Academic Progress Depending on the Skills and Qualities of Learning in Students of a Business School

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ABSTRACT
This research was to establish the relationship between qualities of learning; learning skills and academic performance in undergraduate students.

310 undergraduates participated in this research of which 72% are female and 28% male.

All responded Scale Learning Strategies of Roman and Gallego (1994) and Questionnaire Learning Styles of Honey-Alonso (Alonso, Gallego and Honey, 1995), and the management system learning was used to establish the academic performance, from the accumulated average of each participant.

The results indicate that there is no single way of preferred learning, as most participants rated high in two or more attributes. As for learning skills it was identified that 42.6% use coding strategies. In addition, no significant correlation between the variables analyzed was found.

This information demonstrates it is necessary to teach techniques of study to the students, since it seems to be the best route to certify that his learning is the most successful.

Keywords: Learning styles, learning strategies, academic performance, higher education

INTRODUCTION
The growing interest in regards to the procedures and skills of learning is derived from studies of cognitive styles carried out in recent years, authors such as; Lopez and Ballesteros (2003); Troiano, Breitman, and Gete-Alonso, (2004); Belt (2006); Escalante, Linzaga and Escalante (2006); Fortoul, Varela, Avila, Lopez and grandson (2006); Barros (2007); Madrona et to the. (2007) and Herrera (2009) have conducted research that attempt to describe both learning styles and strategies that students from different university programs used to regulate their learning processes. Also, they have formulated hypotheses against the relationship that these variables have the academic performance, the processes of teaching and learning that are used at the University level.

The results obtained by these researchers indicate that the predominant style in college students is the reflective. Furthermore, they found that learning styles where defined by the program in which the students were enrolled in, as well as the area of expertise in which they were registered. This could possibly be related to the contents, methodologies, information and specific requirements of each career.

The above findings implies that the academic performance of undergraduate students, not only depends on the attentional and memory ability of students to retain and recall information, but also seem to require skills and processes involved in their analysis, transformation and application. On this last point, it is necessary for the student to have a quality of learning and with specific learning abilities to learn, favoring a better cognitive performance. It is worth highlighting that the learning conditions are likely to improve and when students are taught according to their own style of learning, they learn more effectively. This situation can ensure high quality teaching and learning processes.

Taking into account that human beings to learn, require different cognitive processes, in the present study the relevance of two of these processes is exposed to ensure academic achievement. These are: the learning style and learning strategies. We will, describe and explain each of the variables tested in this work.

Conditions for learning to take place

Studying the ways in which people perceive, analyze and structure information to learn, includes multiple aspects that can contribute to the understanding of learning processes in humans. While traditional education was considered a particular form of appropriating reality and teaching, at present, cognitive psychology has contributed new knowledge to ensure that, learning processes are successful. In particular, they propose two key concepts for this: styles and learning strategies.

"Learning styles are the cognitive, affective and physiological traits that serve as relatively stable indicators, how students perceive interactions and respond to their learning environments" ["Learning styles are the cognitive, affective, and physiological traits that serve as relatively stable indicators of how learners perceive and respond to their interactions learning environments" (Keefe cited in Alonso y Gallego, 1994, p. 104)]. These traits are evident in the way the subjects organized and outlined their interpretation and its relationships with the contents and information. They are also involved with emotional traits, motivations and expectations that influence learning and physiological traits associated with the biotype and the Biorhythm of the student.

Whenever a student is exposed to a learning task their learning style is revealed, because it defines the way they focus on new and difficult information, how it is processed and how it is saved (Dunn, Dunny Price, 1985); learning style involves different cognitive processes that unfold so that the apprentice can perform tasks that first needs to be learned.

In this regard, it is important to consider that learning styles can promote the processes of acquisition, interpretation and analysis of the information. Because it allows the trainee to approach the contents to be assimilated in different ways, in addition to reorienting their actions towards effective mechanisms for processing information. Learning styles characteristics were described by Revilla (1998), stressing that they are relatively stable, they can be modified according to the situations to which a person is exposed, and serve as a means to facilitate their learning.

Learning styles are classified in accordance with the individual preferences of access to knowledge. One of the best-known classifications is that offered by the Honey Alonso Learning styles questionnaire (Chaea; Alonso, Gallego y Honey, 1995), which defines the following styles:

- Active learning style: based on direct experience and is characterized by being animator, improviser, discoverer, risky and spontaneous.
- Reflective learning style: focused on the observation and collection of data. This style of learning is characterized by being weighted, conscientious, receptive, analytical and patient.
- Theoretical learning style: based on the abstract conceptualization and formation of conclusions, this style of learning is methodical, logical, objective, critical, structured and planned.
- Pragmatic style of learning: focused on active experimentation and search for practical applications. This style of learning is characterized for being an experimenter, direct, realistic and technical.

Skills or learning skills

Cognitive psychology posits the existence of different cognitive processes which allow the processing of the information accessed by a person, such as the processes of acquisition, encoding, storage and retrieval of data. In addition to these processes, the cognitive theories establish that to obtain optimal performance of the cognitive system it is necessary for other metacognitive processes.

(See figure 1). Figure 1. Strategies activated in the information process. Taken from Román y Gallego (1994).
From a constructivist definition of learning, it is possible to conceptualize it as a mental operation that involves a series of coordinated cognitive processes that unfold in the individual before the execution of a task or exposure of a problem that must be solved. This is the aim of the individual who is facing the situation through the use of specific learning strategies that will facilitate the process (Ausubel, Novak y Henesian, 1993; Flavell, 1984 y Bandura, 1982; Gagné, 1987). Camarero, Buey y Herrero (2000) defined learning strategies as purposeful activities that are reflected in the four major phases of information processing. This vision, operationalized in The Learning Strategies (ACRA) by Román and Gallego (1994), based on four learning stages experienced when learning:

1. Acquisition Stage.

At this stage the cognitive care process, is essential because it is responsible for selecting, transforming and transporting information from the environment to the sensory register (Román y Gallego, 1994). This phase

includes: (a) attentional strategies, explores the information and fragments depending on the contents of previous knowledge; and (b) strategies of repetition, which have the function to facilitate the transmission of information to the long-term memory, simultaneously using different receptors such as vision, hearing, taste and motor function.

2. Encoding of information Stage.
Facilitates the development and organization of information linking it and giving meanings to generate new mental models. This stage contains strategies of development and organization of new information.

3. Information retrieval Stage.
Responsible for deploying memory search strategies (searches for encodings and indications), strategies for generation of responses (planning and preparation of the written response).

4. Support Stage.
Taking into account that information processing occurs simultaneously with other processes of metacognitive and cognitive which can strengthen, neutralize or impede cognitive functioning, metacognitive strategies such as self-awareness and self-management are therefore activated at this stage, affective strategies (auto instructions, self-control and distracting), social (to regulate social interactions) and motivational (to regulate the learning from the intrinsic motivation extrinsic, and exhaust the person learning experiences).

Academic performance
Currently, academic achievement, as a theoretical construct, is regarded as the product of a school process; your benchmark assessment assumes the achievement or not of some learning objectives. Bahamon (2010) shows that the academic achievement can be understood as the result, which should be, obtained by the student with respect to the goals set out by an academic institution.

Objective assessments are those that investigate the learning of a person from the application of standardized tests, i.e. to offer scores to refer to the academic achievement of a student, according to the performance expected for a population in particular. Meanwhile, educational tests are those constructed by teachers within their work of teaching-learning, which can highlight the achievement of a student from a quantitative or qualitative, rating defined by the teacher.

Taking as a reference the above, this research was aimed to determine whether there is a relationship between the type of learning, learning skills and academic achievement of students of a Bachelor's degree from a business school.

The hypothesis of the study asserts the existence of a statistically significant correlation between types, skills learning and academic achievement of students participating in this work.

METHOD
This study is a non-experimental, quantitative transversal-correlational design (Hernández, Fernández y Baptista, 2006).

Participants
The sampling technique was by convenience (all students of the Faculty of second and third semester had the same opportunity to participate), in which all existing degree programs offered by the school were considered. Subsequently, the number of students per program that were to participate in the study was established, to have a representative sample using the formula $sh=n/N$. Of the total of 1963 students enrolled in the august to december 2013 semester, 310 students participated in the study, between the ages of 17 and 21 years old. From this total, 223 participants were female and 87 were male. Most of them, from families of middle socioeconomic stratum. Participants were part of four careers: (a) Information Technology, (b) Administration, (c) International Business, (d) Accounting.

The only established requirement for inclusion was only students in their second and third semester could participate.

Instruments
Learning Strategies (ACRA; Román y Gallego, 1994).
Auto report instrument that permits quantitatively assessment of learning strategies that take place during the study activity in different phases of acquisition, encoding, retrieval and information support (Nisbet y

Schucksmith cited in Román y Gallego, 1994). It consists of four separate subscales which evaluate the students use; of seven acquisition strategies, thirteen coding strategies, four strategies of information retrieval and nine strategies that support the processing. This scale has adequate psychometric properties. For example, the coefficients of reliability of the ACRA scale, are widely satisfactory for their different subscales. The acquisition subscale obtains a score of 0.77 Cronbach's alpha, 0.93 coding subscale, the subscale of recovery of 0.84 and the 0.85 support subscale (Barca, Peralbo, Marcos, Malmierca y Porto, 2009).

Honey-Alonso Questionnaire Learning Styles (Chaea; Alonso, Gallego y Honey, 1995). Self-reporting that can be applied individually or to groups, consists of 80 items scoring between 0 and 1. This instrument allows to evaluate four learning styles according to individual preference in access to knowledge, which were described above. These are: active, reflective, theoretical style, and pragmatic style of learning.

According to the results reported by Villardón and Yániz (2003) and Vivas (2002), the application of the Chaea in Spanish speaking population obtained indices of reliability suitable for each of the styles. The active style got an alpha of Cronbach of 0.62, the reflective of 0.72, 0.65 theoretician and the pragmatic of 0.58.

Academic performance. It was assessed via the academic performance reporting system offered by the University, on the cumulative average that each student has in the career being studied at the time of the measurement. The rule establishes that this average should be on a scale of 0 to 100, where scores below 70 are considered failing, scores between 70 and 89 are medium, while those equal or over 90 are considered high.

Procedure

The implementation of the instruments was carried out by selecting participants by convenience. A request was sent to the selected group of students via each of their teachers. From which, a visit was made with the participants to give them specific information on the study, as well as the processes of application and citation. The instruments were applied to participants with prior signed informed consent. Administration of the scales was performed in a single session during scheduled class time, with five-minute rest periods between each instrument. Subsequently, the grading of the questionnaires answered by the participants and the processing of the data making use of statistical programme SPSS.21 was carried out. Descriptive statistics and inferential (coefficient of range of Rho Spearman, to define the relationship between the studied variables) were calculated.

RESULTS

The age range of participants was between 17 and 21 years, range that matches the General characteristics of the undergraduate students.

In regards to the type of educational institution in which the participants attended for their post-secondary education, it was found that 244 of them said to have studied at an institution of a public nature. The average academic achievement of participants was 76, which shows that the majority of the participants were categorized as average. The achievement of men and women is within the same midrange, being the minimum cumulative average of 70 and the maximum average of 88. Preferences in the use of learning styles, according to the results obtained by the application of the Chaea, show that the majority of the participants do not make use of a style or type of learning. Thus, it is possible to identify combinations of different styles. In terms of pure styles which arose in the students, this study identified 24.8 per cent use the theoretical style, followed by the active style 19.2% (See figure 1).

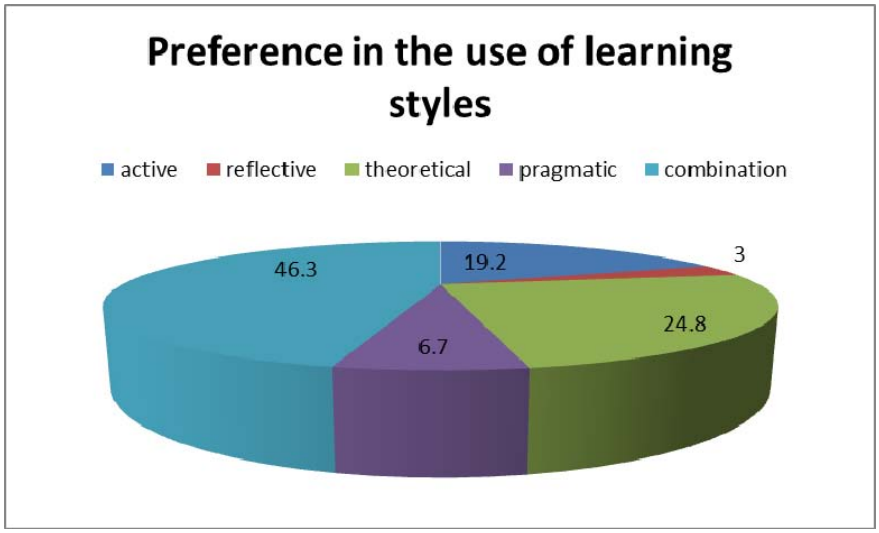

Figure 1.Percentage of preference in the use of learning styles
Source: Own April, 2015

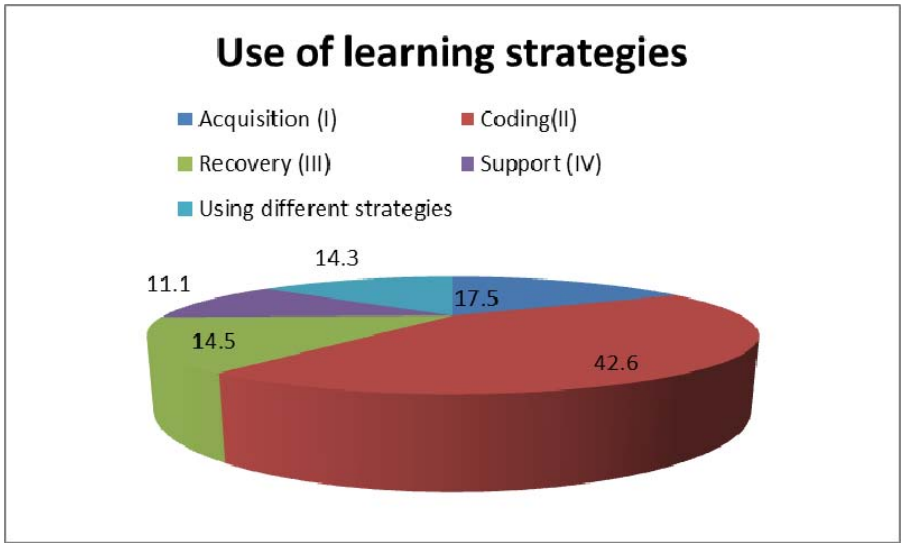

Figure 2.Percentage use of learning strategies
Source: Own April, 2015

About the use of learning strategies, participants registered significantly higher coding subscale, indicating it is common in the students to use skills that help them organize information that are taught at the university, seeking to make sense to new information (see Figure 2). Besides the specific scores, the participants show the use of two or more preferred strategies simultaneously.

However, the scale with the highest score in the ACRA scale coding was followed by acquisition, which has attentional processes to select and transform information coming from the sensory registers. The lowest scores were in the range of recovery, suggesting that students use to a lesser extent processes for deploying skills that facilitate the search for information in memory. The lowest score was presented on the use of support skills, participants indicating that fewer resources to deploy self-knowledge and cognitive, emotional, social and motivational self-learning

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Table 1. Learning Skills for academic performance of the participants

	Acquisition strategies			Coding strategies			Recovery strategies			Support strategies		
Statistical	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
Mean	48.3	53.4	54.4	50.3	64	70.4	41.7	53.3	58.3	28.3	48.0	57.4
S.E.	6.0	1.9	5.1	20.3	1.7	3.9	18.3	1.8	4.3	6.0	1.8	4.4
Median	45.0	60.0	60.0	30.0	70.0	80.0	60.0	55.0	60.0	25.0	50.0	65.0
S.D.	10.4	30.6	34.4	35.2	27.8	26.5	31.8	29.1	29.2	10.4	28.5	30.0
Minimum	40.0	1.0	1.0	30.0	1.0	10.0	5.0	1.0	5.0	20.0	1.0	2.0
Maximum	60.0	99.0	99.0	91.0	99.0	99.0	60.0	99.0	99.0	40.0	99.0	99.0

Source: Own April, 2015

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When analyzed together learning skills used by the participants and their academic performance, The study finds that students with high benefit aimed primarily used learning skills in the phase of recovery, which shows that students with averages between 80 to 100 tend to have better planning of study and exam preparation (see Table 1). For their part, students whose academic performance is in the middle range (60 to 79) have a predilection for using learning strategies the acquisition phase. In this case highlights the use of these strategies in charge of exploring the prior information and fragment it to relate to the content of previous knowledge. Meanwhile, Table 2 details the relationship between learning styles and academic achievement level of the students participating in this study

The Analysis of learning styles, depending on the program that enrolled participants to highlight some particular evidence. For example, Information Technology students, often use reflective learning style; in Accounting, students use the pragmatic learning style.

Table 2. Quality of learning vs. academic performance.

	Active			Reflexive			Theoretical			Pragmatic		
Statistics	low	Med	high	low	Med	high	low	Med	high	low	Med	high
Mean	14.7	13.2	12.9	14.7	15.0	15.5	13.3	14.4	14.7	11.0	14.0	14.1
S.E.	1.3	0.2	0.5	0.3	0.2	0.4	1.3	0.2	0.4	3.1	0.2	0.4
Median	16.0	13.0	13.0	15.0	15.0	16.0	12.0	15.0	15.0	13.0	14.0	14.0
S.D.	2.3	2.8	3.2	0.6	3.0	2.5	2.3	2.8	3.0	5.3	2.9	2.9
Minimum	12.0	3.0	4.0	14.0	6.0	10.0	12.0	7.0	7.0	5.0	4.0	8.0
Maximum	16.0	20.0	20.0	15.0	29.0	20.0	16.0	20.0	20.0	15.0	20.0	20.0

Source: Own April, 2015

Finally, to reveal the objective of the current work it was computed: the relationship between the qualities of learning, learning strategies and academic performance. See Table 3. Among the telltale correlations, highlights the relationship between academic achievement and support strategies for cognitive, social, emotional and motivational control, if consider that this scale is the least used by the participants and the academic performance of most students focus on a medium level.

Table 3. Correlations between variables

	Acquisition strategies	Coding strategies	Recovery strategies	Support strategies
Academic Performance	0.12*	0.10	0.13*	0.16**
Active Style	0.029	0.01	0.02	0.01
Reflexive Style	0.20**	0.13*	0.22**	0.22**
Theoretical Style	0.24**	0.16**	0.27**	0.35**
Pragmatic Style	0.21**	0.11*	0.10	0.21**

*p < 0.05, bilateral. **p < 0.01, bilateral

CONCLUSIONS

The results of this study highlight as learning style most used by research participants, theoretical; this suggests that students frequently use abstraction to form conclusions, both methodical and logical level, and seek new learning approach in an objective, critical, structured and planned.

It should be noted that the participants of this research were studying third and second semester of theirs career, which coincides with the point made by Alonso, Gallego and Honey (1995), Camero, Martin and Herrero (2000), Pujol (2003) and Peinado (2007) who state that: in the first semesters in university, the predominance of pragmatic or theoretical learning styles.

Meanwhile, the lowest style called on students was reflective, which means that few people working under pressure or mandatory deadlines, research, work carefully, be responsive and meet the new analytical information offered in training careers

Moreover, data collected with CHAEA show that most participants do not use one style or learning mode, making it possible to identify combinations of different styles, suggesting some multimodality in student performance when making processes to acquire new knowledge and learn

While it is true that learning styles are patterns of behavior, they are usually not fixed, predetermined, however, they may change depending on the situation of learning and experience that is acquiring the apprentice. As for the transformation of these, research shows that students modify their learning styles to the extent that advances in his studies, which could show a process of cognitive adaptation to university life and teaching strategies used by educators . Accordingly, it is important that students be taught to identify their own style to mobilize effective learning (Revilla, 1998). As for learning strategies, which are understood as purposeful activities are reflected in the four major stages of processing new information (acquisition, encoding, recovery and support), we find that the students of this institution indicate significantly higher in using two or more strategies, often used simultaneously when studying. This means that students have evaluated more complex processes for the acquisition and interpretation of the information and the simultaneous use of different strategies expose a fortress student while more resources have to face learning tasks. However, the highest scores were obtained for coding strategies, except for students Accounting program (notably the use of procurement strategies) and Management and International Business (highlighting the use of strategies, recovery). This indicates that it is common to use processes that contribute to the organization and processing of information by establishing different structures for data processing in order to make sense of new information, a question that may be associated with the competencies required in these careers as demanding pragmatic skills for their professional performance.

The data collected in this study suggest that participants use a theoretical learning style learning strategies often employ encryption, reaching an average academic achievement (between 70-79). This information is consistent with academic averages of the participants, and the scientific literature suggests that in order to obtain a high performance, students should use mainly support strategies (Roman and Gallego, 1994).

In summary, the results of this research show the need for an explicit and systematic teaching of learning strategies and / or study skills imparted to students, as seems to be the best way to ensure that learning is most successful.

That is, the academic programs should not only focus on providing the technical content of their discipline, they should also strive to teach students how to efficiently acquire this knowledge. This proposal should include training teachers on how to teach their students to have better learning strategies considering their learning styles, so that they can include didactic elements that promote student learning.

Future studies should seek to broaden the sample to include students of all careers or the whole university and even other universities, studying in public schools.

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