Enhancing architectural imagination through a visual thinking bridging course

Grzegorz Schnotale

Cracow University of Technology
Kraków, Poland

ABSTRACT: The focus of this article is the experience gained during a visual thinking bridging course for first-grade students of High School No. 1 in Siemianowice Śląskie, Poland, during creative workshops taught in the Faculty of Architecture at Cracow University of Technology (FA-CUT), Kraków, Poland. A group of 22 high-school students took part in a 30-hour course, organised as six regular meetings of 5 lessons each. The main goal of the creative workshops was to learn how to express ideas through images using freehand techniques of visual thinking. The students started by learning the theory of composition, colours and types of perspective. Then, they created works based on the analysis of architectural photos and directly in the open air. Finally, the students illustrated their own design ideas using visual thinking techniques that they discussed with others. The findings demonstrate that architectural visual thinking bridging courses can be effective in enabling high-school students to illustrate their own architectural vision from imagination, which is a key skill in the architectural profession.

INTRODUCTION

Universities define their own admission requirements for applicants graduating from high schools. Nowadays, there are many ways of examining the skills of candidates for architectural studies [1]. However, almost every school of architecture has an examination to test the candidate's ability to create and draw architectural visions by hand. Therefore, the presentation of appropriate skills is a very important aspect for high-school students. The tendency to subject-profile classes in high schools is becoming more and more common.

In High School No. 1 in Siemianowice Śląskie, Poland, there is a class with an architectural and urban design profile. Students of these classes want to enrol in the faculties of architecture in the future. An effective architectural education course might enhance students' aspirations and improve their university entrance levels [2]. Programmes such as the one presented by Avsec and Jagiełło-Kowalczyk are designed to ensure the development of visual thinking skills so needed in the practice of architecture [2].

The architectural creative process is always an individual sequence of thoughts and images. The initial phase of the creative process has enormous creative freedom. Only by specifying certain design elements, will architects limit that freedom. These incremental design decisions are clarified in the form of paintings and architectural drawings. These images are the best form of communication at every stage of the creative process. Each creator presenting his/her design solutions must communicate with others by sharing the images. When presenting one has to choose the most appropriate form for their presentation. Images are considered as a carrier of ideas [3] and may create the illusion of a given space.

Visual thinking gives a number of multifaceted possibilities [4]. The process of creating and illustrating thoughts is paramount. The crafting of drawings involves thinking directly in a visual form, whether it be through sketches or more elaborate works. Many famous architects sketch their works in a very quick and minimalist form, but already having a vision of the whole phenomenal building in this one small sketch. The capacity to discover clarity and essential elements within the intricate specifics and conditions of an architectural project is an extraordinary skill. Moreover, it constitutes a highly significant aspect of an architect's education.

Visual thinking is an activity carried out through the creation of images. Freehand drawing is an important means in this process and has been an important aspect in architectural education for many years. According to Białkiewicz:

> *For many architects, drawing is a fundamental skill in their work making it possible to contain synthetic and factual information within a sketch, to present the project's complexity and the material, as well as intangible assumptions and parameters* [5].

OBJECTIVES OF THE COURSE

The research presented in the article is based on the author's observations while conducting classes. The course includes a curriculum entirely prepared by the author. The goal of the course is to develop visual thinking skills to ensure the ability to illustrate architectural ideas. During the classes, students analyse the possibilities of visual thinking as a tool to illustrate their ideas.

The course contains painting and graphic exercises. Individual drawings are generated in different techniques under supervision and during tutorials. In addition, the course is aimed at the individual development of each student in the field of spatial perception - both in terms of perceiving architectural details and the overall image of the city. The exercises are also focused on in-depth analysis of the role of composition and colour.

To sum up, the programme includes the following objectives:

- Learning the principles of perspective;
- Remembering the basic rules of composition and colour theory;
- Recognising different types of perspective;
- Developing the ability to observe architectural and urban surroundings and noticing the importance of context;
- Developing the ability to choose the right frame to paint;
- Exploring the potential artistic tools in architectural imaging;
- Fostering sensitivity in the field of perceiving the form and details of architecture;
- Developing spatial imagination;
- Developing the ability to process architectural ideas in the form of images.

METHODOLOGY

A group of 22 high-school students took part in a 30-hour course. Workshops were organised as six meetings of five lessons each. Every class began with a short introductory lecture and discussion of the topic. Afterwards, students created an image as a response to the topic, with individual corrections as they worked. The aim of the workshops was to develop creativity and to learn how to express ideas through images using freehand techniques of visual thinking. The students started by learning the theory of composition, colours and types of perspective. Then, they created individual works based on the analysis of architectural photos. Finally, the students were able to illustrate their own architectural vision from imagination, which is a key skill in the architectural profession.

The *leitmotif* of the painting and drawing works was the location of the high school, its architecture, details, and also its history due to the school's centenary celebrations. The students' works were exhibited in the Siemianowice Cultural Centre - Park of Tradition. The classes consisted of six thematic blocks. The workshops were conducted in the Department of Drawing, Painting and Sculpture at the FA-CUT, as well as directly in the building of High School No. 1 in Siemianowice Śląskie and outdoors in the vicinity of the school building. Students had the opportunity to learn freehand drawing with pencils, markers, fine liner drawing and watercolour painting.

Workshop in the Department of Drawing, Painting and Sculpture at the FA-CUT

The first topics were developed in the drawing room on the basis of lecture materials about perspective (Figure 1). The author of the article presented an exemplary approach to the given topic: How to paint an architecture and urban landscape step by step.

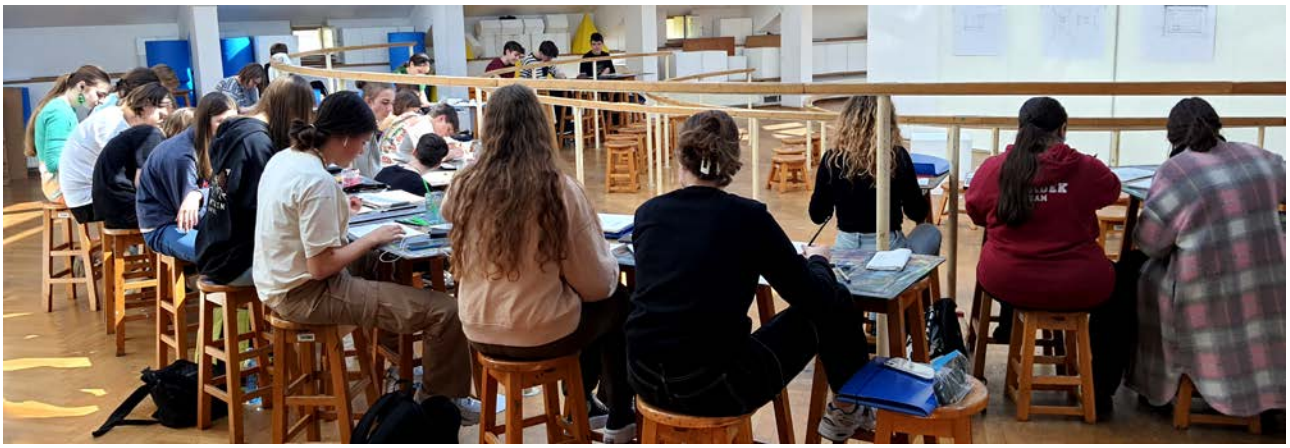

Figure 1: Workshop in the Department of Drawing, Painting and Sculpture at the FA-CUT - students at work, 2023 (photograph by the author).

After the introductory lectures, the key aspect of the course was to encourage and facilitate students' engagement in individual projects focused on a given topic (Figure 2).

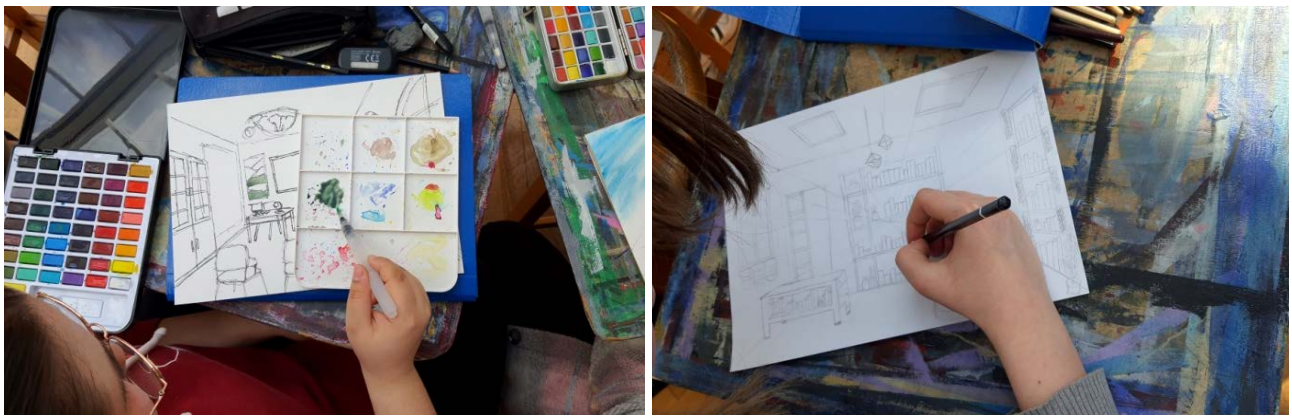

Figure 2: Workshop in the Department of Drawing, Painting and Sculpture at the FA-CUT - students at work, 2023 (photograph by the author).

This approach was designed to foster creativity and independent thinking while allowing each student to develop their own interests [6].

Personal research and hands-on experience are essential to hone visual thinking skills and develop architectural observation skills. At each stage, students received and followed advice regarding corrections in terms of perspective, composition and colours. This process of revision and improvement played an important role in the development of each student's visual abilities. They were also encouraged to experiment with different mediums, styles and artistic approaches, pushing the boundaries of their creativity.

The students created their own works based on the knowledge gained during lectures and the collected materials. In the pursuit of their projects, they were required to collect materials relevant to their chosen topics. One of the common methods used by the students was the selection of appropriate photographs that resonated with their artistic vision. Numerous works were produced by closely observing the intricate details of the school building. Also, the students discovered decorative motifs on the front façade of the building (Figure 3).

After finding an interesting detail, the students get acquainted with the proposals and content of a given architectural element. Then, the given motif was redrawn in black and white technique in accordance with the original assumptions of the author. The next step was interpretation. In this work, the students decided on a new colour scheme that matched the given theme.

Figure 3: An exemplary photograph of an architectural detail, which became the leitmotif of students' work, 2023 (photograph by the author).

These carefully selected images served as reference and inspiration, incorporating key aspects of the composition and guiding their design decisions. The framing of the selected photographs played a key role in defining the narrative and visual impact of the final work, allowing the students to experiment with different storytelling techniques.

As a result of this approach, students' work showcased a diverse range of artistic styles and expressions, reflecting their individuality and development throughout the course. Each work was a testimony of the creative process, showing how the acquired knowledge is transformed into visual works.

Workshop in Siemianowice Śląskie, Poland

Drawing in the open air began with getting acquainted with the architecture of the object. This initial step involves studying the building's structure, proportions and overall design, while also paying close attention to its unique features and architectural elements (Figure 4). In this case, the starting material was a direct relationship with the building.

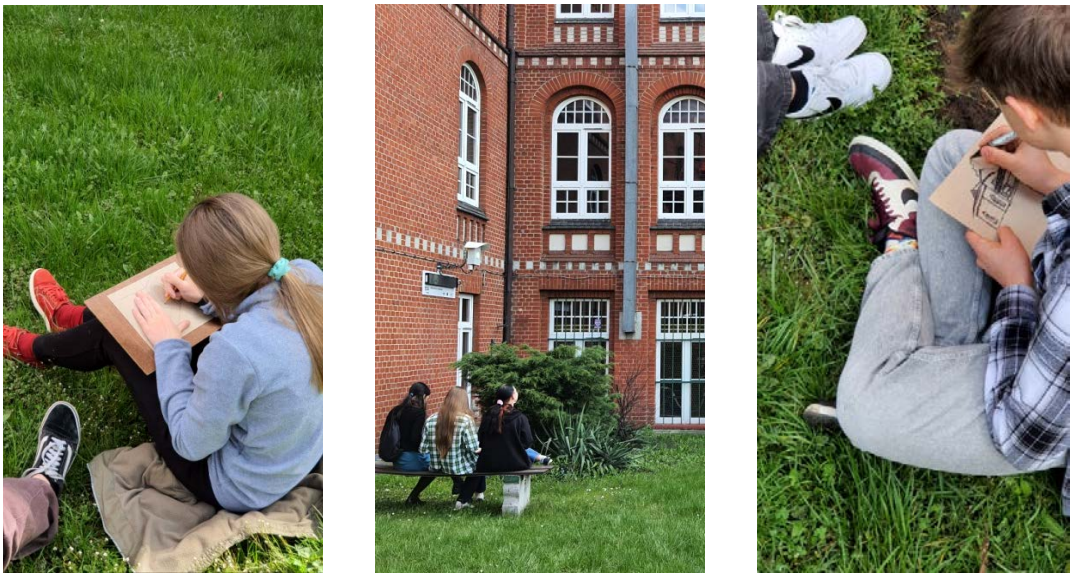

Figure 4: Open-air workshop in Siemianowice Śląskie, Poland - students at work, 2023 (photograph by the author).

As students position themselves in physical proximity to the object, they begin to comprehend the scale, proportions and overall harmony of the architectural composition. This spatial understanding is invaluable for aspiring architects, as it nurtures a sense of empathy for future users of spaces and the impact of design decisions on human experience.

During the workshop, the students were looking for an interesting perspective. After selecting the frame, the synthesis of light and shadow was sought. Summing up, the course included six different thematic blocks during which the students practiced their visual thinking skills using various techniques (Table 1).

Table 1: Topics' realisation scheme during the course.

Task	Technique	Student activities	Learning outcome
1. Urban landscape and open landscape, introduction to exercises: basics of composition	• Pencil • Watercolour	• Examine the picture • Inquisitive observation • Analysis of own work • Describing the composition and colour	• Knowledge of the principles of perspective • Ability to describe key visual elements of the image
2. Sketches of an architectural object from nature	• Fine liner	• Observation of the architectural form • Looking for and identifying the compositional dominant	• Ability to observe architectural and urban surroundings and noticing the importance of context
3. Architectural detail, study - chiaroscuro analysis	• Pencil • Watercolour	• Inquisitive observation • Considering new options	• Sensitivity in the field of perceiving the form and details of architecture
4. Sketches of an architectural object - synthetic value sketches	• Black and white marker on brown paper	• Searching for the synthesis of form in terms of light and shadow	• Ability to sublime the essence of a given design
5. Selected perspective view, study, painting based on sketches	• Watercolour	• Drawing and painting from imagination • Visual search for the best design solutions	• Ability to process architectural ideas in the form of images

6. Discussion, completion of works, selection of works for the exhibition	• Pencil • Watercolour • Fine liner • Black and white marker on brown paper	• Linking comments with ideas • Analysis of others work • Debating	• Spatial imagination developed • Ability to co-operate

DISCUSSION OF THE RESULTS

The last stage of the course was a discussion and exchange of comments (Figure 5).

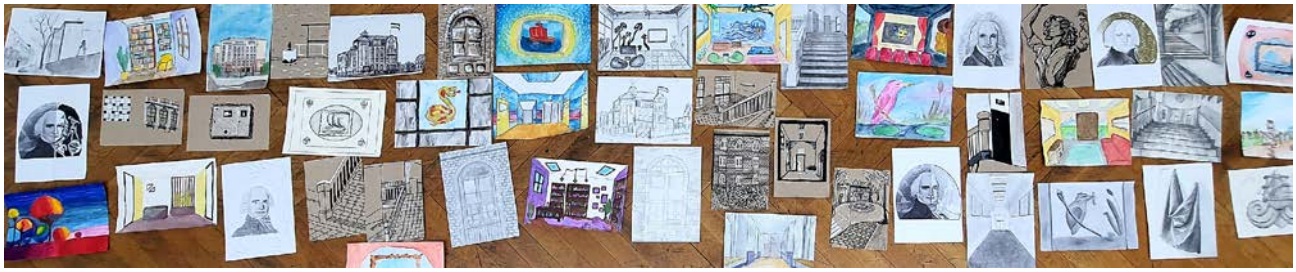

Figure 5: Selection of the best works for the final exhibition (photograph by the author).

The students unequivocally stated that at the end of the course it was much easier for them to visualise their thoughts. One of the tasks was to paint a dream classroom. It was a visual and design task. It was necessary to propose a classroom that would be an ideal place for learning. The results turned out to be multifaceted in terms of the variety of design solutions.

After collecting all the works, each participant got acquainted with the design solutions of other students. This procedure was intended to make students aware that the architect's task is not only to create valuable spaces for one's own needs. The holistic approach to design gives students awareness of the social role of an architect [7]. It is crucial to take into account the needs of many people, preferably every potential user of a given space. It turned out that at this point designing the dream classroom started to be very complicated. Taking into account the various needs of users is an architect's daily task. The students had to discuss all the design solutions and propose one dream classroom space that would meet as many of the identified needs as possible. The students realised that design decisions are not only about aesthetics, but above all, the design is a response to the needs of the users of a given space. The architect is responsible for ensuring that all the needs are addressed.

CONCLUSIONS

Appropriate preparation for studies and for the profession of an architect is a multifaceted and complex process. The acquisition of the appropriate knowledge and skills required for entrance examinations in architectural schools or faculties should take place gradually, and begin already in high school classes. This early preparatory work not only helps in getting into highly regarded architectural schools or faculties, but also prepares the ground for a comprehensive architectural education. The bridging course presented in the article is an initiative that teaches visual thinking as a key skill in the profession of an architect. The most important tangible results are elaborate and multifaceted works created by students serving as evidence that they acquired new skills to present their ideas in the form of images.

The educational exercise presented in this case study provided students with a practical and thought-provoking experience in architectural design. By envisioning their dream classrooms and engaging in discussions with peers, the participants recognised the multifaceted nature of the architect's responsibilities. This approach fostered empathy and highlighted the significance of user-centred design.

To sum up, preparing for a career in architecture is a multifaceted process that requires early and comprehensive preparatory work. Students should cover a diverse range of subjects to acquire the appropriate skills during their school years, laying a solid foundation for future studies. Bridging courses like the one described in the article play a key role in developing basic skills, such as visual thinking. Through such initiatives, students gain a holistic understanding of architecture, including observational skills, greater creativity, a collaborative spirit and effective visual communication, all of which are essential to progress in the challenging field of architecture.

REFERENCES

1. IIlkovič, J., Špaček, R. and Ilkovičova, L., Internal and external evaluation in entrance procedures at FA-STU. *World Trans. on Engng. and Technol. Educ*., 16, **4**, 325-333 (2018).
2. Avsec, S. and Jagiełło-Kowalczyk, M., A high school bridging course to enhance readiness for architectural education. *World Trans. on Engng. and Technol. Educ*., 17, **3**, 231-236 (2019).

3. Żychowska, M.J., Visual communication in imaging student projects. *World Trans. on Engng. and Technol. Educ.*, 18, **4**, 468-472 (2020).
4. Schnotale, G., Visual thinking in architectural education: teaching methods and feedback techniques. *World Trans. on Engng. and Technol. Educ.*, 20, **3**, 185-189 (2022).
5. Białkiewicz, A., Education of architects: historical and contemporary aspects of teaching freehand drawing. *World Trans. on Engng. and Technol. Educ.*, 17, **1**, 17-22 (2019).
6. Gregor, P., Methods and techniques supporting creativity in architectural education. *Global J. of Engng. Educ.*, 23, **3**, 191-196 (2021).
7. Haupt, P., Architectural education for primary school students mentored by university students. *World Trans. on Engng. and Technol. Educ.*, 17, **4**, 454-458 (2019).