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Learning styles, teaching strategies and academic achievement in higher education: A cross-sectional investigation

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Abstract

This study aims at comparing two groups of pre-service teachers (with Educational Sciences and Economic Sciences major) in order to identify their learning style preferences, the most effective teaching strategies for each learning style and some possible differences between their academic achievements ($N=182$). A between subject design was used to analyze the data collected through a survey method. Significant differences between the two categories of students have emerged in relation with the most effective teaching strategies corresponding to each learning style category.

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1. Introduction

Effective teaching requires flexibility, creativity and responsibility in order to provide an instructional environment able to respond to the learner's individual needs. As Tomlinson (2001) puts it, beyond the experiential evidence that pervasive uniformity in teaching fails many learners, there is reason in both theory and research to support a movement towards an instruction attentive to students' variance manifested in at least three areas: the student's readiness, interest, and learning profile. One of the ongoing challenges the university teachers are facing is related to matching the teaching strategies with the students' learning styles in order to improve the academic achievement. Starting from this issue, at

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least two essential questions are asking for an answer: Could it be that matching the teaching strategies with the students' learning styles enhances their academic achievement? If the answer is affirmative, how can we identify the most appropriate teaching strategies for each learning style?

In order to answer the first question, a considerable amount of research has confirmed that congruence between teaching strategies and learning styles has have a positive impact on the academic achievement (Arthurs, 2007; Beck, 2001; Felder & Brent, 2005; Ford & Chen, 2001; Rogers, 2009; Shaugnessy, 1998), motivation (Bell, 2007; Tulbure, 2010; Zhang, 2006) and attitudes toward learning (Beck, 2001; Felder, 1993; Marshall, 1991). Despite this evidence, we have to take into account other studies showing that disagreement between teaching strategies and preferred learning style would have some beneficial effects on learning outcomes (Baker & Cooke, 1988; Kowoser & Berman, 1996). However, another set of studies revealed that the matches between students' learning styles and instructional strategies did not affect the students' learning performance (Akdemir & Koszalka, 2008; Massa & Mayer, 2006). Considering the variety of the existent data, we could only say that this issue is controversial. Therefore, our first question is still open and needs further investigation. The task concerning the development of a universal recipe for all categories of learners is daunting and contrary to the underlying assumption of individualizing the learning environment. Consequently, in this study, we propose a specific investigation for pre-service teachers enrolled within two fields of study: Educational Sciences and Economic Sciences.

In an attempt to answer the second question, we have found, in the specialty literature, some recommendations regarding the most appropriate teaching strategies corresponding to each learning style (Anderson, 2007; Arthurs, 2007; Nilson, 2010; Tomlinson, 1999). For example, Nilson (2010) makes some relevant suggestions to adapting the teaching strategies to the four learning styles described by Kolb (2005): assimilator, converger, diverger and accommodator. Beyond these suggestions regarding the most effective teaching strategies appropriate to each learning styles, we consider that by comparing the group of pre-service teachers attending the Educational Sciences with the group of those attending the department of Economic Sciences, we can investigate the possible differences between the teaching strategies that best suit students having the same learning styles.

2. The objective and the research hypothesis

The main objective of this study is to compare pre-service teachers having two different majors (i.e., Educational Sciences and Economic Sciences) in order to identify their learning style preferences, the most effective teaching strategies for each learning style, and the differences concerning their academic achievement. In other words, our study investigates the possible differences between the academic achievements obtained by the two groups of students, when instructed with various teaching strategies. We hypothesize that the same teaching strategies will lead to different academic achievement across the students belonging to the two groups who have the same learning style.

3. The Method

3.1. The Procedure

The learning style of each participant was identified using a self-report questionnaire. Along one semester, two lecturers implemented five categories of teaching strategies: the graphical organization of information, the cooperative learning, the investigation, the debate and the problem solving. Each strategy was implemented during about four hours within the same course (i.e., Basis of Pedagogy). At the end of each four-hour interval, the students' academic achievement was evaluated through a summative assessment test.

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