

Teaching freehand drawing on-line to architecture students

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ABSTRACT: The necessity to switch to remote learning as a result of the pandemic creates new challenges in terms of teaching freehand drawing to the students of architecture. The purpose of this article is to present the experiences and problems arising from on-line teaching of freehand drawing in the Faculty of Architecture at Cracow University of Technology (FA-CUT), Kraków, Poland, in the spring semester of 2020, and to highlight the importance of including the key issues in freehand drawing classes through the right selection of topics. A study carried out recently has led to a conclusion that remote learning hinders interaction between students and their teacher. The best environment to learn to think and draw conclusions from students' own work is a live meeting in a drawing room. The more intense the interaction between students and their teachers, the better the pedagogical outcomes. Remote learning is the most challenging in the case of students with poor drawing skills or those who are inactive. On-line learning promotes remote collaboration. Nevertheless, the lack of emotional aspects of the dialogue and social contact have an adverse impact on students' achievements.

INTRODUCTION

The increasing expectations regarding the level of education offered to architecture students require the optimisation of teaching methods, the development of holistic, coherent curricula and call for the practical application of the latest research:

...recent trends in globalization of the profession have increased competitiveness and demanded higher design qualities and productivity. This new order implies that students have a deeper understanding of background knowledge and acquire new abilities and attitudes towards design with increased demand on creativity [1].

The issue of new teaching strategies applicable to the education of architects and the related need to modify the teaching curricula have been raised by a number of academics [2][3]. Scholars emphasise the importance of teaching a flexible, creative way of thinking, indispensable to design. According to Białkiewicz:

...education has been undergoing changes resulting from the need to adapt teaching to evolving needs and possibilities, but this is also due to the development of architecture in the availability of new materials and changing fashion [4].

Several studies, carried out recently, have focused on remote teaching [5-7], which has emerged as a new problem at universities offering degrees in architecture in the context of threats caused by COVID-19 [8][9].

The changing environment poses new challenges to educators teaching freehand drawing to future architects. These challenges become particularly acute when it comes to teaching drawing and painting remotely, as the two subjects are best taught during a live meeting with students. In consequence, it has become crucial to concentrate on the key issues and develop students' competence through tasks that stimulate creative approach to problems, and allow them to hone their skills regarding dialogue and auto-presentation using freehand techniques. It is equally important to motivate students to engage in self-development and inspire their cognitive passion, emphasising the importance of interactions with culture.

The purpose of the article is to highlight the importance of the need to ensure that the key issues for freehand drawing and painting are addressed during classes through the right selection of topics. The purpose of this article is also to analyse the outcomes achieved during the remote learning period, and to present students' comments given in response to a survey regarding their experience with on-line learning. This article aims to answer a question of the possible impact of remote learning on the quality of freehand drawings produced by students. The analysis includes the effectiveness of the various feedback methods, taking account of the varying level of drawing skills represented by students.

METHODOLOGY

The research presented in this article is based on the author's observations during many years of experience as a drawing teacher at the Division of Freehand Drawing, Painting and Sculpture in the Faculty of Architecture at Cracow University of Technology (FA-CUT), Kraków, Poland. The class discussed in the article is a freehand drawing course for the first-year students enrolled in a landscape architecture programme taught, out of necessity, remotely in the spring semester of 2019/2020.

Additionally, it relies on the analysis of the latest scientific publications on the improvement of teaching processes and their practical implementation. The class topics (distance education during the summer semester to first-year students of landscape architecture) and the methods applied were adjusted in order to optimise architect training with special focus on the acquisition of practical drawing and painting skills important from the perspective of design presentation, and to develop creative approach to problem solving.

The work with students, based on a Moodle platform (made available through the Internet), involved various forms of feedback:

- drawing tools enabling corrections on students' drawings sent as pdf files (see Figure 1a and Figure 1b);
- freehand corrections made by the teacher on scanned drawings (see Figure 2a, Figure 2b and Figure 2c);
- corrections in the form of a freehand sketch as a commentary to student's work.
- detailed descriptive feedback.

The various feedback methods were analysed from the perspective of their effectiveness in the learning process. They were also assessed by students themselves in a survey. What is more, additional auxiliary materials were made available to the students on the Moodle platform to provide them with creative inspiration (galleries of photographs-inspirations taken by teachers, photos of the best drawings by students made in previous years, useful Web sites, pictures from books on presentation techniques). The materials were selected individually as a response to problems arising during students' work on specific drawings. They could be used more extensively than in the confines of a drawing room under normal circumstances.

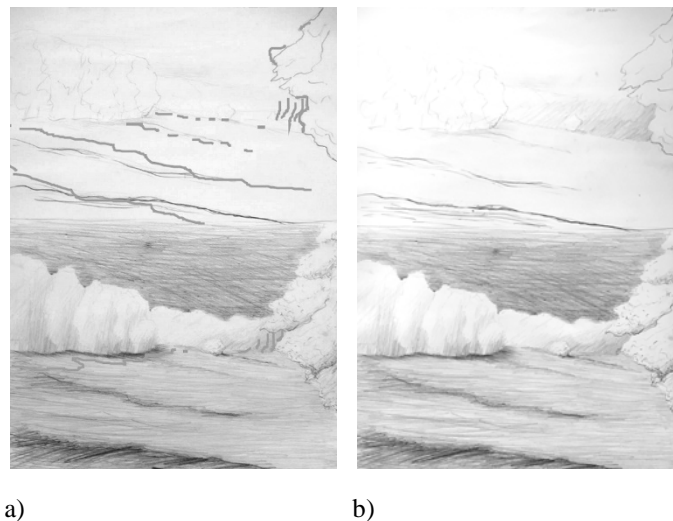


Figure 1: Subject of the drawing: the horizontal landscape (Author: M. Branicka); a) teacher's corrections on the student's drawing; and b) after corrections, 2020 (from the CUT Archive).



Figure 2: Subject of the drawing: the perspective of the own project (Author: T. Jaróg); a) before; b) teacher's corrections; and c) after, 2020 (from the CUT Archive).

The *new normal* (lockdown) has necessitated changes to topics dealt with in the freehand drawing curriculum; it was not possible to draw still life in a drawing room. Instead, a variety of topics for individual open-air drawing have been selected (which was possible in the warmer season), as well as topics relying on imagination, which could be (but did not have to be) inspired by photographs.

BASIC TEACHING OBJECTIVES

The freehand drawing course taught to landscape architecture students in the FA-CUT has the following assumed learning outcomes (the author of the article is a leader of this course):

- development through tasks/work stimulating creating approach, importance of teaching a flexible, creative way of thinking;
- motivation for self-development, developing a life-long learning attitude, emancipation of young people in their learning process;
- developing a passion for learning and interaction with culture.

Creativity requires certain personality traits, including independence, patience and motivation, which are necessary to sustain interest in an unsolved design problem for a longer period of time. Other important qualities comprise readiness to restructure a problem, preference for complexity and the need for stimulating interactions. Guilford defines key factors in the thinking processes as the capacity to identify problems relevant to specific tasks, inventiveness, memory and the ability to carry out a correct evaluation. Other traits include fluent and agile thinking [10]. His concept combines creativity with divergent thinking, which is crucial to develop effective solutions to open problems (untypical issues with multiple possible solutions) [10]. By contrast, reconstructive (imitative) thinking is a convergent process.

In the modified syllabus, sketches played an increasingly pronounced role, encouraging students to approach problems in a creative way. Non-standard and ambiguous answers were accepted (a flexible way of thinking). To stimulate out-of-the-box thinking, students received open tasks built around a sequence of sketches. As a result, students could reflect on their own way of thinking and improve their command of their cognitive skills: *Sketching and ideation, are not only the tools of creativity and communication, but can also be a motivating factor in learning, resulting in more creative engineering graduates* [3]. The development of creative, flexible and attentive thinking involves an intentional attitude that students adopt when confronted with the challenges of today and the changes to come. According to Cudowska:

People function by both adjusting themselves to the reality and processing it at the same time. And hence it seems reasonable to claim that a person needs to be, in a way, grounded in a change which, within the author's original concept, is treated as an inherent feature of the experiential reality. There is a lot of evidence pointing to the fact that it is the creative attitude and innovation-oriented stance that can give us such grounding and ensure that we not only follow changes, but are able to anticipate them, overcoming the sense of alienation and exclusion [11].

The development of creative attitude is deemed to be the result of a combined impact of multiple factors, including students' intellectual potential, personality (talent structure), psychological make-up, as well as cultural, environmental and social aspects. One of the most important factors is the stimulating interaction between students, their peers and a broader circle of people, as well as the motivating effect of positive competition in a students' group during the class. Inter-group rather than intra-group competition has a particularly positive effect on the overall outcomes [12]. When students are confined at their homes (distance education) and separated from their peers, it is necessary to find new ways to keep them motivated.

The ongoing motivation for self-development and development-oriented attitudes have never been more relevant. An important element of architect training is the process of gradual emancipation of young people in their learning process, especially when it comes to controlling their own development:

Being development-oriented is an attitude characterised by a belief that basic qualities can be developed through work; although we differ in a variety of ways - in terms of our talent, abilities, interests or temperament - we can all change and improve ourselves, provided we consistently work on it [13].

In architecture, development relies on innovation and creativeness of designers, as well as their ability to abandon established patterns and models. It is important to realise that such a departure depends on an individual's intrinsic strength. The role of a teacher is to support students in the process of uncovering and development of their potential. Dweck defines this potential as an ability to expand one's skill through work [14]. The result of this process is not entirely conditioned by one's intelligence and talent. The results of brain research regarding the brain's response to errors, changes to intelligence over time and creative epiphany seem to confirm this theory [14].

This is why it is important to educate young people to be development-oriented, engaged in constant search and exploration. The choice of one's own path to explore (see Figure 3a and Figure 3b), the choice of a technique or response to the feedback foster students' independent thinking. Students who are left to make their own decisions learn how to be independent and responsible.

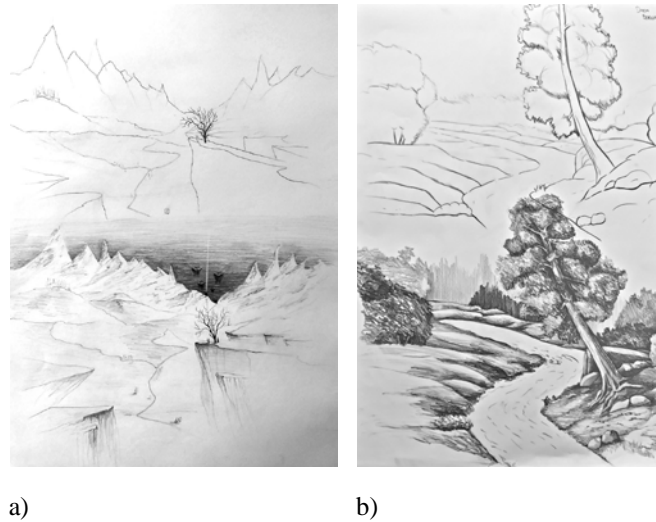


Figure 3: Subject of the drawing: the horizontal landscape; a) Author: K. Rymek; and b) D. Bernat, 2020 (from the CUT Archive).

Apart from developing one's skill of creative thinking, it is also necessary to have a broad knowledge of the area of human creative activity. Interaction with culture and developing a passion for learning, attending exhibitions, lectures - these are some of the major elements of students' education. For instance, students were encouraged to visit ongoing exhibitions with topics related to those discussed during the class (Henry Moor's exhibition used in the first-year students' class of landscape architecture; topic - the display of Moor's sculpture in urban setting, relationship between architecture and art, the perception of scale) or look for creative inspiration in literature and poetry. Openness to cultural diversity and the enriching power of otherness fosters inventiveness. Fortunately, widespread availability of interesting cultural events and lectures in the Internet allows students to extend their horizons, despite confinement and isolation.

PROBLEMS RELATED TO THE REMOTE TEACHING OF FREEHAND DRAWING

Remote learning significantly hinders interaction between students and teachers at the stage of sketching and the search for a good solution to the task at hand. The environment most conducive to intrinsic observation, critical thinking and drawing conclusions is a live class in a drawing room. What is more, the lack of emotional aspects of the dialogue and social contact has a major adverse impact on the level of students' achievements. The *acceleration* of technologies cannot replace in-person meetings, which the university setting ensures, it cannot replace a venue, where one can talk with others and think aloud. The interaction which feeds the creative process relies on the human factor.

In view of these problems, a variety of motivating techniques were put in place during the freehand drawing classes. They included a virtual presentation of the best works submitted in response to the previous topic, while the best drawings were selected to be displayed in the Gallery of the FA-CUT. The deadlines for work submission, announced way ahead, provided additional *forced interaction*. Clearly described requirements and objectives of specific tasks made it easier for students to comprehend what they had to do and why. The teacher finds it necessary that the tasks scheduled in the syllabus be completed within a specified time frame. At the same time, she is aware of the importance of building a student-teacher relationship, which is conducive to obtaining good educational outcomes. When managing a dispersed team, it is important to develop trust and appropriate dialogue culture. To ensure good outcomes, it is also crucial to give students a sufficient margin of freedom and, if necessary, deadline extensions.

Remote learning gives teachers an opportunity to collect photographic documentation (unfortunately, not always of good quality) of all works submitted, and to compare all works when giving the final grade. Poor quality of the photographs, the inability to verify the format of the works (and, at times, also their authorships), difficulties regarding the in-depth observation of drawing techniques applied, are all major disadvantages.

Some of the students experience difficulties with access to the Internet, slow Wi-Fi connections, the availability and efficiency of computer hardware and software (e.g. small-screen devices), as well as the lack of space to work arising from their home conditions (no peaceful space to focus on work). Likewise, some teachers lack studio-mode tables (interactive tools), necessary to teach drawing remotely. Yet another consequence of work from home is the extended time spent in front of screens and its negative impact on health.

ADVANTAGES RELATED TO THE REMOTE LEARNING

The *new normal*, despite numerous drawbacks, is an opportunity for students and for teachers to learn more flexibility and adaptability. Education needs to be continuously transformed and respond to contemporary problems. Certainly, remote learning is a chance to acquire new experiences and improve academic teachers' digital competencies, motivating them to develop further in this area. It also allows for closer collaboration with students, which unfortunately

is more time consuming than scheduled teaching hours in a live class. In an on-line learning mode, students may freely manage their time dedicated to specific drawing tasks, selecting the time of day which suits them the best for drawing and painting. Making the task topics available way ahead allows students to plan, manage their time and prepare drawings in any order they themselves select. This situation teaches - at least some of them - independence and consistency. On-line learning imposes a rhythm and cycle throughout the day, and well-organised students are able to work really effectively.

The economy of isolation may change the manner in which humans interact, collaborate, produce value, manage time and relationships [15]. The economy of isolation will be more oriented towards specific needs of clients, which is relevant also to the training of architects. On-line communication between an architect and an investor is already a widespread practice. The need to work from home and the inability to travel reinforce the use of this channel of dialogue. As a result, teaching clear visual communication becomes a prominent goal in the curriculum for the students of architecture (professional literacy). This experience is essential for the prospective architects to successfully collaborate on national or international projects groups using innovative communication tools in the future. Drawing skills perfected during their studies will form an important asset in view of the growing competition faced by architects in the job market.

SURVEY RESULTS

To improve the quality of remote freehand drawing teaching experience, a survey was carried out among first-year students enrolled in the landscape architecture programme. The survey was completed on the Moodle platform by 21 of 29 course participants. The survey questions are included in Table 1 and Table 2. In questions 1 to 5 the highest mark was 5.0 and the lowest 2.0 (Table 1); and in questions 6 to 10, the answers were: yes, neutral or no (Table 2):

Table 1: Survey questions I.

Survey questions	5.0	4.0	3.0	2.0
1. Do you find the corrections drawn directly on works sent as pdf files (using drawing tools on the Moodle platform) helpful?	16 76.2%	4 19%	1 4.8%	0 0%
2. Are hand-drawn corrections on works sent as jpg files (pencil drawing on a copy of student's work) helpful and comprehensible?	15 71.4%	5 23.8%	0 0%	1 4.8%
3. Do corrections in the form of a freehand sketch provide a helpful commentary to student's work?	16 76.2%	5 23.8%	0 0%	0 0%
4. Are the descriptive corrections of students' works clear and helpful?	16 76.2%	4 19%	1 4.8%	0 0%
5. How do you assess the preparation of additional materials for drawing classes (picture galleries - inspirations, pictures of the best drawings by students from previous years, Web sites, pictures from books)?	15 71.4%	6 28.6%	0 0%	0 0%

Table 2: Survey questions II.

Survey questions	Yes	Neutral	No
6. Is the presentation of students' best works from the 2nd semester (2019/2020) on the Moodle platform a good way to motivate students to work?	14 66.7%	7 33.3%	0 0%
7. Is the possibility to choose your own pathway (own ideas, inspiration by examples) and drawing technique conducive to the development of independent thinking and individual approach to problems?	20 95.2%	1 4.8%	0 0%
8. Does teaching drawing remotely teach students independence?	11 52.4%	8 38.1%	2 9.5%
9. Does teaching drawing remotely contribute to better time management (convenient time, free choice of the order of works to work on, managing time dedicated to a variety of topics, etc?)	11 52.4%	7 33.3%	3 14.3%
10. Are additional sources of inspiration (own photos, the Internet, etc) helpful in finding better solutions to drawing and painting tasks in remote learning?	19 90.5%	2 9.5%	0 0%

Additionally, students could add their comments and share their thoughts on remote learning. They pointed out to the following issues:

- unfortunately, remote learning cannot replace direct contact with another person and the feedback dynamic in the drawing room, in a live class the teacher can immediately respond to a variety of budding problems;
- drawing in a class is more motivating, at home students often procrastinate and put many tasks away for later, they find it more difficult to be engaged in work;
- remote learning lacks the time pressure, which is sometimes present during live classes in a drawing room, by necessity constrained to two teaching periods (2 x 45 minutes);
- remote learning guarantees individual feedback.

According to students, remote learning of freehand drawing does not always teach independence and does not always contribute to better work organisation (as per 52.4% of students). Most of them believe that the possibility to choose one's own path of exploration and drawing techniques helps them develop independent thinking and individual approach to solving problems (as per 95.2% of students). The possibility to use additional sources of inspiration helps them in solving drawing and painting tasks (as per 90.5% of students). When it comes to the forms of feedback via the Internet, students assess the various forms of corrections mostly positively (on average above 70% of the highest mark).

CONCLUSIONS

The observations can serve as a basis for the following conclusions:

- Thanks to sketching, students learn how to think visually and develop a sketching habit, indispensable for their creative work. The use of freehand sketches is a highly efficient manner of presentation of forms - sketched designs may be corrected quickly, improving communication (also in the on-line dialogue) with co-workers and clients.
- In order to obtain good learning outcomes, it is necessary to motivate students to work independently and develop their cognitive passion.
- Positive competition in a group stimulates student's development and provides them with an opportunity to tackle this problem in the actual professional environment. Virtual presentations of the best works are a major factor motivating students to develop, and help them engage more intensely in various drawing challenges.
- More gifted, independent and organised students (autonomous, reflective, self-directed learner) achieved very good results during the period of remote learning. Their works required only minor corrections (typically a descriptive feedback or corrections drawn directly on works sent as pdf files). Some of the best students sent final versions rather than intermediate drafts, analysing them independently and making decisions to complete their work. The switch to remote learning did not impact on the quality of drawings by the most gifted students, as well as those works by good students who were active on the Moodle platform.
- Weaker designers who were more active achieved better results than in the previous semester (winter semester 2019/2020). This was possible thanks to their engagement, submitting all works for feedback and correction, and continued work on them (typically the feedback took the form of hand drawings made on works sent as jpg files or independent sketches). The drawings by less active and less gifted students were weaker than during the semester with live classes. The more intense the interaction between students and their teachers, the better the pedagogical outcomes.
- On-line learning is the most challenging in the case of students who draw very poorly, have problems understanding the principles of perspective and are inactive (submitting works at the very last moment without corrections or submitting their works late).
- The selection of the most appropriate form of feedback and tools (digital tools) is related to the level of students' competence.
- The study has shown that, faced with the challenge of on-line learning, teachers must deal with new difficulties, which are not always in line with students' needs and expectations.
- On-line learning is much more time and energy consuming for teachers and students alike, which has led to the extension of the semester.

Teaching drawing in an on-line environment is particularly challenging - the best environment to learn to think and draw conclusions is a live meeting in a drawing room. Remote learning cannot replace direct interaction between the teacher and student. The lack of emotional aspects of the dialogue and social contact have an adverse impact on students' achievements.

In order to obtain desirable learning outcomes, it is necessary to ensure that the atmosphere during the class is conducive to creative work and motivates students to make additional effort and work independently. The choice of one's own path to explore, the choice of a technique or response to the feedback foster students' independent thinking. Students who are left to make their own decisions learn how to be independent and responsible.

The new reality is *rooted* in change, and hence flexible thinking and adaptability have become highly relevant for future architects. Remote learning may help students learn the important skill of remote collaboration between the investor, the designer and the contractor, and prepares them for the new (post-pandemic) job market.

The syllabus will need to be further adjusted in the future, to respond to the changing requirements. Irrespective of any modifications, however, students must always find it interesting and motivating. Getting ready for blended learning - a mix of live experience in the drawing room (live) and remote classes - becomes a necessary scenario. Conclusions drawn from the remote learning experience may be also relevant to work in the drawing room. In any case, these new experiences should serve as a starting point for the rethinking of the traditional approach to teaching.

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