

Perceptions of the Anatomy Learning Process

Percepciones del proceso de aprendizaje de Anatomía

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Abstract

The study aimed to strengthen the teaching-learning processes in the Anatomy I course of Veterinary Medicine at the University of Pamplona, applying Kolb's experiential learning theory as a strategy to reduce dropout rates and promote meaningful learning. Its objective was to analyze and implement methodologies based on Kolb's cycle (concrete experience, reflective observation, abstract conceptualization, and active experimentation) with the purpose of improving academic performance and student motivation. The methodology corresponded to an action-research design involving three professors and an intentional sample of ten students, to whom semi-structured interviews and open-ended questionnaires validated by experts were applied. The results show that teachers have incorporated practices with specimens, three-dimensional models, problem-based learning, and ICTs, although there are still limitations in resources and resistance to innovation. Meanwhile, students highly value practical and visual activities but consider the theoretical and rote-based load excessive, which highlights the need to better articulate theory and practice, promote innovative methodologies, and take advantage of technologies to consolidate comprehensive training and reduce dropout rates.

Keywords: Experiential learning; Kolb's theory; Veterinary anatomy; Pedagogical innovation; Student dropout

Resumen

El estudio tuvo como fin fortalecer los procesos de enseñanza-aprendizaje en el curso de Anatomía I de Medicina Veterinaria en la Universidad de Pamplona, aplicando la teoría del aprendizaje experiencial de Kolb como estrategia para reducir la deserción y promover aprendizajes significativos; su objetivo fue analizar e implementar metodologías basadas en el ciclo de Kolb (experiencia concreta, observación reflexiva, conceptualización abstracta y experimentación activa) con el propósito de mejorar el rendimiento académico y la motivación estudiantil; la metodología correspondió a una investigación-acción con la participación de tres docentes y una muestra intencional de diez estudiantes, a quienes se aplicaron entrevistas semiestructuradas y cuestionarios abiertos validados por expertos; los resultados muestran que los docentes han incorporado prácticas con especímenes, modelos tridimensionales, aprendizaje basado en problemas y TIC, aunque persisten limitaciones de recursos y resistencia a la innovación, mientras que los estudiantes valoran especialmente las actividades prácticas y visuales, pero consideran excesiva la carga teórica y memorística, lo que evidencia la necesidad de articular mejor teoría y práctica, promover metodologías innovadoras y aprovechar las tecnologías para consolidar una formación integral y reducir la deserción.

Palabras clave: Aprendizaje experiencial; Teoría de Kolb; Anatomía veterinaria; Innovación pedagógica; Deserción estudiantil

1. Introduction

Several studies have shown that the implementation of Kolb's model—based on a cycle composed of concrete experience, reflective observation,

abstract conceptualization, and active experimentation—not only facilitates conceptual understanding but also fosters the development of soft skills essential for professional life (Espinar & Vigueras,

2020; Vargas, 2020). Thus, applying this approach in the Anatomy course helps improve academic outcomes, reduce risk factors associated with student dropout, and strengthen competencies that connect theory and practice, consolidating a more comprehensive education aligned with the contemporary demands of higher education.

2. Theoretical Framework

The recent corpus shows a transition from traditional rote approaches toward active and experiential strategies. At the international level, it has been reported that identifying learning styles with Kolb's instruments allows teaching to be adjusted and outcomes to be improved (Peñalba, 2022); situated activities linked to professional practice increase motivation and clinical thinking (Payan et al., 2022); and multimodal and tangible resources (e.g., colored skeletons) strengthen osteological understanding (Erralde et al., 2019). Evidence has also been consolidated regarding PBL, simulation, and 3D resources, with both contributions and limitations: PBL enhances analysis and cooperation but must be complemented with dissection

for highly visuospatial domains (Inzunza et al., 2015; Vélez & Ruiz, 2017).

In Colombia, qualitative studies show that students and teachers value combining traditional and active methodologies and call for pedagogical training and institutional support (Barreto et al., 2022). Multimodal approaches improve understanding and reduce dependence on memorization (Tamayo & Quiceno, 2021), while bimodal/digital proposals increase performance and satisfaction (Rúa, 2018). At the curricular level, it is recommended to integrate strategies through an integration line with teacher–student participation (Londoño, 2018). Taken together, the state of the art converges on: (1) diagnosing learning styles; (2) articulating experience–reflection–conceptualization–experimentation (Kolb cycle); (3) combining PBL, simulation, and dissection; and (4) supporting with teacher development and institutional resources to impact dropout and performance in Anatomy I.

On the other hand, the problem of high failure rates in the Anatomy I course at the University of Pamplona highlights a gap between the disciplinary training of

teachers and their pedagogical competencies. This situation requires rethinking pedagogical practices through strategies that foster interaction and meaningful learning. Previous studies in similar contexts have shown that the incorporation of experiential learning reduces dropout and improves academic performance (Ballesteros et al., 2021). Thus, the integration of Kolb's theory with innovative pedagogical practices becomes a key resource to strengthen student training, contributing to the consolidation of a more comprehensive educational model adapted to the contemporary challenges of higher education.

3. Method

The study used action research as its method, since it allowed for the analysis of didactic strategies in the Anatomy I course and the implementation of interventions to improve them. This approach was justified by the need to reduce dropout rates and strengthen practical learning, involving both teachers and students in a reflective and participatory process.

The population consisted of teachers and students from the Anatomy I course of the Veterinary Medicine program at the University of Pamplona. There were four teachers (three selected for the development of the research) and approximately 120 students, from which an intentional sample of 10 participants was taken to explore perceptions and experiences in greater depth.

Regarding data collection instruments and techniques, semi-structured interviews and open-ended questionnaires were applied, allowing the exploration of experiences, perceptions, and evaluations of the methodologies used in class. These tools were validated through expert review in pedagogy and pilot testing, ensuring clarity and relevance of the questions.

4. Results

Qualitative results from the interviews with Anatomy I teachers

Category	Main findings	Qualitative interpretation
Instructional strategies	Use of practices with specimens, three-	There is an effort to integrate active and

	dimensional models, problem-based learning, ICTs, and collaborative work.	technological methodologies, although limitations in the availability of resources (e.g., specimens) still persist.
Theory–practice relationship	The practical sessions motivate students, improve memorization, and strengthen their confidence.	Experiential learning supports the appropriation of concepts but requires greater articulation with theoretical content.
Pedagogical challenges	Resistance from some students to reflective methodologies; difficulty in designing assessments that measure critical reasoning.	Tension is evident between traditional (rote-based) methods and innovative strategies, which calls for a cultural and pedagogical shift.
Needs for improvement	Replacement of formalin-preserved specimens; linking theory and practice through integrated guides and case analysis.	Greater institutional investment and adaptation of contextualized pedagogical resources are required.
Technological innovation	ICTs, simulators, and augmented reality generate	Technology is seen as a key resource for transforming teaching, but

	motivation, foster participation, and reduce dropout rates.	its use is still incipient and uneven among teachers.
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Source: own elaboration

Qualitative results from the interviews with Anatomy I students

Category	Main findings	Qualitative interpretation
Most useful strategies	Laboratory, dissected animals, images, audiovisual content, and case studies.	Students highly value practical and visual learning as tools for understanding complex concepts.
Theory–practice relationship	They acknowledge that the practical sessions reinforce what is explained in theory, although they point out that these are infrequent and the subject remains highly theoretical.	There is a gap between the predominant theoretical approach and the need for constant practice that better connects both components.

Reflection on mistakes	Most students reflect only when they fail a midterm or perform poorly. Some do not reflect at all.	Self-reflection is associated more with failure than with a continuous learning process, which reflects shortcomings in pedagogical support and in the culture of feedback.
Adaptation of strategies	They consider that the laboratory and audiovisual resources help to better understand the content. However, some do not clearly identify what “didactic strategies” are.	It shows a lack of pedagogical awareness among students and the need for teachers to explicitly explain the methodologies applied.
Suggestions for improvement	More practice, less extensive theory, updated content, dynamic cases, better laboratory resources, and less rote-based methodologies.	Students demand pedagogical innovation, with learning that is more experiential, updated, and contextualized, fostering critical thinking rather than mere memorization.

Source: own elaboration

5. Conclusions

The findings show that, although teachers implement pedagogical practices such as the use of specimens, three-dimensional models, and ICTs, there is still a significant gap between theory and practice. This highlights the need to strengthen curricular articulation and promote innovative strategies that integrate reflection and action, in line with Kolb’s model, to foster more meaningful learning and reduce student dropout (Espinár & Vigueras, 2020; Ballesteros et al., 2021).

From the students’ perspective, it is observed that practical activities, especially laboratory sessions, are valued as the most effective for understanding complex concepts. However, the predominance of theoretical and rote methodologies limits motivation and the development of critical thinking. Thus, it is argued that technological innovation and pedagogical multimodality constitute key axes to improve academic performance and consolidate comprehensive training in Veterinary Medicine (Tamayo & Quiceno-Zapata, 2021; Vélez et al., 2017).

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