Learning Strategies and Academic Achievement

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Abstract

Currently, there is a great concern, in the educational field, about low students’ achievement. Through this study, we can see how, given the central role of the brain, using learning strategies by students improve their academic performance. In this research, with 30 students sample in first course of bachelor’s degree belonging to Foment Foundation School in the city of Madrid (Spain), it can be seen how the use of learning strategies in language and mathematical social science subjects influences academic performance.

1. Introduction

Read learning it has been promoted in Spanish schools for many years, defending the behaviorist methodology in which just a series of concepts were explained by teachers and where students performed some "standard" exercises, without take in count different learning styles and the multiple student features.

In the early school years students need to integrate information in an effective way through all the senses, encrypting and storing it properly. Thus it become a part of the reason and it can be recovered in the near future, when is needed. Students need to understand the information, internalize it and make it meaningful (Ausubel, 1968). For this, Neuropsychology plays an important role, because if the different brain lobes are stimulated in the process so learning will be significant (Jensen, 2004). Hence teaching learning strategies is important and work with different cognitive styles, abilities and skills as well.

Many of the students’ difficulties when they get to the stage before college entrance, such as the bachelor’s degree, and their low academic results sometimes are due to the absence or bad or acquisition of learning skills. Works such as Loret (2011), Barca-Lozano, Peralbo, Almeida, Brenlla, Vicente, Porto and Moran (2011), Tejedor, González y García (2008), show how there is a clear relationship between learning strategies and academic performance: thereby, is important to understand what is meant by learning strategies. This term has been defined in different ways, according to different authors. Gagné (1985) said that are a "cognitive operations sequence directed to a goal that guides students from understanding a question until make an answer." Monereo, Castelló, Clarian, Palma and
Perez (2001) see this as the set of "procedures and techniques used intentionally, coordinately and contextually for process new information and try to achieve meaningful learning." Meanwhile, Beltran (1993) understands learning strategies as "internal mental operations that students do in the teaching-learning situation. They have intentional and purposeful character."

There are several classifications of learning strategies. In this study we focus on the proposal by Beltrán (1996), which noted four types of strategies: 1) Support Strategies (motivation, attitudes and affect); 2) Processing strategies (selection, organization and processing); and 3) Knowledge Personalization Strategies (creative and critical thinking, recovery and transfer).

In the twenty-first century education is very important that put the student as main character in the teaching-learning process (Beltrán, 2003). To do this the brain acquires a major role because if cerebral lobes (frontal, temporal, parietal and occipital) are properly stimulated, the students’ rate of learning will be greater (Jensen, 2004). Therefore it is necessary to know the main functions of the cerebral lobes, which are: 1) occipital lobe: vision; 2) frontal lobe: creativity, problem solving, judgment and planning; 3) parietal lobe: integrations of sensory and linguistic superiors functions; and 4) temporal lobe: responsible for hearing, meaning, memory and language. Furthermore the brain association areas (temporal parietal-occipital association area, prefrontal association area and limbic association area) play a key role in the whole teaching-learning process (Jensen, 2004) because they put in relationship the functions that perform each of the lobes.

2. Method

The design proposed in this study is non-experimental and correlational because measures and evaluates the degree of relationship between two variables (learning strategies and academic performance) in a group of subjects. In this research can not differentiate between dependent and independent variable, both play the same role in a correlation analysis. The aim set in the research is to know the correlation between the learning strategies used by students (through ACRA test) and academic performance in the subjects of language and mathematics in the social sciences (considering scores students in those subjects in June 2014). We use a Pearson correlation index due to variable features.

2.1. Sample

The study was carried out in Foment Foundation School, a high school center located in Madrid downtown city. The school has 450 students belonging to upper-middle social class. For this research we have chosen 30 male students randomly that are in the social sciences itinerary.

2.2. Questionnaire

In this research we used the test of learning strategies “ACRA” (Roman and Gallego, 1994), which analyzes the following strategies: 1) information acquisition strategies (repetition and attentional strategies); 2) information coding strategies (mnemonic, organizational and development strategies); 3) information retrieval strategies (search strategies and response generation); and 4) processing support strategies (metacognitive and socioaffective strategies).
2.3. Procedure.

To carry out this research, first of all the researchers made contact with the school management team. Once approved by school permission was requested to families. After all approvals and in coordination with the teachers we decided the right time to test. During the sessions the students’ attitude and willingness was collaborative because they were informed about the study purpose.

2.4. Data Analysis

To perform the correlation analysis we used IBM Statistic SPSS for Windows version 20. We calculate Pearson correlation to study the relationship between Learning Strategies (Acquisition, Coding, Recovery and Support information processing) used by students and their academic performance.

3. Results

Considering the proposed research objective, the results were the followings:

1.1. Learning Strategies and Language Academic Performance Results

Table 1. Correlation between Learning Strategies and Language Academic Performance.

<table>
<thead>
<tr>
<th></th>
<th>Acquisition</th>
<th>Coding</th>
<th>Recovery</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson</td>
<td>.199</td>
<td>.451*</td>
<td>.561**</td>
<td>.197</td>
</tr>
<tr>
<td>N</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>

*p<0.01 **p<0.001 Source: prepared by authors

As we can see in Table 1, the acquisition strategy presents a correlation of 0.19 with language subject, but significance probability is 0.25, so correlation is not significant using 95% confidence level. The same happens between the support strategies and language. We found a significant correlation between language performance and coding strategies (Pearson index equal to 0.45; P= 0.007) and also with recovery strategies (Pearson index equal to 0.56; p=0.000).

1.1. Learning Strategies and Math (Social Sciences) Academic Performance Results

Table 2. Correlation between Learning Strategies and Math Academic Performance.

<table>
<thead>
<tr>
<th></th>
<th>Acquisition</th>
<th>Coding</th>
<th>Recovery</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson</td>
<td>.255</td>
<td>.499**</td>
<td>.227</td>
<td>.261</td>
</tr>
<tr>
<td>N</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>

*p<0.01 **p<0.001 Source: prepared by authors

Table 2 shows the correlation between learning strategies and math performance. In this case we found significant correlation among coding strategy and maths, with a Pearson coefficient of 0.49 and p value equal to 0.000. We did’nt find out significance correlation with the others learning strategies.
4. Conclusions and discussion

Given the research results it can be seen how learning strategies significantly correlated with students’ academic performance; specifically with language subject. We found that performance is significantly related with coding (Pearson=0.45; p=0.007) and recovery (Pearson=0.56; P=0.000). On the other hand, in maths subject the significant correlation occurs with the coding strategy (Pearson=0.49; P=0.000).

Therefore, these results are consistent with previous research such as Ceniceros (2009), where there is a reflection process on learning processes used by students; Martin Garcia, Torbay and Rodriguez (2008) shows how learning acquired by students is meaningful and self-regulated. And Valle, Rodriguez, Cabanach, Nunez, Gonzalez-Pienda and Rosario (2009) found that the greater the use of strategies and self-regulation, academic achievement in curricular areas tested are also increased.

At the time to evaluate the research results it must take into account some limitations, mainly related with the sample: 1) This study was conducted in a single center; 2) in one location; 3) the sample size is small; 4) is composed only by males and 5) we use just one performance measure. Considering this, for upcoming research, it would be necessary a sample amplify with more schools and cities, in order to get a country representative sample. In addition, the study will focus on observed performance differences in both men and women, and measure learning strategies used by students and their performance not only at the end of the academic year but throughout the course. In this way, we can observe and analyze the evolution of learning strategies and students’ academic performance.

5. References


SPSS para Windows. (2007). Versión 15.0
