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Specificities in Pedagogical use, Content Management and Performance with a Virtual Space in Neuroanatomy

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Objective: To evaluate parameters of use, content management and performance, specifying instructional strategies used in Neuroanatomy through the implementation of a VSTL.

Materials and Methods: An observational, retrospective and cross-sectional study on parameters of use, content management and performance in 309 university students with an EVEA applied in 3 commissions of Human Anatomy matter. The results were divided according to the rotation of matter (neuroanatomy and musculoskeletal with splanchnology contents) and pedagogical strategy activities (clinical and surgical cases and clinical imaging cases); statistical parameters (descriptive and inferential) were applied and correlated with the socioeconomic characteristics of users. The work complied with the ethical and legal standards.

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Specificities in Pedagogical use, Content Management and Performance with a Virtual Space in Neuroanatomy

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Results: The access time was the day of the practical work. The activities recorded most times of realization, especially that presented clinical-surgical high rate of deprecated. Working hours per week were correlated with the outcome (R2= 0.76).

Conclusions: The performance in virtual Neuroanatomy activities presented specifications related to the object of study and teaching strategies associated. The number of work hours impacted both performance and management of the content and features of using virtual space.

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I. Introduction

Our preliminary investigations determined qualitative and quantitative benefits achieved by university undergraduate course of Human Anatomy mediated by the use of a virtual space for teaching and learning (VSTL) applied as a supplemental instructional resource learning1, 2,3,4,5, 6,12,20,21,22, which were consistent with the international literature on this topic7,8,13,14.

The benefits of the implementation of VSTL in the process of teaching and learning as a complementary tool to classical curriculum development of the subject were both objective (student performance associated with its use, number of hours of student relationship with matter, addressing the issues through different teaching strategies) and subjective (ratio of educating their peers, with the development of the art and the internalization and generation of new educational settings), and were added to maximize the chances of cognitive schemas through use, to the particularity of power 24 hours for any channel connection (computer, notebook, netbook, cell, mobile connections or not)21 and allow its users to imagine and generate innovations within it, making them active participants and used not mere receptores20,23.

The case of the rotation of Neuroanatomy, part of the curriculum of the subject Anatomy of the Medical School, has characteristics inherent in the topics covered as well as the timing of its adoption in that submitted. The study of neuroanatomy, after corresponding rotations Splanchnology and Musculoskeletal, is characterized by a more theoretical approach of content with greater complexity (leading to difficulties) in the conceptualization, abstraction and three-dimensional location of structures21. However, this rotation issues remain intrinsic, inseparable and complementary relationship with other knowledge (physiology and chemistry). This limitation in addressing the issues so atomized and the current educational trend of education in relation to concepts of Clinical Anatomy, complicate their study and force our teachers to implement teaching strategies. Added to these difficulties as the object of study and teaching, innovations and developments arising from research in basic and applied neuroscience generate a context of changing concepts and clinical-surgical applicability.

II. Purpose

The objective of this research was to evaluate the parameters of use, content management and performance, specifying the instructional strategies implemented during Neuroanatomy rotation using a

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VSTL applied to the teaching of anatomy. Also, the results were correlated with socio-occupational characteristics of students.

III. Materials y Methods

An observational, retrospective, cross-sectional study on the implementation of a VSTL designed with the Moodle® platform was implemented as a supplemental instructional resource to practical work with cadavers (preparations of the Museum and Jakob´s and Fleshing´s cuts) and classes are held theoretical teaching provided by the Chair in the rotation Neuroanatomy. We studied the user´s adhesion (students) in the activities of clinical anatomy (clinical and surgical cases, structural imaging correlates with anatomical preparations and cases imaging with 3D reconstructions), content management (administrative and academic) was assessed, which were used by the students through the virtual space and teachers to evaluate the teaching-learning process and performance parameters (mean times were evaluated to perform the activities necessary to approve, percentage of time or "attempts" approved and disapproved, and percentage of students who failed the same activity twice or more times); the results of these assessments in Neuroanatomy rotation were compared with the average results of other rotations (Locomotor and Splanchnology).

Our population consisted of 309 students of 3 fees associated with the attended of Anatomy, 3rd Chair. Was an inclusion criterion users who had performed completely all activities mentioned in various formats; and were excluded users who had not completed all the activities (loss of regularity condition such as lack of adherence to educational resource of the virtual platform) and records results in revenue during the refresher prior to partial each area. The population characteristics of the sample are shown in Table 1.

The results were tested for descriptive statistics (mean, maximum, minimum) and inferential (correlation r and r2) and graphs for better visualization were performed using the Microsoft Excel® 2007 for Windows. The present research was conducted attentive to ethical and regulatory objections force (requirements of Good Clinical Practices -GCP- regulatory arrangements and adherence to ethical principles originating in the Declaration of Helsinki)

IV. Results

We were able to objectify higher Neuroanatomy average income in relation to the determined average of the other two areas that make up matter (musculoskeletal and splanchnology). This area is noted that the main point of access to the virtual space was the day of practical work (PW) followed by income up to 24 hours after PW, made very significant given the other areas prevailed income range between 24 to 72 hours after PW [Figure 1]. When assessing the time band EVEA entry, night hours between 20 and 24 hours was the most prevalent in both the rotation and the average of the other of matter. In all areas of the subject prevailed income weekdays [Figure 2].

Parameters opinion adhesion with the virtual space presented in neuroanatomy high positive response; students emphasized that knowledge of normal anatomy helped them to understand the imaging, while parameter less positive response was associated with the correlation of concepts with the theoretical and the usefulness of clinical and surgical cases for understanding of normal anatomy [Figure 3-5].

In relation to the management of content in the VSTL, we determined that the neuroanatomy´s activities were the recorded as many times embodiment; activities based on clinical and surgical cases had a higher average realization in relation to clinical imaging. When evaluating the average times used to approve the activities, we found that the clinical and surgical cases in the area in question were the most accomplished, followed by clinical-imaging corresponding to the same rotation cases [Figure 6]. In quantifying the average number of times that users endorsed the activities, we recorded the highest prevalence was in clinical neuroanatomy and surgical cases, and the increased prevalence of many times disapproved activities was recorded in case of clinical imaging neuroanatomy. It should be mentioned that in the clinical and surgical cases of this rotation, as the other 2 rotations, students who have failed 2 or more times were found the same activity repeatedly [Figure 7].

While we determine significant correlations between parameters of use and socioeconomic characteristics, studying variables such as subject areas of significant results were not maintained.

In assessing performance in PW, checked the area neuroanatomy recorded a high average percentage of PW disapproved with a low percentage of PW approved with 100 % correct [Figure 8]. When analyzing the results obtained in the PW according to the teaching strategy applied to the posing of cases of clinical anatomy determined that in cases of images with structural correlates of cases prepared and imaging with 3D reconstruction, lower pass rates corresponded to rotation in the study (44.34% and 67.31% respectively) [Figure 9]. In the analysis of the average results obtained from the different pedagogical strategies used to achieve the PW according to the anatomical area, objectify the highest percentage of unapproved corresponded to PW on structural imaging correlates with anatomical preparations neuroanatomy area (55.66%) [Figure 9] .

By performing correlation plots we determine the number of hours worked per week were correlated

with the average result obtained in neuroanatomy PW (R2 = 0.76), in other areas this correlation and implications are not maintained between the variables [Figure 10] .

V. Discussion

The influence of "new information and communication technologies (ICT)" impacted heavily on science education, and through him throughout modern society, creating new scenaries for teaching and learning2, 22. Different levels and types of education (from undergraduate to graduate, and in their ways or face away) internalized this tool provided by technology and adapted it in their instructional activities as a complementary resource to study materials, curriculum and objectives education, positioning ICT as complementary or both of the central proccess9,10,11,16,18.

Not only sources of information presented transformations and adaptations, also the tools to interact with and subject as the recipient uses. Applications for manipulating information in the form of text, images and sounds, created new productions with the influence of the subjectivity of the amended and influence of student´s cognitive structure. These new ICT transformed the ways in which the academic, scientific and professional communities work and interact with their users. And was forced to consider how to strengthen them in order to bring students with such knowledge communities that actively produce and publish on line11, 15, 16.

From the constructivist theory of learning patterns is proposed to generate a virtual environment: 1) organize activities that include the construction of meaning from the information received by the student, 2) record activities or exercises that allow students to communicate, and 3) encouraging students to engage in problem solving through simulations or actual cases20.

It was found that VSTL student-centered self-learning and self-transformation to generate cognitive schemas that mediate the technology available and the individual monitoring by mentor teachers. Be part of the representations that students have about what is to be taught and also the analysis of the interaction process between the new and prior knowledge. VSTL allow the integration of knowledge and reaffirm that human learning is explained as a social experience mediated. A web of support such as the VSTL is frequently applied to strengthen traditional education because students and teachers share a workspace, communication and interacción19, 21.

With this research we could objectify the benefits with the use of the VSTL by students of anatomy under a complement mode in Neuroanatomy. We found significant differences in the parameters of use of technological resources compared with those obtained in other subject areas (Musculoskeletal and Splanchnology) 1,2,3,5, which have a relation to the temporality of the year it is issued this rotation and wear and subjective impact of this matter on annual studied on the students17. The variables related to adherence opinion of the users showed significant differences with the other areas because the feeling and internalizing this teaching resource is structured at the beginning of student´s study.

The current trend in the teaching of anatomy is aimed at clinical application, with the approach, discussion of cases (clinical-surgical, clinical and imaging) and clinical problem solving. The clinically oriented anatomical information applies to conduct practical and theoretical studies, interpret diagnostic images, to understand the anatomical basis of medicine in its different contexts and its importance in daily practice. Anatomical knowledge is reinforced by clinical reasoning is structured and constructed in relation to the acquired knowledge and enabling the next study in the curriculum of the university4, 12. For our Faculty of Medicine, University of Buenos Aires, Human Anatomy matter is inserted into the first year of Biomedical sent within Cycle Race (with Histology, Embryology, Physiology and Pathology, among others); knowledge gained from this Studied must be apprehended as significant for articulation with the corresponding materials of Clinical Cycle the last 3 years learning.

With regard to the content area Neuroanatomy, their knowledge is essential for understanding and teaching not only matters of degree (basic and clinical) from the rest of the School of Medicine, but also the contents of the graduate (Update , Specialist, Master's or Doctorate) and insert Neuroscience disciplines. But this area specificities presented in performance in clinical cases, aiming at greater polarization in the performance of students in the virtual space, which is confirmed in formal examinations of the subject. We were also able to objectify the socio-economic characteristics of the users/students, specifying the work activity was determined parameters and adherence to use virtual space6.

VI. Conclusions

Evaluation of performance per areas in the clinical anatomy virtual activities using the virtual space confirmed the existence of similar specificities and characteristics in the practical works in the area of neuroanatomy that would relate to the subject matter of the same and would determine the impact and subjective use of different teaching strategies.

We determine that parameters of using and management of the content presented differences with those obtained in the other areas that make up matter, and we objectify that user performance was associated with the number of working hours of those working.

Since differences in the intrinsic object and method of study areas that make up matter had impact on the outcome of the exercise, teachers are required to design and implement new teaching strategies in order to obtain maximum efficiency with this resource instructional applied in a complementary manner to practical work area Neuroanatomy of Human Anatomy matter in the medical career.

References Références Referencias

1. Algieri RD, Mazzoglio y Nabar MJ, Castro Barros FA. Espacios virtuales de enseñanza y aprendizaje (EVEA) en Esplacnología: especificidades pedagógicas en su enseñanza topográfica. Int. J Morphol 30(3):908-915, 2012.
2. Algieri RD, Mazzoglio y Nabar MJ, Dogliotti CG & Gazzotti A. TICs aplicadas a la enseñanza del aparato digestivo (TICs applied to teaching the digestive apparatus). Int. J. Morphol.,27(4):1261-1268, 2009.
3. Algieri RD, Mazzoglio y Nabar MJ, Dogliotti CG, Gazzotti A, Jiménez Villarruel HN, Rey L, Gómez A. Especificidades pedagógicas en la utilización de un EVEA para la enseñanza del aparato locomotor. Rev Arg Anat Online 2012; 3 (4):109-115.
4. Algieri RD, Mazzoglio y Nabar MJ, Dogliotti CG, Gazzotti A, Rey L, Gómez A. Rendimiento en casos clínico-imagenológicos a través del espacio virtual. Revista del Hospital Aeronáutico Central 2012; 7 (2):111-117.
5. Algieri RD, Mazzoglio y Nabar MJ, Dogliotti CG, Rey L, Gómez A, Tornese EB. Espacio virtual de enseñanza y aprendizaje aplicado en la enseñanza del tórax: adherencia y utilidad didáctica. Revista del Hospital Aeronáutico Central 7 (2):37-39,2011.
6. Algieri RE, Mazzoglio y Nabar MJ, Dogliotti CG, Gazzotti A. Social-Economic Factor as a Determining Factor of Parameters of Use and Performance in A TLVE Applied to Anatomy Teaching. Global Journal of HUMAN-SOCIAL SCIENCE Linguistics & Education 2014; 14(1):44-54
7. Avila RE, Samar ME, Peñaloza Segura F. Descripción y Evaluación de una página Web como Apoyo Virtual del Curso Presencial 2003 de Biología, Histología y Embriología en la carrera de Medicina. Primer Congreso Virtual Lationamericano de Educación a Distancia. LatinEduca2004, 2004.
8. Buelta Carrillo L, Fernández Fernández F, Garijo Ayensa F, Val Bernal F. Docencia virtual de anatomía patológica. Rev Esp Patol 36(2):139-148, 2003.
9. Burgos, D. & Koper, R. Comunidades virtuales, grupos y proyectos de investigación sobre IMS Learning Design. Status quo, factores clave y retos inmediatos. RELIEVE 2005; 11(2):189-200. Disponible en: http://www.uv.es/RELIEVE/v11n2/ RELIEVE v11n2_6.htm
10. Correa Gorospe, J. M. La integración de plataformas de e-learning en la docencia universitaria: Enseñanza, aprendizaje e investigación con Moodle en la formación inicial del profesorado. RELATEC, 4(1):37-48, 2005.
11. Duart, J. M. & Sangrá, A. Aprender en la virtualidad. Barcelona, Gedisa, 2000.
12. Gazzotti A, Algieri RD, Dogliotti CG, Mazzoglio y Nabar MJ, Rey L, Jimenez Villarruel HN, Gómez A, Pró E. Adhesión al Espacio Virtual de Enseñanza y Aprendizaje (Moodle) en alumnos de Anatomía (Joining the virtual teaching and learning (Moodle) space for students of Anatomy). Revista Argentina de Anatomía Online, 2(2):60-63, 2011.
13. Inzunza O, Bravo H. Impacto de los programas computacionales de anatomía humana en el rendimiento del conocimiento práctico de los alumnos. Rev Chil Anat 1999; 17(2): 205-209.
14. Inzunza O, Bravo H. Animación computacional con fotografías, un real aporte al aprendizaje de la Anatomía Humana. Rev Chil Anat 2002; 20(2): 151-157.
15. Lara P, Duart JM. Gestión de contenidos en el e-learning: acceso y uso de objetos de información como recurso estratégico. Revista de Universidad y Sociedad del Conocimiento 2005; 2(2):6-14. Disponible en: http://www.uoc.edu/rusc/2/2/dt/esp/lara.pdf
16. Litwin, E. Tecnologías educativas en tiempos de internet. 1ª ed. Buenos Aires, Ed. Amorrortu, 2005
17. Mazzoglio y Nabar MJ, Algieri RD, Dogliotti CG, Gazzotti AM, Jiménez-Villarruel HN, Rey LM. Utilización de sustancias psicoactivas en alumnos de Anatomía y su implicación en el aprendizaje. Educ Med 2011; 14 (2): 129-132
18. Montero O'farrill, J.L.. Estrategia para la introducción de las Tecnologías de la Información y las Comuni caciones. Revista Latinoamericana de Tecnología Educativa – RELATEC 2010, 9(1),75-87. Disponible en: http://campusvirtual.unex.es/cala/ editio/.
19. Popescu B. M.; Navarro V. Comparación del aprendizaje en internet con la clase convencional en estudiantes de medicina en Argentina. Educación Médica 2005; 8(4):204-207.
20. Tornese EB, Algieri RD, Mazzoglio y Nabar MJ, Dogliotti CG, Gazzotti A, Jiménez Villarruel HN, Rey L. EVEA en Anatomía: rendimiento por áreas. Rev Arg Anat Onl 2014;5(1):13-20.
21. Tornese EB, Dogliotti CG, Mazzoglio y Nabar MJ, Algieri RD, Gazzotti A, Jiménez Villarruel HN, Rey L, Gómez A. Entorno virtual de enseñanza y aprendizaje aplicado como recurso instruccional complementario en la enseñanza de Neuroanatomía: aspectos poblacionales, didácticos y psicopedagógicos. Int. J Morphol 29(4):1130-1135, 2011.

22. Tornese EB, Mazzoglio y Nabar MJ, Algieri RD, Dogliotti CG, Gazzotti A. mEVEA: Espacios de enseñanza sin límites?. Rev Docencia Universitaria 13:57-67, 2012.

23. Wiecha J, Barrie N. Collaborative online learning: a new approach to distance. 2005. [Disponible en: http://www.jmir.org/2003/2/e13/].

Tables Y Figurs

Table I : Characteristics of the sample population.

Sexo	Masculino	31,07%
	Femenino	**68,93%**
Edad	**18-24**	**85,44%**
	25-30	12,62%
	> 30	1,94%
Franja horaria de cursada	Turno Mañana	36,25%
	Turno Tarde	33,33%
	Turno Noche	30,42%
Trabaja	**Si**	**65,70%**
	No	34,30%
Cantidad de días de trabajo semanales	1 día/semana	22,17%
	2 y 3 días/semana	34,97%
	4 o más días/semana	**42,86%**
Horas de trabajo en la semana	**entre 12 y 24 hs/semana**	**44,98%**
	entre 25 y 30 hs/semana	35,60%
	entre 30 y 40 hs/semana	13,59%
	> 40 hs/semana	5,83%
Tiene como alumno alguna experiencia previa en el uso de e-learning?	Si	7,44%
	No	**93,85%**

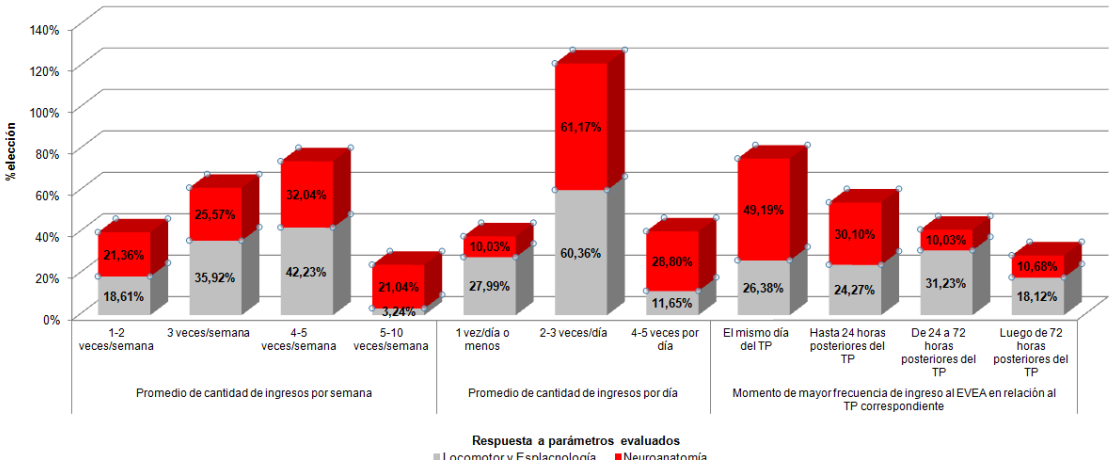

Figure 1 : Percentage of responses to 3 parameters evaluated on VSTL usage data depending on the subject area.

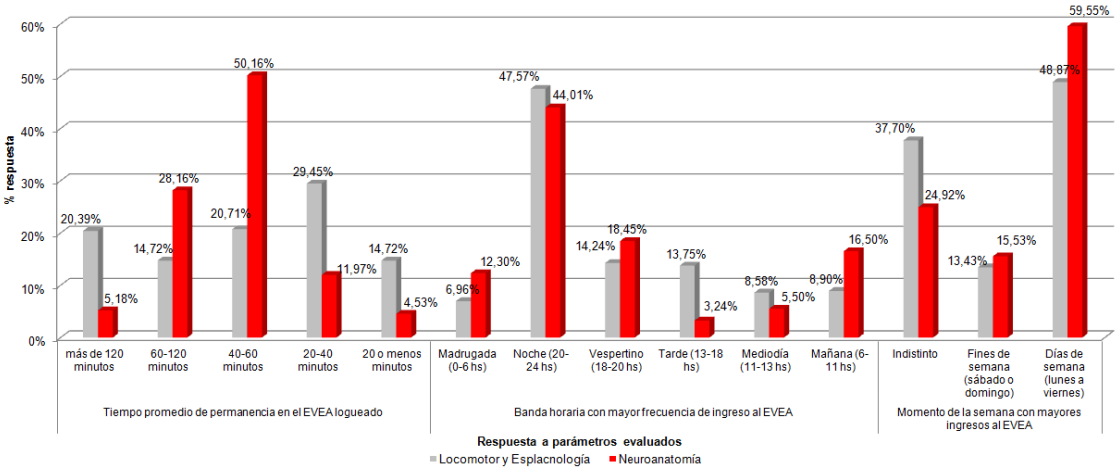

Figure 2 : Percentage of responses to 3 parameters evaluated on temporary use of VSTL data depending on the subject area.

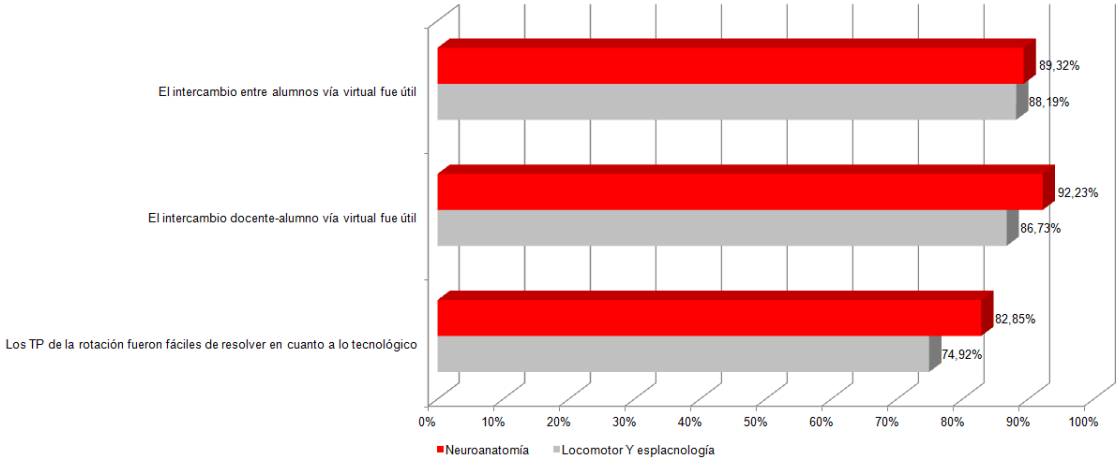

Figure 3 : Percentage of answers 3 questions related to adherence opinion of students depending on the subject area.

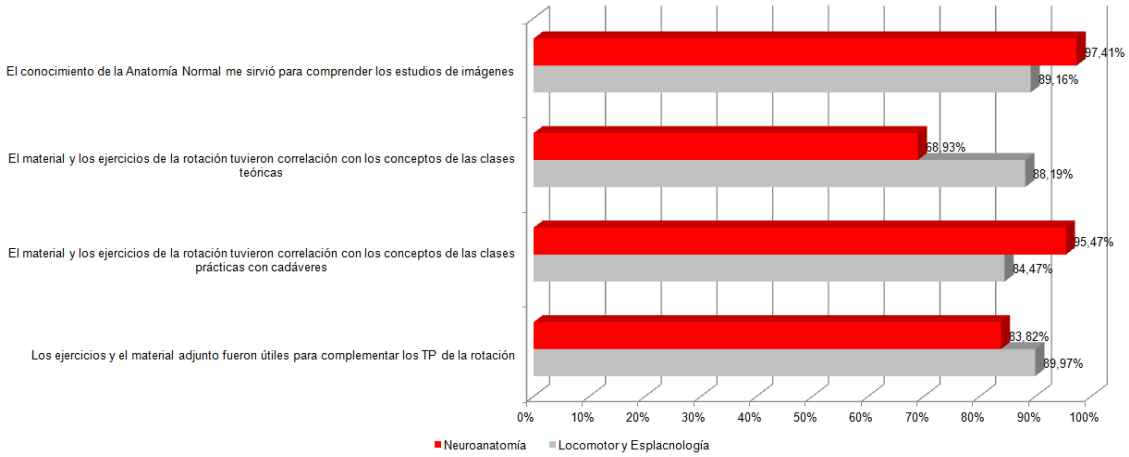

Figure 4 : Percentage of answers 4 questions related to adherence opinion of students depending on the subject área.

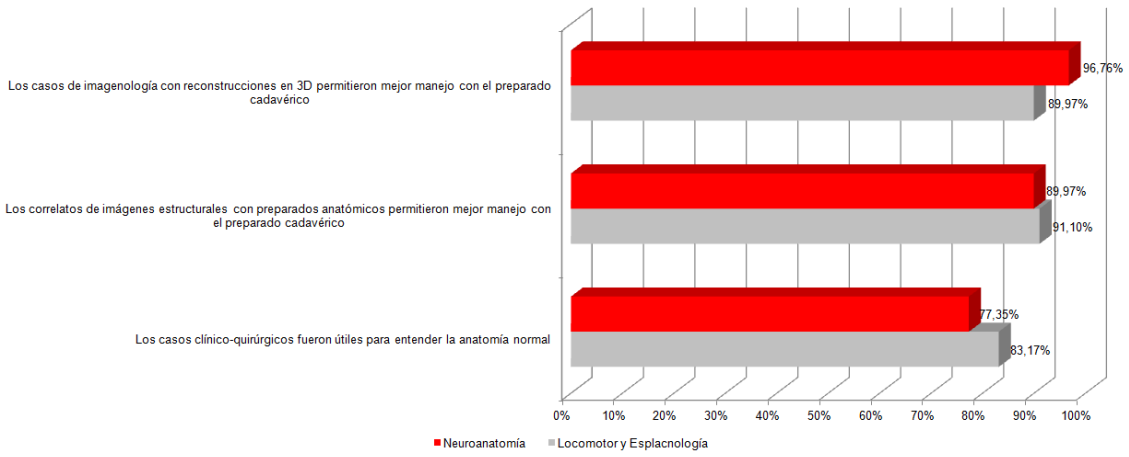

Figure 5 : Percentage of answers 3 questions related to adherence opinion of students depending on the subject area.

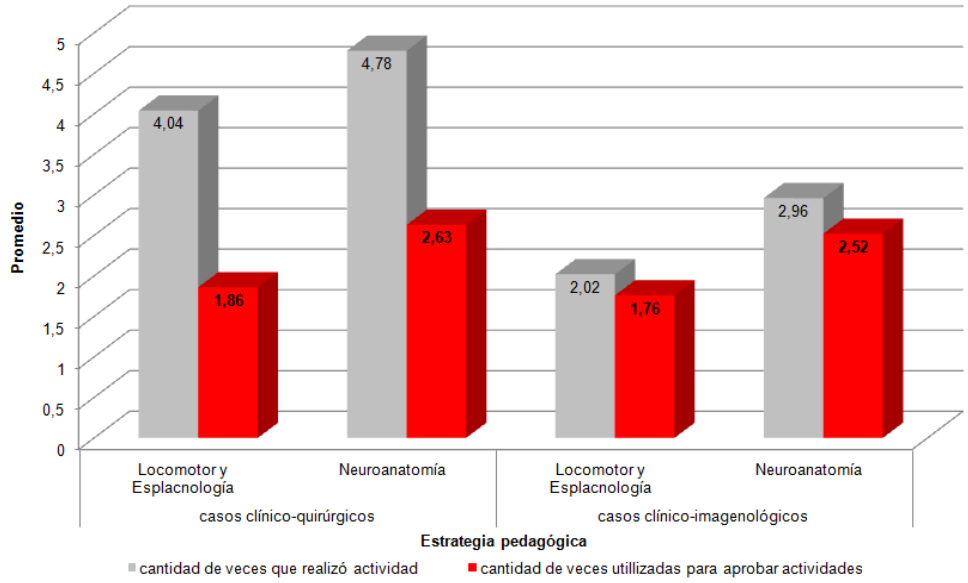

Figure 6 : Average time used for carrying out activities in the VSTL as teaching strategy.

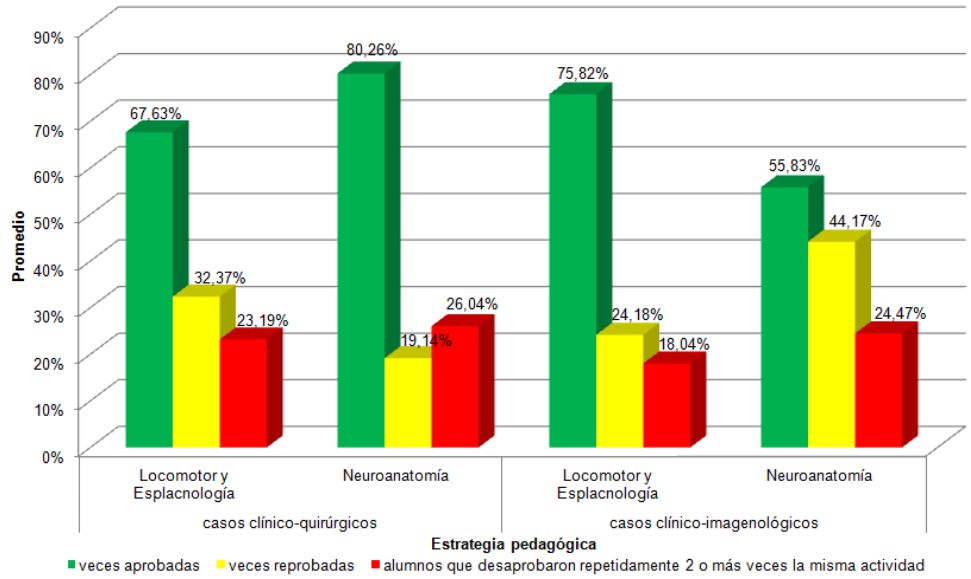

Figure 7 : Ratio attempts and results used in the activities of VSTL as teaching strategy.

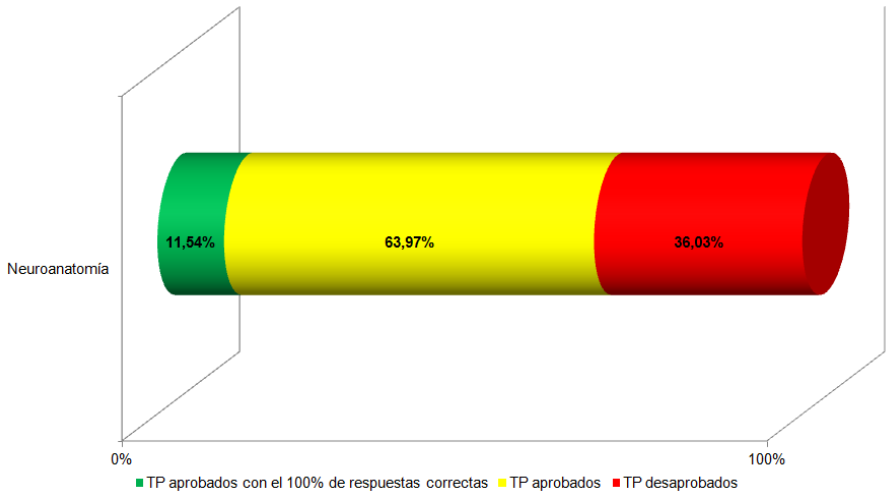

Figure 8 : Performance of students in clinical anatomy exercises in the area of Neuroanatomy.

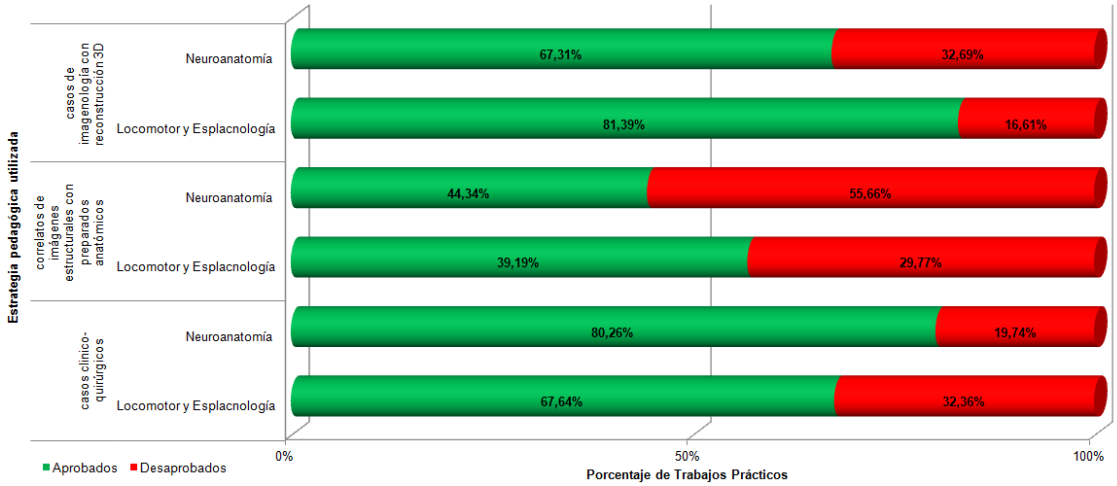

Figure 9 : Performance of students in clinical anatomy exercises according to the anatomical area and the teaching strategy used in the area of Neuroanatomy compared to other.

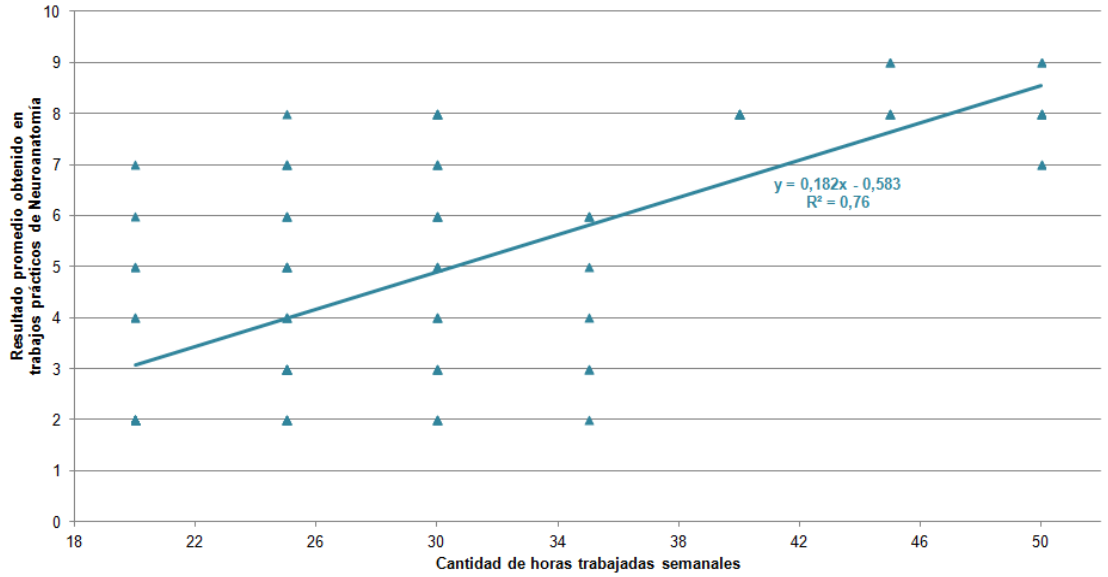

Figure 10 : Correlation between the number of weekly working hours of students and the average result in practical work in the area of Neuroanatomy.