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ARCHITECTURAL AVANT-GARDE IN EDUCATIONAL SPACES

AWANGARDA ARCHITEKTONICZNA W PRZESTRZENIACH EDUKACYJNYCH

Abstract

The article presents contemporary methods of designing educational spaces, based on the concept of teaching focusing on the individual needs of the student (student-centered learning). The aim of the article is to indicate the differences between the traditional approach and new didactic methods and to show the possibilities of supporting them through a properly designed learning environment. By using design as a tool, it is possible to change the physical environment of educational institutions and transform the learning process into an experience that adequately prepares students for the challenges that await them in the future.

Keywords: educational spaces, open learning environments, student-centered learning

Streszczenie

Artykuł prezentuje współczesne metody projektowania przestrzeni edukacyjnych, opartego na koncepcji nauczania koncentrującego się na indywidualnych potrzebach ucznia (student-centered learning). Celem artykułu jest wskazanie różnic między tradycyjnym podejściem a nowymi metodami dydaktycznymi oraz pokazanie możliwości wsparcia ich poprzez odpowiednio zaprojektowane środowisko nauczania. Wykorzystując projektowanie jako narzędzie, można zmienić fizyczne środowisko instytucji edukacyjnych i przekształcić proces dydaktyczny w doświadczenie, które w odpowiedni sposób przygotowuje uczniów do wyzwań czekających na nich w przyszłości.

Słowa kluczowe: przestrzeń edukacyjna, otwarte środowisko uczenia się, nauczanie skoncentrowane na uczniu

1. NEW EDUCATIONAL SPACES

Education of children and youth is one of the major tasks of society. In a nutshell, education helps shape up future citizens – their attitudes, views, knowledge or needs. The world of tomorrow depends on the quality of today's education. That dependence has been eagerly taken advantage of by totalitarian regimes, in which indoctrination of children and young people often becomes the core element of the system. Sadly, contemporary schools make very little positive use of the knowledge on successive phases of human development and the moment when attitudes and future views are formed. With very few exceptions (e.g. the Scandinavian countries), education is reduced to the acquisition of textbook knowledge and its updating, leaving other aspects – such as interpersonal contacts, manual skills, creativity, sensitivity, or

the right to individuality – lagging behind in the unmodified form taken from past epochs. The evolution is extremely slow, and its validity is often criticised by society itself, the prevailing viewpoint being that what was good for parents will also be suitable for their children. This view is opposed by the futurological approach discussed in the next chapter, according to which a future society will need citizens who are in tune with the new times. The biggest difficulty today is to identify the right direction for change and to convince both decision-makers and education process participants (teachers, students and parents) to follow a new path.

An interesting example of a turning point in the approach to education was the onset of the Covid-19 pandemic. The need to introduce remote education almost overnight – a need that was non-negotiable and resulted from ‘force majeure’ – showed the enormous potential on the part of both teachers and students. Leaving aside the many disadvantages and losses associated with the fact that children and young people were cut off from the school community, the pandemic has shown that there is room in education for a different form of learning, different tools, a different approach to the student – in short, a different space of education. Most teachers stood up to the challenge and modified their long-standing habits by adapting to the new conditions. Many initiatives have emerged that would not have been possible before, such as a project by teachers from Poznań’s Primary School No. 33, who used a platform from a popular computer game to teach mathematics. This example shows that the pandemic not only changed the form of education, but also the space in which education can take place. It is no longer just the classroom, but also the home, as well as the virtual space – any place where there is a person willing to learn and a teacher, even if they are not physically in the same location.

The above considerations clearly show the need for the contemporary world, with its challenges, opportunities and threats, to initiate changes in the educational process and demonstrate greater flexibility in understanding the needs of learners and what we have so far used to define as ‘educational space’. When one begins to go beyond the usual patterns in teaching, there is also room for innovation in design, and a space treated with a wink begins to act as a trigger, encouraging change in thinking and acting. Its educational value increases with the increased interest from the user-observer. Solutions that overturn centuries-old traditions foster creativity and stimulate students and teachers to act. They become a source, an inspiration and – for students with special educational needs – sometimes the only chance to find an individual learning path.

The architectural avant-garde in educational spaces can anticipate the transformation of the educational system, be a kind of forerunner – a breath of novelty that will become a catalyst for further change. An analysis of contemporary solutions indicates that there is a need for a change in the approach to the design of educational spaces and for constant search for new possibilities in this area.

2. FUTUROLOGICAL RESEARCH ON THE DEVELOPMENT OF EDUCATIONAL SPACES

For the vast majority of people living in modern society, education is a process that lasts throughout their lifetimes – much longer than their statutory schooling age. If we agree with the above statement, it appears that the modern school, understood both as an institution and its physical representation (a building) will play an educational role in a relatively short

period of the average person's life. Apparently, this fact marginalises the need for change and improvement – since the process is only expected to last a few years, perhaps there is no need for a revolution in this area. However, research into human psycho-physical development indicates that the early childhood period has a huge impact on the development of creativity, motor skills and, in the longer term, the ability to undertake self-learning in adulthood. Consequently, the initial phase of the learning process begins to make a huge impact on the condition of future generations.

Today's students will enter the most professionally and socially productive period of their lives in about 15–20 years. Their school education should reflect the fact that their adulthood will be about the society of the future, which, in the context of the accelerating pace of technological change, could mean living and working in conditions strikingly different from those of today. Covid-19 has, in the space of a few weeks, verified the understanding of remote education, the importance of social contact and the opportunities behind today's technology – opportunities that may also carry risks.

Professor Torsten Husen pointed out as early as 1974 to the necessity of including futurological methods in educational research, which would make it possible to “foresee the future consequences of current educational planning and policy decisions concerning school organisation, school construction, curriculum development, teaching aids, and teacher training”¹. Importantly, it was already recognised at that time that the school building and its layout fundamentally implied certain concepts related to the way in which work would be carried out in it for decades to come. The rigid planning of the educational space decides in advance the parameters related to the number of pupils in a class, the way in which knowledge is imparted, the possibilities for leisure activities, the right to privacy (or lack of such right), etc. In most cases, it more or less excludes or reduces the likelihood of alternative solutions that would involve changes in teaching methods, educational concepts or the needs of the pupils themselves. Designers and decision-makers should therefore embrace to a greater degree the possibility of future changes in educational concepts and seek solutions that due to their flexibility allow such changes to occur without the need for reconstruction of school buildings. A school classroom is an excellent example of how a spatial layout that has been repeated since ancient times² remains the basis for the design of modern school buildings, despite the fact that research developments and technological changes clearly indicate that this model is already obsolete today (let alone in 20–30 years' time).

The biggest problem in reconciling futurological research with contemporary trends is its uncertainty and the fact that politicians and decision-makers rarely commit to decisions that require long-term action and often entail overcoming the resentment of selected social groups. The careers of those in power are directly linked to public opinion, and so the choice between immediate gains and delayed gains is usually a very simple one. Looking at current issues from a short-term perspective often prevents a broader analysis and discourages conclusions that allow habit-breaking.

A separate issue is also the change in value systems over time. Futurology attempts to predict them, but this is difficult to verify. And yet it is precisely the change in value systems that

¹ T. Husen, *Oświata i wychowanie w roku 2000*, PWN, Warszawa 1974, p. 15.

² The first evidence of school organisation comes from Mesopotamia, from around the 3rd millennium BC. Archaeological discoveries have allowed the partial reconstruction of school rooms – with parallel rows of desks, designed for two, three or four people.

underpins most changes in the behaviour of societies, including their attitude to education. The attitude being promoted in schools today places a higher value on each student's individuality than on their value as a collective of individuals with different aptitudes and abilities. This is problematic as for the society of the future, in which knowledge on every subject will be constantly available on the Internet, it seems more important to teach pupils how to interpret and verify sources of information and how to cooperate in a group using the diverse potential of its members. It is likely that in the society of the near future, it will no longer be important what one knows – but how one finds the information one needs and how one uses it. Due to the increasing specialization of particular fields, the importance of social skills and teamwork will increase. On the other hand, the experiences with the Covid-19 pandemic and distance learning, as well as the ever-increasing dependence of children and young people on the virtual world, indicate that the next generation of adults may have a big problem here.

In this above-described context, it is worth considering the role that educational space might play in the future. Will schools become useless and remote learning will become the future? Or is it the case that a properly designed classroom and school, with an area to relax, tailored to the real needs of students and teachers instead of negating those needs, supporting a personalised approach to learning, will allow a completely different kind of space to be created that will address the above issues?

3. STUDENT-CENTERED LEARNING

Contemporary school is very reluctant to address issues related to the evolution of educational space that could herald broader changes involving the learning process and individualised approaches to student needs. The current situation is mainly influenced by funding problems in public schools and lack of knowledge and (often) mistrust concerning new solutions. School renovations are usually cosmetic in nature, boiling down to changes in furnishings or colour scheme of the rooms, introduction of multimedia boards. A new arrangement of common spaces or improving the acoustics of the rooms happen less often, while a change in the way the whole building functions, with a new arrangement of common spaces and classrooms, is very rare. It is much easier for designers to plan new facilities, although the second aspect mentioned above – the need to win over decision-makers and investors to secure their acceptance for the design concept – becomes more important. The spread of the concept of universal design and the need to take into account the needs of people with disabilities, including those with special educational needs such as autism spectrum disorder or Asperger's syndrome, is also having a positive impact on the implementation of changes in the functioning of schools.

Contemporary examples of school design indicate that the hall/corridor/classroom solution is slowly becoming a relic. The idea is not entirely new; didactic and educational concepts in which the school building plays an important role in the educational process have been developing since the end of the 19th century. For instance, in Montessori type schools the shape, colour and layout of the rooms should support educational tasks. A similar idea can also be observed in the concept of a Waldorf, or democratic, school. Unfortunately, due to problems with insufficient premises and funds in Poland, indications concerning space are often neglected, focusing instead on aspects related to the organisation of education.

Meanwhile, examples of modern school buildings from around the world show that common spaces, with a high degree of flexibility, providing opportunities for pupils and teachers

to undertake a variety of activities not limited by their belonging to a particular school class, are increasingly important. Student-centred learning is a modern educational concept based on four principles (the 4 Keys):

- learning is personalized,
- learning is competency-based,
- learning happens anytime, anywhere,
- students take ownership.

Although the above assumptions can also be implemented in traditional school buildings (sometimes to a limited extent), the support of the educational process through a properly designed space is difficult to overestimate. As an example one can mention here the Spring Lake Park School based on the 4K philosophy, opened in 2018 in Minneapolis³. In order to realise the assumptions of student-centred learning, a building was designed with a common space in its central part that is used for both relaxation and learning, but also serves as a meeting place for students and the local community. It includes a stage, an auditorium, multimedia whiteboards that can become an art gallery, as well as areas for individual relaxation. The school building is modern and exciting – it does not make pupils weary when they enter it and feels more like a playground than a typical school facility. Importantly, the teachers were actively involved in the design, creating a space to support the learning process in the best possible way. As the school was intended to have a strong emphasis on individualised learning tailored to the abilities of individual students, all elements of the space (furniture, equipment, walls) were designed to maximise its flexibility and thus integrate the building into the educational process. The basic units that make up the school space are the Flex Labs (containing equipment for creating art and music) and the Learning Studios – spaces that can be freely arranged, thus allowing the distance between teacher and student to be reduced and the process itself to be transparent.

Another interesting concept is authored by CEBRA Architecture⁴. The idea of a Smart School in Irkutsk (Russia) is to create a new type of school combining architecture and landscape (school park) into a unique learning environment and a meeting point for the local community. The buildings are grouped around a central courtyard, with each building interconnecting to create a diverse space conducive to experiential learning and synergy. Activity-filled indoor spaces contrast with the quieter green areas surrounding the complex, while also providing the facility with partial self-sufficiency and involving students in some maintenance work. Particularly important from a didactic perspective are the spaces between the buildings – covered communal spaces that connect the building complex to the central area and landscape, also providing students with a place to relax and integrate.

The Ørestad Gymnasium in Copenhagen (Denmark) designed by the 3XN Design Studio⁵ goes a step further, eliminating enclosed spaces altogether in favour of an open communal space where classes are held. The architecture and design of this building challenge traditional teaching methods, necessitating changes in teaching methods and teacher approaches.

³ <https://www.woldae.com/portfolio/spring-lake-park-school-district> (access 1.06.2022).

⁴ The concept designed by CEBRA was selected in 2015 in a prestigious architectural competition from among five other proposals, including those designed by MVRDV, Sou Fujimoto, WORKac, Architects Rudanko + Kankkunen / Studio Puisto, and MKPL Architects. Source: S. Santos, *CEBRA Wins Competition to Design Smart School in Russia*, <https://www.archdaily.com/773253/cebra-wins-competition-to-design-smart-school-in-russia> (access: 1.06.2022).

⁵ <https://www.architonic.com/en/project/3xn-orestad-college/5100079> (access 1.06.2022).

Rosan Bosch, designer of the Vittra School Telefonplan in Stockholm, has a similar approach to the design of educational spaces⁶. Modern society demands lifelong learning, looking for creative solutions instead of memorising material. Her concept for arranging educational spaces is based on the conviction that education can no longer be a boring and unpleasant chore. The Vittra Telefonplan School abandons the conventional classroom by turning it into a learning environment where space becomes a catalyst for change and a learning tool approved by the students themselves. The school uses digital methods in the learning process, leaving students with a great deal of freedom to choose the place or position in which they acquire knowledge and skills. Importantly, the shared space fosters interaction, supporting relationship building and the acquisition of social competences, so essential in the context of the increasing digitalisation of modern life.

The solutions indicated above can also have a positive impact on the inclusion of children with special educational needs in the educational process. Disorders such as hyperactivity, ADHD or depression are affecting an increasing number of pupils today. Perhaps one of the underlying reasons is that children and adolescents have less and less contact with wildlife: according to the thesis presented by R. Louv in his book *Last Child in the Woods*, as the scarcity of nature increases, there is “more and more evidence of the indispensability of direct contact with nature for proper physical and emotional development”⁷. Research findings suggest that contact with nature can reduce symptoms of attention deficit disorder and ADHD, improve cognitive abilities and increase resilience to stress and depression. Incorporating green spaces into the school building will certainly have a positive impact on the emotional state of pupils, also providing opportunities for personal observation. In addition, the abandonment of traditional divisions into classes and lessons, elimination of irritating bell sounds and introduction of an individualized approach to each pupil can open up new possibilities for those children for whom traditional education currently has no alternative to offer (autism, Asperger’s syndrome).

4. CONCLUSIONS

The question about the future of education is a question about the future of our society and our culture. Generations of today’s students will soon be deciding the shape of the world and the space around them, they will be making choices with consequences that only their children will probably see. The learning environment in which pupils spend eight hours a day is not “just” a school – it is a place that influences them every day, builds their spatial and aesthetic competences and sensitivity, supports or hinders their knowledge. Building the right habits and learning to take responsibility for space and the environment does not start at a specific point in time – just like the education process, it takes place all the time, everywhere.

Contemporary trends in the design of educational spaces are shifting towards more flexible functional arrangements. The leap from the traditional school, where the focal point is the classroom/workshop and pupils spend every break in the corridor or the concreted sports field, to a broader learning environment open to change, in which every element of the space can be adapted to the current needs of pupils and teachers, is enormous. It requires

⁶ R. Bosch, *Designing for a Better World Starts at School*, Rosan Bosch Studio, 2018

⁷ R. Louv, *Ostatnie dziecko lasu*, Mamania. Grupa Wydawnicza Relacja, Warszawa 2016, p. 54.

not only a change in the approach to design, but more importantly, a change in the approach of teachers to students and to the learning space⁸. In many cases, it also requires a broader knowledge of how to arrange the space so that it facilitates rather than obstructs the intended tasks. The new learner-centred concept of school shatters the millennia-old tradition of knowledge transmission – it becomes a kind of avant-garde in the modern world. By rejecting previous trends and orientations, it creates its own new space – interesting and promising.

The direction of change outlined in this article does not resolve all doubts, nor does it present all the potential opportunities offered by a properly designed learning space. It does, however, demonstrate that possibilities offered by the learning environment should be more widely taken into account in the educational process. Motivation, inspiration, challenge – these are key to creating spaces where students themselves take ownership of their education. Using design as a tool, the physical environment of educational institutions can be transformed, and a boring teaching process can be turned into an interesting experience that adequately prepares students for the challenges that await them in the future.

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⁸ P. Barrett, Y. Zhang, F. Davies, L. Barrett, *Summary report of the HEAD Project Clever Classrooms (Holistic Evidence and Design)*, University of Stanford, Manchester 2015, <http://usir.salford.ac.uk/id/eprint/35221/1/120515%20Clever%20Classrooms.pdf> (access: 1.06.2022).