Conceptual and technical considerations in the interior architecture education framework

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ABSTRACT: In this article, the authors discuss a problem of possible methods to bond effectively the conceptual and technical problems within design projects executed by students of interior architecture. The possible adjustments within the existing teaching scheme encompass the correlation between the design projects executed within the design studios and the practical module of the course in building construction, consultation on technical matters in semester or diploma designs, and joint execution of practical modules of the course in building construction and of selected courses. The article analyses the main assumptions and discloses the effects of a jointly executed project within the practical module of environmentally sustainable interior architectural design and the building construction course. It reveals the important role of building construction in the creative process of shaping interiors, in acquiring the abilities to select the most appropriate building techniques to fulfil the functional, formal and environmental demands, and to employ the critical thinking into the design process.

INTRODUCTION

The present structure of the interior architecture teaching framework within Polish academies of fine arts offering studies in this design discipline reflects the interrelationship of design studios representing the non-technical subjects, and courses covering the technical aspects of interior architectural design. According to the authors, the positioning of the technical courses, including Building Construction analysed in the article, with the discussed teaching programme *remains inadequate to contemporary expectations from interior architecture design field and profession* [1].

Building construction is responsible for the interior architect's communication with other professionals involved, just like in the case of the architect representing the related design discipline. Photorealistic three-dimensional representations are suitable for the conception and representation of a design idea to the less experienced clients, whereas 3D models allow for visualisation and testing of various proposals. They are neither sufficient nor adequate media for the transfer of substantial information on introduced design solutions to other stakeholders in the building process, including engineers and consultants.

The article discusses possible adjustments to the teaching programme to ensure a closer co-operation between the Interior Architectural Design course realised within design studios, and the Building Construction course. There are three main formulas identified within the existing teaching framework, as being supportive in establishing a more balanced relation between the above-mentioned courses. Since the effects of the class correlation and consultations on the technical matters are mostly challenging, partially due to the cultivation of the master-apprentice teaching model within design studios, the implementation of the joint practical modules of selected design subjects and technical courses is worth consideration. This formula offers work on the spatial and formal design of the object mastered through the architectural technology issues, including the examination of building materials, their mechanical and physical properties, and the conscious introduction of building techniques. The *conceptual* aspect, mentioned in the article's title, refers to the issues of creating spaces and their components based on spatial, formal and functional analysis, whereas materiality refers to the technical aspects of this process.

The article analyses the main assumptions and discloses the effects of a jointly executed project within the practical module of environmentally sustainable interior architectural design and the Building Construction technical course. The practical modules followed the theoretical lecture-based module courses, both delivered by Magdalena Celadyn, who supervised the completion of the projects as well. The projects were complemented with a survey where students were asked about the impact of the teaching method on their understanding of the inclusive nature of the design process where design- and technology-related issues are jointly considered.

BUILDING CONSTRUCTION WITHIN THE INTERIOR ARCHITECTURE PROGRAMME

The course in building construction, which covers the basic information on building systems, building physics and building services is one of the technical courses provided for the undergraduate students of interior architecture in higher education institutions in Poland. It is offered along with building structures, building physics, material science, lighting, as well as building information modelling. These courses, although not formally organised as an autonomous unit within the faculty's structure, make the subject of interior architectural technology. In the majority of faculties, the building construction course is executed in the form of an introductory lecture-based segment then followed by problem- and project-based classes led in the subsequent semester. This framework is realised in the realm of the Polish education system with faculties of interior architecture mostly affiliated with the academies of fine arts, as well as within departments of architecture at technical universities, where the interior architecture study field is offered. The interior architectural design teaching scheme currently realised still demonstrates a well-established hierarchical structure. The central place in this model is traditionally reserved for design studios [1][2], with other satellite subjects where the detailing skills required for design studio projects are developed.

The dominant position of space-creativity research in this interior architecture teaching scheme remains constant. Similarly, the area of research that encompasses predominantly the examination of space's physical attributes, symbolic and abstract aspects, as well as social and cultural contexts is immutable. The emphasis on the questions of space-creativity research in the teaching process has consequences. This situation explains the reluctance of many tutors to employ unconventional learning methods in the framework. It concerns mainly undertaking such actions that, by investigating the interdependency of intangible and material aspects of design, might increase the involvement of architectural technology issues in the interior architectural design process, and in result significantly affect the final appearance of designed objects.

The environmental sustainability design paradigm considers, among other questions, the value of the technical performance of interior space and its components. Therefore, it is reasonable to provide interior architecture students with various opportunities to investigate the potential of building construction methods in shaping interior space and to examine their impact on the functional-formal consistency of designed objects. The *materials-related aspects of interior architectural design require from interior architects the basic knowledge on technical aspects of spatial objects* [1], as well as the ability to their creative inclusion into design methodology. The traditional teaching scheme with the Building Construction course combines a theoretical lecture-based segment and the practical module, although allows students to make conceptual sketches, and then develop a set of working drawings concerning such problems as building materials' parameters, (Figure 1), is not sufficient for students to recognise the importance of technical subjects in designing of interiors.

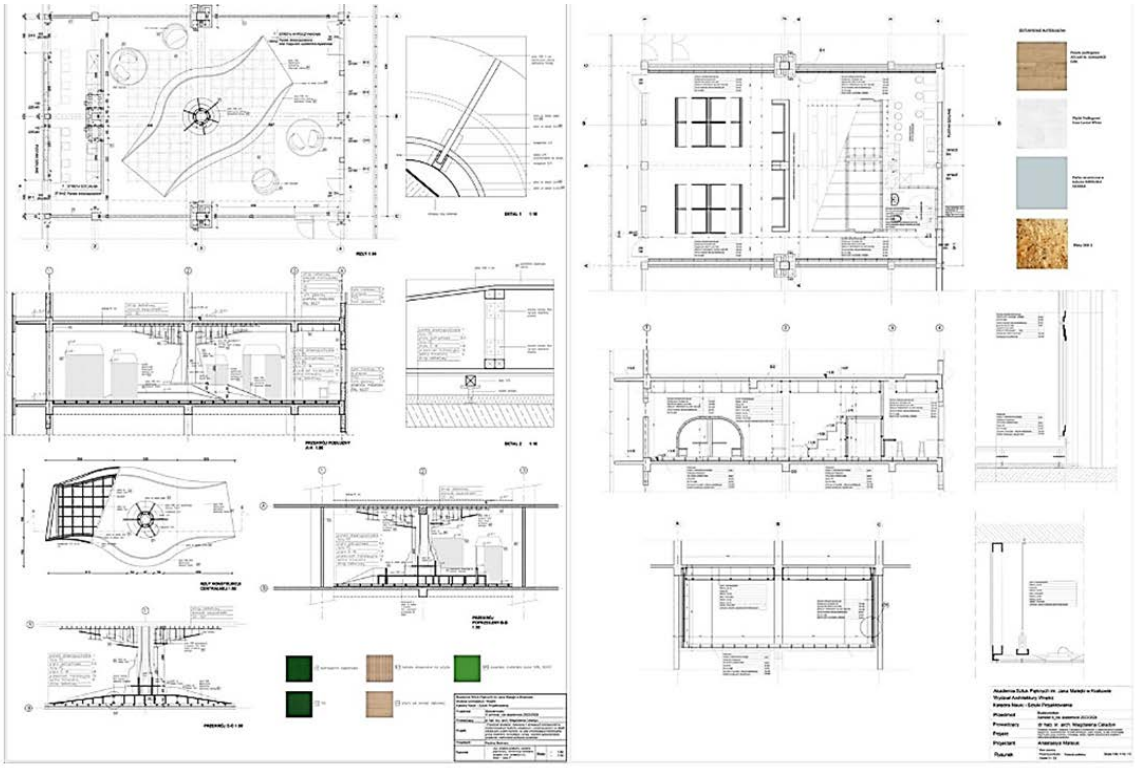

Figure 1: Composite drawing boards of a design project for a multipurpose space in a higher education facility. Practical module of the Building Construction course (authors: P. Bednarz, A. Matsiuk, supervisor: M. Celadyn, source: Archive of the Faculty of Interior Design, *Jan Matejko* Academy of Fine Arts in Kraków).

This framework, where the co-operation between various teaching courses is practically non-existent, does not prepare students to contribute effectively to a better understanding of the space designed within the integrative architectural design teams. Meanwhile, this form of co-operation among professionals involved in the design process more commonly requires an active and beneficial role of the building construction discipline in solving the questions essential for the successful completion of the project and the high performance of the building along with its interiors. These issues encompass a plethora of information that is strictly connected to the technical aspects of designing, including interior architecture.

The interior architecture education framework applied to the offered courses mostly takes the *form of tutoring or supervising: a modern form of the ancient master-apprentice relationship* [3]. This model, employing the formula of a *direct way of transferring knowledge*, is exercised within the course of building construction as well. Given that teaching *is not to be seen as transmission of knowledge, but rather as facilitation of learning* [4], the concept of this course involves *collaborative and supportive dialog* [3] employed by the participation of external experts-tutors, and critical analysis of selected realised objects to give students the possibility to assess the meaning of technical questions in creative designing of interiors.

The very limited amount of time assigned to the course in building construction in the learning programme makes the introduction of any adjustments quite difficult. This concerns especially the practical module that involves individually executed semester design projects following the theoretical lecture-based teaching instruction. Adding a teaching component of co-operation between various courses in recognition of the interconnectedness of technology and design seems to be necessary to assure the effectiveness of the whole teaching process.

The contemporary expectations from interior architecture design, caused partially by technological and technical progress, require high level of competence from designers in terms of the technical aspects of design. The learning methods to enable the inquiry on the conceptual and technical problems in projects realised by students of interior architecture are to be assessed in relation to the placement of technical courses within the education programme. Considering that the amount of class hours assigned to the delivered technical courses within the interior architecture teaching programme, including Building Construction, is immutable, there is a need for innovative proposals. These should concentrate on modifying the currently binding teaching model to provide students with the possibility of simultaneous and informed analysis of the technical aspects of their projects executed within design classes at the conceptual stage.

The possible adjustments within the existing teaching scheme to enable the necessary linkage of building construction to the design studio embrace the following:

- Correlation between the design projects executed throughout the semester within the design studios and the practical module of the Building Construction course.
- Consultation on technical matters as to the optimisation of applied technical solutions in a semester or diploma design leading to a Bachelor;s degree in interior architecture.
- Joint execution of practical modules of the obligatory course in building construction and of a selected course to enhance the context of the assessment of the design’s quality and correctness.

These adjustments within the existing learning programme seem realistic proposals for the modification of students’ attitudes towards the technology-related building documentation and means to convince them to consider technical problems at the conceptual phases of the design process, and to regard them as drivers of innovative design. The next chapters analyse the problems that come with the application of the above-mentioned proposals considering the specificity of learning interior architecture.

CLASSES CORRELATION

The correlation between the design projects executed throughout the semester within the design studios and the practical module of the Building Construction course, depends primarily on the general concept of the study programme and subjects’ assignment. In the interior architecture curricula offered by academies, the main position is reserved for design studios, while the other courses are considered supplementary. This results, in the case of technical courses, in their weak connection with interior architectural design courses. Building Construction remains among the obligatory courses, while Interior Architectural Design is among the major courses. This means that an undergraduate interior architecture student, who decides to concentrate his/her efforts exclusively on designing furniture, equipment elements or exposition spaces will not have the opportunity to design the interiors (e.g. residential, public, commercial) even at the conceptual design phase. Therefore, a search for a closer correlation between building construction and interior architectural design courses seems hardly possible in this situation.

The teaching framework based on the class correlation, according to the authors, allows direct, real-time verification of acquired technical knowledge and competencies required for the execution of technical documentation in a manner close to the reality of professional practice. The correlation of the above-mentioned courses within their practical

modules leads to 1) clarification of the interior architectural design preliminary assumptions; 2) precise execution of proposals developed at the conceptual phase of design; and 3) search for alternative technical solutions to accomplish a project.

The question of correlation between the courses became the main subject of an anonymised survey conducted at the end of the practical module of building construction among 20 students attending the course in the year 2023/2024. Participants were provided with an open-ended questionnaire to share their opinions on the currently realised learning framework and to suggest possible adjustments. Students were asked about their presumptions concerning the nature of the practical module and assessment of the way this part of the course had been conducted. The last question concerned the issue of correlation between programmes realised within design studios and building construction courses. They positively valued the subject of the project as being adequate to the area of interest in interior architecture and covering the problems substantial for the discipline. The majority of students attending the building construction class agreed that there should be a correlation between projects realised within design studios and those developed within the practical module of building construction. They noticed that projects realised in the building construction class allowed them to verify in practice the information they had been given during the lecture-based theoretical module of the course.

CONSULTATIONS ON TECHNICAL MATTERS

The technical consultations of diploma projects made within the undergraduate studies of interior architecture are another opportunity for the subjects' integration, to achieve the consistency of formal and technical solutions applied. As the authors' personal experience proves, this practice is almost completely missing in the realm of interior architects' formation. It is due partially to the treatment of technical courses as distant from the substantial problems of space analysis, as well as due to the diploma subjects chosen by students and then approved by their supervisors, and the design approach focused on the exploration of the social, spatial and aesthetical aspects of designed objects.

The diploma supervisors' knowledge of the current technology and technical problems, as well as their own professional experience, are considered a guarantee of the correctness of the students' proposals in their physical aspects. Considering the increasing role of technology-related issues in shaping buildings and their interiors, as well as the information on the latest development within building construction or materials science, it seems justified to combine the expertise of academics delivering design subjects with the knowledge of these teachers and practitioners who specialise in architectural technology matters. Their opinions and remarks on the problems in question would make a valuable contribution to the final project solutions.

JOINT PRACTICAL MODULES OF SELECTED COURSES

Joint practical modules of the obligatory Building Construction course and the facultative Environmentally Sustainable Architectural Design course seem to be another promising proposal for the effective building construction teaching scheme. Within this model, students are encouraged to explore building construction techniques and various structural systems concerning the functional, formal, as well as environmental requirements assigned in particular to institutional interior architectural design. This teaching formula allows students to explore, and then consciously select the available assortment of building materials, while analysing their strength parameters and physical characteristics. Depending on the second component of this teaching formula (i.e. environmental sustainability problems), as chosen by the tutor, students can widen their understanding of the spatial, functional and cultural contextualities as essential features of interior architecture.

This learning model can be understood as a conceptual and contributory design platform where linear reasoning to create the environment for various activities is replaced wit*h interconnecting systems-thinking* [5] that considers the application of multiple perspectives into design thinking. Among the primary design approaches, Roshko identifies the *design as engineering* which *proceeds from a well-defined problem statement to an abstract solution and then to an implementation state* [5]. According to the authors, this design method, allowing to conduct design process through the well-defined design stages and externally imposed design guidelines, can be *beneficial in well-regulated typology applications, such as institutional design*.

The second approach, identified by Roshko as *design as arts and crafts,* is built on the *evaluation of spatial interactions and contextual relations* [5] to seek a unique solution based on the relations occurring between designers, material objects and end-users. Both these design approaches, according to Roshko, remain intimately connected to methodologies and education in designing interiors. In this current article, the authors claim that these accompanying approaches can refer to the conceptual and technical phases of the interior architectural design process and teaching procedure alike. In particular, the teaching formula of jointly conducted practical modules of selected design-oriented courses and Building Construction can be employed to verify the complementarity of these attitudes in search for the optimal proposal. This scheme reflects the *integration of aesthetics and technology* [6] as characteristic features of modern interior architecture, as well as an *understanding of building technology and an appreciation of its importance in a building's ultimate performance* [6], as well as its inner spaces.

JOINT MODULES AS A TEACHING FORMULA IN PRACTISE

The analysis of the proposed formula is based on the academic experience of the first author of the article, who has been delivering the obligatory Building Construction course, as well as the facultative Environmentally Sustainable Architectural Design course to third-year undergraduate students. The facultative course was originally proposed as an autonomous programme to encompass the clearly outlined environmental content. The inclusion of the practical module of the facultative course into this jointly executed classes was inspired by the fact that the paradigm of sustainability in architecture, as well as in interior architecture design disciplines *is a factor that exerts* (...) *programmers to incorporate gradually more technology-related knowledge in curricula to make the graduates the competent partners* [7] of other professionals involved in the design process and *to enable them to participate effectively in collaborative multidisciplinary teams within the integrated design* [7].

The sustainability postulates referring to the building enclosure make the environmental and physical context in which the design-as-art-and-craft approach can be realised also apply to the interior architectural design. The investigation of building materials' parameters and the search for the most appropriate construction system, analysed from the very preliminary design phase *as a potential ingredient of the design* [8], prove the design-as-engineering approach. This attitude, based on the exploration of building materials' parameters and space characteristics, is enhanced with a wider awareness of designers about the real problems of contemporary interiors drifting away from the main trends of sustainable architecture. Similarly, the discussed formula allows employing various means of examining, and then presenting design solutions as responses to the above-mentioned remarks.

The design project realised within this formula of jointly executed practical modules was to *enhance the consideration of technical characteristics of spatial objects featuring interior components, while searching for their formal identity and artistic expression* [1], as well as compliance with sustainability postulates. The design assignment concerned a project of the co-working space within an existing commercial space. Students were asked to focus on specific sustainability postulates and develop a project with clear references to them. They considered the environmental impact of their proposals and explored the potential of sustainability design strategies focused on the effective management of resources (e.g. adaptive reuse of reclaimed building products and by-products, avoidance of composites, reduction in finishing layers), and optimisation of the interior environment quality parameters (e.g. acoustical comfort, visual comfort, inner air quality).

The design realised in compliance with this formula began with research on the possibilities of considering the management of building materials-oriented problems within the project, then free-hand conceptual drawings were developed as a specific drawing notation in attempt to 1) complete the functional requirements; 2) experiment in form and style; 3) recognise and then creatively explore the existing spatial context; 4) analyse social and cultural implications; and 5) respect the building code requirements in terms of accessibility, fire safety regulations, ergonomics.

The environment sustainability-related design problems created the main context in which design solutions were supposed to be employed.

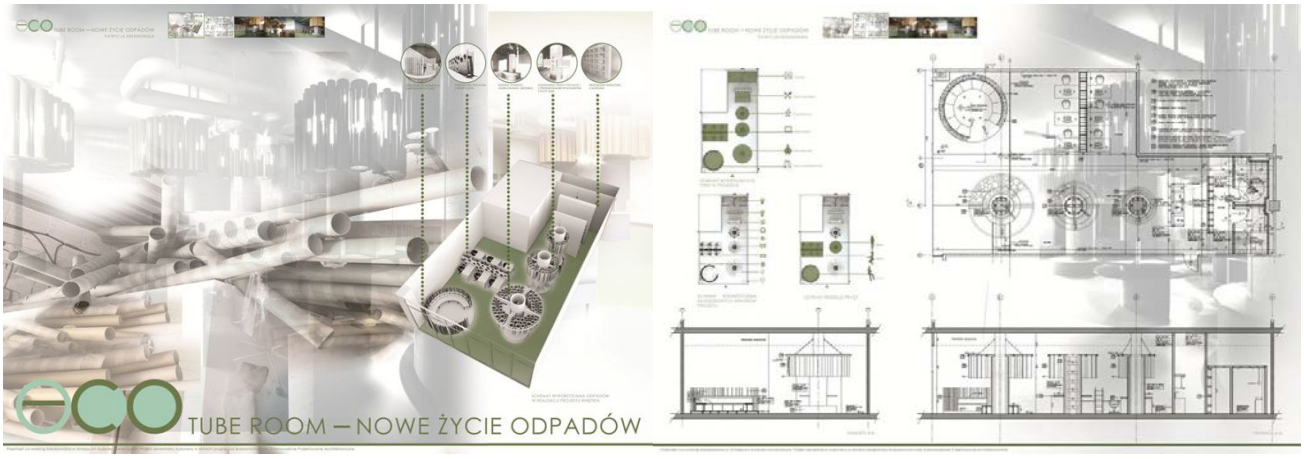

Figure 2: Two selected composite drawing boards with a project of co-working space in an existing commercial building. Jointly executed practical module of the Building Construction obligatory course and the Environmentally Sustainable Design facultative course (author: P. Chrzanowska, supervisor: M. Celadyn, source: Archive of the Faculty of Interior Design, *Jan Matejko* Academy of Fine Arts in Kraków).

The final results were presented on composite drawing boards that combined plans, sections, architectural details and computer-generated perspectives (Figure 2). These posters were arranged in a way to 1) highlight the main design concept with the implementation of environmental issues (e.g. resources efficiency, reduction in waste management,

optimisation of indoor environment quality parameters) considered equally important design determinants as social and economic dimensions; and 2) show understanding of issues being the domain of architectural technology and to prove abilities to develop an interior and its components through the acceptance that *understanding the role of materials, construction, lighting, and the contents of interior space are prerequisites for designing* [9]. Presently this guideline is even more justified, considering that advanced building techniques and technologies substantially impact the design methodology.

The main goal of the project designed within the joint modules was to allow students to fully understand that the *knowledge of technology is essential in designing and evaluating form* [9], and to recognise that technology, understood as a design component decisive for the satisfactory and efficient accomplishment of a design concept, is what the *designer brings to the design work in the form of quantitative facts* [9].

In terms of technical aspects, the detailed objectives of the project, created within the jointly conducted practical modules of the above-mentioned courses, encompassed the following activities:

- Examination of the building construction technique appropriate to achieve the assumed formal appearance of inner space and its components.
- Investigation of individually conceived building techniques to develop architectural details of high performance and aesthetic values.
- Selection of building materials and products to fulfil functional requirements, as well as to demonstrate their compliance with sustainability postulates including the basic 3R formula (i.e. reduce, reuse, recycle).

DISCUSSION AND CONCLUSIONS

The students developing their projects within the Building Construction practical module, and working in line with the traditional scheme that ignored the possibility of co-operation between design subjects and technical courses, showed clearly their approval of the programme adjustment that would enhance the connection of the discussed subjects. Their opinions, enclosed in the survey conducted at the end of the course, confirmed their willingness to consider more intensely the technical questions, while working on architectural objects realised in design studios. It is the result of their conviction that the interconnectedness of building technology and design issues (e.g. spatial analysis, environmental context, psycho-physical comfort of the end-users) is a crucial element in the design methodology.

The correlation between the discussed courses, according to the students, should be enforced to allow them to better understand the impact of chosen solutions on the objects' formal appearance and their efficient usage from a long-term perspective.

There is a possibility to make some adjustments within the existing interior architecture programme to allow students to conduct the design process cohesively, and to examine simultaneously conceptual issues and questions concerning the architectural technology. The study has investigated one of these proposals concerning the jointly conducted practical modules of courses in building construction and environmentally sustainable architectural design. This model, according to the authors, responds to the necessity of synergic development of interior architectural projects. This was confirmed by the results of the open-ended questionnaire on students' assumptions about this unconventional method of teaching building construction.

One section of the survey concerned students' assessment of their abilities and skills, developed due to their engagement in the design process compiling projects elaborated within the joint practical design modules. The students noticed that the discussed formula allowed them to widen their knowledge of the environmental context of designing interiors, as well as to analyse the impact of technical issues on their approach to interior architectural design. The results confirmed the students' positive reflections on the effectiveness of the proposed teaching model in gaining commitment to the consideration of environmental issues within interior architectural design. They pointed out the importance of the design model in the development of projects elaborated in line with contemporary principles, compulsory also in the case of architectural constructions.

This model, according to the authors, helps understand the important role of building construction in the creative process of shaping interiors, in acquiring the ability to select the most appropriate building techniques to fulfil the functional, formal and environmental demands, and to employ the critical thinking into the design process.

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