonomy in learning. For this reason, studying individual differences has gained importance, given that it proposes self-recognition of cognitive, affective, and physiological characteristics, referred to as learning styles by Keefe (1988), which allows people to better cope with their learning process. In addition, the inclusion of new technologies in the field of education has raised great interest from the academic community in searching for new strategies that help to redefine pedagogical processes for a more integrating vision that meets the demands of our current society. In the field of teaching and learning foreign languages, this task has not been the exception and researchers have become interested in inquiring on the influence that new technologies has had in foreign language classrooms, highlighting the importance of generating educational approaches that imply new forms of teaching and learning (Loaiza, Cancino and Zapata, 2009; Cancino, 2018). As result, a mandatory task for professors and researchers in foreign language teaching has become continuing searching for strategies that

help to optimize recent educational paradigms created from the vertiginous rhythm upon which society is developing.

As mentioned above, the use of ICT, as a mediating learning tool, has been a core element for the conception of new pedagogical and methodological perspectives in the education field (Kukulska-Hulme, 2009), particularly within a context of bilingual teaching. In this sense, "flipped classroom" methodology, or *classe inversée,* has gained recognition (Torrecilla, 2018). In an educational context, and mainly at a university level, the development of autonomy in the learning process of students is a core issue –as evidenced in the "academic credit" system–. Thus, it is undoubtedly important and undeniably necessary to continue researching on pedagogic strategies that allow improving autonomy. In light of the aforementioned, this research addressed the following question:

How can we promote autonomous learning among Modern Language students by recognizing individual differences and the use of ICT and flipped-classroom methodology?

To have a clearer picture of the core elements of this research, we must first conceptualize them. First, autonomy is understood as the students' capacity to organize their own learning process in an intentional, conscious, explicit, and analytic manner (CVC, ELE dictionary). This concept is also assumed by Velásquez, Pérez and Parra (2016) as follows:

> […] the student's contextualized, integrating, personalized, and developing process of reflection to identify the goals established and the personal processes in the demands of each guided or self-elaborated learning task, from the self-recognition of the style and proposing learning strategies, values, managing technological resources and the necessary aids, critically analyzing and socializing the information processed to make pertinent decisions and transfer knowledge to the presentation and defense of a proposal to solve problems related with their own teaching-learning process. (pg. 36)

For this study, and particularly for the stage of analysis, it became relevant understanding the different perspectives on autonomy proposed by Schmenk (2010, cited in Burbat, 2016), and the levels of autonomy presented by Velásquez *et al*. (2016) in a foreign language setting.

For Schmenk, autonomy has been approached from different perspectives:

- From a *situational-technician perspective,* autonomy is merely seen as an amount of activities, where the learner is totally independent and the teacher does not evaluate the process, i.e. he/she is not involved in the evaluation.
- From a *pedagogical-didactic perspective*, autonomy is seen as a previous requisite to learning.
- From a *strategic-technician perspective,* autonomous learning is seen as the use of strategies and techniques by the learner to reach a determined learning objective.
- From a *constructivist view*, autonomy is considered as a natural state of the human being, and the role of the professor is determinant since he/she is responsible for designing and organizing didactic materials and activities.
- From a *psychological-evolutionary perspective,* autonomy is assumed as a life-long process based on experiences and self-recognition of one's own learning style.

Considering these perspectives, this study is supported by a constructivist vision of autonomy that recognizes that, in our culture, the teacher still has a great influence on the students (even at a university level), needing a guide to develop their own learning process. Bearing in mind this vision, the educational platform Edmodo was used. Class activities were organized using the flipped-classroom methodology according to students' learning styles. This study also considered the psychological-evolutionary perspective of autonomy, since it is important to recognize that, at a certain point, students need to be "detached" from the teacher and recognize their learning styles to subsequently find the best strategies to cope with their own learning process.

Taking into account the levels of autonomy that students can develop in their learning process, Velásquez *et al*. (2016) proposes the following levels: approximation-implication level, investigation-intervention level, and linguistic-didactic level. The first level is related to the awareness of what must be learnt, self-recognition of learning styles and strategies, and identification of linguistic and didactic strengths and weaknesses. The second level refers to the startup of theoretical knowledge through research skills, identification of areas to improve, and use of learning strategies, linguistic skills and resources to confront learning challenges. The third level is considered the upper rung of autonomy in which students have internalized the language knowledge, their learning strategies, and where they have developed their linguistic-communicative skills properly, and are capable of not only reflecting on what they learned, but also projecting a specific learning goal in a given context or situation.

Another concept that sheds light to this study was that of *learning styles*. Its most accepted definition by the academic community is that of Keefe (1988), who assumes them as the cognitive, affective, and physiological traits that serve as relatively stable indicators of how students perceive, interact, and respond to their learning environments. This classical concept integrates three types of traits or characteristics of the individual: 1) cognitive traits related to the way of structuring contents, forming and using concepts, interpreting information, solving problems, and selecting means of representing information; 2) affective traits, associated with the motivations, expectations, attitudes, beliefs; and 3) physiological traits linked to processes, such as the biotype and biorhythm that have to do with the response of organisms to the conditions of the external environment. Said traits will serve as relatively stable indicators of how students interact and respond to their learning environments.

In a more recent approach, Díaz (2017), in his doctoral thesis on learning styles in higher education, argues that students can approach learning from various approaches, including learning styles, which account for how they react to learning environments. However, in addition to the student's own reaction, other factors can lead to the configuration of a certain learning style, as a form of reaction to a teaching and learning situation. In this sense, this author considers that it is important to take into account the value that the student assigns to the knowledge, the traits of his personality and his general skills, which are little modifiable in the young adult in his university stage. However, it recognizes that some characteristics such as specific skills, self-confidence, interest, motivation and learning strategies, can be impacted by the university experience. In the same way, the person receives influences from the different sociocultural contexts in which he is immersed: from the family with its values and customs, through the school and its pedagogical conceptions, religion, work, idiosyncrasies, ideologies and cosmogony, etc., contexts that delineate and define to a large extent the

behaviors of individuals. In turn, factors that depend on the student, such as self-regulation, autonomy, study methods and learning styles have a great impact on the teaching and learning process, aspects that have been taken into account in the study reported in this article.

From the different models of learning styles, the Felder and Silverman (1988) model was chosen, whose questionnaire examines students' preferences regarding four dimensions of learning: type of information, sensory modality, learning progression, and information processing (Table 1).

Table 1. Learning Style Model by Felder and Silverman (1988).

Learning dimension	Learning styles	Description
Perception of information	Sensory – intuitive	In general, students prefer to perceive external information or sensitive through the sight, hearing, or through physical sensations; or they prefer to perceive it internally or intuitively through memories, ideas, readings, etc.
Reception of information	Visual – verbal	In general, students prefer to receive external information in visual formats (illustrations, diagrams, graphics, demonstrations, etc.) or they prefer to receive it in verbal formats (sounds, oral and written expression, formulae, symbols, etc.).
Progression in learning	Sequential – global	Students prefer to advance in their learning in a linear and ordered manner; they first see details of the whole image; or they prefer to do so globally, which requires an integral vision; they first see the whole image and then the details.
Use of information	Active – reflective	Students prefer to use information in tasks involving physical activities, interacting with the rest or applying what they have learned; or through individual reflection and introspection.

Concerning "Edmodo", platform selected for this study, Alarcón (2015) defines it as a social-educational platform, a virtual environment or specific tool that facilitates the creation of teaching activities on the web, destined for the exchange of materials between educators and students. In this sense, using this tool goes beyond the situational-technician approach to autonomy (Burbat, 2016). Edmodo seeks to create learning settings where the inclusion of technology contributes to a progressive development of autonomy (psychological-progressive approach) and to a broader and more significant construction of learning (constructivist approach). Thus, the election of the Edmodo platform meets such needs, given that, as an interactive platform, it motivates students to construct their own knowledge from the activities proposed by the professor, who guides the whole process by exemplifying, using authentic and varied material, and generating reflective spaces that can be transferred outside the classroom (Alonso, Morte and Almansa, 2015).

Finally, *flipped-classroom methodology* (*classe inversée)*, a concept of great tendency in the new era of education and technology, is defined by Akin (2016) and Pérez and Tejedor (2016) as a methodology that dedicates more classroom time to activities that imply practice, teamwork, and resolution of questions and problems, and uses a technological platform for the distribution of contents and talks. Santiago, Trabaldo, Kamijo

and Fernández (2015) estimated the following advantages of said resource:

- Inverts the traditional teaching model.
- Adapts to students' work rhythms.
- Enables students with comprehension difficulties to avail of the opportunity to repeat the topics as often as they require.
- Promotes social interaction and resolution of problems among students.
-

Thobois-Jacob, Christoffel and Marquet (2017) state that using the flipped classroom methodology must fully match the learning styles of each student because not all students find in this methodology an appropriate way of learning. Thus, students with an active and reflexive learning style appreciate the use of the flipped classroom, given that they find in this methodology an innovative way of learning, which – additionally – fosters team work and privileges the conceptualization of notions.

METHODOLOGY

Given the nature of this research, and by recognizing the benefits of mixed approaches and deeper understanding of a given area (Hoover and Krishnamurti, 2010), more evidence and confidence in the findings (Albert, Trochelman, Meyer and Nutter, 2009; Bryman, 2004; Caruth, 2013; Creswell and Plano Clark, 2011; Tashakkori and Creswell, 2008), and broader questions that lead to more insight (Creswell and Plano Clark, 2011), this research was conducted by using a mixed approach.

Table 2 provides a detailed description of the research design and the process undertaken. This model is adapted from Bryman (2004).

Table 2. Research Design and Procedures. Adapted from Bryman (2004).

Research design	Research approach
Theoretical paradigm	Explanatory, systematic approach Quantitative research. Using the Statistical Package (SPSS). Qualitative research. Using Atlas TI.
Methodology	Mixed approach, explanatory sequential approach (Creswell, 2013) where the quantitative phase is followed by the qualitative one and systematic approach.
Participants	43 University students: 20 of an English Class (6th semester) and 23 of a French class (10th semester). According to Burbat (2016), advanced levels will shed more light to the study of autonomy in foreign language classrooms.
Data Collection Method	Index of Learning Styles-ILS (Felder and Soloman, 1988[5]) and autonomy test Didactic sequence and virtual portfolio (to measure students' progress in each activity) Focus groups (interviews)
Ethical factors	Informed consent signed by every student. Data protection is ensured.

5 *Learning style test: https://www.webtools.ncsu.edu/learningstyles/*

Data analysis	Index of Learning Styles and autonomy test: SPSS software Virtual portfolio and Focus groups (interviews): ATLAS TI.
Validity, reliability	Validity of the ILS has been adequately supported (Felder and Spurling, 2005; Livesay, Dee, Nauman and Hites, L. S., 2002; van Zwanenberg, Wilkinson and Anderson, 2000; Zywno, 2003, cited in Platsidou and Metallidou, 2009), but reliability of the ILS is still in dispute (Felder and Spurlin, 2005, cited in Platsidou and Metallidou, 2009). The autonomy test was designed considering the constructivist and the *psychological-evolutionary perspective* of Schmenk (2010, cited in Burbat, 2016) and the levels of autonomy (Velásquez *et al*., (2016)). The instruments were piloted and validated by experts[6].

In order to conduct the study, three main phases were considered (Figure 1):

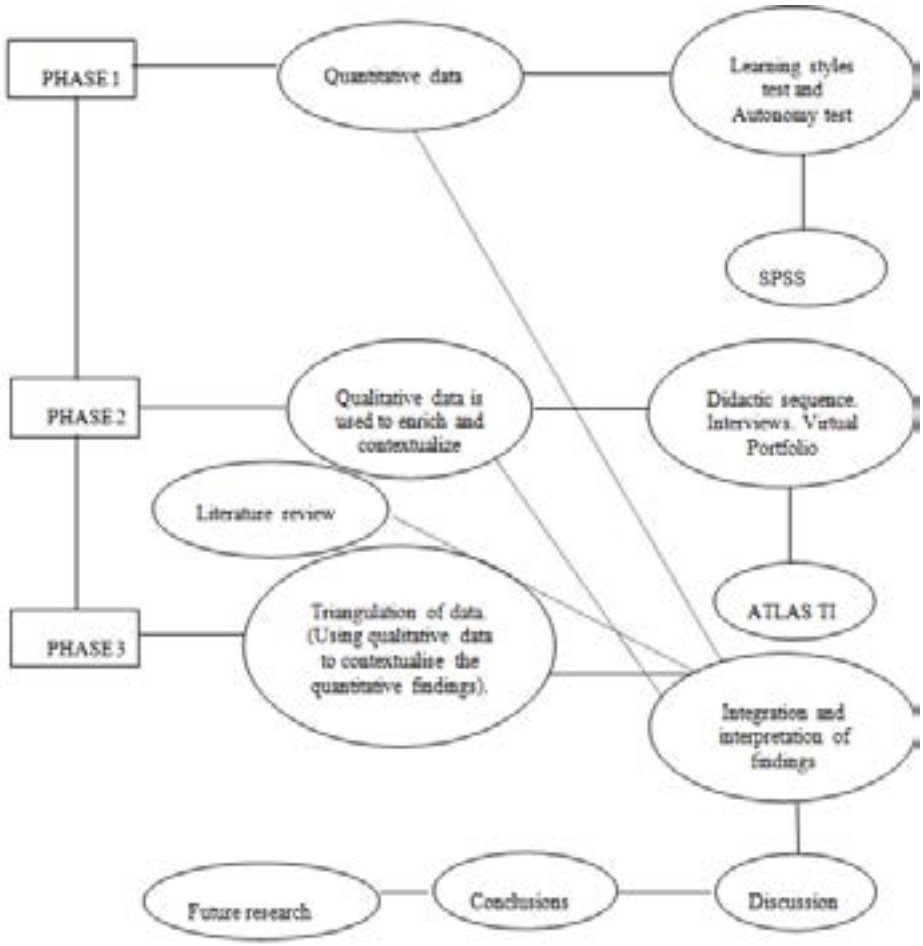

Figure 1. Overview of the research phases. Model adapted from Bowen, Rose and Pilkington (2017).

6 *To see the test, visit the link https://drive.google.com/open?id=1YCjh1jg_5aq2ClYFoDwYueP1t6AiZFFy*

Having, as input, the diagnoses of learning styles[7], the results of students' levels of autonomy, the course syllabus, the types of strategies and activities of the flipped-classroom methodology, and the Edmodo platform as pedagogic mediation, the proposal was designed, responding to constructivist and psychological-evolutionary perspectives of autonomy and the recognition of individual differences. Additionally, the study followed the principles of the flipped-classroom methodology translated into the need to develop basic and superior intellectual skills, as proposed in the Bloom´s taxonomy[8]. A balance was always sought between classroom activities and autonomous activities carried out on the Edmodo platform. Furthermore, it was the professors' responsibility selecting authentic material to reach learning goals.

Thus, the courses were organized as follows (Tables 3 and 4):

- *Autonomous activities*: For motivating self-learning, students carry out some activities on the Edmodo platform before coming to class.
- *Prior knowledge activity*: Before class, students activate prior knowledge through an activity, allowing them to relate their life experience to topics from the unit.
- *Classroom activities*: Students work in teams based upon the activities already done on the Edmodo platform.
- *Forums*: Activity to develop critical thinking. From their own experience, students have to reflect on the topic addressed.
- *Tests:* Activities to evaluate the learning progress of students in each topic.
- *Portfolio*: At the end of the unit, students assess their own progress in the course taking into account whether the three pedagogic tools of the project (learning styles, Edmodo and flipping class) favored or not their levels of autonomy.

7 As van Zwanenberg et al. (2000, cited in Platsidou and Metallidou, 2009) proposed, the ILS was used for this research to assess the relative strengths of learning preferences within an individual, rather than for comparing learning style preferences among individuals.

8 Basic intellectual skills: remember, understand, apply. Superior intellectual skills: analyze, evaluate, and create. Vanderbilt University. Taken from: https://cft.vanderbilt.edu/

Table 3. Didactic Sequence Example of Foreign Language Teaching Methodology (FLTM).

Topics	Activities to be done in class	Autonomous work on Edmodo (to be prepared before each session)
1. What makes a good theory? 2. Key concepts in foreign language teaching methodology	**Activity 1**. Analyze the quote "theory without practice is blind, practice without theory is empty"; try to give examples about the quote in non-educational contexts. Also, based on the videos watched, analyze the characteristics of a good theory. **Activity 2.** Matching exercise about concepts	**Forum 1**. How do you think we acquired our first language? **Activity 1**. Solve Previewing knowledge activity. **Activity 2**. Read the document: First language acquisition. **Activity 3**. Watch the videos: Genie Willey; My deaf parents and Jero's first babbling.

Table 3 shows an example of some of the activities developed in every English class. They were always organized in such a way that students could know what they had to do independently and which activities they were going to do in the classroom. The same applies to the French Elective course (Table 4), where activities were clearly explained in terms of autonomous learning and face-to-face interactions.

Table 4. Didactic sequence example of the Elective French Course III (EFC).

Topics	**Activities to be done in class**	**Autonomous work on Edmodo (to be prepared before each session)**
The written production process	**Activity 1**: In class, each team should make a *mind map** with the key ideas of the text previously read (activity 1 in autonomy). Present it to the class. For information about how to make a mind map, watch: http://apprendre-reviser memoriser.fr/3-methodes-visuelles-pour-apprendre/ You should propose the exercises about your topic to your classmates.	**Prior knowledge activity**: Do the proposed activity to activate your previous knowledge. **Activity 1**: By teams, read these five texts about written production. On the first three documents, we explain the different processes for writing an argumentative text, and on the last two, we give an example of the two kinds of text requested by the DELF B2: the letter and the article.
The written production assessment	**Activity 2**: Each team writes the text proposed in activity 2 in autonomy and posts it on Edmodo. The other teams review it, make comments on whether the authors of the text followed the processes explained for argumentative written production and propose the correction of the text based on assessment criteria of DELF B2.	**Forum**: Do the forum proposed on Edmodo. **Activity 2**: Each team chooses one of the writing exercises proposed on the following video: https://www.youtube.com/watch?v=-c-Uc08Ndgg
Individual written production	**Activity 3:** Each student writes an argumentative text.	**Activity 3**: Get ready for the written production assessment by watching the video: https://www.youtube.com/watch?v=7Uw21L0--V4

Peer review	**Activity 4:** Exchange your text with a partner. Revise his/her text using the assessment criteria of DELF B2. You should correct your own text following the observations your partner suggests for you.	**Activity 4**: Read and analyze the assessment criteria on DELF B2 about an argumentative text. What aspects are evaluated? Are there other aspects that you proposed to evaluate? **Test**: Do the proposed test to verify your knowledge on the topic developed. **Portfolio**: Make the Virtual Portfolio on Edmodo.

In general, the activities were based on the recognition of individual differences, as evidenced in the variety of activities proposed in each topic (videos, readings, tests, crossword puzzles, alphabet soup, infographics, mind maps, diagrams, and sketches, among others) which, in many cases, where chosen by students. The process was observed through the virtual portfolio.

RESULTS AND DISCUSSION

The results here reported give an account of a triangulation process where the qualitative data contextualized the quantitative findings. It is important to highlight that, given the nature of this study, the main goal was not comparing groups, but instead, our purpose was identifying individual characteristics that allowed not only creating the didactic sequence, but also that students were able to recognize strengths and weaknesses in their learning style profile.

First category: Learning styles and Edmodo platform, and their relationship with levels of autonomy.

- *Learning styles and autonomy*

First, the diagnosis of learning styles of the FLTM[9] and EFC[10] students revealed the following group profiles, as shown on Table 5. The results can reveal a moderate trend or strong trend toward a style, or equilibrium (EQ) between both bipolar styles.

9 English course: Foreign Language Teaching Methodology. 6th semester students
10 French course: Elective French Course III. 10th semester students

Table 5. Percentage of FLTM and EFC students in each learning style category.

DIMENSIONS	LEARNING STYLE	FLTM (20 students)			EFC (23 students)		
		Moderate trend	Strong trend	Equilibrium	Moderate trend	Strong trend	Equilibrium
How do you prefer to process information?	Active	30%	0%	**50%**	21.73%	0%	**65.21%**
	Reflexive	15%	5%		13.04	0%	
How do you prefer to receive or take in information?	Sensory	25%	25%	**50%**	26.08	0%	**69.5%**
	Intuitive	0%	0%		4.34%	0%	
How do you prefer information to be presented?	Visual	20%	25%	45%	39.13%	17.39%	34.78%
	Verbal	10%	0%		8.69%	0%	
How do you prefer to organize, structure and understand information?	Sequential	20%	5%	**60%**	43.47%	0%	47.82%
	Global	15%	0%		8.69%	0%	

As noted in Table 5, the FLTM and EFC students obtained the highest percentages of equilibrium in several dimensions: between sensory and intuitive (50% and 69.5%) and between active and reflective (50.6% and 65.21%), but a lower percentage between visual and verbal dimension (45% and 34.78%). FLTM students show a higher equilibrium in sequential and global dimension (60%) than EFC students (47.82%).

This equilibrium between the sensory and the intuitive learning styles in both groups might indicate that, in general, most students can perceive external information or sensitive through the sight, hearing, or physical sensations; or have no inconvenience in perceiving it internally or intuitively through memories, ideas, readings, etc. Moreover, the equilibrium between the active and the reflective learning styles —also found in foreign language students by Cancino, Loaiza and Zapata (2009), Loaiza and Galindo (2014)— would suggest that a good number of the students in this research can use information in tasks involving physical activities, interacting with the rest or applying what was learnt; or that they can use it through individual reflection and introspection. The equilibrium between the visual and verbal learning styles would suggest that many of the students may feel comfortable with learning environments in which the types of activities proposed by the professor involve information delivered through diagrams, pictures, flow charts, or textual representations (written or spoken). However, in the design and implementation phases of the pedagogical proposal, that fact did not imply

that professors and researchers would ignore activities cognitively and affectively involving the styles of students whose profile showed strong or moderate tendency to one of the two styles from the bipolar dimension.

It is important to highlight that, globally, in both groups the moderate trend is more marked than the strong trend in the preferences of learning styles by students. This would suggest that it might be easier for students to face tasks that involve cognitive and affective traits than other styles. In this sense, the dynamics of cognitive flexibility demonstrate, as proposed by Reid (1995, cited in Loaiza, 2016), that learning styles exist in a continuum, even when they are often described in their dichotomous nature, as is the case of the bipolar model by Felder and Silverman (1988).

With regard to the global results of the autonomy questionnaire, students scored 4.2 (FLTM) and 4.3 (EFC), which places them in a medium-development stage of autonomy on a scale of 1 to 6[11]. Specifically, according to the three levels of autonomy proposed by Velásquez *et al*., these results indicate that the majority of the students from both courses (88.2%, FLTM, and 91.3%, EFC) are at a level 2 of autonomy *(investigation-intervention)*, as shown on Table 6:

11 In a scale from 1 to 6, where 1-3 corresponds to low levels of autonomy, 3-5 medium, and 5-6 high levels.

Table 6. Results of students' levels of autonomy.

Levels of autonomy	**FLTM (20 students)**	**EFC (23 students)**
Level 1: Approximation- implication Awareness of what should be learnt, self-recognition of learning styles, and strategies and identification of linguistic and didactic strengths and weaknesses.	**5.9%**	**4.35%**
Level 2: Investigation-intervention Startup of theoretical knowledge through research skills, identification of areas to improve, and use of learning strategies, linguistic skills and resources to face learning challenges	**88.2%**	**91.3%**
Level 3: Linguistic-didactic Internalization of the knowledge of the language, mastery of learning strategies, linguistic-communicative skills, meta-linguistic skills, and capacity to project what was learnt to a specific learning context or situation.	**5.9%**	**4.35%**
Total	**100%**	**100%**

In other words, they can organize their learning goals, create an action plan to organize their time, are interested in knowing their successes and mistakes once the work is turned in, and take their learning style into account to use their own learning strategies to strengthen their weaker areas. As explained by Velásquez *et al*. (2016), it is at this level where students are aware of what should be learned and identify their styles and learning strategies. However, participants in this study still have difficulties to relate their research skills with the startup of strategies to improve the weaker areas that they identified in their learning process. In other words, putting the solving of problems through research, retrospective reflection of what is learnt, into practice, which are fundamental aspects of the levels of investigation-intervention autonomy and linguistic-didactic level. Hence, only a minimum percentage of students from both courses would be in a level 3 autonomy level (*linguistic-didactic)* (5.9% and 4.35%). It is worth observing that the two students placed at level 3 have a very similar learning style profile: equilibrium between active and reflexive (both students); sensory (strong tendency in the FLTM student and moderate tendency in the EFC student); visual (strong tendency in the FLTM student and moderate tendency in the EFC student); and equilibrium between sequential and global (in the EFC student), and sequential (moderate tendency in the FLTM student). The combination of cognitive and affective traits of the active and reflective, sensory, visuals and sequential styles that students have (Table 1) contributes to approaching the second level of autonomy, characterized by "the use of what is learned [by students] in correspondence to their needs, interests, and linguistic and didactic motivations, the use of research methods as mediators to solve tasks and the search for aids and resources in correspondence with the goals identified." (Velásquez *et al*., 2016).

- *Learning styles, Edmodo platform and their relationship with levels of autonomy*

Regarding the use of Edmodo platform and its relationship with learning styles and levels of autonomy, different situations may be noted. First, although not every student presented the virtual portfolios that accounted for their progress in autonomy, it was evidenced (through the virtual portfolio and the interviews) that students with active, sensory, sequential, and visual learning styles responded to almost every activity proposed in the platform, which somehow ratifies their autonomous responsibility to fulfil the activities proposed. However, and as stated by some of the students, such autonomous work was conducted only to "comply" with the responsibility, but not to reach their learning goals.

Student 1: "(…) I must admit that I work best under pressure and that implies having the guidance, instructions, and constant follow up from a professor. It also works being graded in every activity"**.**

Although the prior comment is not part of the whole group, it could affirm that, for this student to transcend from the approximation-implication level of autonomy to the higher levels (investigation-intervention and linguistic-didactic), it becomes a complex task in the sense that their level of autonomy will always depend on external factors to their own learning interests.

Students with active-intuitive and active learning styles, respectively, showed progress in their level of autonomy, given that they not only developed all the activities proposed in the platform, but they also improved every time in the results obtained in the virtual portfolios and their contributions to the class. From this situation, it could be inferred that, for students with active-intuitive learning style, it is easy to make progress in their levels of autonomy

perhaps due to their desire to put into practice what they have learned and their interest for discovering and learning new concepts.

Students with reflective learning style, in turn, developed few of the activities proposed in the platform and only turned in the first virtual portfolio. In this sense, it could be inferred that this particular group of students does not appreciate the use of virtual platforms for their learning process. This situation may be compared to what Thobois-Jacob *et al*. (2017) state regarding students with convergent learning style: they found that this type of learners does not appreciate the flipped-classroom methodology.

SECOND CATEGORY: AUTONOMY APPROACHES AND THEIR RELATIONSHIP WITH THE FLIPPED-CLASSROOM METHODOLOGY

The didactic proposal implemented considered two autonomy approaches proposed by Schmenk (cited in Burbat, 2016): constructivist and psychological evolutionary approaches. Although both perspectives recognize autonomy differently –given that, from the constructivist vision, autonomy is assumed as a natural state of the learner, whereas the psychological evolutionary approach is understood as a progressive process–, both perspectives provided coherent ideas to design the proposal. On the one hand, the constructivist approach seeks a teacher trained in the creation of innovative didactic material that generates reflection and bears in mind prior knowledge of students to, thus, create significant learning. From this vision, the students' role is active in the sense that the learner is responsible for "re-constructing" and discovering knowledge, generating – in turn – critical thought that helps them solve problems. In a psychological-evolutionary approach, the educator plays an imperative role in being a model and guide throughout the whole process until the student can be "detached". These elements are considered in each approach to assess the didactic proposal.

- *Constructivist approach and the roles of students and the professor*

From this perspective, and from the results obtained, it may be noted that the constructivist approach of autonomy has a close relationship with how the flipped-classroom methodology must be carried out. As expressed by the students and as manifested during the interview of the focus groups, the role of professors was essential in that they provided the necessary tools to develop the content, fostering – in turn – development of autonomy. Thus, some of the students from both groups state: "the role of the professor was that of a companion, given that the classes focused on developing activities proposed on Edmodo and on discussing them in class. In addition, most topics were conducted and/or explained by the students themselves, while the professor only listened and made corrections" (student 9); "the professor was a guide, a mediator throughout the process. Clearly, she was in charge of the class development, but she was not the one who carried it out, but always tried to get the students to do it. She accompanied us in the whole process, but we – as students – had the most important role because we discussed the concepts and associated them among ourselves" (student 10); "the professor was in charge of giving us the tools and guiding us through the activities" (student 6). In their opinions, students saw the professor as "always guiding the teaching, as total accompaniment, but also motivating to achieve autonomy and personal and professional growth" (student 1), considering the professor "a guide who showed us how and gave us freedom to reach our destiny" (student 4), "… they did not transmit knowledge, they instructed us to find it" (student 5). This favorable attitude toward the professors´

role of facilitator is also confirmed by the virtual portfolios.

The role of students, as reported, was active in the sense that they were in charge of constructing their own knowledge from the tools provided by the platform and in the classroom, as evidenced by the students' answers in the focus groups: "sure, my role was active, given that I participated in the activities proposed in the platform, stating my opinion critically and with foundations" (student 2); "in many of the activities on Edmodo and in the classroom, I was allowed to give my point of view, developing it and sharing it with that of others" (student 7).

However, and as observed in the use of the platform, there are still few students truly committed to the development of activities that do not imply a grade, which allows inferring that it is difficult to transcend from the level of approximation-implication autonomy, at least in the short term. Recognizing its psychological-evolutionary approach to autonomy is important.

- *Psychological-evolutionary approach and the roles of students and the professor*

From a psychological-evolutionary vision, the didactic proposal implemented sought the development of autonomy at ulterior levels. However, and as understood from this perspective, autonomy is a progressive process reached throughout life. In this sense, it may be noticed that, at least within this context, students still recognize the professor's role as a fundamental element to reaching their learning objectives, even if the use of technology is provided to complement knowledge. "In my case, and due to my lack of pressure to work well, I did feel the need and dependence on the professor to develop the proposal" (student 10); "I prefer the face-to-face method" (student 1); "I prefer being present than online" (student 2). This preference by students for traditional classes under the aegis of the professor was found by Rahman *et al*. (2015) in their meta-study on the relationship of flipped class and learning styles in a broad sample of engineering students, of which half preferred the flipped class methods and the rest the traditional methods.

Precisely, this recognition of the possibility offered by the course to strengthen their autonomy is in itself an initial step towards its search, which shall, if work continues with these types of pedagogic tools, allow students to move toward a level of linguistic-didactic personalization that may bring them to applying the linguistic, cognitive, and meta-cognitive strategies evidenced in their self-recognition process of their learning styles to other contexts, especially that of their teaching practice.

On this path toward achieving autonomy, it is important to recognize that much awareness is still needed from students to adopt attitudes and behaviors that allow them to identify areas to improve, as well as the use of learning strategies, linguistic skills and resources to face challenges in the learning tasks; identification of difficulties that could be found in the learning process to avoid mistakes, supported by consulting articles, texts, degree works, or other types of documents to understand and complement the information from the topics. The actions mentioned are contemplated among the characteristics to be evidenced in the level of autonomy of development, research, and intervention of most of the students participating in this study, indicating the need to delve into strengthening the critical and investigative spirit of the students and on the role of the ICT in educational processes.

CONCLUSIONS

As for the research's general objective, which sought to promote the autonomous learning of English and French students from the bachelor's degree in Modern Languages course of study through a teaching strategy mediated by the

educational platform Edmodo, the theory of learning styles, and flipped classroom methodology, it is possible to outline some final considerations. Given the limitations in the size of the sample involved in this study, they do not intend to be generalized, but they shall serve as a reference point for studies with similar objectives and in educational contexts with characteristics close to those raised in this research.

- The results of the Felder and Soloman Learning Style Questionnaire showed once again the heterogeneity of the classroom, a fact that the teacher must take into account when organizing the teaching and learning processes. The study highlights the balance between the active and reflective, sensory and intuitive, sequential and global learning styles of English and French students, which may allow them to have greater cognitive flexibility to approaching learning tasks from theory, observation and reflection, but also from subjectivity, affection, practice and social interaction. It also highlights, in both groups, significant percentages of students who show a moderate tendency to a particular style, which makes it easier for them to adapt, without great inconvenience, to situations involving stylistic traits different from their own. Moreover, to a lesser extent, there are students with a strong tendency to a specific style of learning, who will surely require more cognitive, metacognitive, affective, or social efforts for stylistic adaptation processes. These results, which, in the continuum of learning styles, oscillate between the balance of the objective and the subjective, could be related to the cognitive advantages that bilingualism provides, among them greater cognitive flexibility, higher levels of reflection, but also emphasizing that the contact of languages and cultures requires action, interaction and empathy.

- Self-recognition of cognitive, affective, and physiological traits (learning styles) contributed to understanding the learning processes that take place in the student, whose awareness of its autonomy, i.e. the responsibility to its own learning, is based on the self-recognition and the strategies it uses according to its stylistic preferences.

- Thus, it is possible to find diverse didactic strategies that help students to approach knowledge in their own way and at their own rhythm of learning.

- As pedagogic mediation, Edmodo offered students greater opportunities of communication, organization, and interaction in a more dynamic manner.

- As an innovative and motivating strategy for the students, the flipped class optimized classroom time, turning it into a more dynamic space.

- These three pedagogic tools allowed, at a greater extent, improving the capacity of a good number of students to organize their own learning process in an intentional, conscious, explicit, and analytic manner, which means that they advanced toward certain levels of autonomy.

- On the path to autonomy, awareness is still lacking among students to adopt attitudes and behaviors that allow them to identify areas to improve, use learning strategies, linguistic skills and resources to face the challenges of the learning task.

- There is the need to enhance the critical and inquiring thinking of students and the ICT role in educational processes.

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