Learning from reflective practice. A qualitative study in the Architectural Design Studio

Los aprendizajes de la práctica reflexiva. Un estudio cualitativo en el Taller de Proyectos de la carrera de Arquitectura

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Abstract

This article analyzes the learning outcomes developed through reflective practice in the Design Studio course in university architectural education, conceived as a reflective practicum. Based on a qualitative case study and inductive data analysis, it explores students' perceptions of changes in their ways of thinking, acting, and learning during their professional preparation. Such findings reveal interrelated learning across the cognitive, affective-motivational, self-regulatory, and social spheres. At the cognitive level, improvements are observed in higher-order thinking processes and in more analytical and holistic problem-solving strategies. In the affective-motivational domain, students develop greater self-regulation, learning habits, and attitudes, as well as a positive and persistent disposition toward the task. Likewise, at the social level, openness to dialogue, cooperation, and the co-construction of knowledge are strengthened. The multidimensionality of these

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results allows for an understanding of reflective practice as an integral formative process in higher education contexts, articulating personal, intersubjective, and professional dimensions.

Keywords: Higher education; Learning; Reflective practice; Vocational training.

Resumen

El artículo analiza los aprendizajes desarrollados a través de la práctica reflexiva en el contexto de la asignatura de Taller de Proyectos en la formación universitaria de Arquitectura, concebida como un prácticum reflexivo. A partir de un estudio de caso cualitativo y un análisis inductivo de datos, se exploran las percepciones de los estudiantes sobre los cambios en sus formas de pensar, actuar y aprender durante su proceso de preparación para el ejercicio profesional. Los hallazgos revelan aprendizajes interrelacionados en las esferas cognitiva, afectivo-motivacional y autorregulatoria, así como social. En el plano cognitivo, se observan mejoras en procesos de pensamiento de orden superior y en estrategias de resolución de problemas más analíticas y globalizadas. En el ámbito afectivo-motivacional, los estudiantes desarrollan mayor autorregulación, hábitos y actitudes para el aprendizaje y una disposición positiva y persistente hacia la tarea. Asimismo, en el plano social, se fortalece la apertura al diálogo, la cooperación y la construcción conjunta de conocimientos. La multidimensionalidad de tales hallazgos permite comprender la práctica reflexiva como un proceso formativo integral en contextos de educación superior, que articula dimensiones personales, intersubjetivas y profesionales.

Palabras clave: Aprendizaje; Educación superior; Formación profesional; Práctica reflexiva.

INTRODUCTION

Reflective practice in higher education has become a central focus of professional training in recent decades. This is consistent with the transformations the university has undergone, which have highlighted the need for student-centered, autonomous, critical learning, with the ability to learn to learn and to work collaboratively (Gargallo et al., 2020).

The questioning of epistemological foundations and the consequent crisis of professionalism, characterized by technical rationality as the dominant paradigm in professional training at the end of the last century, motivated the search for alternatives that responded to the complexity and uncertainty inherent in practice (Atkinson & Claxton, 2010; Schön, 1998, 2008). In response, reflective practice, within the framework of practical rationality, gained particular relevance by proposing a contextualized and comprehensive understanding of professional action, which articulates theory and practice through processes such as knowledge-in-action and reflection in and on action (Schön, 2008). From this perspective, reflective practice is conceived as an activity guided by judgment and reflection, capable of guiding action and giving it meaning (Bárcena, 2005).

The reflective approach in education has opened new avenues for understanding professional practice and knowledge, as well as for rethinking the training of professionals in different fields, as evidenced by the numerous studies that have addressed the topic in recent decades (Brockbank & McGill, 2002; Cerecero-Medina, 2019; Domingo, 2021; Fullana et al., 2013; Gaitán-Pedraza et al., 2022; Medina et al., 2010; Perrenoud, 2011; Saiz-Linares, 2023). However, despite the broad consensus on its relevance, certain limitations persist in both its conceptual definition and its application and impact (Ide & Beddoe, 2023; Liu et al., 2025; Mohamed et al., 2022; Ruffinelli et al., 2022).

The preceding premises highlight the complexity of the field and the progress still needed to consolidate the training of reflective practitioners. Despite the growing interest in reflective practice, a gap persists in the literature on the integrated identification of the learning students develop, especially in contexts where knowledge is eminently practical, as in design-based disciplines such as architecture. This study seeks to contribute to the understanding of the reflective approach as a strategy to improve teaching and learning in higher education (Brockbank & McGill, 2002), focusing on the learning constructed through reflective practice in practicum contexts.

The research is carried out in the Project workshop subjects of the Architecture degree at the University of Bío-Bío (Chile), conceived as a prototype of reflective practicum (Schön, 2008). The objective was to analyze and understand students' perceptions of the learning they construct during their experience with the subject, delving into the transformations that emerge when incorporating reflective practice in a systematic and continuous manner during their professional training

THEORETICAL FRAMEWORK

The literature agrees that learning associated with reflective practice is a diverse and multidimensional phenomenon, analyzable from multiple perspectives and facets (Ide & Beddoe, 2023; Saiz-Linares, 2023). Although the predominant focus has traditionally been on the cognitive processes that underpin this practice, emotional and social aspects have received secondary attention (Pérez-Echeverría et al., 2006; Fullana et al., 2013). However, the field is currently shifting towards more integrative approaches that emphasize the systemic nature of reflective learning (Buherko, 2022; Colomer et al., 2020; McGill et al., 2025).

Reflective practice is understood as a conscious and systematic activity (Korthagen, 2001), where learning does not occur automatically. Rather, it stems from conditions of intentionality and a specific context that enables it. Far from traditional teaching methods, this process demands scenarios designed for students to learn through direct practice and the guidance of a tutor. In these spaces, the resolution of real-world problems generates the cognitive conflict necessary to foster an integrated dialogue between thought, action, and context. In other words, training is not limited to the instrumental acquisition of knowledge and techniques. It is fundamentally a systematic exercise focused on understanding and guiding practical action, while simultaneously constructing meaning and significance from it (Bárcena, 2005). Within this framework, the workshop course serves as a privileged space for training grounded in practical experience and reflection (Schön, 2008).

Research on learning derived from reflective practice has evolved from fragmented approaches— centered on theoretical knowledge, experience, or attitude—towards more integrative perspectives. Based on current evidence, the findings allow these changes to be grouped into three fundamental dimensions.

Research that delves into the cognitive dimension shows improvements in higher-order processes. From the perspective of Colomer et al. (2020), a reflective approach enables the analysis, questioning, and reorganization of knowledge through the integration of experiences. This process involves comparing past experiences with new situations, which develops the ability to anticipate and plan future actions. Reflection fosters self-awareness and awareness of one's surroundings, promoting critical and metacognitive skills transferable to various professional settings.

Accordingly, works such as Buherko's (2022) demonstrate that reflective practice directly affects awareness of one's own cognition, leading to schema restructuring and greater adaptability. Reflection is associated with self-determination, understood as a means to redefine beliefs through practical exercise. This view aligns with the approaches of Ide and Beddoe (2023), who note that the process involves deliberate introspective activities, such as self-observation and self-questioning.

In addition to the evidence mentioned above, significant transformations have been detected in the affective-motivational dimension. Recent findings (Huang et al., 2024; Liu et al., 2025) show variations in students' self-efficacy, interest, and autonomy, although the extent of these changes is contingent upon factors such as time, methodology, and the pedagogical tools employed. Finally, authors such as McGill et al. (2025) highlight that socialization in reflective contexts strengthens professional identity, critical self-awareness, and a sense of community, while Janssen et al. (2024) show that reflection-focused e-learning environments improve communication and the transfer of learning to the professional context.

The evidence on the impact of reflective practice, though still incipient and with conceptual limitations that hinder generalization, is progressively shaping a construct integrating cognitive, affective-motivational, and social dimensions. Several studies also underscore the need to further explore how these findings transfer to specific educational contexts to improve understanding. In this scenario, it is pertinent to ask what students learn when reflective practice is systematically incorporated into vocational training.

METHODOLOGY

The research was conducted using a qualitative approach through an instrumental case study (Stake, 2007). It aimed to understand and interpret, in depth, the students' perceptions of the learning they acquired in the workshop context. This design was chosen because it allows for the examination of a complex educational phenomenon within its natural context, paying attention to the interactions, meanings, and dynamics inherent in the learning process developed within the course.

Understanding this experience required considering the interdependence among personal, social, and cultural factors, as well as the interpretive frameworks through which actors make sense of what they learn (Van Manen, 2010). Accordingly, the study employs an exploratory and descriptive design, whose purpose is not to generalize results but rather to offer an interpretive understanding of a particular experience. The findings can guide improvements in the teaching and learning of reflective practice.

The workshop course, present throughout the entire program, constitutes the core of the Architecture degree curriculum, articulating the theoretical and practical knowledge of the discipline. It is taught as a mandatory annual course worth 25 credits and demands an estimated commitment of 10 to 15 hours per week. Its objectives include the development of autonomy, proactive thinking, observation, analysis, and the formulation of spatial proposals, as well as understanding the project in relation to the physical, sociocultural, and material context. In terms of resources, each section has an exclusive room, accessible outside class hours, where relatively small groups (fewer than 20 students) are led by two tenured teachers and an assistant.

Within this framework, the workshop serves as a privileged space for developing practical skills, where the project acts as a mediator of learning and as a space for theoretical and practical integration. Its professional approach is based on solving real-world problems, learning by doing, and reflective dialogue.

The sample included the voluntary, anonymous participation of 123 architecture students enrolled in studio courses in the first to fourth years. Participants were selected using purposive sampling. Inclusion criteria were active participation in the workshop course and a willingness to share their learning experiences.

Data collection was carried out using an open-ended questionnaire reviewed by experts, a structured interview, and in-depth interviews with teachers, supplemented by the analysis of institutional documents. Its heterogeneity served as a basis for triangulating information, contrasting perspectives, and assessing the interpretative consistency of the results.

This study is part of a broader research project aimed at understanding reflective practice learning. This article specifically addresses evidence related to the dimension **"**what students learn**"**, for which they designed questions incorporated into the instruments. Among them are: "What implications has this educational experience had on your personal growth, both at a cognitive, emotional, and social level?" (EA3); "What cognitive skills have you seen increased?" or "In what aspects has the experience of taking the workshop had an impact?" (CA10).

To ensure the quality of the study, rigorous criteria specific to qualitative research were applied, including triangulation of sources and instruments, expert review, and interpretive verification during the analytical process. Strategies contributed to strengthening the credibility, consistency, and interpretive coherence of the results (Lincoln & Guba, 1985).

Data analysis was performed using inductive content analysis (Elo & Kyngäs, 2008), combined with the method of constant comparison (Glaser & Strauss, 1967). This proce-

dure made it possible to identify emerging patterns of meaning from the data, favoring the progressive construction of analytical categories derived from the participants' experiences. In the first stage, units of meaning were identified in the responses and subsequently grouped into categories. Initial themes were reorganized into broader content areas, giving place to thematic cores as interpretive structures of a higher level of abstraction. The procedure involved repeated reading of the material, segmentation, constant comparison, and interpretive synthesis, paying attention to both the manifest and the implicit content.

The analytical process involved continuous movements between the empirical level of units of meaning and the conceptual level of categories and thematic nuclei, favoring a progressive and contextualized understanding of the phenomenon from the students' perspective. To present the units of meaning that underpin the interpretations, an alphanumeric reference system is used for each fragment, which identifies the instrument and the question (e.g., EA3: student interview, question 3) and the participant (e.g., 121: first-year student, number 21).

A total of 381 units of meaning were collected, initially organized into 34 thematic blocks, then into 16 content blocks, and finally into four core areas. Table 1 summarizes this process.

The categories in Table 1 result from an inductive synthesis, in which units of meaning were progressively grouped into interpretive cores at a higher level of abstraction. These cores synthesize the areas of learning perceived by the students.

Table 1
Categorical system

Qualitative Thematic Nuclei	Content Block	Thematic Block	Units of Meaning	%
1. Perceived changes in cognitive processes and in the ability to solve practical problems n=165	Detailed observation and sensitivity	Detailed and sensitive observation Broad vision and perspectives	34	20.6
	Open-mindedness, flexibility, and fluency of ideas	Open-mindedness Flexibility Fluency	32	19.4
	Analysis, critical thinking, and understanding	Analysis Critical Thinking Understanding	30	18.2
	Global and holistic approach	Building relationships Integration, global or holistic vision	16	9.7
	Communicating ideas	Clear and convincing communication of ideas Defending and influencing others through one's own arguments	16	9.7
	Anticipation of future consequences	Foresight Anticipation	9	5.5
	Improvement of practice and application of knowledge	Improvement of practice Improvement in the application of knowledge Theory-practice relationship	28	17.0

Qualitative Thematic Nuclei	Content Block	Thematic Block	Units of Meaning	%
2. Changes in self-regulatory and affective-motivational processes n=140	Self-regulatory control strategies	Control strategies (consistency, effort, willpower, etc.)	62	44.3
	Autonomy and self-criticism	Autonomy Self-criticism	44	31.4
	Frustration tolerance and acceptance of criticism	Frustration tolerance Acceptance of criticism	13	9.3
	Motivation and self-confidence	Motivational preferences Self-confidence	21	15.0
3. Changes in social skills, shared learning and social responsibility n=49	Social Skills: Socialization and Interaction	Positive Social Relationships	13	26.5
	Dialogue and shared learning	Sharing ideas and discussion Learning through mutual exchange	27	55.1
	Social and emotional sensitivity towards the environment	Interest in and sensitivity to social issues Understanding of the social role of the discipline	9	18.4
4. Changes in habits,-maturation and integral development of the students n=27	Habits	Positive habits Negative (unhealthy) habits	12	44.4
	Holistic Development and Personal Growth	Personal Growth Holistic Development	15	55.6

RESULTS

The data analysis identified various learning outcomes associated with reflective practice, which were organized into four main dimensions: cognitive, self-regulatory and affective-motivational, social, and holistic development, derived from the previous ones. These dimensions emerged from a process of progressive categorization that allowed for the integration of initially dispersed meanings into interpretive cores of a higher level of abstraction.

Perceived changes in cognitive processes and in the ability to solve practical problems

This core encompasses transformations in how students process information and approach the resolution of practical problems.

The first identified change is linked to strengthening the capacity for detailed and sensitive observation of the environment. Testimonies such as "seeing the world with different eyes, more broadly and from other perspectives" (CAB10.226) or "feeling part of the realities and people they observe" (EA3.312) show that students develop a deeper disposition to perceive, interpret, and analyze realities with a personal and attentive gaze. This attentive gaze, in line with the proposals of Dewey (1989) and Schön (1998), would help them access qualities, patterns, and relations previously barely perceptible, enriching their analyses and interpretive processes.

Secondly, the narratives indicate that the workshop experience fosters greater cognitive openness, flexibility, and fluency of thought, as evidenced by quotes such as "my mind opened up" (CAB10.215) and "it makes me see things from another point of view" (CAB10.401). This facilitates the construction of new and original meanings and understandings of reality (EA3.302; CAB10.118). Changes in this area broaden learning for practice, making it more analytical and logical by enhancing adaptive and expansive thought processes that can reorganize available knowledge and reformulate it in response to the changing characteristics of situations (Atkinson & Claxton, 2010).

In this regard, it is relevant to mention a characteristic inherent to the workshop's learning task—the projects—and to its teaching methodology, based on the premise that the same problem can have multiple valid solutions. A striking example is the teacher's differentiation when saying, "I want to look out from this spot" or "I will place the balcony here," showing how personal interpretation of the practice can broaden or restrict the action and its suitability for the specific context. This methodological approach fosters an attitude of exploration and creativity in learning.

Along the same lines, but from the other perspective, students report a significant increase in their analytical, critical thinking, and comprehension skills. Analysis, a constant task across all phases of the project, is associated with improved skills such as prioritizing, categorizing, and logical reasoning, as well as the ability to establish relationships among the various elements and factors (EA3.327). Critical thinking, exemplified in expressions such as "I have learned to ask questions that were not relevant before" (EA3.330), "I see my surroundings with a critical eye" (CAB10.110), or "I no longer see things like a typical young person, but rather I analyze what I see, think, and take critical stances" (EA3.305), is linked to processes of questioning, reflective analysis, and independent thinking. These findings reveal the rational and reflective facet of learning from practice, in which not only are informed decisions understood and made, but assumptions and ideas are also questioned, and knowledge itself is reconstructed (Medina, 2013).

As a fourth piece of evidence, students highlight more modes of global and holistic reasoning, emphasizing the ability to detect the interdependence between the parts that configure a problematic situation and its integration and global vision. Expressions such as "the workshop has helped me to conceive a holistic vision of things, from the detail to the whole" (EA3.332) or "in the integral way in which problems are faced" (CAB10.310) demonstrate this transition towards a more articulated understanding of design practice. In this sense, the results show progression in the acquisition of this learning process. This begins with first-year students recognizing partial relationships, continues with synthesis processes characteristic of second and third-year students, and culminates in forms of global integration primarily demonstrated by fourth-year students. For the faculty, the integration of the different variables, relationships, and disciplines involved in architectural design is a fundamental aim, since it does not consist of a sum of isolated responses, but rather a coherent and comprehensive proposal, where all the elements are articulated (D4.41.P23). This development can be understood as stemming from the continuous, repeated exercise of practice, a process that drives the transition from novices to experts, with this recognition being a characteristic of their evolution.

Fifth, the ability to anticipate future consequences stands out as a skill closely linked to reflection "in" and "on" action (Schön, 1998; 2008), in which the practitioner imagines alternative scenarios and chooses the most appropriate course of action. Statements such as "I tell myself: this might be useful to me tomorrow" (EA3.203) or "now I can see beyond the day-to-day" (EA3.330) reflect that students develop a prospective awareness to foresee and evaluate alternatives (in real time or retrospectively), developing anticipatory strategies for similar future problems.

Another change relates to the communication of ideas, indicating its strengthening to express them verbally. An example is the quote: "[My way of expressing myself has improved] when I want to give an idea or convince someone" (EA3.204). In the case of the workshop, the verbalization and concretization of thought and its consequent dialogic exchange in the classroom reinforce the mediating function of language as an instrument of cognitive elaboration (Vygotsky, 2012), so its increase could be related to a greater clarity in the formulation of arguments and to a more active participation in the dynamics of discussion.

Finally, an improvement is evident in the practice and application of knowledge. The changes related to practice describe different phases of the project process, indicating progress in its definition and approach, in the methodology, as well as in the propositional component (CAB10.206; CAB10.409). Testimonials such as "I develop my ideas and work proposals better because, as the workshops progress, these skills are refined and enhanced" (EA3.214) allude to a practical exercise understood as a personal process that, although complex, becomes more accessible and agile with experience. This approach reinforces the idea that learning reflective practice is a progressive and personal construction.

Regarding the application of knowledge, the testimonies highlight a transfer from theory to practice and a greater mastery of the content. When students state that the workshop "allows them to practice and develop the knowledge acquired in other subjects" (CAB10.111) or that it "has helped them to put their knowledge into practice and understand it better. I have seen how my projects are improving" (EA3, 218), it is evident that theory does not operate in isolation from practice, but rather that both reinforce each other, generating a more solid understanding and a more grounded approach. This articulation demonstrates a deeper appropriation of disciplinary knowledge, which is strengthened when that knowledge is applied in real-world practice situations.

From a pedagogical perspective, these changes suggest that the workshop operates as a formative environment that fosters deep learning processes, reinforcing the importance of design experiences based on the observation, analysis, and interpretation of authentic situations, as well as the active construction of knowledge from experience.

Changes in self-regulatory and affective-motivational processes

The following thematic unit addresses the transformations that students experience in the management, control, and regulation of their own learning, as well as in the emotional and motivational aspects involved in this process.

It begins by identifying an increase in the use of self-regulatory control strategies. This is reflected in expressions such as "it has helped me to have more willpower and patience" (EA3.335) or "I am much more consistent in what I do" (CAB10.121). This progress refers to the consolidation of habits such as willpower, consistency, and personal effort, which are linked to greater responsibility, rigor, and discipline in their work. The students recognize that the experience has allowed them to commit more consciously to what they do and to do it well (EA3.205), as described in testimonies such as "it has helped me to strengthen my will and self-improvement" (CAB10, 221) or "this educational experience has helped me to order my habits and customs, to be more orderly and organized" (EA3.205).

In this context, commitment to learning through practice involves not only an active disposition and the building of habits, but also an increase in metacognitive awareness, insofar as one reflects on one's own processes, resources, and personal strategies. These attitudes, described by authors such as Domingo (2021) or Bárcena (2005), are fundamental for reflective practice, understood as a deliberate and systematic activity that demands responsibility, perseverance, effort, and repeated personal commitment. More than isolated or occasional responses, this type of practice, according to Perrenoud (2004), when exercised continuously, fosters its internalization as a stable disposition, through which the student develops a more deliberate reflection on practice and progressively reconfigures their action schemes.

The second piece of evidence shows an increase in autonomy and capacity for self-criticism, associated with greater self-sufficiency and personal independence. In quotes such as "it has helped me to question and take charge of my work individually; it is super important to be autonomous" or "I am more self-sufficient and self-critical" (CAB10.401), evident are a progressive taking of control over decisions and work processes, based on continuous reflection and critique of one's own actions, thoughts, and assumptions, in accordance with the reflective practice described by Schön (1998). Considering the research on self-regulated learning (Zimmerman, 2002) and the findings previously mentioned – where students attribute to the workshop an increase in consistency, responsibility, and commitment – these results suggest that the autonomy achieved is built through metacognitive resources and greater personal involvement in the learning task.

Under these transformations, the training plan establishes autonomy as a fundamental skill that the student must achieve in the first year. This is embodied in two central guidelines: the development of a personal and conscious understanding of the architectural phenomenon ("autonomy in thinking"), and the ability to act based on their own arguments, judiciously incorporating the observations of teachers ("autonomy in action") (D4. P23; D1.P10; EP, 02). This pedagogical approach translates into students who do not merely reproduce external theories or discourses but rather develop their own point of view and make decisions in dialogue with others, within a framework in which teacher intervention serves more as a stimulus to deepen thinking than as a strict directive. The articulation with internal self-regulation processes opens the possibility that autonomy will not be relegated to the level of declared intentions, but will materialize in a practice supported by both metacognitive mechanisms and pedagogical conditions that make it possible.

Third, changes are observed in the ability to tolerate frustration and accept criticism. The students explain that the workshop "at an emotional level involves an enormous effort to build tolerance for frustration and burnout" (EA3.329) and that their experience has helped them "build the strength to accept criticism and persevere, taking them and improving" (EA3.317). Together, they distinguish between criticism of the work and of personal worth, noting that "one learns that criticism is not for you, but for the work one does" (GDA.305), a distinction that helps approach criticism from a constructive perspective and reduces the emotional burden of error.

These more emotional experiences are accompanied by increased motivation and confidence. Testimonials such as: "it has made me fall in love with the field" (EA3.206) or "it has increased my capacity to be passionate about what I do" (CAB19.402) reflect an increase in interest in learning and in the degree itself, of an intrinsic nature and with a strong affective involvement.

Regarding self-confidence, the results show an effect that is complex and not always linear. For a significant number of students, the workshop has led to a significant increase in self-confidence, as expressed in statements such as: "I now have much more confidence in myself; I have grown in many ways" (EA3.318). These perceptions suggest an increase in self-efficacy belief, possibly favored through the accumulation of mastery experiences, teacher validation, and familiarization with the demands of the workshop (Bandura, 1997). However, this positive trajectory is not shared by everyone. For some students, the experience is emotionally very demanding and, at times, exhausting. As one student points out, it is experienced as "difficult and a tough test" (EA3.329). In these cases, feelings of frustration, exhaustion, and self-doubt emerge, likely linked to pedagogical or personal factors that make the task difficult.

In any case, whether the emotional impact is positive or negative, the workshop experience is not neutral. It connects with the student's personal experience and activates interpretive processes that mobilize judgments about themselves and what they learn, while simultaneously prompting them to reinterpret their training, making it more meaningful and giving it its own purpose.

These findings highlight the need to create pedagogical conditions that foster the development of personal dispositions to sustain autonomous and reflective learning skills, such as perseverance, responsibility, and effort management.

Changes in social skills, shared learning, and social responsibility

This section gathers perceptions of the development of interpersonal skills and the collective construction of learning, highlighting the role of learning as a central component of the training experience.

Firstly, transformations in social skills are observed, evidenced in changes in the forms of socialization and in the types of interaction, which increase the ability to relate in a positive and collaborative way. Students indicate: "In my opinion, it has developed me in a positive way; I have become more sociable and open to group work" (EA3.211) or "…it has helped me to forge better relations with colleagues" (EA3.324). These findings

suggest that the workshop offers opportunities for collaborative interaction and promotes relationships based on trust, respect, and openness to the exchange of ideas, essential elements for the consolidation of learning communities (Lave & Wenger, 1991). From the teacher's perspective, this collective dimension is considered central and is reinforced through strategies that strengthen the sense of group and cohesion among members (D4. P21).

Secondly, there is significant development in the capacity for dialogue and collaborative learning. Students report improvements in expressing ideas, active listening, negotiating agreements, and constructing shared meanings. Factors contributing to this learning include dialogue and discussion in class, which help to "arrive at the right thing" (CAB10.408); shared classroom time, which facilitates "learning not only from the teacher, but also from peers" (CAB10.209); and a flexible and emotionally safe classroom environment, described as "very warm" (CAB10.117). These interactions constitute a space to contrast ideas, review one's own positions, and build knowledge in a shared way, complementing individual practice and favoring its transfer to professional and social contexts (Bandura, 1997).

Finally, an increase in social and emotional sensitivity towards the environment is observed. Students show a greater ability to recognize needs,difficulties, and the particularities of other people and contexts, as reflected in: "[it has helped me to]... connect with my environment in a more emotional, more human, more constructive, more open way..." (EA3.214) or "I think it has taught me to adapt to all kinds of people, to get to know them better and to be interested in their problems, difficulties, as well as what makes their lives easier or what they like" (EA3.216). The data reflect a more humanistic and ethical understanding of professional practice and training, consistent with institutional guidelines (D6.4).

Consistent with the above, the results suggest that the organization of work in collaborative and dialogic environments, constitutes a key pedagogical strategy to promote the shared construction of knowledge and the development of reflective thinking in professional training.

Changes in habits, maturation, and integral development of students

Unlike the previous, more specific collections, this one gathers stories that allude to global changes, in which students describe how certain behaviors have become integrated into their daily lives and how the subject has contributed to their personal growth and to their development in different areas.

First, one of the most important changes in this sphere is linked to habits. Expressions such as "it has involved an abrupt change in lifestyle" (CAB10.301) or "the pace of life and the things I used to do [have changed]" (CAB10.207) reflect how certain attitudes and behaviors – such as effort, perseverance, consistency, or even "sleeping little" – have become established as part of their daily routine.

By highlighting the idea of "sleeping too little," it is emphasized that these changes can also lead to unhealthy habits, linked to academic pressure, poor time management,

and/or insufficient self-regulation. Testimonies such as "their demands lead to fewer hours of sleep" (CAB10.206), "to neglecting important things in order to be a professional" (CAB19.405), or "not having a life outside of academics" (CAB19.404) coincide with the points made by Coll (2003), who indicates that, although effort is necessary for learning, it must be part of a balanced, sensible pedagogical approach, in order to avoid counterproductive effects on well-being and the quality of learning.

When delving deeper into opinions such as "you acquire abilities without realizing it, because it is something personal that becomes part of your life in all aspects: educational, social, and emotional. Abilities are diverse in terms of your growth"(EA3.214), students not only highlight the comprehensive nature of the learning, but also the naturalness with which it is incorporated. This is consistent with the learning based on repeated experience on which the workshop is based.

At the same time, maturation processes are observed, in which practical learning is conceived as a space for personal growth. Phrases like "it has helped me mature, " "I no longer see things the same way" (EA3.201) reflect how students reinterpret their experiences and build new perspectives on their training and on themselves.

From the teachers' perspective, although references to developmental changes are less explicit, a holistic development is emphasized (D1.P10; EP.2). The recurring use of terms such as "trajectory" (D4.45.P8) or "journey" (D4.40.P22) denotes a continuous, dynamic, and gradual learning process, not a routine path based on repetition, but open to ongoing review (D4.40.P22). This perspective reinforces the conception of learning as an active and unique process, where each formative experience constitutes a further step in the consolidation of the student as a reflective subject.

Additionally, these results suggest considering professional training as an instance of personal and professional growth of an integral nature, capable of influencing not only academic learning, but also the configuration of habits, attitudes, and ways of acting.

DISCUSSION

The results allow us to identify significant changes in most students, in the cognitive processes involved in learning reflective practice and, by extension, in the development of project practice in workshop settings. Participants repeatedly describe changes in how they observe, analyze, interpret, and approach problems. This reflects a shift from more immediate or reproductive processing methods toward more reflective, elaborated, comprehensive, and reflective modes of thinking.

In particular, improvements are noted in the ability to make detailed and sensitive observations. This, along with greater open-mindedness, flexibility, and fluency of ideas, allows them, according to the students, to adopt multiple perspectives, generate alternatives, and review initial understandings. These approaches are based on exploratory and heuristic reasoning supported by experience and experimentation (Schön, 2008). Such modes of action seem to rely on open problems that are dynamically defined, without a single, predefined solution.

In line with these changes, advances are also observed in analytical skills, critical thinking, and understanding of situations, as well as in anticipating consequences and in more articulate, reasoned communication of one's own ideas. Such progress demonstrates a rational and reflective dimension to practical learning, focused on understanding the situation through flexible forms of thinking (Perkins, 2006) and on constructing well-founded personal positions, supported by critique and available knowledge (Ennis, 2011). If reflective practice is understood as a search for understanding that gives meaning to present action and values the possibilities and limits of future action (Pérez-Gómez, 2010; Bárcena, 2005), these processes are necessary for their constitution. From a pedagogical point of view, these developments imply the activation of processes of review and deconstruction of prior knowledge and one's own positions (Medina, 2013).

The findings presented are complemented by the ability to address the problems from a global perspective, considering the relationships between multiple factors and dimensions. Taking into account the situation as a whole, along with changes in analysis and understanding, the transfer of theoretical knowledge and continued practice in consecutive workshops can contribute to students' better understanding of the complexity of professional practice. This fosters improved performance and more informed decision-making. Thus, in line with authors such as Pérez-Gómez (2010) and Schön (2008), the student stops applying content mechanically to interpret, relate, adapt, and mobilize knowledge according to the particularities of each situation. In this context, theory becomes a significant tool at the service of action, generating greater articulation between theory and practice in professional training (Castro & Pérez, 2017).

As the results show, further evidence indicates a trend toward changes in how students manage, regulate, and experience their learning process, in both self-regulation and affective-motivational factors. This process involves mobilizing personal dispositions, habits, attitudes, and emotions.

A significant portion of the student body reports that qualities such as willpower, perseverance, patience, personal effort, responsibility, and work discipline have strengthened and gradually become established as daily habits that transform their approach to tasks. These qualities, understood in this study as self-regulatory control strategies (i.e., dispositions and habits that support effort management and commitment), reflect a more conscious and sustained involvement in their education, in line with self-regulated learning models that link deliberate effort management, persistence, and self-regulation with greater effectiveness in this development (Pintrich, 2000).

In association, self-regulation manifests itself not only in a greater consistency in action, but also in the students' ability to recognize and value their own ways of working, to regulate themselves and to persevere, which indicates a development of metacognitive awareness about how to cope with the demands of the workshop (Pintrich, 2000). Recent studies show that guided reflection devices, such as reflective journals or other structured activities of analyzing one's own practice, promote both metacognitive awareness and the use of self-regulation strategies in university students (Alt et al., 2022).

In this sense, the aforementioned dispositions and habits, will, constancy, effort, responsibility, and commitment to the task can be related to the attitude of sustained in-

volvement that characterizes reflective practice approaches. These approaches emphasize that the professional-in-training must distance themselves from their own actions. analyze them, question their assumptions, and adjust their modes of intervention in a deliberate and conscious manner.

Another relevant finding relates to the perceived changes in autonomy, self-criticism, and the ability to tolerate both frustration and external criticism. Based on students' experiences, a significant proportion believe these abilities have increased throughout the training process. This progressive gain in control, associated with the evaluative components of criticism, suggests that learning reflective practice involves managing the tension generated by the contrast between one's own decisions and others' evaluations. This process represents progress toward more mature forms of self-regulation and responsibility by differentiating between the evaluation of the product and personal worth and by embracing criticism as an opportunity for improvement and growth, in line with Schön (2008) and Perrenoud (2011), as well as with the psychological perspectives of Pintrich (2000) and Zimmerman (2002).

On the other hand, the perceived effects of autonomy could be linked to the self-regulation of their learning, understood as the ability to consciously employ cognitive, metacognitive, and effort and motivation control strategies, as well as to assume responsibility for their own training process, as highlighted by research from Gargallo-López and collaborators (2020, 2023).

Within the affective-motivational sphere, a considerable number of students show an increase in intrinsic motivational preferences in self-confidence. However, these results are not homogeneous. For some, the experience involves tension, emotional strain, and self-doubt. In both cases, the workshop experience is not neutral; rather, it activates processes of personal interpretation regarding their studies and their ability to pursue them, revealing the affective dimension underlying the development of reflective practice.

From this perspective, when these findings are compared with evidence on negative states, such as stress, anxiety, and/or fatigue, likely linked to the demands from the training process and time management, it can be provisionally considered that these experiences are similar to those described by Perrenoud (2011). According to the author, these states constitute necessary preliminary phases for progressing towards a more autonomous practice and tend to gradually diminish as the individual acquires experience and confidence in their reflective process.

In accordance with the specialized literature, these results can be understood in an articulated way, since previous evidence indicates that the affective-motivational self-efficacy beliefs, responsibility, and sustained effort influence each other. Several studies highlight that motivation fosters... involvement, persistence, and commitment, which in turn strengthen self-efficacy beliefs and task appreciation; and these elements, in reciprocal interaction, facilitate the deployment of more complex cognitive processes and metacognitive skills (Pintrich, 2000; Zimmerman, 2002). From this integrative perspective, the perceived changes do not constitute isolated phenomena, but are part of a network of processes that support more autonomous and self-regulated forms of learning.

Alongside individual processes, learning is complemented by changes in the relational and social spheres. Some students reinforce their specific contributions, demonstrating a greater willingness to work together and more meaningful relationships with their peers, as well as improvements in their dialogue and shared learning skills, derived from the exchange and collective discussion with peers and teachers. This demonstrates not only the functioning of the workshop as a relational space but also as an environment that stimulates the construction of shared meanings and the contrast of ideas, establishing a common framework from which interpretations and relationships are built.

These findings align with sociocultural perspectives on learning (Vygotsky, 2012) and with the role of context in reflective practice (Schön, 2008), emphasizing its social and collective nature as an interpersonal and intersubjective process. This is further enhanced by increased social awareness, which facilitates the recognition of the needs and particularities of other people and contexts, contributing to a more ethical and humanistic view of professional practice. This learning is linked to both the social dynamics of the classroom and the types of problems addressed in the workshop, as well as to their grounding in real-world contexts.

Furthermore, the evidence from the fieldwork suggests that the workshop is a community of practice, from which the construction of subjectivities and professional identities in relation to said community is fostered (Lave & Wenger, 1991), in line with what Schön (2008) pointed out.

The final result can be interpreted as the final synthesis of the learning perceived by the students. Changes in their lifestyle habits are evident, consolidating attitudes and actions related to learning, along with holistic development where reflective practice is established not only as an academic impact but also as a cross-cutting element, permeating the cognitive, affective, and social domains, and naturally assimilating into their daily experience. In conclusion, the process leads to personal maturation and growth that influences their identity construction and underscores the importance of continuity and progression in learning reflective practice (Korthagen, 2001).

Unlike previous studies that have analyzed some of these dimensions in isolation, the present research demonstrates the interrelationship between distinct types of cognitive, self-regulatory, affective-motivational. and social learning that emerge from reflective practice in professional training contexts. In this sense, the study provides an integrated view of the phenomenon in the specific context of architectural education.

CONCLUSIONS

According to the results obtained in this research, and responding to the main objective, which was to know and analyze the perceptions of the students about the learning built from their experience in the Project workshop subject, it is concluded that the students develop a broad and diverse set of knowledge linked to reflective practice, of an experiential, dialogical nature, and anchored in action.

These learning processes have a multidimensional and interrelated nature, encompassing cognitive, self-regulatory, affective-motivational, and social components, among which the following stand out:

- Cognitive: evolution towards more elaborate, critical, and reflective, based on higher-order processes and more analytical and globalized problem-solving strategies, such as detailed observation, analysis, openness to diverse perspectives, and criticism.
- Affective-motivational: increased confidence and involvement with the task, although with individual variability and dependent on processes of emotional self-regulation, pedagogical support, and the balance between demands and support.
- Self-regulation: activation of control strategies (e.g., perseverance, effort, discipline) and strategic management of one's own performance (e.g., self-criticism), which strengthens metacognitive awareness and autonomy in learning.
- Social: strengthening dialogue, building shared meanings, and fostering a willingness to work together, thus shaping the Project workshop as a relational and intersubjective space that contributes to professional identity and to the development of a community of practice.

In summary, reflective practice developed in a practical context fosters comprehensive and deep learning that articulates knowledge, attitudes, and dispositions, with a significant impact that transcends the academic sphere.

The findings presented demonstrate the relevance of methodologies based on "learning by doing", starting from open problems in authentic scenarios that generate cognitive conflict and do not admit a single solution. They also highlight the importance of constant feedback, spaces for critical dialogue, and joint reflection.This includes integrating theoretical frameworks and clearly connecting theory and practice to achieve knowledge transfer and a holistic approach. All of this requires institutional support and resources to guarantee its continuity and progression.

Finally, it is essential to design learning environments that integrate systematically reflective practice, promoting spaces for experimentation and pedagogical accompaniment . However, such development will not depend solely on teaching action, but also on curricular and institutional conditions that favor its coherence, such as the organization of training time, the articulation between subjects, and institutional support for proposals based on reflection.

Given that the results come from a single qualitative case study, while the findings are relevant, future research should delve deeper into these issues.learning through interdisciplinary comparative analyses, longitudinal studies, and mixed methodological designs (qualitative-quantitative) that examine its consistency, transferability, and robustness in diverse contexts of reflective practice.

AUTHORS' CONTRIBUTION

Leyla Castro-Gonzalez Project management; Formal analysis; Conceptualization; Data curation; Writing - original draft; Writing - revision and editing; Research; Methodology; Resources; Validation; Visualization.

Maria-Carme Armengol-Asparó Project management; Formal analysis; Conceptualization; Data curation; Writing - revision and editing; Research; Methodology; Resources; Supervision; Validation; Visualization.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

ETHICAL COMPLIANCE

This article presents a qualitative study based on an instrumental case, prepared in accordance with the principles of academic integrity and scientific transparency. The authors declare that no Generative Artificial Intelligence tools were used in the writing, data analysis, or bibliography compilation. The manuscript is original. It has not been simultaneously subjected to another editorial process and is free of plagiarism or data manipulation. All materials analyzed come from properly cited and referenced sources.

Ethical principles were respected throughout the research process; however, the study was not submitted to an institutional ethics committee for evaluation.

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OPEN SCIENCE OBJECTS

The data derived from the research have not been deposited in a public repository; however, they can be provided by the authors upon reasonable request. respecting the established confidentiality commitments.

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