

Heritage protection in the education of the modern architect

Zbigniew W. Paszkowski & Jakub I. Gołębiowski

West Pomeranian University of Technology, Szczecin
Szczecin, Poland

ABSTRACT: An important component of teaching architecture and urban planning in Poland is to teach design within a cultural, historic or landscape-protected area. Transforming existing facilities or degraded areas, while recognising, analysing and preserving their historical value, is a growing challenge for graduates. In July 2019, new standards for education were introduced into the architectural profession in Poland, specifying the number of teaching hours for subjects and the proportion to be shared between lectures and practical exercises. The introduction of new regulations has opened up the possibility of modifying the programme of education within heritage protection. The main objective of the research work presented in this article was to analyse several new teaching programmes planned for introduction within architecture from the academic year 2020/21. The subjects are related to architectural and urban design within an historic environment.

INTRODUCTION

New challenges have arisen in the education of architects through developments in design, building technologies and materials, as well as external factors, such as climate and cultural changes. Also, a question arises in teaching the history of architecture and the preservation of monuments. Should a modern architect deal with architectural history and monument conservation? To what extent is this knowledge necessary to realise a vision of the future?

The education of architects and urban planners in Poland requires an historical perspective. Architects and urban planners shaping the future image of Polish urban areas should be conscious of preserving for the future the history of spatial development. Polish history highlights the need to maintain identity - both at a national and local level, and for identifying with the place of birth and residence. Hence, it is important to develop a proper understanding of architectural heritage. Due to the historical multiculturalism of Polish society, this heritage is also multicultural. Today, that which has survived from history exists alongside modern buildings created in recent years, forming a conglomerate of multivalent structures. The recognition, valorisation and choice of the form of a structure's further existence requires historical knowledge, with conservational and architectural skills.

Heritage is also subject to political valorisation, as a result of which a certain part of architectural heritage has been considered *unwanted heritage*, with a tendency for it to be removed or for its impact to be reduced. Another part has been considered *endangered heritage*, which includes rural structures, especially those of wooden construction, as well as those objects of modernism from the era of the Polish People's Republic and resources of post-industrial architecture.

This valorisation has been variable, depending on political trends. An awareness of these processes is important for the architect. As a result of the historical shifts in Poland's borders after WW2, a significant part of immovable national heritage, relating to the history of the Polish Nation and connected with ancestors, has become a *lost heritage* within other countries (Ukraine, Belarus and Russia). At the same time, Poland has become the host to *recovered lands*, from the Third German Reich.

The attitude of Poles to the architectural heritage acquired as a result of the decisions made after WW2 has changed from the negation of *post-German* heritage as a symbol of aggression and wartime oppression, through to destructive tendencies and ignorance, then on to affirmation and adaptation and, finally, to a growing interest in the history and identity of places and objects. However, this last phase relates to a distant but still unknown past, due to political fog. Rebuilding the identity of these historical places, where historical facts overlap with the contemporary experience of use as public facilities and spaces, creates a conglomerate of values and methods in the approach to the conservation of architectural heritage.

The presence of architecture from different eras, and of varying value, is a feature of Polish cities where urban development is taking place. The ability to operate in such an environment requires a knowledge of both the history of Poland and its architecture, as well as the history of architecture. Conservation in Poland has an extensive legal codification, the knowledge of which is important for architects. Polish law has been adapted to conform to EU directives since Poland's accession to the European Union in 2004. This has also applied to the law regarding the protection of monuments. There is a duty on all countries in the EU to respect historic buildings, regardless of their cultural and national provenance. Architecture and urban planning students should possess this knowledge to properly understand heritage protection. Architecture and urban planning teaching within architectural history and the conservation of monuments in Poland must take into account Polish specifically, but also European standards.

EDUCATION FOR ARCHITECTURAL HISTORY, PROTECTION AND CONSERVATION OF MONUMENTS

Since 2019, a new legal situation has existed in Poland regarding the education of architects. The Ministry of Science and Higher Education has developed a regulation specifying the *standard of education for preparing for the profession of architect* [1]. This ordinance sets out the minimum curricula for education to prepare for practice as an architect, at first- and second-cycle levels in the Bologna system or for Master's studies.

These provisions will enter into force at the beginning of the 2020/21 academic year. In first-cycle architectural studies, the regulation requires 3,400 minimum teaching hours worth 240 European credit transfer and accumulation system (ECTS) credits. When divided into individual groups of subjects, the distribution of the minimum number of hours is as shown in Table 1.

Readers should note the following clarification of terms. In this article, the synonyms below will apply: first cycle - first degree, S1, are synonyms; and second cycle - second degree, S2, Master's are synonyms.

Table 1: Minimum number of teaching hours by type of study and group of subjects.

Group of lectures	First degree studies (engineer's degree)	Number of hours		Group of lectures	Second degree studies (Master's degree)	Number of hours
A	Designing	1,325		A	Designing	430
B	Design context	900		B	Design context	285
C	Supplementary classes	120		C	Supplementary classes	40
D1	Apprenticeships	5 weeks				
D2	Internship in the design office	1 semester				
E	Diploma degree	50		D	Diploma degree	100
-	Available to the university	405			Available to the university	145

LEARNING OUTCOMES: NEW REGULATION OF MINISTRY OF SCIENCE AND HIGHER EDUCATION

The ordinance defines those learning outcomes which should be achieved by a graduate of first- and second-cycle studies in architecture. A significant part of the outcomes concerns architectural history and the protection and conservation of architectural heritage. This could be a response to the demand for the reuse of the existing heritage, as well as the growing interest in this subject among students [2].

The learning outcomes of first-cycle studies in the chapter, *Designing*, has six related to the history, protection and conservation of architecture out of a total of 15 outcomes. These relate to designing within the existing urban environment, transforming and giving new objects new values, a creative approach to artistic concepts, taking responsibility for shaping the cultural landscape and preserving the heritage of the region, the country and Europe.

In the *Design Context* chapter, the learning outcomes associated with the *conservation and historical* package include seven out of 17, including the history of architecture and urban planning, heritage protection, the understanding of the integrating function of architectural design and collaboration with specialists from various industries. The learning outcomes related to knowledge within the field of adaptation of buildings and maintenance should also include knowledge of construction, technology and building materials, because conservation issues relate largely to issues of construction and the material from which historic buildings have been created.

Apprenticeships should include practice, as well as outdoor drawings and workshops. All practice should reflect on cultural heritage, whether in the form of a drawing or historic objects. The semester of professional architectural practice introduced by the Ministry of Science and Higher Education at the request of the Chamber of Polish Architects [3] may also apply to design studios and offices dealing with the protection and conservation of architectural heritage or with architectural and conservation design. During the internship, students are required to master knowledge in the field of basic methods, techniques, tools and materials used in architectural design.

In terms of the diploma thesis, out of 11 points covered, five concern *historical conservation and conservation*. These are the identification and valorisation of a building, especially in an historic area, to a multi-disciplinary design when solving design problems. The outcomes are oriented towards issues of architectural history, monument conservation and design. Issues relating to the history of architecture and heritage protection constitute an important part of first-cycle studies, creating an understanding of the transformation taking place in cultural spaces and protecting heritage against destruction.

In second-cycle (Master's) studies, historical and conservation issues are included within groups of design subjects, i.e. conservation design and specialised design resulting from local conditions. This includes *design context* items within the theory and history of architecture and urban planning, heritage protection, cultural studies, archaeology and the theory of conservation. Included also are practical and workshop skills, within the group of engineering/technical and technological subjects, including advanced technical aspects relating to design in built-up areas and existing facilities. In supplementary classes, there can be found subjects, such as philosophy and aesthetics or art history. The diploma and Master's thesis may contain historical and conservation issues and can be entirely devoted to them.

The second-cycle learning outcomes in the regulation related to the historical and conservation package are quite extensive. They reflect the first-cycle learning outcomes but are more extensive. There are also some new elements. These include learning outcomes related to topics of greater complexity within urban planning, such as public utilities and the revitalisation of building complexes, as well as the ability to examine critically specific issues such as *...using the experience gained during studies to conduct a critical analysis of conditions, and formulating design proposals in a complex, interdisciplinary context*.

The historical context, the complexity of issues occurring in the place where the project is carried out, the need for a creative compromise - these are all tasks for the graduate of Master's studies as an architect [4]. The regulations also draw attention to social competencies associated with the readiness of the future architect to take responsibility for humanistic, social, cultural, architectural and urban values in relation to the protection of the environment and cultural heritage.

ADAPTATION OF ARCHITECTURE EDUCATION TO NEW REGULATION

The ordinance on the education of the architect requires changes to study programmes. The changes within the Department of History and Theory of Architecture have covered both first- and second- degree studies; however, much broader changes are required for S2 (Master's) studies. Under the regulation are four main groups or classes, with detailed learning outcomes: group A - design; group B - design context; group C - supplementary classes; group D - diploma. The groups are further separated into subgroups.

A comparative analysis of the requirements contained in the regulation with the present S2 education programme revealed no current subjects implementing learning outcomes from group B.2 (engineering technology and technology) or group B.3 (design workshop). An hourly underestimation for diploma subjects was also found. New subjects introduced included advanced issues of construction in architectural, urban and planning design, as well as subjects relating to the methodology of scientific work and the integration of design processes.

New elective subjects were introduced to implement this content, with a focus on the scientific research in the Department. This gives students the opportunity to gain knowledge within a specific field, orienting them for S2 studies. The following were introduced as elective subjects in the Department of History and Theory of Architecture:

- Methodology of scientific work in relation to the conservation of monuments and urban regeneration.
- Conservation techniques.
- Advanced engineering, technology and technology issues in design - conservation of monuments and urban regeneration.

The introduction of new subjects and the need to balance the hours in the curriculum forced the liquidation of two subjects: *architectural design - restoration* and *architecture psychology and composition perception*. For the remaining subjects, the changes were technical [5] (see Table 2).

Table 2: Changes in the programme 2019/20 to 2020/21; for first (S1) and second (S2) degree studies in architecture.

S1 2019/20	Form of classes	S1 2020/21	Form of classes
History and theory of architecture and urban planning	Lecture/auditorium	History and theory of architecture and urban planning 1-3	Lecture/auditorium
Protection and conservation of monuments	Lecture/design	Heritage protection	Lecture
		Architectural design - conservation	Design
Diploma project (EC)	Design	Diploma project - conservation of monuments and urban regeneration	Design

S2 2019/20		S2 2020/21	
Heritage protection	Lecture/design	Heritage protection, archeology and conservation theories	Lecture
		Architectural design - conservation	Design
Architectural design - urban regeneration (EC)	Lecture/design	Course liquidated	-
Diploma project 1 (EC)	Design	Diploma design 1 - conservation of monuments and urban regeneration (EC)	Design
Diploma project 2 (EC)	Design	Diploma design 2 - conservation of monuments and urban regeneration (EC)	Design
Diploma seminar (EC)	Seminar	Diploma seminar - conservation of monuments and urban regeneration (EC)	Seminar
Composition and perception in architecture	Lecture/design	Course liquidated	-
Issues of artistic culture	Auditorium	Cultural studies	Auditorium
No course	-	Methodology of scientific work - conservation of monuments and urban regeneration (EC)	Auditorium
No course	-	Conservation techniques (EC)	Lecture
No course	-	Advanced issues of engineering and technology in design - conservation of monuments and urban regeneration (EC)	Lecture/design

*EC - elective course

Table 3: Newly created subjects at Master's degree level.

Lectures	Subjects	Implemented learning outcomes	Content of classes
B.2. Engineering and technology: advanced technical aspects related to the design process	1. Conservation techniques (elective course) 2. Advanced issues of engineering and technology in design - conservation of monuments and urban regeneration (elective course)	A.W6. student knows and understands advanced methods of analysis, tools, techniques and materials necessary to prepare project concepts in an interdisciplinary environment, with particular emphasis on inter-branch co-operation	Techniques of conducting archaeological research
			Planning conservation works
			Architectural research in historic buildings
		A.W7. student knows and understands the basic methods and techniques for maintaining, modernising and supplementing historic structures	Methods for protecting walls against moisture
			Conservation techniques for stone elements and other historic building materials
		A.U5. student is able to assess the usefulness of advanced methods and tools for solving simple and complex engineering tasks (...) student is able to choose and use appropriate methods and tools in design	Techniques for strengthening and maintaining steel and wooden structures
			Types of non-invasive survey in conservation
B.U5. student knows how to use properly selected advanced computer simulations, analyses and information technologies	Thermovision		
	Renovation techniques for wall polychromes		
B.3. Design workshop - integration of design processes and methodology of scientific work	Methodology of scientific work - conservation of monuments and revitalisation (elective course)	C.W3. student knows and understands the basic principles of scientific research methodology, including the preparation of scientific studies	Research methods used in the conservation of monuments
			Research methodology in revitalisation
		C.U4. student can prepare a scientific study, define the subject, scope and purpose of scientific research	Conservation studies and analyses
			Preparation of scientific publications from conducted research

The new programme has been expanded to include complex technical and technological studies at the S2 level, and responds to the need for students to participate in scientific activities. The regulation also imposes an obligation on the university to provide appropriate technical equipment. Hence, the need for new equipment in classes, i.e. 3D scanners and infrared cameras with associated drones.

The new standards significantly extend not only the requirements for students, but also those for lecturers at the Master’s level. Many of the learning outcomes required by the ordinance have been included in the current West Pomeranian University of Technology, Szczecin (WBiA ZUT) architecture study programme. These affect a limited number of hours and subjects. An example is the preparation of students for conducting scientific activity within monument protection. One of the elements is to write a scientific article dealing with issues within monument protection. This allows students to focus on the methodology of conducting scientific research.

The introduction of subjects covering technology issues and the technology itself is particularly important. So far, these have been implemented in the Protection and Conservation of Monuments (S1) and the Protection of Monuments (S2). The introduction of a separate subject on conservation techniques will expand the knowledge of graduates with the practice of conducting renovation work. In this context, it is necessary to co-operate with business and with specialists - art conservators, monument conservators and archaeologists. The changes introduced present a significant extension of education within monument protection at the second degree of studies and will enrich the toolkit of the graduate (see Table 3).

The creation of subjects devoted to technology and scientific methodology makes it possible to release some of the hours previously allocated to these issues within monument protection. Thus, the theory of heritage protection, cultural studies, archaeology and conservation theory have been extended in the protection of monuments.

DISCUSSIONS

The new regulations with regard to the *historical and conservation* package do not differ significantly from the present teaching or outcomes for architecture and urban planning at the Faculty of Architecture in Szczecin. However, the obligation to introduce new standards has prompted the revision of existing teaching methods; the creation of new teaching materials; creation of links between different teaching subjects; and building on the latest research in various fields of science. A preliminary assessment of planned and already implemented changes in the teaching has indicated both positive and negative aspects.

This requires discussions on learning methods, taking into account the need to incur additional expenditure in areas such as:

- lecturers’ efforts to ensure good teaching;
- the purchase and implementation of new audiovisual means (remote education, filmmaking, new techniques);
- creation of safe conditions during practical classes and apprenticeships;
- co-operation with design offices and companies to prepare them for conducting apprenticeships.

The parallel arrangement of technology subjects with a two-semester conservation design course allows for synergies between the knowledge acquired and its application in the semester projects (Table 4).

Table 4: Synergy between subjects at Master’s degree level (S2).

Heritage protection, archeology and conservation theories	→ Theoretical knowledge			Architectural design - conservation
				↕ practical skills
Conservation techniques	→ Theoretical knowledge			Advanced issues of engineering and technology in design (practical design)
Advanced issues of engineering and technology in design				
	↓ Diploma design			
	↑			
Heritage protection, archeology and conservation theories	→ Theoretical knowledge	Methodology of scientific work	→ Practical skills	Diploma seminar

This is a new challenge to fully utilise the potential of the changes introduced. This means the new curriculum will be successful only through further training of the academic staff; the purchase of new equipment and the creation of appropriate conditions for its use, e.g. in newly established laboratories managed by qualified technicians; and by establishing co-operation with external partners. All these activities involve significant financial costs that have not been included in current budgets.

The new education standards will also increase the requirements for students who will have to organise their work in a new way to achieve the learning outcomes. The correct organisation of working time, the ability to assimilate new tools and technologies, and the use of detailed knowledge acquired during courses in projects will be of key importance.

CONCLUSIONS

Today's vision of an architect and urban planner educated at a Polish architectural university is of one who knows the history of architecture worldwide and of Polish architecture in particular, is aware of the cultural value of heritage and its importance for the future, is a specialist in methods for the protection and conservation of historic buildings, and who knows building law and EU directives within heritage protection. Such an architect is able to carry out a project to adapt an historic building to modern functions, without compromising its authentic values, and to observe architecture in the context of its urban layouts and urban planning, while respecting historic building layouts and buildings of historic value. The introduction of new standards and learning outcomes is associated with:

- introduction of changes to study programmes;
- the training of researchers;
- creation of new didactic and research laboratories;
- finance for the preparation of programmes and laboratories for conducting practical classes;
- development of new didactic materials corresponding to modern technologies and methods, including integration and synergy between different subjects.

The analysis of the new standards has led to the conclusion that the learning outcomes relating to the knowledge and skills included in the programme provide the undergraduate with a comprehensive education in heritage protection. During their first-cycle studies, the students acquire practical and engineering knowledge, especially in design exercises and apprenticeships. During second-cycle studies, the theoretical knowledge of the students is enriched through classes in the methodology of conducting scientific research in monument conservation, and the exploration of techniques and technologies for conducting design work. After completing two degrees of study, students receive a complementary education in heritage protection, significantly enriching the education of the modern architect.

REFERENCES

1. Rozporządzenie Ministra Nauki i Szkolnictwa Wyższego z dnia 18 lipca 2019 r. w sprawie Standardu Kształcenia Przygotowującego do Wykonywania Zawodu Architekta. Dz. U. 2019 Poz. 1359 (in Polish).
2. Szczepański, J., Sustainable monument preservation in architectural education. *World Trans. on Engng. and Technol. Educ.*, 17, 1, 42-47 (2019).
3. Stanowisko Izby Architektów Polskich w sprawie Nowych Standardów Edukacyjnych w Zawodzie Architekta. Warszawa, 28 lutego 2018. 15 April 2020, http://www.izbaarchitektow.pl/pliki/wych_056_KRIA_2018.pdf (in Polish).
4. Molski, P., *Education of Architects and Contemporary Trends in the Protection of Cultural Heritage*. In: Szmygin, B. (Ed), *Teaching and Promoting Heritage Protection*. Warszawa: PKN ICOMOS, 19-25 (2014).
5. Paszkowski, Z., Gołębiewski, J. and Kozłowska, I., *The Issue of Protection and Conservation of Architectural Monuments in Higher Education at the Faculty of Civil Engineering and Architecture of the West Pomeranian University of Technology in Szczecin*. In: Szmygin, B. (Ed), *Teaching and Promoting Heritage Protection*. Warszawa: PKN ICOMOS, 171-180 (2014).