RELACIÓN ENTRE EL ENFOQUE DE APRENDIZAJE EN EL RENDIMIENTO ACADÉMICO UNIVERSITARIO. UN ESTUDIO DE CASO.

RELATIONSHIP BETWEEN LEARNING APPROACH IN THE UNIVERSITY ACADEMIC PERFORMANCE. A CASE STUDY.

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En este artículo se analiza si existe relación entre el enfoque de aprendizaje y el rendimiento académico de los alumnos, mediando como variable independiente el empleo de WEbCT. Se realiza en la Escuela Técnica Superior de Ingeniería de Edificación (ETSIE), de la Universidad de Sevilla, sobre una muestra de 176 alumnos. En función de las necesidades del análisis estadístico se recurrirá a la t de student, t de Welch, U de Mann-Whitney, ANOVA (F de Snedecor o F de Welch) o la prueba de Kruskal-Wallis. Los resultados obtenidos indican que no existe correlación entre el enfoque y el rendimiento académico, con docencia mediada por plataforma educativa.
Palabras clave: rendimiento académico, WebCT, enfoque de aprendizaje.

This article analyzes the correlation between the learning approach and the academic performance of students, the use of WebCT is an independent variable. The study is done in the Building Engineering School (ETSIE) at the University of Seville, the sample size is 176 students. Depending on the statistical analysis the t test, Welch's t, Mann-Whitney, ANOVA (F of Snedecor or Welch F) or Kruskal-Wallis test are used. The results do not indicate a correlation between the learning approach and the academic performance, the teaching methodology includes a virtual learning platform.
Keywords: academic performance, WebCT, learning approach.

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1. Introduction.

Coll (2007, p. 179) indicates that learning is a process in which «students learn, the contents that are object teaching and learning, and teacher who helps students to build meaning and attribute meaning to they do and learn». We wanted to start this chapter with this significant paragraph we understand is vigorously related to the implementation of the European Higher Education Area. Biggs (1999, p. 62) suggests that learning is «a way of interacting with the world. As we know, our conceptions of things and phenomena change and see the world differently. The acquisition of the information, in itself, does not provide such changes but so does the way we structure this information. Thus, education is concerning that conceptual change, not the acquisition of information».

The Lisbon Declaration (2007) suggests that universities should move towards a teaching model, in which the student is the center of the learning process. This is enhanced when it asserts that those processes must adapt to highly variable needs that students present, and that must also ensure full accessibility to the means available.

The study of learning approaches has been used, in its different versions, to learn, diagnose and solve conflicts of learning as either single instrument or in combination with others.

Hernández Pina (2005, p. 29) defines learning approaches as «intentional phenomenon of the individual that is directed towards the world around him. It is not something that is within the student, but rather is set to how the student learning experience». To Corominas, Tesouro and Teixidó (2006, p. 446) the «learning approaches arise from consideration synergistic content area of study, the demands of context and awareness that students are learning». And also indicate that «learning approaches include the individual (genetic, cognitive style, prior experience) and the situation in which the behavior occurs. A person in a context is not simply the sum of the person and the context» (p. 446).

Marton and Svensson (1979) argue that the approaches focus on the characterization of the conceptions about the student interprets the world around him, especially the content and the learning context, and the act of leaning in itself (p. 471). Therefore Entwistle and Tait (1996) understand that this new approach provides a valid conceptual framework for understanding the differences in student learning. And to Duff (2004), they try to understand the processes of learning that students continue to evaluate the learning experiences of these and the way they face, give meaning to them. To Ramsden (1992) the approaches are associated with how and what students learn rather than how much they learn.

In this respect we consider the contribution of Valle Arias, Cabanach Gonzalez, Núñez Pienda and Gonzalez-Perez (1998), who after a detailed study suggest that:

The perceived capability influences both internal and causal attributions in academic self-concept, while an incremental conception of intelligence should influence the use of a deep learning approach. At the same time, prior attainment on academic self-concept influences on causal attributions and current academic outcomes. Furthermore, it is argued that the perception of the evaluation criteria, the type of subject, teaching style, and task characteristics affect learning approaches (p. 397).

The first that employed the construct approach were Marton and Säljö in 1976 with university students in Sweden, employing the terms of deep approach and shallow approach to learning to refer to the way in which students faced reading research articles from the focus of qualitative approach developed from a phenomenographic orientation.

Hernandez Pina, Garcia Sanz Martinez Clares, Hervas Avilés and Maquilon Sánchez (2002, p. 490) submits that «a Shallow approach to learning is clearly at odds with the objectives and principles of what should be a university education».

Selmes (1988, in Pozo, 1996, p. 207) establishes the characteristics for the shallow approach that set out in Table 1.

The features that Selmes attributed to the deep approach are gathered in the Table 2.

However, Kember (in García Berbén, de la Fuente, Justicia & Pichardo, 2005, p. 259) states that the focus of the students belong to a continuum, in which the shallow and the deep focus occupy the ends.

· Shallow: extrinsic motivation. Memoristic strategy. Mechanical learning. Quantitative conception of learning.

· Intermediate 1: motivation fundamentally extrinsic. Memoristic Strategy, but uses the understanding to facilitate it. Quantitative conception of learning, but considers that is necessary not just memorization but understanding must be involved in a lesser extent.

· Understanding and memorization: intrinsic and extrinsic motivation. Initially seeks to achieve understanding, but with the aim of memorization. Qualitative conception of learning, is in a state of equilibrium between memorization and meaning construction.

· Intermediate 2: intrinsic motivation. Uses memory strategies, but after having understood the material. Qualitative conception of learning.

· Depth: student motivation is intrinsic, strategies are aimed to understanding the task. The student understands that learning is reached with the construction and revision of the material to be learned.

Isolation	It focuses on the procedural elements of the task
	Tendency to treat the material as if it's isolated from other materials
	Considers that the task consists of discrete part
	It focuses on tasks elements
Memorizing	Consider that the context of the task requires memorization of material
	The student defines the task as a memory task
	The student states his intention to memorize the material
Passivity	The task is defined by another person
	Indicates a thoughtless or passive approach of the task
	Indicates teacher dependence
	Try the material externally

Table 1. Features of shallow approach according Selmes. Source: Well, 1996, p. 207

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Personal integration	• Intention to create a personal interpretation of the material
	• Emphasizes the importance of personal interpretation comparing with those of another person
	• Indicates the desire to relate the task to the personal situation outside the immediate context
	• Intent to link ideas and personal experiences with the topic of the task
	• Indicates the desire to link the task / concept with everyday situations
	• Consider the task as a part of personal development
Interrelations	• Intent to connect the parts of the task each other
	• Intent to relate the task with other relevant knowledge
	• Relate what you know about another problem with a new problem
	• Match the previously studied materials with new materials or new materials with future materials
	• Intent to relate material from different sources
	• Think proactively in the relations between the parts of the material
	• Try to relate the aspects of a problem
Transcendence	• Intention to focus on the meaning of the content
	• Intent to think about the underlying structure of the task
	• Try to use some of the material to represent all, or a text to represent a kind of text

Table 2. Features of deep approach according Selmes. Source: Well, 1996, p. 207

2. Methodology.

2.1. Objectives and hypotheses.

The main objective of this research is to *Test the relationship between dominant learning approach of students and their academic performance.* As have employed two different teaching methods, you can set two subgoals:

· Check the relationship between dominant learning approach of students and their academic performance during the first semester of the course.

· Check the relationship between dominant learning approach of students and their academic performance during the second semester of the course.

Hypothesis

Hypothesis 1: There are differences in the performance of students in the subject Materials 1 in function of the dominant learning approach.

Since different methodologies used in the two semesters we formulate the following sub-hypotheses.

Sub-hypothesis 1.1: About the performance in the first quarter:

H_0: No significant differences in student achievement in the subject Materials 1 during the first quarter with teaching methodology based on the use of WebCT learning platform, depending on the dominant learning approach.

H_1: Significant differences in student achievement in the subject Materials 1 during

the first quarter with teaching methodology based on the use of WebCT learning platform, depending on the dominant learning approach.

Sub-hypothesis 1.1: About the performance in the second quarter:

H_0: No significant differences in student achievement in the subject Materials 1 in the second quarter with traditional teaching methodology without using the WebCT learning platform, depending on the dominant learning approach.

H_1: Significant differences in student achievement in the subject Materials 1 in the second quarter with traditional teaching methodology without using the WebCT learning platform, depending on the dominant learning approach.

2.2. Tool.

It has been used Questionnaire Revised Study Process (R-CPE-2F), adapted by Recio Saucedo (2004, 2007) of inventory R-SPQ-2F (Bigs, Kember & Leung, 2001). The goal of this questionnaire is to identify the predominant learning approaches in students from the exhibit, namely: shallow and deep. Each of the approaches, while two subscales comprises as follows:

· Deep Approach: DA = DM (deep motivation) + DS (deep strategy)

· Shallow Approach: SA = SM (Shallow motivation) + SS (surface strategy)

The questionnaire is resolved from a Likert type scale of five possible answers, and each is associated with a score of 1 to 5: never or rarely (1) Sometimes (2), half of the time (3), often (4) always or almost always (5).

To determine the reliability of the questionnaire of learning approaches R-SPQ-2F was calculated Cronbach's alpha coefficient for each of the two sets of 10 items that are diagnosed with each of the two learning approaches of the main scale, shallow approach and deep approach, and each of the four sets of five items that diagnose the four learning approaches subscale, namely, shallow-motive, shallow-strategy, deep-motive, deep-strategy. The coefficients obtained for each approach are set out in Table 3.

2.3. Population and sample.

The population consists of 315 students enrolled in four of the ten groups in the first year of the Higher Technical School of Engineering Building at the University of Seville. The sample consisted of 176 students (55.87% of the population), who are the students who completed the questionnaire of learning approaches R-SPQ-2F of Biggs.

The sample was chosen in an incidental way, that is not randomly, since it aims to achieve contextual information so that the results found in the same reverse (Gil Flores, Rodriguez Gomez & García Jiménez., 1995, p. 224), or opinion sampling method (Sabariego, 2009, p. 148), or intentional (Cohen & Manion, 1990, p. 139). But also understand that it can be considered a convenience sampling

DEEP MOTIVE	DEEP STRATEGY	SHALLOW MOTIVE	STRATEGY SHALLOW	DEEP APPROACH	*SHALLOW APPROACH*
.478	.568	.609	.575	.68	.739

Table 3. Cronbach's alpha coefficient by approach

(Cohen & Manion, 1990, p. 138), or causal or accessibility (Sabariego, 2009, p. 148) simultaneously because informants are individuals closest to the formative action, in order to report on it, and know their organismic characteristics.

2.3.1. Sociodemographic profile of the initial sample.

The sample for the study of learning approaches was constituted by 176 students who filled in the questionnaire of learning approaches R-CPE-2F, of which 60 (34.09%) were women and 116 (65.91%) men. In graph 1 shows the distribution of students by group and gender.

2.3.2. Identification of the approaches.

Recio Saucedo (2004, p. 99) proposes determining the intensity of the approach on the basis of the difference between the scores that a student obtains between deep and shallow approach. The idea is that as the minimum score that can be obtained in each approach (deep or shallow) of the main scale is 10 (10 items that may have a minimum score of 1) and the maximum score that can be obtained in each approach is 50 (10 items that can have a maximum score of 5), that the smallest difference that can exist between scores on each approach is 1 and the largest possible difference is 40. In this way if the difference between the scores of approach is between 1 and 13 points is considered low intensity if between 14 to 26 is considered medium intensity, and if it is between 27 and 40 is considered high intensity.

With these precisions, the assignment to approach learning in the main scale for the students reflects the following distribution (Table 4) based on the dominant approach (approach with the highest score):

Predominantly we find deep approach students (139) versus shallow approach (30), and there are 7 students with the same score
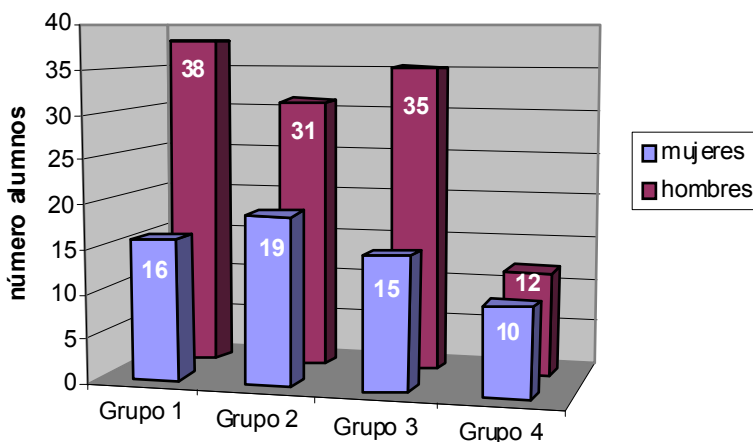
Graph 1. Sample distribution by gender and group

LEARNING APPROACHES	N. STUDENTS	%	APPROACH INTENSITY		
			High	*Med.*	*Low*
Deep	139	78.98	2	42	95
Shallow	30	17.04	0	3	27
Undefined	7	3.98			

Table 4. Distribution of the dominant learning approachess.

in both approaches so do not ascribe to any of them. As the intensity is observed that in both approaches highlights the low intensity level.

2.4. Data analysis.

When you employ as grouping variable for contrast the learning approach dominating the main scale, which has two categories, we will use the Student's T, Welch's T, or Mann-Whitney's U depending on whether or not comply the cases of normality and homoscedasticity. And when we employ as grouping variable to carry out the contrast the dominant learning approach subscale, which has four categories that will be used ANOVA (Snedecor's F or Welch's F, depending on the course of homoscedasticity) or the Kruskal-Wallis depending on supposition of normality. In all cases it is intended to determine whether there are significant differences in the means of scores on the subject of Materials 1, depending on the dominant approaches aforementioned for a significance level of 95% ($á = .05$).

3. Results

3.1. Influence in the performance with the use of WebCT platform

It first analyses the potential influence of the categories of the main scale learning

1st QUARTER QUALIFICATIONS	APPROACH	KOLMOGOROV-SMIRNOV		
		Stadistic	gl	significance
Did. Unit 1	*Shallow*	.108	25	.200*
	Deep	.101	124	.003
Did. Unit 2	*Shallow*	.189	22	.039
	Deep	.207	117	.000
Did. Unit 3	*Shallow*	.129	20	.200*
	Deep	.045	111	.200*
mid-term-1	*Shallow*	.132	26	.200*
	Deep	.116	130	.000
*. This is a lower limit of the true significance.				

Table 5. Normality test for the qualifications of 1st quarter (1C) by main scale approach.

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		Levene test		T-test for equality of averages		
		F	**Sig**	**t**	**gl**	**significance (bilateral)**
Did. Unit 3	Assumed equal variance	1.552	.215	-2.041	129	.043
	Not assumed equal variances			-1.677	23.039	.107

Table 6. Student's T test for glass qualifications grouped by main scale approach.

	Test Statistics			
	U de Mann-Whitney	*W de Wilcoxon*	*Z*	*significance*
Did. Unit 1	1274.000	1599.000	-1.402	.161
Did. Unit 2	1227.500	1480.500	-.343	.731
mid-term-1	1363.500	1714.500	-1.553	.121

Table 7. Mann-Whitney's U test 1C qualifications grouped by main scale approach.

approaches. The normality test of Kolmogorov-Smirnov (Table 5) indicates that the distribution is not normal have any categories of the grouping variable «Focus» with $p < .05$ in the qualifications of the didactic unit 1, didactic unit 2 and mid-term 1. While grades in the didactic unit 3 you meet the assumption of normality from having both the category «shallow» and category «deep» p values $p > .05$.

The fulfillment of the normality case on the ratings of glass allows use Student's t-test (Table 6), while for the qualifications of the didactic unit 1, didactic unit 2 and mid-term-1 will have to use the non parametric Mann-Whitney U test (Table 7).

The Levene test confirms that is fulfilled homoscedasticity case of to be its significance $p = .215 > .05$ leading to choose the Student t test (equal variances were assumed) as a more appropriate alternative analysis to compare the average grade both groups. Consequently, there are significant differences in ratings of the didactic unit 3

between students shallow dominant approach ($X = 4.1150, S = 2.19884$) and the deep dominant focus ($X = 4.9808, S = 1.65567$), $t(129) = 2041, p = .043$, with a small effect size $d = .3594$.

The non parametric Mann-Whitney U indicates no significant differences between shallow and deep approaches on ratings of the topics: Didactic unit 1, $U = 1274, p = .161$; Didactic unit 2, $U = 1227.5, p = .731$, mid-term-1 $U = 1363.5, p = .121$.

Analysed the influence of main scale categories of learning approaches, secondly is studied the possible influence of the categories of the subscale on the learning approaches. The normality test of Kolmogorov-Smirnov (Table 8) shows that the distribution is not normal to have some category of for the grouping variable «Approach» with $p < .05$ in the qualifications of the didactic unit 1, didactic unit 2 and mid-term 1. While on the ratings of the didactic unit 3 If it is fulfilled the supposition of

1st QUARTER QUAL	APPROACH	Kolmogorov-Smirnov		
		Stadistic	gl	significance
Did. Unit 1	*Shallow / Motive*	.164	12	.200*
	Shallow / Strategy	.185	14	.200*
	Deep / Motive	.102	90	.023
	Deep / Strategy	.195	21	.036
Did. Unit 2	*Shallow / Motive*	.174	10	.200*
	Shallow / Strategy	.218	13	.092
	Deep / Motive	.209	84	.000
	Deep / Strategy	.204	19	.036
Did. Unit 3	*Shallow / Motive*	.169	10	.200*
	Shallow / Strategy	.137	12	.200*
	Deep / Motive	.058	78	.200*
	Deep / Strategy	.105	19	.200*
mid-term-1	*Shallow / Motive*	.225	12	.096
	Shallow / Strategy	.141	15	.200*
	Deep / Motive	.115	93	.004
	Deep / Strategy	.212	23	.009
*. This is a lower limit of the true significance.				

Table 8. Normality test of 1st quarter qualifications by the subscale approach.

normality to take into the four categories of the subscale values for $p > .05$.

The fulfillment of the normality assumption on the ratings of glass allows us to use the analysis of variance (ANOVA) (Table 9), while for the qualifications of the didactic unit 1, didactic unit 2 and mid-term one will have to use the non parametric Kruskal-Wallis test (Table 10).

The test of homogeneity of variances (Levene test) ANOVA on the ratings of the didactic unit 3 gave a significance $p = 118$ which when greater than ,05 indicates that the supposed of homoscedasticity meets, so

we use Snedecor's F from the ANOVA. Consequently, no significant differences in ratings of the didactic unit 3 between students of the four dominant approaches the subscale $F(4.130) = .697, p = .595$.

The non-parametric Kruskal-Wallis test indicates no significant differences between the four approaches subscale scores on topics: Did. Unit 1, $X^2(3, N = 137) = 2529, p = 0.470$; Did. Unit 2, $X^2(3, N = 126) = 1232, p = 0.745$; Part-1 $X^2(3, N = 143) = 1814, p = .612$.

The tests do not confirm our hypothesis in any of the grades, except in glasses by main scale approaches. Accordingly, the null

	Levene test	ANOVA								
		Snedecor	Welch							
	F	Sig	F	gl-1	gl-2	Sig	F	gl-1	gl-2	Sig
Did. Unit 3	1.881	.118	.697	4	130	.595	.457	4	29.494	.767

Table 9. ANOVA for qualifications of glasses grouped by subscale approaches.

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APPROACH	N	Test Statistics		
		Chi	gl	significance
Did. Unit 1	137	2.529	3	.470
Did. Unit 2	126	1.232	3	.745
mid-term-1	143	1.814	3	.612

Table 10. Kruskal-Wallis test for 1C qualifications grouped by sub-scale approach.

2nd QUARTER QUALIFICATIONS	APPROACH	Kolmogorov-Smirnov		
		Stadistic	gl	significance
Did. Unit 4	*Shallow*	.135	25	.200*
	Deep	.091	123	.014
Did. Unit 5	*Shallow*	.145	25	.183
	Deep	.076	124	.078
Did. Unit 6	*Shallow*	.157	19	.200*
	Deep	.113	107	.002
Did. Unit 7	*Shallow*	.162	17	.200*
	Deep	.103	109	.006
Mid-term 2	*Shallow*	.155	26	.112
	Deep	.082	126	.038
*. Este es un límite inferior de la significance verdadera.				

Table 11. Normality test for the 2nd semester qualifications (2C) by main scale approach.

hypothesis 1.1 is acepted. *No differences were observed in student achievement in the subject Materials 1 during the first four-months period with teaching methodology based on the use of WebCT learning platform, depending on the dominant learning approach.*

3.2.   Influence on performance without using WebCT platform.

Just as we was done in the previous section, we will first analyse the possible influence of the categories of the main scale of learning approaches. The normality test of Kolmogorov-Smirnov (Table 11) shows that the distribution is not normal to have some category of the grouping variable «Approach» with $p < .05$ in the qualifications of the didactic unit 4, didactic unit 6, didactic unit 7 and mid-term 2. While on the ratings of the didactic unit 5 is met the normality assumption to note that both the category «Shallow» and category «Deep» shows values for $p > .05$.

Compliance with the assumption of normality in the qualifications of the didactic unit 5 enables employ Student's t test (Table 12), while for the qualifications of the didactic unit 4, didactic unit 6, didactic unit 7 and mid-term 2, will have to employ the nonparametric Mann-Whitney test (table 13).

		Levene test		T-test for equality of averages			
		F	**Sig**	**t**	**gl**	**significance (bilateral)**	
Did. Unit 5	Assumed equal variance	.008	.927	.001	147	.999	
	Not assumed equal variance			.001	34.705	.999	

Table 12. Student's T test for limes qualifications grouped by main scale approach.

	Test Statistics			
	Mann-Whitney's U	**Wilcoxon's W**	**Z**	**significance**
Did. Unit 4	1517.000	1842.000	-0.105	.916
Did. Unit 6	963.500	6741.500	-0.362	.718
Did. Unit 7	840.000	6835.000	-0.619	.536
Mid-term-2	1426.000	1777.000	-1.037	.300

Table 13. Test Mann-Whitney's U for the qualifications 2C grouped by main scale approach.

The Levene test confirms that the assumption holds their meaning homoscedasticity $p = .927 > .05$ which leads to choose the Student t test (equal variances were assumed) as a suitable alternative analysis for comparing average score of both groups. Thus, no significant differences on the ratings of the didactic unit 5 between students shallow dominant approach and deep dominant approach, $t\,(147) = .001$, $p = .999$.

The nonparametric Mann-Whitney U indicates no significant differences between shallow and deep approaches on the ratings of the subjects: didactic unit 4, $U = 1517$, $p = 0.916$; didactic unit 6, $U = 963.5$, $p = 0.718$; didactic unit 7, $U = 840$, $p = .536$, mid-term 2, $U = 1426$, $p = .300$.

Analysed the influence of main scale categories of of learning approaches, we proceed to study the possible influence of the categories of the subscale of learning approaches. The normality test of Kolmogorov-Smirnov (Table 14) shows that the distribution is not normal to have some category of the grouping variable «approach» with $p < .05$ in the qualifications of the didactic unit 6, of the didactic unit 7 and the mid-term 2. While the ratings of the didactic unit 4 and didactic unit 5 marks the normality assumption to take the four categories of the subscale values $p > 05$

The fulfillment of the normality assumption in the qualifications of the didactic unit 4 and didactic unit 5 allows employ analysis of variance (ANOVA) (Table 15), while for the qualifications of the didactic unit 6, of the didactic unit 7 and mid-term 2 used the nonparametric Kruskal-Wallis test (Table 16).

The test of homogeneity of variances (Levene test) ANOVA on the ratings of the didactic unit 4 and didactic unit 5 gives significance $p = .219$ and $p = .735$ respectively, both being greater than .05 indicates that the

1st QUARTER QUALIFICATIONS	APPROACH	Kolmogorov-Smirnov		
		Estadístico	gl	significance
Did. Unit 4	*Shallow / Motive*	.229	11	.111
	Shallow / Strategy	.124	15	.200*
	Deep / Motive	.093	85	.068
	Deep / Strategy	.138	23	.200*
Did. Unit 5	*Shallow / Motive*	.226	11	.122
	Shallow / Strategy	.125	15	.200*
	Deep / Motive	.087	86	.130
	Deep / Strategy	.095	23	.200*
Did. Unit 6	*Shallow / Motive*	.193	10	.200*
	Shallow / Strategy	.228	11	.114
	Deep / Motive	.127	75	.004
	Deep / Strategy	.169	18	.186
Did. Unit 7	*Shallow / Motive*	.175	10	.200*
	Shallow / Strategy	.223	9	.200*
	Deep / Motive	.102	78	.043
	Deep / Strategy	.180	18	.129
Mid-term 1	*Shallow / Motive*	.154	12	.200*
	Shallow / Strategy	.141	15	.200*
	Deep / Motive	.079	88	.200*
	Deep / Strategy	.239	23	.001
*. Este es un límite inferior de la significance verdadera.				

Table 14. Normality test for th qualifications of th 2nd quarter by approache.

	Levene test		ANOVA							
			Snedecor				Welch			
	F	Sig	F	gl-1	gl-2	Sig	F	gl-1	gl-2	Sig
Did. Unit 4	1.943	.106	1.398	4	147	.238	1.509	4	37.692	.219
Did. Unit 5	.233	.919	.583	4	148	.676	.501	4	35.059	.735

Table 15. ANOVA qualifications for gypsum and lime grouped by approaches.

case of is met homoscedasticity in both cases, what is used by the ANOVA F Snedecor. Consequently, no significant differences exist in ratings of the didactic unit 4 $F(4.147) = 1398$, $p = 0.238$ and didactic unit 5, $F(4,148) = .583$, $p = .676$, between students of four dominant approaches.

The nonparametric Kruskal-Wallis test indicates no significant differences between the four approaches subscale scores on the units: didactic unit 6, $X^2(3, N = 114) = 1.066$, $p = .785$; didactic teaching 7, $X^2(3, N = 115) = 2605$, $p =. 457$; mid-term 2 $X^2(3, N = 138) = .409$, $p = .938$.

The tests do not confirm our hypothesis in any of the grades, therefore we accept the null hypothesis 1.2. *No significant differences in student achievement in the subject*

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APPROACH	N	Test Statistics		
		chi-squared	gl	Significance
Did. Unit 6	114	1.066	3	.785
Did. Unit 7	115	2.605	3	.457
Mid-term 2	138	0.409	3	.938

Table 16. Kruskal-Wallis test fot 2C qualifications grouped by approach

Materials 1 in the second quarter with traditional teaching methodology without using the WebCT learning platform, In order to the dominant learning approach.

4. Discussion.

There are few investigations conducted on the same instrument, R-SPQ-2F, and in a similar context, college technical branch, so the contrast should not be taken as definitive elements, but as informative illustrations, especially considering learning approaches that are largely conditioned by environmental and individual variables. For the contrast presented below, will be used only to research that used the R-SPQ-2F, in any version adapted to Spanish, and in the university context.

From the analysis of data is apparent that students who were part of the sample, present mostly deep learning approach (78.98%), with a percentage higher than those with shallow approach (17.04%), it we should express the presence of defined unfocused students (3.98%), and all but one of these are students, not giving the case of any female student.

As for the distribution function of the intensity, we get that the total sample that presents deep approach, as only 1.43% have a high intensity, moderate intensity is given in 30.21% of those students with this approach, and low intensity, is the main for this approach with 68.34% of students. Regarding the shallow approach, is not given any high intensity case, and dominated by low-intensity students (90%) compared to those with moderate (10%). Partially we agree with the results found by Recio (2007, p. 208), in the sense that in both investigations concluded predominantly in deep approach, although the percentages differ widely, and moreover, reached agreement on the low percentage of those with high intensity, but there are significant differences in the distribution at low and moderate intensities. However, we must clarify that the students with whom Dr. Recio doing his research are adults, and workers with dependent relatives.

We found no other studies that identical results are obtained. If we agree with the foregoing partially shown by Chan (s.f.) who found no significant differences in deep strategy subscale. And, in contrast with Muñoz and Gómez (2005) studied in technical careers at the Catholic University of Murcia, obtained that there are significant differences in the subscales deep approach and, on the other hand, if we agree with the findings in Science Health and Business Administration from the same university, which found no differences in that subscale.

However, although at first we could satisfy that students mostly present deep learning approach, we should clarify the results, as well as in deep approach on the shallow

predominates low intensity. And above all it will be necessary to raise as future line of study, the situation of students with shallow focus, since none of them are in high intensity, and only three in average intensity. By doing the same with the subscales that define each approach, we find that the deep approach in Reason Reason, and the shallow in Strategy subscale.

The statistical analysis informs us that there are no significant differences in student achievement in the subject Materials 1 during the first quarter with teaching methodology based on the use of WebCT learning platform, depending on the dominant learning approach. And equally there are also no significant differences in student achievement in the subject Materials 1 in the second quarter with traditional teaching methodology.

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