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[†]This article was produced as a part of the doctoral thesis being developed by first author

SPECIALTY SECTION

This article was submitted to Higher Education, a section of the journal Frontiers in Education

RECEIVED 28 September 2022

ACCEPTED 19 January 2023

PUBLISHED 17 February 2023

CITATION

da Silva PR and Palaré O (2023) Drawing skills at the beginning of higher education: Teachers' perspectives, expectations, and realities. *Front. Educ.* 8:1056518. doi: 10.3389/feduc.2023.1056518

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Drawing skills at the beginning of higher education: Teachers' perspectives, expectations, and realities

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For more than two decades, educational policies in Portugal have primarily focused on improving student outcomes, reducing school absenteeism, and preventing school abandonment. Another factor has been the overemphasis on literacy and numeracy, which has resulted in an unbalanced weighting of these school subjects on instructional time. As a result, instruction time for non-essential classes, such as music and visual arts, was reduced. What effect do these policies have on the drawing abilities and visual literacy of those who pursue visual arts studies in higher education? To date, there has been a plethora of studies on drawing in its didactic, neurological, and physiological components, with findings that strengthen and support the idea that drawing plays a central role in the development of conceptual thinking and abductive reasoning. These findings are significant when advocating for drawing as a learning tool in S.T.E.M., but also, for drawing to play a different role in education overall. To determine whether these policies impact the competencies, skills, and visual literacy of those who pursue visual arts studies, we surveyed higher education teachers regarding their perceptions of student drawing skills as they begin college degrees ranging from fine arts to design. Some survey findings point to weak areas, particularly in perspective drawing and preparatory drawings and sketches. The teachers suggested that the causes were mostly political. These findings should be investigated further, specifically through follow-up interviews and a survey of first- and second-year students enrolled in the courses taught at the educational institutions under analysis.

KEYWORDS

skills, learning, survey, drawing, visual literacy

1. Introduction

This research forms a component of a bigger research project as part of a doctoral degree program in fine arts. The study will be concentrating on how drawing is taught in primary, lower secondary, and upper secondary schools in Portugal.

The premise is that drawing is not just a skill (Simmons, 2019) or just a part of the visual arts, but it is one fundamental pillar of education and learning as important as literacy and numeracy (Mitchell, 2007). Stemming from the concepts of drawing to learn (Brew et al., 2012) and thinking through drawing (Kantrowitz et al., 2012), research was drawn to assess different aspects of this class subject in the Portuguese mandatory education curricula, mainly how it compares with other countries.

An examination of the Portuguese curricula between 1989 and 2021 reveals a decrease in the number of teaching hours in arts education, in general, while the number of teaching hours in Portuguese and mathematics increases. As a result of their lack of structural support, the arts is frequently the preferred victims of adjustments and budget cuts, according to Sullivan (2005), and

this reality is not unique to the Portuguese educational system. According to PORDATA data, state education spending over the last three decades has ranged from 3.7% of GDP in 1989 to 5% in 2000 and 3.9% in 2020. The trend in the 1990s was up until 2002, 5.1%; since then, although fluctuating, the trend has been down to a low of 3.5% of GDP in 2019 (PORDATA, 2022).

One aspect of the preliminary study was the reduction in art class instruction time over the last 20 years in favor of the Portuguese language and mathematics. As a result, in comparison to other European countries (OECD, 2014), Portuguese students benefit from the least amount of instruction time in arts education, which includes music, visual arts, and performing arts. What stands out when analyzing the Visual Education curriculums for the second and third cycles of basic education is that the loss of workload is not reflected in the curriculums, i.e., the same content must be taught in less time.

In the case of visual education in the third cycle, it resulted in the concentration of geometry contents in the seventh grade, some of which had previously been taught in the ninth grade, which raises the question of whether it was pedagogically correct because some contents did not fully fit the stage of development of students in the seventh grade. Perhaps this is why the National Assessment Test results show that average performance in visual education in eighth grade is lower than in fifth grade, which is lower than in third grade (IAVE, 2018; IAVE, 2019).

It is debatable whether structural subjects should be taught for less time. According to the European Commission's comparative documentation of educational systems, by the end of the ninth grade, Portuguese students had 1,660h of mathematics lessons on average, compared to their Finnish counterparts who had 812h (EACEA et al., 2015; European Commission/EACEA/Eurydice, 2017), while Estonian students had 945h.

These times are not reflected in PISA results, and while Portugal has improved, it still lags behind countries such as Finland and Estonia, where the weight of mathematics and mother tongue teaching occupies less than 40% of the curriculum time up to the ninth grade, compared to more than 50% in Portugal (OECD, 2014). Although there has been an evolution in Portugal's PISA results (OECD, 2019), and the Finnish trend has been in the opposite direction, Finland's results remain higher than Portugal's. Moreover, when we look at Estonia, we find an upward trend in results.

We hypothesize that all of this is harming the academic performance of students who want to pursue higher education studies in creative fields, particularly those related to visual arts. To answer that, a survey was proposed to higher education docents who teach drawing to first-year students in fine arts schools at Lisbon and Porto universities. The goal is to understand if there is a noticeable decline in drawing abilities (Fava, 2020) in first-year students, not driven by a digital revolution, but as a result of policies.

2. Materials and methods

2.1. Participants

The survey was conducted between 20 June 2022 and 10 July 2022. The survey was answered by 7 participants, all of them faculty teachers, 3 men and 4 women, in two age groups, 5 between the ages of 41 and 55, and two over the age of 55, as shown in Figures 1, 2. All the participants had a degree in fine arts, five from Lisbon University and two from Porto University (see Figure 3), one had 6–10 years of teaching experience, five had 21–30 years of teaching experience, and one had more than 30 years

of teaching experience (see Figure 4). Figure 5 shows that all seven respondents teach fine arts courses, with three respondents also teaching architecture, design, and multimedia courses, respectively.

The limitation of this investigation is the small data pool (Quivy and Van Campenhoudt, 1998), there are only two fine art colleges in the country, and the drawing departments at both have a total of 24 faculty teachers.

Therefore, there is a small number of higher education teachers who meet the survey criteria, namely teaching drawing to first-year students in a fine arts college. According to the institutional information of both colleges, only three docents are teaching at the first-year level at Porto University Fine Arts College and five at Lisbon University Fine-Arts College. Thus, even though being a small sample, it comprises 87.5% of the population who fits the criteria.

Taking this into consideration, the Lisbon Fine-Arts College has 356 new students in six courses where drawing is taught as a first-year requirement. There were 136 new students in Porto. Overall, 492 students from the top performing visual arts students graduating from secondary school that year are reached by the study. All this is performed according to the publicly available information provided by the Ministry of Science, Technology, and Higher Education (DGES, 2022).

2.2. Survey

Due to a smaller pool, there will be a greater emphasis on qualitative analysis, rather than quantitative, and the investigation will be regarded as a closed interview survey, with questions that can be framed into four different categories:

- The first group of questions, from #1 to #6, is aimed to profile the enquired, ranging from gender group, age, experience, background, and geographic location.
- The second group of questions, from #7 to #8, aims to assess if there has been a visible decline in the ability to draw in younger generations that are starting their higher education.
- The third group of questions, which ranges from #9 to #10, peer into the observations made by teachers in their classrooms, their assessment of the students' practices and techniques to be evaluated on a Likert scale of 1 to 5 from total disagree to totally agree. In question #9, there are five sentences aimed at the assessment of the students' perceived skills, and in question #10, there are six sentences aimed at the perceived technical and theoretical knowledge.
- Finally, question #11 presents a group of four sentences with possible causes that could justify a decline in drawing skills or a lack of preparation of fine arts first-year college students, also on a Likert scale.

3. Results

3.1. A decline in students' drawing skills?

It was asked first if there is a visible decline in students' base skills in drawing with five possible answers: (a) Yes, since the pandemic; (b) Yes, for the last 5 years; (c) No; and (d) No, it has improved. Three of the respondents answered (b), "yes," and four answered (c), "no" (see Figure 6).

1. Age Group

| | |
|---|---|
| ● Less than 30 years old. | 0 |
| ● From 31 to 40 years. | 0 |
| ● From 41 to 55 years | 5 |
| ● Over 55 years. | 2 |



FIGURE 1
Age group.

2. Gender

| | |
|--|---|
| ● Woman | 3 |
| ● Man | 4 |
| ● Other | 0 |

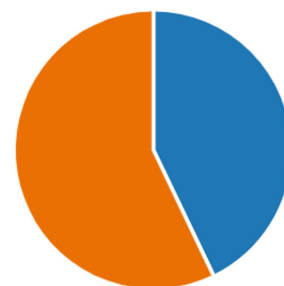


FIGURE 2
Gender.

There was no discernible age, gender, or geographic tendency in the responses; it was nearly a split, but the majority (57%), unlike the other 43%, do not perceive a decline in student abilities.

The second question was how the teachers classify their students' drawing skills at the start of the first year. Four answered "sufficient," two answered "good," and one answered "very weak," which is 57, 29, and 14%, respectively (see Figure 7). Has before, gender, age, and geography do not appear to influence the outcome of the questions, though the two teachers from Porto have opposite views in this regard.

An examination of the data derived from the national exams for the school subject "Desenho A" (Drawing), revealed a consistent trend of improvement, with grades rising from 57% in 2008 to 68.9% in 2021, having peaked in 2020 with a 73.5% average [this break in the data coincides with the pandemic mandatory confinement], and continuing a general upward trend in 2022 with a 70.5% average (PORDATA, 2022).

3.2. An observation-based assessment

In the third block, we delve into more specifics about each respondent's personal experience in the classroom. In the first sentence, we affirm that first-year students enter college with "bad habits" about drawing and a "lack of flexibility" to change them; six of the respondents, agreed with the sentence, an overwhelming majority of 86%, and one did not agree or disagreed with the sentence (Figure 7).

When we stated that the students lacked versatility in their use of various materials, one participant agreed completely (14%), two agreed (29%), three did not agree or disagreed (43%), and one partially disagreed (14%). There is a tie between those who do not have an opinion and the total of those who agree that students lack versatility.

Four participants agreed, and one completely agreed, or 71% total, that first-year students lack technical knowledge, while the other two did not agree or disagree with the sentence. In this question, all male participants answer the same way, which in the sum of all surveys does not appear to be relevant.

As for the difficulty, students have to use drawing as a tool for thinking and registering thoughts, two teachers, or 28%, did not agree, two agreed, other two totally agreed, which combined is 42% of positive answers, and finally, one participant did not agree or disagree with the sentence.

In the final sentence of this block, most participants, 72%, five in total, partially disagreed with the assertion that most students struggle to recognize their flaws and difficulties, one participant agreed, 14%, and another had no opinion, 14% (see Figure 8).

3.3. On students' overall knowledge

In the first sentence of the second part of the third bloc, we affirm that most new first-year students lack experience with various materials;

3. What is your area of academic training?

| | |
|--|---|
| ● Architecture | 0 |
| ● Fine Arts | 7 |
| ● Design | 0 |
| ● Other | 1 |



FIGURE 3
Academic training.

4. For how long have you been teaching?

| | |
|---|---|
| ● Less than 5 years. | 0 |
| ● Between 6 and 10 years. | 1 |
| ● Between 11 and 20 years | 0 |
| ● Between 21 and 30 years | 5 |
| ● More than 30 years. | 1 |

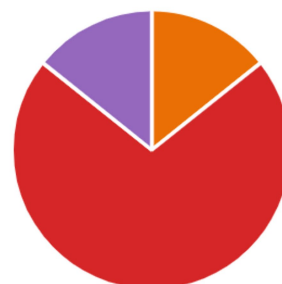


FIGURE 4
Teaching experience.

28% of participants partially disagree, 42% neither agree nor disagree, 14% agree, and another 14% completely agree.

When we affirm that new students use drawing materials insufficiently, one participant completely agrees, three others agree, and three partially disagree (see Figure 9).

Concerning observational drawing, three participants disagree that students have difficulty performing this type of registry, two neither agree nor disagree, and two completely agree.

When it comes to skills in perspective drawing, 71% of participants agree that students reveal difficulties in this type of drawing, with the exception of 29% of participants who have no opinion.

Four participants, or 57%, strongly agree with the assertion that most students do not dominate the terminology or understand the meaning of the design elements, 14% of participants agree, and another 14% partially disagree.

A total of 86% of the participants agree and one strongly agrees that students struggle with preparatory drawings and sketches.

3.4. Possible causes

For the final block, we look for possible causes of first-year students' difficulties and apparent lack of skills. We propose four motives that are

not mutually exclusive: (a) students lack preparation, (b) socioeconomic reasons limit access to media and materials, (c) the problem is outside the school, visual arts are socially undervalued, and (d) the problem is in education policies that undervalue visual arts.

Concerning the first sentence, one participant strongly agrees, two agree, and the remaining four participants, 57%, neither agree nor disagree.

Four participants partially disagree and three agree on social-economic factors, 57% vs. 43%.

The third sentence is more contentious; one participant completely disagrees and another partially disagrees that visual arts are socially undervalued; of the remaining participants, two, or 28%, agree and 43% neither agree nor disagree.

Figure 10 shows that six participants, 86% in total, agree that education policies tend to undervalue the visual arts, while the remaining participant had no opinion.

4. Discussion

In terms of observational drawing, participants are more positive about their student's abilities, in contrast to perspective drawing, where the majority agrees that students generally show some difficulty in this

5. In which area of general training do you teach Drawing?

| | |
|--|---|
| ● Architecture | 1 |
| ● Fine Arts | 7 |
| ● Design | 1 |
| ● Multimedia | 1 |
| ● Others | 0 |



FIGURE 5 Teaching field.

7. From your point of view, do you observe a decline in the core competencies of the students arriving from secondary school?

| | |
|---|---|
| ● Yes, since the pandemic. | 0 |
| ● Yes, for over 5 years. | 3 |
| ● No. | 4 |
| ● No, they've even improved. | 0 |

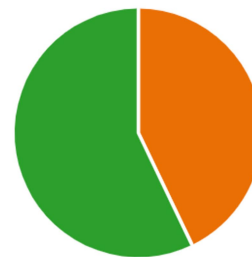


FIGURE 6 Students' competencies.

type of registry. Perspective and observational drawings, while similar, are very different. To create an effective perspective drawing, you must have a deep knowledge of geometry, light, focal points, and vanishing points, but in observational drawing, these aspects can be mostly ignored.

According to the responses of the participants, most first-year students also lack knowledge and comprehension of the elements and principles of design, which means they do not master the discipline's basic terminology and the essence of communicating visually; they lack visual literacy. Concerning preparatory drawing and sketching, all participants agree that students reveal difficulties in this type of registry. This type of free-flow reflexive drawing is less formal, but it requires capacities related to other subjects in the survey, such as perspective, observation, thinking through drawing, visual literacy, or media domain.

The overall assessment of the survey is that there are some issues, namely the students' tendency to show a lack of flexibility in changing old habits, which can be seen as an impediment to acquiring new techniques, skills, and knowledge. This difficulty in changing habits could be due to a lack of exposure to different materials and techniques, resulting in a lack of versatility in the use of different drawing materials and, as a result, a lack of technical skills.

We did not find any research on this theme in the context of Portuguese academia, but some research in other countries may help

create connections, establish comparisons, and provide some more scientific background, not only to contextualize but also to show the relevance of this kind of research in our national context. On a similar subject of research focused on architecture students in Poland, the researchers state that "there is no correlation between the results obtained in the entrance exam (the drawing stage) and the grades obtained by the students in the Drawing classes during their education in subsequent semesters of studies" (Gawlak et al., 2021). This means that we need further information about the student's performance during the two first semesters in college.

There is a great amount of research that links educational performance and social and economic background, where students with more resources tend to outperform those with fewer (Seabra, 2009). The social factor might play a role bigger than the majority of the participants in the survey believe, and it might be a path of research that will help frame some of the responses in the query. The participants tend to agree that students demonstrate an inadequate use of drawing materials and media, which may be evidence of no contact or little experience with an assortment of media. This might be a reflection of those social-economic differences, mainly because, even though the Portuguese educational system is tuition free from elementary school until the completion of secondary education, it is not free of frequency.

8. How do you classify your students' drawing skills level at of the beginning of higher education?

| | |
|------------------|---|
| ● Very weak | 1 |
| ● Uninsufficient | 0 |
| ● Sufficient | 4 |
| ● Good | 2 |
| ● Excellent | 0 |

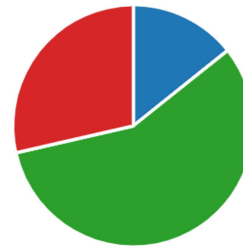


FIGURE 7 Students' skill level.

9. Considering your classroom experience, rank the following statements from 1 to 5, where 1 totally disagrees, 2 partially disagrees 3 without opinion, 4 agree and 5 completely agree.

| | | | | |
|-----|-----|-----|-----|-----|
| ■ 1 | ■ 2 | ■ 3 | ■ 4 | ■ 5 |
|-----|-----|-----|-----|-----|

First-year students have mannerisms, wrong drawing technics, and lack the flexibility to change.

New students' drawings reveal a lack of versatility in the use of different drawing media.

Students who start college reveal a lack of technical knowledge.

Students have difficulty using drawing as a tool or way of registering thought.

Most students have difficulty acknowledging their flaws/difficulties.

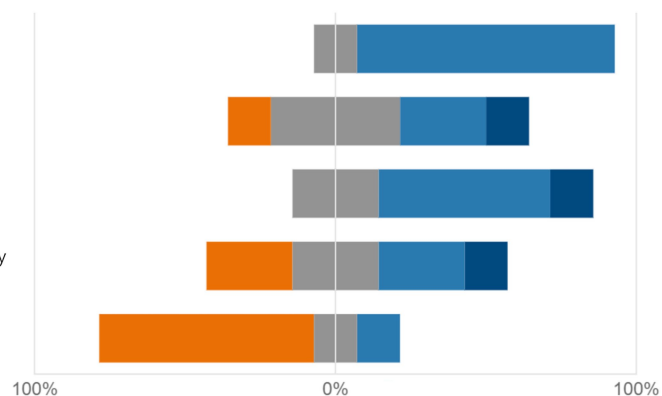


FIGURE 8 Students assessment.

Except for school books, most educational materials are the responsibility of the families; in light of this, teachers may attempt to reduce the social-economic impact of the drawing subject and other art-related topics, at the secondary education level, by limiting the number of materials requested. This will reduce financial strain while limiting the students' learning opportunities.

Another study "identified different patterns for arts participation and cultural engagement across society in the United Kingdom and found that these patterns are closely associated with demographic and socioeconomic characteristics" (Mak et al., 2020). In general, the Arts are a manifestation of culture, from music to dance, to theater, entertainment, visual arts, and multimedia, they drive industries, creating jobs and wealth; however, what happens when education in these fields is restricted? It results in a perpetuation of inequality. Portugal has the fifth lowest culture budget in the European Union and spends more on sports than on cultural services than the majority of E.U. countries (European Commission, 2022).

Educating in the arts is about more than just developing creators and artists; it is also about preserving culture and heritage, as well as incorporating creativity into the curriculum, as it is not limited to the arts (Kantrowitz et al., 2017), and plays an important role in learning other subjects such as sciences, technologies, engineering, and math (Tytler, 2016).

Educational policies are one of the major forces influencing the outcomes of visual arts teaching; thus, these policies are reflected in the weight and value that these disciplines have in school curricula, instruction time, and programs. However, social, economic, and cultural factors influence policymakers. The importance of the arts in society is reflected in the policies, and while the survey points to a link between teachers' perceptions of society's view of the arts as a negative factor in students' outcomes, it is unclear how this societal lack of awareness and undervaluing of the arts will affect policymakers and underpin educational policies.

As a result of this confluence, there has been a 20-year trend of decreasing instruction time in the lower levels of education, between the

10. With regard to the practices of your students, classify the following statements from 1 to 5, and 1 totally disagrees, 2 partially disagrees, 3 no opinion, 4 agrees and 5 totally agrees.

■ 1 ■ 2 ■ 3 ■ 4 ■ 5

The majority of the new pupils show little experience with different drawing media.

In first-year classes, it is common to detect improper use of drawing materials.

Many students have a weak dominance in observational drawing.

Students, in general, demonstrate difficulties in perspective drawing.

Most students do not master the terminology or does not realize the meaning of the visual elements.

Many students show difficulties in preparatory drawing and drafting.

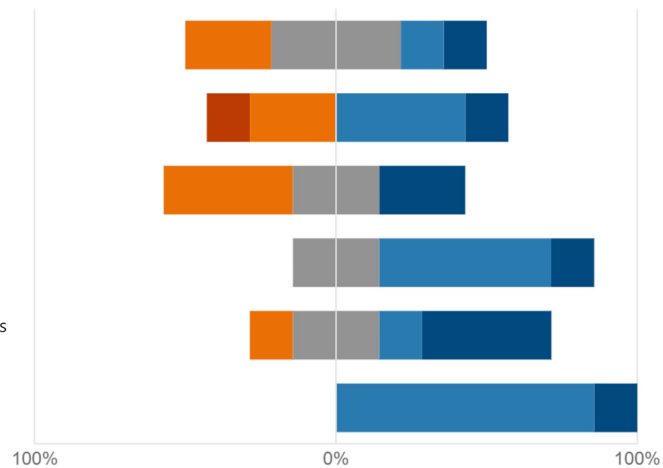


FIGURE 9 Students' practices.

11. From your point of view, what can be the causes of the difficulties and unpreparedness demonstrated by students in the 1st year of college, classify the following statements from 1 to 5, and 1 totally disagrees, 2 partially disagree, 3 no opinion, 4 agrees and 5 totally agrees.

■ 1 ■ 2 ■ 3 ■ 4 ■ 5

Students have a poor preparation.

A lack of access to drawing materials due to socio-economic reasons condition learning and students'...

The problem is external to the school, by the visual arts being socially undervalued.

The problem lies in educational policies that devalue the visual arts.

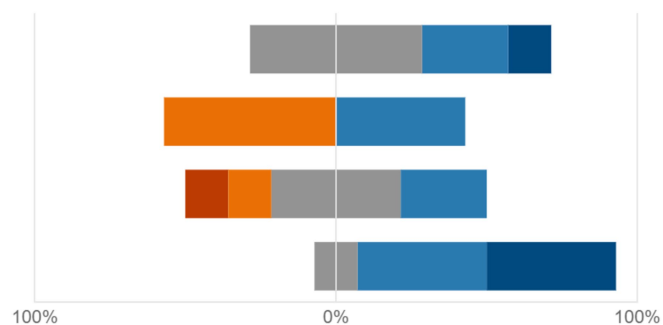


FIGURE 10 Possible causes.

first and ninth grades. As a result, students entering secondary school who wish to pursue a formal education in visual arts are already underprepared for the task ahead, and students in other fields will not benefit from visual literacy (Freedman and Stuhr, 2004).

5. Final considerations

The findings of the investigation appear to indicate a lack of consistency in the background formation of first-year fine arts students.

In some ways, the data confirmed a set of symptoms for us. The participants were asked to leave a final comment at the end of the inquiry, a brief reflection like the one that follows:

“Students, normally, demonstrate a lack of work habits, they do not understand the importance of repetition and do not have a good relationship with error. They are increasingly having difficulty concentrating on their tasks. All of these characteristics are required to draw, and they are obviously worked on throughout the year, but they should already be a part of the student's performance, i.e., they should

have been developed during secondary school. Then, regarding observational drawing, the large majority of the students have been in contact with this kind of representation, but nothing is explained or contextualized to them. That is, their observational drawing doesn't obey rules, and they get surprised that rules exist when they are explained and worked upon. At the end of the school year, all students claim to experience a radical change relative to knowing how to see."

This comment, the only one left by the participants, resumes the way teachers experience some of the difficulties shown by students. It also ratifies the hypothesis in the way that, even though there is not a decline in drawing abilities, there is something wrong with the skills of students that start their first year at fine arts colleges. So, the underlying issue of our conclusions is that there is a significant flaw in the skillset with which students should begin college. As assessing the problem is only half of the research, new questions arise, such as whether the problem exists in secondary schools. Is it the program, the curriculum, or something else? Or do secondary school teachers struggle with a lack of resources and student disengagement?

As students apply to college there is a limited number of vacancies in each course, and students with the best secondary school average, plus the best national examination results tend to occupy first the most desired courses. This means there are differences in the teacher's experience with said students. Which might explain some different points of view over the survey? We cannot affirm that there is a decline in students drawing skills in a general sense. Though some issues might reveal a lack of systematic practice of drawing, and that might be attributed to a varied number of factors.

The findings of the survey provided a clearer picture of the expectations that higher education teachers in the field of drawing have for their new students, and how those expectations may not be met exactly. Mostly, it shows that there is a lack of investigation on this subject, at least in the context of the Portuguese educational system. Because there is a noticeable gap, or miscommunication, between secondary and higher education as stated by [Shifrin \(2009\)](#):

"Some aspects of the scholarly debate are relevant to—and can therefore help to elucidate—the pedagogical assumptions, practices, and divergences at the primary and secondary school levels; and, as a result, that there is a degree of understanding to be gained by examining those practices and perceptions (initially at least) in the context of the larger debate, rather than as divorced and remote from it, as is often the case when secondary educational practices are considered in relation to those of higher education or of the academy in general."

Since 2008, the average examination grades have been rising, but this leads us to a first conclusion: the competencies and skills evaluated in the exam are not the same skills and competencies that higher education teachers expect of first-year students. Because, according to the teachers' responses, there are some key competencies, techniques, practices, and knowledge that the students lack, and this perception is exacerbated when we consider that the teachers who respond to the survey teach students with above-average exam results and secondary school conclusion grades. As a result, it appears that college and secondary curricula are not on the same page.

The investigation leads us to the conclusion that students struggle to abandon old habits and flawed techniques, which creates hurdles to their learning. In addition to these habits, students demonstrate a lack

of versatility in using different media, a lack of overall knowledge, and a lack of use of drawing as a tool. They appear to have a limited understanding of the discipline, as evidenced by the contrast between good observational drawing skills and a lack of perspective drawing skills, which relate to a broader set of competencies related to visual literacy.

That is notable in a lack of understanding of the elements and principles of art, as these are the foundations of visual communication; perhaps there is a rooted misconception of their learning in which ability or aptness are mistaken for actual knowledge.

Another aspect of the narrow view of drawing is the difficulties students exhibit in preparatory drawing and sketching, which exposes a lack of learning of how to see because they apparently do not go beyond observation to analyze and deconstruct reality reflexively, and looking not only with sight but with the mind's eye. This method is used to draw what one sees with his eyes as well as what one designs in the mind.

All of the various nuances asserted by participants, as obstacles or gaps in the student's preparation, are a result of various factors that shape their learning experience prior to beginning college degrees. Thus, it is important to survey the students, namely first and second-year students, because their points of view are important to seek answers to some of the questions raised by the teacher's survey, such as social and economic factors. Further research is needed.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical review and approval was not required for the study of participants in accordance with the local legislation and institutional requirements. Written informed consent from the participants was not required to participate in this study in accordance with the national legislation and the institutional requirements.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Funding

This work was funded by national funds through FCT – Fundação para a Ciência e a Tecnologia, i.p., in the scope of the project «uidb/04042/2020».

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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