Drawing Across Disciplines: Teaching Strategies in Higher Education

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Abstract

This paper reflects on the experience of teaching drawing at three public higher education institutions in Portugal, within bachelor's degree programs in various scientific areas, including Communication Sciences and Technologies, Product Design, and Fine Arts, aiming to compare pedagogical approaches and the results achieved by students in various curricular units whose programmatic content includes basic drawing concepts, product drawing with manual rendering, human figures, and animal drawing. This study employed case analysis based on direct observation and the authors' teaching and research experience. Drawing on three distinct case studies, the analysis led to the development of a proposed pedagogical framework designed to enhance drawing instruction across diverse educational contexts. With a background in Design, the authors argue that Drawing is a tool for creativity, enabling one to learn to see, understand, and interpret forms, organise thoughts, explore possibilities, and visualise alternatives. This study had the ambition to contribute to: (1) finding strategies that encourage the practice of drawing; (2) reducing the inhibition to draw, the penalisation of doing and redoing reduces the motivation for experimentation and taking risks, which is fundamental for a project practice where drawing is a tool for idea generation; (3) raising students' awareness of the importance of drawing as a tool for thinking, expression, and communication (4) promoting the acquisition of drawing skills and their application in Communication Sciences and Technology, Design, and Fine Arts; (5) encouraging students to find their creative voice, message, and identity as individuals, designers, and artists to communicate it to others.
Drawing is a practice that requires time, patience, and concentration. In the end, this study highlights the need to find new teaching approaches that demonstrate to students the importance of drawing for their professional future and minimise the blockages and inhibitions that are increasingly appearing in the teaching of Drawing.

Keywords: *Drawing Education; Drawing Practice; Drawing Teaching Framework*

1. Introduction

Drawing transcends its traditional association with the arts to function as a vital cognitive and educational instrument across a wide range of academic disciplines. In contemporary higher education, it has evolved into a multidimensional pedagogical tool that supports observation, creativity, critical thinking, and visual communication. Increasingly, research demonstrates that engaging in drawing enhances students' ability to retain information and grasp complex concepts. This cognitive benefit stems from the sustained attention and deeper cognitive processing that drawing requires, facilitating both meaningful learning and long-term retention.
Despite its pedagogical value, the teaching of drawing in higher education is confronted with growing challenges. Student cohorts have become markedly heterogeneous, comprising individuals with varying degrees of experience and confidence in drawing, from complete novices to those with substantial prior training. This diversity presents significant instructional complexity, as educators must simultaneously bridge foundational skill gaps and support advanced creative development. These challenges are compounded by curricula that are often constrained by time and increasingly focused on short-term practical outcomes rather than long-term artistic exploration.
In the Portuguese context, this situation is particularly acute. Portuguese students typically receive less formal education in the visual arts compared to their European peers. Consequently, higher education institutions are tasked with delivering comparable academic outcomes under significantly restricted conditions, intensifying the pedagogical pressures placed on instructors.
Given these conditions and the growing recognition of drawing as a critical educational resource, the development of innovative and adaptive pedagogical approaches is both necessary and timely. This study investigates drawing instruction across three distinct higher education programmes in Portugal.

Through comparative case analysis, it explores current challenges and proposes a structured pedagogical framework designed to address five key areas: fostering consistent drawing practice; reducing inhibition and performance anxiety; enhancing awareness of drawing's cognitive and educational value; promoting cross-disciplinary skill development; and supporting students in cultivating a distinct creative voice and identity.

2. Literature Review

2. 1 Lessons from Drawing

Drawing is a powerful educational tool in higher education, enhancing learning, assessment, and skills development across scientific and artistic disciplines. Combining drawing with other teaching methods, fostering cross-disciplinary collaboration, and updating pedagogical approaches can maximise its benefits for students' understanding and promote creativity[1]. Drawing is a fundamental practice that demands technical skill, patience, and sustained concentration, playing a critical role in the development of intellectual flexibility. It is particularly essential in fields where creativity and innovative thinking are key drivers of success. In the fields of art and design, it has a direct influence on students' academic performance and creative development. Studies demonstrate that manual drawing develops essential competencies through iterative trial-and-error processes, particularly in areas such as motor control, critical thinking, and imaginative thinking[2]. Contemporary educational research increasingly emphasises that drawing extends beyond the acquisition of technical skills, positioning it as both a practical means of skill development and a fundamental cognitive tool within educational frameworks, on par with traditional literacy and numeracy in its pedagogical significance [3].
Drawing thus assumes diverse interrelated functions: it stimulates creativity through visual experimentation, trains the eye through systematic observation exercises, develops the capacity to understand and interpret complex forms, organises thoughts in a structured manner, explores conceptual possibilities, and allows the visualisation of design alternatives.
Drawing courses in higher education play a multifaceted role in fostering creativity, critical thinking, and professional competence across various disciplines. Côrte-Real[4] reinforces this functional multiplicity, conceptualising drawing as a multifaceted instrument that encompasses creative development, visual perceptual, and formal interpretation capabilities. This holistic approach transcends mere representational technique, establishing drawing as a fundamental cognitive instrument that mediates between abstract thought and the materialisation of ideas, constituting itself as an indispensable element in the education of creative professionals.

2. 2 Teaching Drawing in Higher Education

The teaching of drawing in higher education is undergoing a transformative phase, marked by emerging pedagogical challenges and a growing need to reassess traditional methodologies, as evidenced by the widespread perception of a decline in foundational drawing competencies among incoming students, Fava's [5] study in United Kingdom educational context provides compelling evidence of this decline, revealing a concerning pattern among higher education lecturers. Of the forty-eight respondents surveyed, only two reported observing improvements in students' drawing abilities upon entry to university. This finding suggests that the perceived decline in drawing competencies may be particularly acute within UK educational contexts, reflecting broader systemic changes that have systematically prioritised specific academic disciplines while marginalising visual arts education.
In the Portuguese context, da Silva and Palaré [3] contextualise this issue within the broader European educational landscape, demonstrating that national educational policies have systematically reduced the time allocated for artistic education. The authors' findings reveal that Portuguese students receive significantly less arts instruction time compared to their European counterparts, establishing Portugal among the countries with the most limited arts education provision. This decrease creates a paradoxical situation in which educators must deliver duplicate curricular content within progressively constrained timeframes, potentially compromising the depth and quality of artistic learning experiences.
Faced with these challenges, innovative pedagogical proposals emerge, seeking to maximise drawing's educational potential. Lyon et al.[1] present convincing evidence about the effectiveness of collaborative interdisciplinary approaches, observing that the "mixture of aims enabled different disciplinary backgrounds and their philosophical underpinnings to be engaged and explored openly".

This methodology enriches the learning experience and prepares students for increasingly interdisciplinary professional contexts. Simultaneously, Thurlow et al.[6] identify a concerning phenomenon designated as "sketch inhibition", characterised by students' growing reluctance to engage with manual processes and use manual tools in the creative process. The researchers observe that "over the past thirty years, students have demonstrated less engagement with the manual processes of design development", suggesting a preference for digital tools that may compromise the development of fundamental visual thinking competencies. Di Giovanni [2] complements this analysis by establishing a clear connection between the erosion of design thinking processes and the decline in manual drawing practices, both of which are attributed to an over-reliance on digital technologies. The study demonstrates that when students are introduced to computer-aided design tools too early in their educational journey, they develop fundamental misconceptions about the nature of design, creative processes and visual representation methods. This premature technological exposure disrupts the natural progression of skill development that traditionally builds from manual exploration to digital application. Portuguese studies by da Silva and Palaré [3] corroborate these concerns through empirical evidence of students' drawing competencies in higher education contexts. Their findings reveal that students struggle with fundamental drawing skills, particularly in perspective construction and ideation sketch work. The authors identify that "86% of the participants agree and one strongly agrees that students struggle with preparatory drawings and sketches", providing quantitative support for the widespread nature of these educational challenges across Portuguese higher education institutions.

2. 3 Identified Challenges in Drawing Teaching

As drawing professors, the authors contend that drawing serves as a multifaceted tool for creativity development, perceptual training, form interpretation, thought organisation, possibility exploration, and alternative visualisation. The literature highlights significant challenges in teaching drawing in higher education, underscoring the urgent need for pedagogical strategies that raise awareness of drawing's essential role in the practical education of future creative professionals. In this context, the study aimed to address the following challenges: (1) finding strategies that encourage the practice of drawing; (2) reducing the inhibition to draw, the penalisation of doing and redoing reduces the motivation for experimentation and taking risks, which is fundamental for a project practice where drawing is a tool for idea generation; (3) raising students' awareness of the importance of drawing as a tool for thinking, expression, and communication (4) promoting the acquisition of drawing skills and their application in Communication Sciences and Technology, Product Design, and Fine Arts; (5) encouraging students to find their creative voice, message, and identity as individuals, designers, and artists to communicate it to others.

3. Methodology

This study is grounded in the authors' teaching experience in courses that involve drawing practice. Holding a PhD in Design, the authors teach drawing-related subjects across different academic programs. Although each of these courses plays a distinct role within its respective degree curricula, they share a unifying purpose as catalysts for fostering observation, creative expression, and conceptual development through the practice of drawing. Another significant factor is that they accommodate a heterogeneous cohort of students with markedly diverse levels of knowledge and competencies in hand drawing. The student cohort comprises individuals with widely varying levels of experience, ranging from complete novices with no prior engagement in drawing to those demonstrating substantial proficiency in the discipline.

3.1 Graphical Representation in Communication Sciences and Technologies

The Graphic Representation curricular unit is a first-year subject within the degree in Multimedia and Communication Technologies at the University of Aveiro, establishing a fundamental foundation for developing visual and creative competencies in contemporary communication technologies.
As the only drawing discipline in this course, the pedagogical structure comprises a theoretical component and a practical component. The theoretical strand provides essential conceptual foundations for understanding and applying practical exercises, incorporating references that establish a solid cultural foundation in graphic representation. This theoretical framework serves as a catalyst, connecting concrete practical examples with their potential applications in multimedia and

communication technologies. Drawing is conceptualised within this course primarily as a thinking tool and cognitive instrument. By mastering representation techniques, students develop competencies for conceiving and designing previously non-existent elements, enhancing their visualisation capabilities and capacity for planning complex projects. Drawing's interdisciplinary nature is evident across the curriculum, supporting multiple units, from multimedia conception to interface development and digital content production. A range of teaching methodologies is employed, wherein the theoretical component adopts expository strategies supported by case studies to guide practice, while simultaneously addressing technical aspects of observation and graphic resolution, such as perspective perception and its accurate translation into two-dimensional representations.
The practical component employs direct instruction to enhance observational skills and achieve high-quality, realistic, and authentic outcomes. The teaching methodology employs diverse techniques and tools for specific pedagogical purposes, including expressiveness through gestural techniques, speed through sketching exercises, and assertiveness through technical precision.
The primary learning objectives enable students to: (1) acquire knowledge and use the instruments, methods, and materials necessary for image creation; (2) develop observational skills and understanding of the representation process; (3) recognise that graphic representation is an intentional act grounded in both external reality and the author's perspective; and (4) develop the ability to approach design with agility, spontaneity, and awareness through visualisation and project planning.

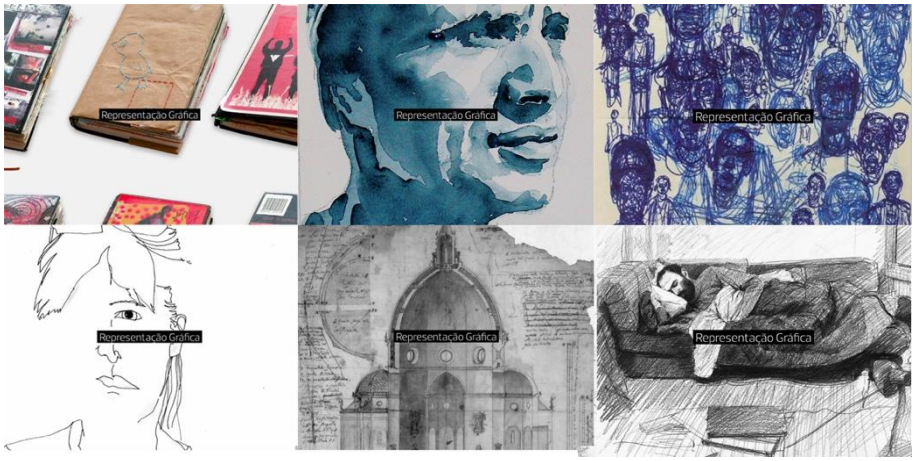

Fig. 1. Visual support for theoretical lectures — examples of lesson openings.

3.2 Drawing II in Product Design and Technology

Drawing II curricular unit is part of the Product Design and Technology degree, taught at the School of Design, Management, and Production Technologies at Aveiro North, University of Aveiro aiming to: (1) employ drawing as a structuring element of thought and essential instrument in design projects; (2) represent ideas and objects in drawings with different characterisations, durations, and manual rendering with didactic annotations, highlighting functional, structural, material, and formal details in longer-duration drawings; (3) structure and represent for communication through drawing during a design project. With a strong practical component and developing students' education within the culture of design projects, product development, and material production, through sensitisation to drawing's potential as a structuring element of thought, an instrument of representation, communication, and simulation. The teaching methodology is based on executing programmed practical exercises with varying execution times, using different tools and techniques. Teachers provide critical and individualised supervision through verbal intervention and manual instruction, offering rapid guidance to improve drawings and student performance. The course presupposes a self-corrective approach by students, focusing on exercises to improve their performance. A daily notebook is recommended as an essential instrument for students' complementary education, whilst daily drawing practice is encouraged.
Drawing's interdisciplinarity within the degree is evident when drawing is used as a conceptual tool in design project classes, serving as a means of reflection during the ideation phase. The approach to drawing in the classroom includes the use of definitive marking instruments to instil drawing speed and

risk anticipation training, as well as observational drawing, analytical drawing, interpretative drawing, composition, and drawing organisation through exercises with specific purposes: to observe, mark, interpret, and represent. In the classroom, teachers provide specific instructions to help students achieve their finest drawings while always respecting their singular artistic identities.

Fig. 2 Manual render with markers—representation of different materials (wood, textile, metal).

3.3 Drawing in Fine Arts

The degree in Arts and Multimedia at the School of Education of the Polytechnic Institute of Viseu is classified within the scientific area of Fine Arts. However, it presents a multidisciplinary study plan that integrates, sequentially, in the first four semesters of training, drawing curricular units with weekly contact hours varying between 4 hours (Drawing I and II) and 3 hours (Drawing III and IV).
The proposed drawing progression first explores observational drawing through freehand recording on paper, focusing on the representation of objects and architectural spaces (notion of perspective and dimensional relationships — Drawing I), as well as the drawing of human figures and other animals (static and dynamic anatomical representation — Drawing II). Drawing III (Illustration) and IV (Comics) propose the development of drawing skills applied to projects, considering digital drawing as an expressive resource for character and environment design, as well as the creation of visual narratives. Drawing II combines observation and expression, presenting as main objectives: (1) to develop observation and recording capacities of reality; (2) to understand anatomical relationships relevant to drawing the human figure and other animals; (3) to record human and other animal forms/poses, applying notions of structure and volume; (4) to expressively adapt different media and techniques for recording observed forms. This curricular unit stimulates experimentation through practice as a knowledge acquisition strategy in a dialectic of constant action and reflection, with critical and demonstrative contributions from peers and lecturers. Systematic drawing practice is encouraged for progressive technical improvement beyond contact hours in the classroom, through complementary exercises in public cultural and natural contexts, which are recorded in graphic diaries. With exercises that vary in execution time, representation objectives, syntheses, and drawing techniques or mark-making materials, a structural understanding of forms is sought through observation oriented towards their representation, which reconciles anatomical rigour with each student's artistic expressiveness. For animal drawing, natural contexts within the city of Viseu are sought, and as a form of knowledge communication, a scientific illustration project is proposed.

Fig. 3 Different animals and human figure drawing exercises. ©Diana Barbosa (animal skull and texture); Áurea Rojo (human figure poses); Ana Garcias (human musculoskeletal study).

Course	Graphical Representation	Drawing II	Drawing II
Degree	Communication Sciences and Technological	Product Design	Fine Arts
Year/ Semester	1/1	1/2	1/2
Number of students	~ 110 (4 classes)	~ 40 (2 classes)	~ 40 (2 classes)
Theorical classes	1 hour/ week	---	—
Practical Classes	2 hours/week	4 hours/week	4 hours/week
Type of Contact	face-to-face	face-to-face	face-to-face
Teaching Methodology for Drawing Practice	Direct instruction with specific orientation	Direct instruction with specific orientation	Direct instruction with specific orientation
Drawing Typologies	Freehand observational drawing	Freehand observational drawing	Freehand observational drawing
Drawing Techniques	Line (texture) and mass	Marker rendering	Contour line and mass
Drawing Aims	Volumetry (light and shadow) Structural and proportional studies	Volumetry (light and shadow) and material representation	Volumetry (light and shadow) Anatomical study (static and dynamic)

Table 1. Descriptive table of the three courses included in the study.

Students undertook tasks specifically designed to align with the course's purpose, whether primarily theoretical or practical in nature. Despite methodological differences and the diversity of assigned exercises across courses, the classroom environment and the pedagogical interactions between students and professors constituted the principal context for the empirical data collection in this study. Drawing on informal participant observation methodology [6], the authors systematically documented students' behaviours, physical expressions, and verbal responses throughout the teaching sessions. This ethnographic approach facilitated the collection of informal testimonies that empirically validated the challenges identified in the literature review, thereby providing empirical grounding for the theoretical questions raised in this field of study.

4. Findings

Classroom sessions were observed across the three academic programs. Field notes, student reflections, attitudes and informal feedback were analysed to identify recurring themes related to drawing pedagogy. Some of the students´ attitudes observed corroborate the difficulties highlighted in the literature, including a lack of confidence in drawing ("I cannot draw!"), reluctance to show their drawing, a tendency to rush task completion regardless of quality ("Is this okay?"), difficulty starting the drawing exercise, blank page syndrome, fear of failure, and reticence to engage in repeated attempts, as well as overall insecurity regarding the outcomes ("Is this what the teacher wants?").

4.1 New Teaching Approach

The practical nature of drawing, coupled with students' prior skills, directly influences their engagement and motivation in learning the discipline. In drawing education, a key challenge for professors is sustaining student motivation during ongoing practical work. When faced with demanding tasks, many students tend to bypass difficulties rather than confront them, suggesting a misunderstanding of the relevance of drawing in their academic progress. A dynamic and adaptive pedagogical approach allows professors to diversify teaching strategies, tailoring them to the varied profiles of their students. The proposed ongoing tool presented in this study aims to assist drawing educators in managing the diverse levels of proficiency and performance among students, thereby facilitating progressive auto-development of drawing skills throughout the course. The proposed framework outlines three pedagogical approaches: Observe, Make and Learn, aligned with

contemporary research on drawing education that emphasises the interconnection between observation, practice, and reflection to improve drawing skills.

Category	Strategy	Exercise	Challenges: Encourage drawing practice	Reducing the inhibition to draw	Raising students' awareness of the importance of drawing	Promoting the acquisition of drawing skills	Find student's creative voice
OBSERVE	Look for inspiration (V isual culture)	Annoted research	●		●		●
	Guided observation	Imaginary window exercise (dim ensioning the drawing on the sheet)				●	
		Measuring the object				●	
		Directional angles / Structure lin es (easy to start)				●	
		Geometric structure (revealing three-dimensional form on a two-dimensional surf ace)				●	
		Invisible lines				●	
		Light direction				●	
	Show other students' drawing	Peer identification	●	●			●
	Show thematic videos	Technical and expressive diversi ty	●		●	●	●
	Show drawings of a creative process	Visual identities, products, pain ting			●		
	Visual critical analysis	Drawing selection and comment			●		
		See the differences			●	●	
	Improve visual accuracy	Blind contour drawing			●	●	
		Reverse drawing			●	●	
		Negative space			●	●	●
MAKE	Warm-up exercises / Unlocking exercises	Cursive hand-writting (larger and small scale)	●	●	●	●	
		Pressure and direction exercis es with different material	●	●	●	●	
		Drawing with the mouth / Drawi ng with the non-dominant hand	●	●	●	●	
		Continuous line drawing (straigh t and thick)	●	●	●	●	
	Collaborative drawing	Group drawing in large format	●	●	●	●	●
		Collaborative sketchbook	●	●	●	●	●
	Drawing experimentation	Graphic diaries	●	●	●	●	●
		Using inexpensive materials	●	●	●	●	●
		Timed drawing challenges	●	●	●	●	●
	Find expressiveness	Material experimentation	●	●			●
	Make mistakes	Don't erase	●	●		●	●
LEARN	Showing that the teacher also fails	Drawing in classroom	●	●			
	Digital drawing	Digital environment approach	●	●	●	●	●
	Virtual immersive drawing	AR, VR, MR drawing	●	●		●	●
	Drawing outside classroom	Drawing around us Dance/Mus ic/Theatre Performance; Nature; City; Museum	●	●		●	●
	Enhancy creativity	Doodling	●	●		●	●
		Drawing new realities	●	●	●	●	●
	Slown down, drawing needs time and focus	Detailed drawing	●			●	
	Describing objects	Drawing from verbal description	●	●			
	Give instructions, not receipts	Always!	●	●	●	●	●

Diagram 1. Proposed drawing pedagogical framework

The OBSERVE dimension aligns with research highlighting the significance of visual literacy development in diverse student cohorts [5] where students enter with significantly different levels of prior experience and competency. Observation entails being attentive with an open mind to possibilities. Activities that focus on observation and the principle of learning to see to learn to draw, prioritising the presentation and discussion of practical case studies that illustrate and explain this methodology.

During these moments, the teacher's role is to instruct without providing formulaic solutions, leaving students to rely on this observational process to extract what they consider fundamental to drawing. By constructing a consistent visual repertoire, students develop a visual lexicon that they can employ in the execution of their drawings. The MAKE reflects empirical findings that demonstrate the cognitive benefits of manual drawing practice in developing spatial reasoning and creative problem-solving abilities [6]. A moment that privileges the act of making and connects observation (eye-brain) with the tool (hand) in the act of drawing. Here, students are encouraged to practice various warm-up

exercises and activities designed to enhance their drawing skills and unlock creativity. Finally, the LEARN dimension acknowledges the expanding pedagogical landscape identified by recent research on collaborative learning environments in art education[1], where traditional hierarchical teaching models are increasingly supplemented by peer-to-peer learning and technology-enhanced instructional approaches.

5. Final Considerations and Future Work

This study reinforces the importance of continuously improving pedagogical practices in drawing education, particularly through the integration of active methodologies that respond to the diverse needs and skill levels of students.
To further advance this work, it is essential to test the proposed model in various educational contexts and subsequently evaluate its impact on student development in relation to the five identified challenges. Expanding the repertoire of exercises will enhance the tool's applicability and relevance, particularly for educators and learners beyond the fields of Design and Fine Arts. Additionally, establishing a network of contacts dedicated to drawing education will foster the exchange of pedagogical strategies and contribute to the broader dissemination of effective teaching practices in this domain. Future developments may include the creation of a structured manual or workbook, cataloguing exercises according to their intended pedagogical objectives. Such a resource would serve as a practical tool to support students in identifying their challenges, promoting self-directed learning, and fostering greater autonomy. By understanding their limitations and selecting appropriate exercises, students can develop their observational skills, build confidence in their chosen field, and engage more meaningfully in the learning process.

Acknowledgements

This work was supported by FCT – Fundação para a Ciência e Tecnologia, I.P., by project reference UID/04057: Research Institute for Design, Media and Culture. The authors would like to thank Beatriz Ribeiro, a student from the Product Design and Technology degree (figure 2, sneaker drawing), and Diana Barbosa, Áurea Rojo and Ana Garcias students from the Arts and Multimedia degree, for authorising the publication of their drawings produced in the respective Drawing II curricular unit.

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