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THE PEDAGOGICAL DIMENSION OF THE PHYSICAL LEARNING ENVIRONMENT IN THE UNIVERSITY SYSTEM

Lucia CEPRAGA

Department of Human Resources, Public Affairs, and Communication
The Academy of Economic Studies of Moldova
Chisinau, Republic of Moldova
cepragalucia@ase.md

Elena GOGOI

Department of Software Engineering and Automation
Technical University of Moldova
Chisinau, Republic of Moldova
elena.gogoi@faf.utm.md

Abstract. Nowadays there are unlimited opportunities to learn anytime and anywhere, in various environments, whether physical or digital, formal, informal, or non-formal. The teaching staff aims to create a learning environment that facilitates, stimulates, and optimizes the students' abilities to learn to easily adapt to the dynamic changes of society. The present paper showcases the learning context as a physical dimension of the learning environment. It is commonly accepted that the physical classroom represents an agent of change. It has also been assumed that each adjustment in the physical learning environment will produce deep transformations in the education system. Moreover, the learning space will reconceptualize the entire educational philosophy. Living in a highly globalized and digitalized era, the learning context has been explored from the perspective of introducing dual education at the university level, both at the Academy of Economic Studies of Moldova and the Technical University of Moldova. The dual education framework in professional technical education has been adopted as a platform that enables universities to prepare students fully equipped for their jobs. The dual education approach has also been analysed from the perspective of strengthening student learning since it provides a real-life environment that makes the learners combine theory with practice. While the theoretical courses are carried out at university, in traditional lecture halls or labs, the practical classes are organized in the company. The partnerships between the university and the industry will only contribute to forging a synergy between traditional and modern, theory and practice, classroom and real-life environments. Through this form of learning, our students will be more connected with the labour market, and the academic staff will manage to create a more efficient and more impactful learning process.

Keywords: dual education, globalization, learning space, labour market, partnerships

JEL Classification: H75, I20, I23, I25

*Motto: "If you want students to come to school
and feel delighted to be there,
then don't put them in an old school...".
(Ron Christie)*

INTRODUCTION

In the context of recent multi-dimensional and multi-aspectual developments, global society is facing various tensions, people marked by economic crises, pandemics, and wars are gripped by a deep over-excitement, which compels them to rummage feverishly through the stock of uncertain solutions. "Contemporary globalization works on asymmetric bases argues the

sociologist Constantin Schifirnet, and, at the same time, forces all societies connected in one way or another to the global market to operate more or less profound reforms to comply with the imperatives of this indispensable sources of income and, paradoxically, of subordination, economic and not only." (Schifirent, 2016)

The globalization framework and the emergence of the so-called global culture "achieved not only through access to huge information systems, but also postulating a strong reference to what we could call international civil society." (Cosma, 2004) Vertiginous globalization, beyond the material flows that are increasingly reconfigured into digital ones, calls for imperative actions to reorganize both the global and national educational systems. Or, "The need to overcome tensions, even if they are not inner ones, will occupy a central role in the issues of the XXIst century. Knowing the ways of manifesting states of tension, the causes that generate them, can introduce us to the decoding of the complexity and diversity of the poles generating anxiety or, on the contrary, confidence in finding solutions to solve it." (Cosma, 2004)

The concept of globalization is a comprehensive one and it affects all aspects of human activity, including education. Of course, "technology is now developing simultaneously in the material and immaterial spheres, through services and information, a process in which occupational diversification is a more visible trend than sectoral diversification. The implications are not found only at the level of production, in its characteristics and structure, but society as a whole becomes an active participant: by supporting societal needs, by raising awareness of ethical aspects, by redefining educational principles." (Cojanu, 2018, p.62)

As a consequence, countries worldwide are trying, especially in the context of the strategic development objectives stipulated in Agenda 2030 - Sustainable Development, to meet the needs of the labour market, needs which, most of the time, are perceived through the prism of the non-compliance of university education with these needs. "In the Republic of Moldova, the adaptation of the 2030 Agenda began as a result of the collaboration between the Government, the UN Moldova, as a key development partner of the Republic of Moldova, and the Expert Group, which provided analytical support to the entire process. The task consisted in identifying the relevant and priority objectives for the Republic of Moldova, as well as adapting the objectives to meet the national specifics (without affecting the nature and spirit of the SDO objectives)." (Adaptation of the 2030 Agenda)

CONTENT

Starting from the idea of the national priority of education, we specify that "the Republic of Moldova promotes an educational policy connected to European and international educational policies, relevant for solving the current problems and needs of the educational system and its beneficiaries." ("Education 2030" Strategy) Education is subordinated to the need to capitalize on human potential globally, focusing on the development of intellectual and psychophysical qualities, aesthetic and moral sense, and behaviour to optimally integrate into the present and future society.

"Given that *education* is both a goal and a means that contributes to the achievement of the country's socioeconomic development objectives, the "Education 2030" Development Strategy

exploits the pillars and sustainable development objectives provided for the "Moldova 2030 National Development Strategy" and transposes them into value axes and strategic visions on the development of education in the short and long term." ("Education 2030" Strategy)

"The globalization of education becomes a specific condition for quality education, one of the directions for the development of pedagogical theory and practice, focused on human training for a world in permanent change." (Callo, 2008, p.33)

The ongoing transformations and reforms, such as those carried out within the "Education Reform in Moldova" Project (PRIM), implemented between April 2013 and December 2022, the Higher Education Project in Moldova, implemented between 2020-2025, financed by the World Bank, focuses not only on general education and vocational training but also on the development of a new, more flexible model of people's behaviour in life and works under existing conditions, "improving the labour market orientation of higher education institutions and improving the mechanisms of quality assurance." (MCR, 2022)

A modern education system must constantly monitor changes in the demands of the labour market. In this sense, beyond the traditional indispensable component elements: the student, the knowledge, i.e. the scientific-practical content delivered to the educational beneficiaries, the teacher, the *environment* intervenes as a safe framework for the training/development of professional and transdisciplinary skills, a context of help and facilitation of interpersonal communication.

Pedagogical literature displays several meanings attributed to the learning situation, such as: "learning *context*"; set of conditional factors of education processes; *position* in which the subject of the educational action is placed, i.e. the person "put in the situation", (Nicorici, 2015, p.247) *learning space*, etc.

The concept of *context* originates from the Latin *contexere*, which means "to weave together". In the educational field, the learning environment/context is seen as a process of collaboration and interaction with the act of learning. A very relevant factor in educational activities, which, unfortunately, is often overlooked, is the impact of space, i.e. accessibility and flexibility, on learning. In other words, the design of a learning space influences the learning process, therefore, any design of the educational space must represent an "architectural embodiment" of the learning theory, presented more and more frequently as "built pedagogy".

In *ancient times*, education took place either in the open air or at the so-called teacher's house. The disciples learned from daily practice and routine and from the teachers' speeches, which today would correspond to the experiential method on the one hand, and the expository, one-way interaction, on the other.

In the early Middle Ages, which was also called the "Dark Ages" because there was a deep cultural decline in Western Europe, schools were usually located near medieval churches, which did not exactly provide the best conditions. "A small room with a low vaulted ceiling. Rare rays of sunlight make their way through the narrow windows. Boys of different ages sit at a long table. Good clothes betray the children of rich parents, there are no poor people here. At the head of the table is a priest. In front of him is a large handwritten book, and nearby there is a pile of rods. The priest mutters prayers in Latin. Children mechanically repeat incomprehensible words after him." (ik-ptz.ru, 2022)

In the *Middle Ages*, the first educational institutions were monastic and church/religious schools, where education experienced a cultural rise starting with Charlemagne's reign and later on with the "Carolingian Renaissance". It was during this period that religious educational institutions were established both conceptually and physically.

"Two main types of church educational institutions developed in early medieval Europe: episcopal (cathedral) schools and monastic schools. In some monasteries, there were internal schools, which trained clerks, and external schools, which trained simple people: in the first ones, they taught boys, whom their parents gave to monasticism and lived in monasteries; in the latter one - the children of the inhabitants of this church parish (laymen). Parochial schools were located in some church buildings or in the priest's house who took over the children's education. Monastic and cathedral schools, as a rule, had special rooms intended for teaching."(ik-ptz.ru, 2022)

Between the XIIth - XVth centuries, school education went beyond the framework of churches and monasteries, and thanks to socioeconomic and political evolution, the so-called urban schools and universities appeared. Among the first urban schools (XIIth - XIIIth centuries) we can mention those in London, Paris, Milan, Florence, Lübeck, Hamburg, etc.

The oldest university in Europe considered a "free school" in the first half of the 12th century and the beginning of the XIIIth century is considered the University of Paris. It was located as a physical space within the Notre Dame Cathedral in Paris.

In the XIVth - XVth centuries, the so-called *colleges* appear. An important point to make is that at the beginning, this was the name of the student dormitories, later they started holding lectures and debates in the given spaces, a fact that conditioned the reconceptualization of those spaces into learning environments. One such institution, the Sorbonne College, founded by Robert de Sorbon, confessor of the French king, evolved and expanded conceptually and physically into a new higher education institution, namely the Sorbonne University of Paris, considered the largest higher education institution of the Middle Ages.

If at the beginning of the XVth century in Europe students attended 65 universities, then at the end of the century, the number of universities increased to 79. The most famous were Paris, Bologna, Cambridge, Oxford, Prague, and Krakow. (ik-ptz. ru,2022), many of which function nowadays, aiming to exhibit and reinforce an institutional culture with old university traditions. And if in the urban environment we notice colleges and universities, then in the rural environment we can see schools with one room, where children of different ages study, called: the *blab school*, the *vocal school*, the *ABC school*, etc., and even Abraham Lincoln attended such a school. (upwikiro.top, 2022)

In the *pre-industrial period*, until the XIXth century, "personality formation was predominantly influenced by informal education, coming from the person's living environment, while the *industrial period*, the second half of the XIXth century the - the 80s of the XXth century, is characterized by an explosion of schooling."(Dandara & Negrei, 2021) We come across the so-called *institutionalized education*, which is equivalent to the notion of *studying/learning*. In the above-mentioned period, a reconceptualization of education can be observed, extending from a duration of 3-4 years, corresponding to the age of 7/8-10/12 years, to about 20 years later, with ages ranging between 3-23 years.

The massive industrialization of this period highlighted the need for intensive professional training of a large number of workers who could easily conform to the conditions of the large factories. From the perspective of the organization of the physical environment, the solution for the demands put forward by the rigours of professional education of the time was the so-called "factory model" and "the cells and bells" schools, named by Nair and his colleagues (2013) and the Ford Model. The description brings into focus the flow of the industrial organization of today's schools, focused on maximizing efficiency, strictly compartmentalized, by classes and groups, fragmented by the sound of the saving bell.

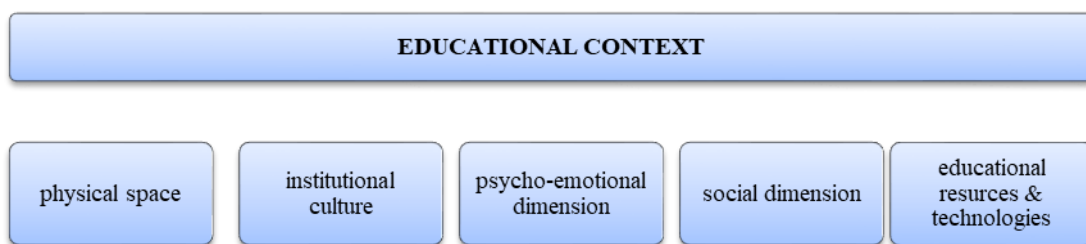
The standardized *Factory School* model, from the late XIXth century to the early XXth century, was the most common schooling form in many parts of the world. The classrooms and facilities were set up in "assembly lines", the disciples' desks and chairs were arranged in rows, often fixed in position, facing the teaching wall. Classrooms were also arranged in rows along double-loaded corridors. This pattern is also known as "cells and bells".

The use of the term "factory model school" dates back to the 1980s, being attributed to educational leaders such as Dr. Howard Lamb, Theresa Jablonski, Marilyn RothAl Shanker, etc. "The 'bells and cells' model is a common approach to design, but it has not been universal."(wikipedia.org, 2022)

From the definition suggested by the Educational Reform Glossary of August 29th, 2014, we derive the idea that an educational context forms a three-dimensional paradigm in which the teaching-learning-evaluation process takes place, namely:

- physical location
- the culture of an institution
- educational approaches.

Synthesizing scientific approaches from the specialized literature, we identify several distinctive constitutive components for a learning context, as reflected below:



The **context** represents the set of relationships between the learning agents and the environment in which they occur. The learning environment is approached two-dimensionally, referring to both the culture and the physical space created by teachers and students. "Learning space or learning setting refers to a physical setting for an educational environment, a place where teaching and learning occur. The term is commonly used as a more definitive alternative to "classroom", but can also refer to an indoor or outdoor location, real or virtual.

In addition to the above-mentioned models (*the blab/vocal school, the factory model school / "bells and cells"*) through the '60s of the XXth century, thanks to a progressive pedagogical movement, schools were developed, especially in Europe and North America with open classes, i.e.

without internal walls, thereby aiming for team teaching-learning, student mobility between learning areas. However, the lack of sound separation and visual distractions made this model fall out.

Learning spaces are extremely diverse in use, learning styles, configuration, location, and educational institutions supporting a variety of pedagogies, including quiet study, passive or active learning, kinesthetic or physical learning, vocational learning, experiential learning, and others.

Undoubtedly, the subject of the physical learning space is also of increased relevance for university education, especially for universities in the ex-Soviet space, where the teaching-learning process was unidirectional, and oriented towards imparting knowledge, respectively, the design of the spaces was distinguished by a standardized, uniform design and, according to us, very stiff.

The *Post-industrial period* showcases the continuous and multidimensional nature of education, increases the role of the student, or the teaching-learning process is one focused on the student. This form of education through which the person programs/designs his personal and professional development process calls for universities, and the community as a whole, to reconceptualize learning spaces. Preferable, in our opinion, would be the implementation and development of spaces following the *Model Learning Community*, which involves structuring the interior physical space in such a way as to provide more of an environment for personalized learning, including collaboration between teachers and students, interdisciplinary studies and learning based on projects.

Currently, the universities of the Republic of Moldova, although they have certain common study rooms, are increasingly reconfiguring their learning spaces into mobile areas, separate clusters or collaborative spaces or team learning centers, HUBs, open-space areas, etc. This means that the learning context/environment should be both in universities, but also outdoors, in the online environment, and outside the premises of the university campus, in other words, the classes should become authentic, extracted from reality, reflecting real-life needs. Of course, the goal of the educational actors (the student, the teacher, institutional decision-makers, LPA, CPA, as well as stakeholders, etc.) is to focus on the creation of a learning environment that facilitates, stimulates, and optimizes the ability of the learners to learn to achieve performance. To achieve an effective training process, it is necessary to explore the learning context, to make it attractive, innovative, collaborative, playful, and easily adaptable for various needs.

The present scientific approach showcases the learning context/space/ environment, called by Loris Malaguzzi and the "third teacher", as an agent of change, that assumes that each adjustment of the physical space will produce transformations in the didactic system, even reconceptualizations in the educational philosophy. However, the educational context influences strategies, teaching-learning-evaluation techniques, and teaching aids.

The development of the ability to transfer knowledge in new contexts does not occur by itself through the diversification of contexts, but through the good organization of the learning sequence, placed in a meaningful context.

The father of proxemics, E. T. Hall considers that space sends an extremely deep non-verbal message, making silent but visible statements ("space speaks") and, speaking before the teaching staff and, sometimes, in their place.

Considering the rapid evolution of information technologies, it is obvious that the models of virtual classrooms are becoming more and more ubiquitous. “The *Virtual Learning Environment* model (VLE) is a web environment or platform for learning, usually within educational institutions. VLEs typically: allow participants to be organized into cohorts, groups, and roles; present resources, activities, and interactions within a course structure; provide different stages of evaluation; participation reports, and have a certain level of integration with other institutional systems.”(upwikiro.top, 2022)

Because of the pandemic caused by COVID-19, in the Republic of Moldova, all universities, along with other educational institutions, have developed the Virtual Learning Environment model within the educational space. The Academy of Economic Studies from Moldova (ASEM), the Technical University of Moldova (TUM), etc. have actively implemented virtual learning spaces on the MOODLE platform, Teams, etc. continuing to use them along with other new educational platforms. In the case of these types of rooms, the ergonomic rigours aim at adequate furniture/space, wi-fi connectivity, acoustic insulation, etc. Moreover, this can be almost any environment with access to a wireless telephone, Internet, or communications network.

Starting from the idea of a healthy way of life, an idea of space would also be outdoor classes, the *California-style schools*, an example representing a "set of buildings that form together a single school or educational institution but which are not connected by closed internal corridors. All movement between major spaces is out of doors. This is similar to a university campus, but with buildings that do not have major internal circulation routes, as would be found in a faculty building". (upwikiro.top, 2022) Partially this model is also used in the Republic of Moldova, but it has not become a widespread experience, mainly because of its inadequacy in unfavourable weather in certain periods. For universities, this space is used more often in non-formal education.

An interesting solution is the *model of portable classrooms*. “This model consists of modular buildings which are also colloquially known around the world as portables, bungalows, cabins, trailers, lodges, T-buildings or relocates. They are created in a factory and delivered in two or more sections to an educational facility. They are assembled into one or two classroom buildings, normally without permanent foundations so that they can be removed. Their normal purpose is to provide temporary classroom space for schools that require additional instructional space”. (upwikiro.top, 2022)

To effectively develop the professional skills of the young generation, closer and more intensive collaboration between employers, the business environment/the industry, and universities are required. In this sense, **dual education** was conceived based on the collaboration between the *economic operator*, the *educational unit*, and the *administrative-territorial unit*. The value of the learning space results in dual education meaning that the theoretical training is carried out in the educational institution (university), and the practical one –is at the economic agent.

In our country, the dual system was introduced by law in 2014, but there are countries where this system has demonstrated its priorities, an eloquent example in this regard being Germany. In this country, the employment rate of graduates of this form of education is approximately 90%, with apprentices being paid most of the time even after the first year of training in the company.

The "duality" of this form of instruction consists of the fact that the degree courses are divided into practical and theoretical ones. The theoretical classes are held directly at the university as lectures, seminars, project work, and exams at the end of the semester. The practical part of a degree begins when students do their internship in a company with which the HEI has a training agreement. At the same time, students are given a good opportunity to directly understand the work processes in the company, gain real experience by getting involved in real-life production situations, and be involved in developing internal projects.

The Academy of Economic Studies of Moldova and the Technical University of Moldova, have moved their learning spaces from the university campus to enterprises, becoming the first universities in the country to implement the dual education model under the "COOPERA - Integrating Dual Higher Education in Moldova and Ukraine" project: 617490-EPP-1-2020-1-MD-EPPKA2-CBHE -SP, co-financed by the Erasmus+ program of the European Union.

ASEM, "following the consultation with the representatives of the companies, decided to adopt the following training model: 60% of the total number of study hours will be spent at the institution, 40% at the enterprise. In this way, all lectures will take place at the university, being taught by full Associate Professors and by specialists selected from the industry. A specific number of seminars and laboratory lessons will be carried out at the university, and the other part will be carried out within the economic units, the students being financially remunerated during their studies." (diez.md, 2022)

The Technical University of Moldova, also in the framework of the same project "COOPERA - Integrating Dual Higher Education In Moldova and Ukraine", adapted the requirements of dual education for two undergraduate engineering programmes in *Automation and Informatics* and *Robotics and Mechatronics*. "(fcim.utm.md, 2022) This approach can be translated into the fact that engineering students from TUM will also alternate their learning space: "Students from two undergraduate programmes *Automation and Informatics* and *Robotics and Mechatronics* who choose the dual model will complete 120 hours during the 2nd year at the company, and in the 3rd and 4th year they will spend 2 days at the university, studying the subjects from the study plan, and the other 3 days they will study at the company, that will help them develop practical skills and professional competences." (fcim.utm.md, 2022)

CONCLUSIONS

Synthesizing the information presented, we conclude that in the postmodern era representation the idea of school/university no longer represents a commonplace: study buildings, no matter how modern they may be, with large and bright windows or small and economical, fenced yards, possibly with a gym/sports field and classrooms, laboratories, rigid, dark classrooms with tables, benches lined up in front of a chair. Or, the graphic representation and design of the learning space last over time in human memory.

Given that the learning environment is the place where we spend a large part of our lives, it must dominate in the individual's representations as areas of physical and, obviously, psychological comfort. A favourable learning environment "is a place that, if structured effectively, creates a mood for learning, amplifies this process, stimulates creativity, imagination, motivation, produces rapid development and contributes to well-being." (Nedelcu, 2019, p. 20)

Whatever the trend of modernizing education and, the learning spaces, it is important to take into account the beneficiaries' needs, students, in our case: *flexibility* and *interaction*, achieved by dynamizing spaces in the business environment, *experientiality*, and *productivity*, developed through involvement in situations drawn from real life, *multisensory communication*, adjustability of spaces for special sensory or kinesthetic needs, *safety* and *sustainability*, building learning ecosystem, *academic* and *professional* character, virtual expansion of classes, building hybrid environments (traditional/virtual, university/company), etc.

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