

PEDAGOGY

CO-WORKING AS THE COMPONENT OF THE E-ENVIRONMENT FORMING ENTREPRENEURSHIP COMPETENCE. MANAGEMENT, ON-LINE TOOLS FOR BUILDING A FREE WORKING SPACE

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ABSTRACT

The subject of the article is the study of modern trends coworking of the university. The key aspects of the co-working center on innovative activity of higher educational institutions of agrarian education are considered in the light of the main advantages and disadvantages of this occurrence. The purpose of the work is to study trends and approaches in the use of coworking in agricultural universities. From the standpoint of the scientific-pedagogical paradigm and systematic approach to the formation of entrepreneurial competence in a free space, the tasks, structure, forms and models of a co-working center oriented to the project-network and scientific-service support of innovative development of the agrarian sphere based on innovative ideas are revealed.

A retrospective analysis made it possible to consider the prerequisites for the emergence of co-workings. Based on empirical research methods - questionnaires categories of people working in co-working centers of Ukraine, researched their motives of being in free space, advantages and disadvantages of working in co-working. The analysis of the relationships between the participants in the co-working process has allowed to justify the stages of formation the necessary infrastructure of the internal co-working environment. Conclusion: The peer review method has created an adequate model for the future development of the co-working center for higher education applicants and confirmed that co-working is helping to enhance the professional position of the agricultural business. On the basis of comparative analysis of infrastructure and architecture of software and hardware, mechanisms of organization of co-working present on the market of Ukraine, the key aspects of the model and e-environment of co-working in relation to innovative activity of higher educational institutions of agrarian education are highlighted.

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Introduction. Unesco announced 21st century the "Era of Education", proclaiming the declaration new benchmarks of the educational paradigm. With the proliferation of the Internet, the virtualization and globalization of society, as well as the creation of new forms of economy and governance, there is a need for a space that will unite not only opinion but also new knowledge, experts of different profiles. For example, co-working places may be collaborative spaces. They are mainly used by young people for educational, work or creative purposes, namely young people

working on Internet projects, so-called freelance or start-ups that do not yet have an office, are the main participants in co-working.

Co-working can serve as a platform for the development of all actors in the educational process through improving skills that are world claimed. In addition, we believe that the co-working center will be a catalyst for both the processes of innovative development of agricultural education and a whole agrarian sector as well.

Seeing the development of innovative technologies in the agrarian sector directly in the co-working centers, we consider it necessary to see the key aspects of the co-working center regarding the innovation activity of the higher educational institutions of agrarian education in the light of the main advantages and disadvantages of this occurrence.

Analysis of the problem and existing methods. This is a new direction in Ukraine, so there is a small amount of research devoted to the introduction of Co-working made by Ukrainian scientists. B.Shved describes the concepts of open space and the model of co-working, identifies advantages and disadvantages of work, collaboration, communication, etc. [5]. O. Martynyuk pays attention to the relevance of co-working as a platform for business and entrepreneurship development in Ukraine [6]. O. Zheleznova researches the prerequisites for the emergence of such a phenomenon as co-working [7]. Interesting is the research of A. Ignatieva, G. Tulupova, and O. Molkov that study the structure of educational co-working, the main purpose of which is the potential growth and intellectual development of the teacher [11]. Researchers A. Rus and M. Orel study the problems of community building in co-working, paying attention to the prerequisites and causes [12].

The purpose of this article. Research objectives:

- to reveal the essence of co-working taking into account its potential in higher education, through a historical excursion into 20th century co-working;
- identify priority areas and ways of implementing co-working centers;
- to research the motives of finding different segments of the population in space to determine the functional model of educational co-working of higher education applicants;
- identify technologies for practical implementation, technical aspects and options for adaptation to higher agrarian education institutions during the organization of innovative activities;
- identify key aspects of the co-working model and the structural elements of the co-working e-environment in relation to the innovation activities of higher agricultural education institutions;
- determine the software architecture for managing a co-working center.

Scientific novelty. To reveal the characteristics of co-working that integrates the professional training of applicants for higher education in the agricultural sector in accordance with the requirements of the time; social order; professional development of the higher education applicant in terms of his professional growth; individual needs and opportunities.

Practical importance. Intensive development, establishment of business, cultural and scientific ties between the subjects of the educational process and representatives of the agrarian sphere at both the regional and national level. The co-working model has a high potential of forming new functional positions in the conditions of business competence formation and economic development of the country.

Solving of the problem. The principle of working together on an equal footing has emerged a long time ago. Equality in labor and consumption was realized in monasteries, kibbutz (agricultural communes in Israel), settlements of free artists, as well as working cooperatives. The prerequisites for creating new places for free communication were the boom of the publishing house and the dissemination of printed information. The information boom in the 20th century led people to communicate and discuss text books, be it a poem collection, a magazine, a new story or a novel. The so-called "literary cafes" were the place for discussion. Once a week, or even often, an active community gathered to discuss various political issues and a new publication. Discussed, made plans for the future. Thus the information vacuum united the community in such places.

Later the libraries proliferation gathered all the new editions converge. It was a place where the authors presented their own developments, where a large number of master classes and groups took place. A new term is gradually being introduced - "Third Place", which was first defined by a mercenary sociologist Reem Oldenburg (1982). The scientist identified it as a "neutral" place for social interaction (not home or office).

The proliferation of computer technology in the 1990s gave the movement a powerful impulse - that's when the first hackerspace appeared. Such places have gathered like-minded scientists, enthusiastic programmers, gamers and related audiences. The participants came to get knowledge, to visit the Internet, to get acquainted with technical novelties or to talk about topics that are not

understood by the surroundings behind the walls of hackerspace. One of the first spaces was Berlin-based. Its history began back in 1995, and for 20 years, participants have been spreading knowledge about software, hardware and computer networks, or telling children about robotics at urban festivals.

Since the late 80, early 90 the number outsource tasks enlarged as evidenced J.Pfeffer and J.Baron, found that waves of mass layoffs resulted in large numbers of temporary staff and contractors [13]. Studying J.Pfeffer's achievements in "Work and Spirit: A Practice of Managing Value-Based Management", we focus on the scientist's emphasis on motivating people to work together and working in general, the problems and mistakes of the executives of certain major companies that have gone down in history, thus confirming prerequisites for creating free spaces to work [14].

The scientist O. Zheleznova consider a large number of freelance employees is the top priority of such centers appearance [7]. Silicon Sentier relies on OECD statistics. By the year 2008, the ICT sector represented more than 8% of GDP for enterprises in the *OECD* zone (Organization for Economic Co-operation and Development zone), the sector at that time numbered 15 million people [15]. In Ukraine, according to the Unified State Register of Legal Entities, Individual Entrepreneurs and Public Formations, the number of IT specialists registered as private businessman in 2018 amounted to 154 thousand [16]. In 2018, 413,000 specialists were graduated from higher education institutions of Ukraine.

Research results. Today with all the negative and positive points, the number of co-workings in the capital continues to increase, one of the reasons of it is the raising amount of IT professionals. Let's look at statistics of co-working centers present in the market in different cities of Ukraine (Fig. 1). It should be noted that the number of co-workings does not depend on the population. Kyiv stands at leading positions and has 74 co-working centers with a population of 2.9 million people (as of February 2019). In turn, Kharkiv is a home for 1.4 million people, but there are only 17 co-working places. Odessa, which is also a population leader, has only 5 co-working centers, although the number of living people is almost 1 million.

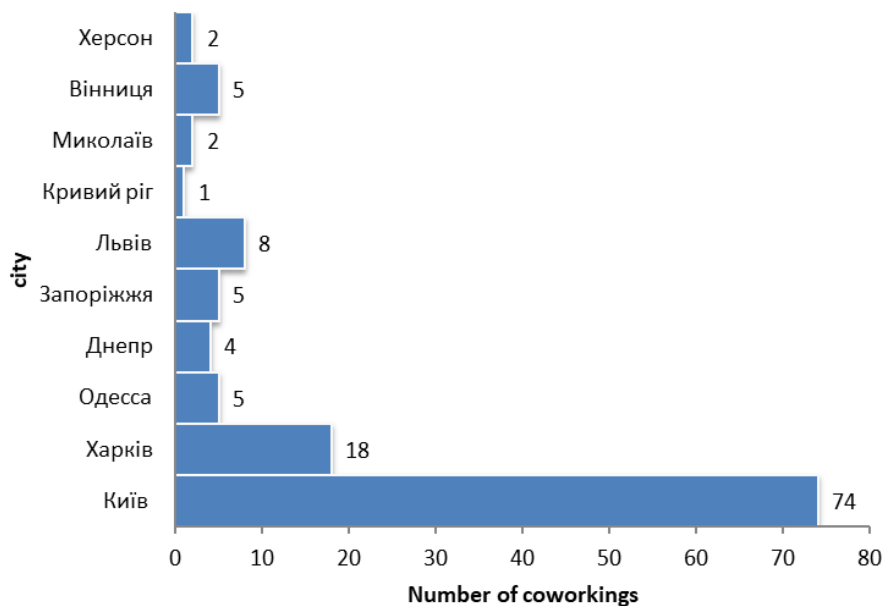


Fig. 1 Number of co-workings in Ukrainian cities.

Summarizing the historical excursion, as well as statistics of today, it should be noted that communication and teamwork have always attracted people, so the priorities in social work are social interaction and social support [10]. Co-working aims to create a space that supports collaboration, openness, sharing knowledge, innovation and user experience. The demand for co-working space was driven by the growth of the creative and technical industries, as well as the changing nature of the work. A well-developed business and technological infrastructure enables any person to have a career.

Determining the audience of co-working centers, we turn to the research of different publications. For example, according to Forbes in 2019, the number of digital nomads is 4.8 million in the US. Now in the co-working centers there are freelance, remote employees of the companies working under the contract.

In order to determine the reasons for the presence of users in workspaces, as well as to identify the main components of the opening center - a survey of users of different cities, including: Kyiv, Dnipro, Lviv, Odessa, Mykolaiv. 312 respondents participated in the survey (Table 1). A large number of respondents indicated that the most important thing when attending co-working is the created

microclimate and the circle of highly motivated people (213). As the main aspects users named the following components:

1. Staying in space for a minimum fee (n = 78);
2. Free flavors and coffee (n = 71).
3. Conducting on a regular basis master classes, meetings with active persons, battles (n = 62);
4. Electronic and office equipment (n = 65);
5. Design of Space (n = 57);
6. Microclimate and circle of highly motivated people, active communication with those who visit the space (49);
7. Large audience, number of users of different orientation, besides programmers, there also were mentioned marketers and designers, motivators and managers (n = 48);
8. Recreation: games, slot machines, sports equipment (n = 38).

It should be noted that among the regular visitors emphasis was placed on proper comfort and equipment, high-traffic Internet, as well as all the necessary means of communication, supplies. Note that almost half of the respondents said that it is also necessary to hold interesting meetings and workshops, such answers were given by representatives of the business industry. The same opinion has Maxim Yakover, founder of the creative space "Часопис".

The graphical method will reveal the interdependence of the answers and the strength of the correlation between the answers of the respondents. After processing the data, we define a strong direct relationship between the answers (Fig. 2. Determining the correlation between the respondents).

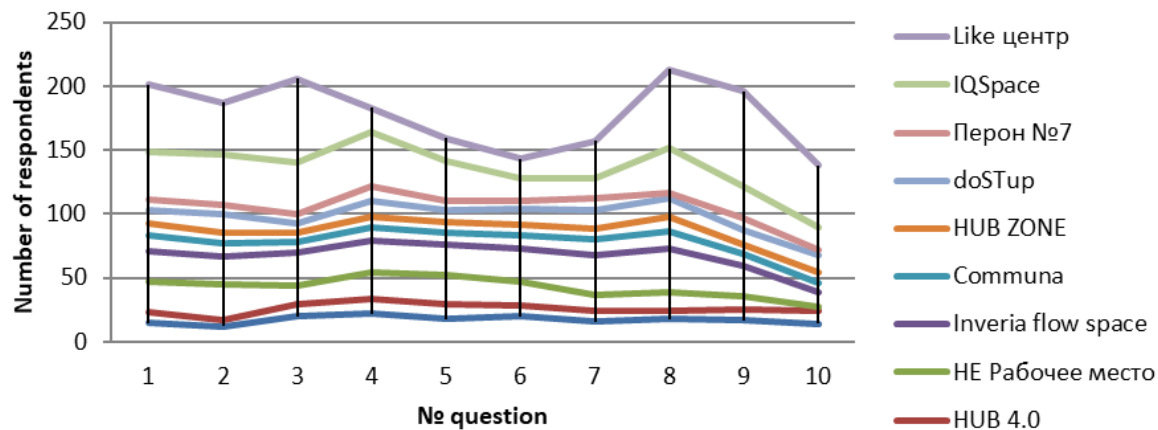


Fig. 2. Graphical method of determining the correlation between the respondents

Determining the basic technology of implementation of co-working centers, we turn to the expert evaluation of the founders of the most popular workspaces. Thus, according to Maxim Yakover (founder of the creative space "Часопис"): "The success and popularity of co-working challenges begins with the degree of demand and attractiveness of projects, meetings or seminars that take place in it. Scheduling and inviting guests to work in the workplace" - Maxim believes. "And the main thing is the constant expansion of the audience and its interests. If you have a strong enough focus, then the most popular are the activities that most accurately reach the target audience", - Maxim comments [2]. "The place should be close to the city center. It is very important for a person to be nice to get to, and therefore pleasant to work with," - says the art-director of the smart cafe of libraries Mykhailo Rybachuk.

According to J. Pfeffer, the quality of work is affected by the information infrastructure of co-working. Organization of the work in the co-working center is the main prerequisite. Scientists have suggested the dividing the information space into several structural units, among them:

1. Problematic, the purpose of which is to activate thought processes. Implementation through analytic sessions, based on the breakdown of complex tasks into simple ones.
2. Information, aimed at modernizing the space, equipping with new intellectual equipment, innovative technologies. Knowledge management technologies are the foundation
3. A community that is a key priority for successful co-working. Therefore, active in all co-working activities are regularly held to re-acquaint and unite residents. In addition to startups not fading fast and successful ideas finding their way to the market, many co-workings help tenants with consulting in the field of marketing, technology, law and arrange meetings with investors. Some collaborate with business accelerators and incubators.

Among the big players in the market of co-working centers we will name IMPACT HUB, The most interesting in Europe are Sector 5, Hub Vienna, BetaHaus, Rochuspark, Hub, TechHub, Aalto Venture Garage, Utopic (there are also operate four schools: visual communication, modern humanities, music and music personal training school), LX Factory (Lisbon). Among the most creative and beautiful are: Crew Collective & Cafe - Montreal (Canada), Ministry of New (Mumbai, India), East Room Toronto (Canada), NeueHouse - Hollywood (USA).

The benefits of F on the part of higher education applicants:

1. Opportunity to acquire communication skills and expand your own social network for ontactics, opportunity to exchange ideas.

2. The presence of educators from different faculties will make it possible to do complex multi-disciplinary projects, as well as innovative teamwork methods make it possible to complete the projects.

3. Leadership factor and teamwork methods give impulse to innovative solutions.

4. Trainings, briefings, seminars, conferences of a new scale accelerate professional and personal growth.

5. The architecture of the space, designed in conjunction with the higher education applicant, will provide free space and the ability to change locations, allowing you to stay in your personal comfort zone. Separate rooms (meeting rooms) will welcome visitors.

7. The necessary equipment for the work, including new features - 3D printers, virtual reality equipment, robotic technology and more.

Software infrastructure must be available to provide adequate information, technology and educational resources to the educational institution. Large companies with a network of co-working centers give users access to their smartphones via mobile and web applications.

Let's open the basic functionality of software for organization of work in co-working centers. Thus, among the main features that users have access to: book a room using a mobile (integrated room reservation system combines external and internal bookings in one tape); Payment for room reservations is possible via online banking or cash; information on the timing of trainings, conferences on previously selected interests. Administrators can manage space and automate rooms and billing; Observe statistics: usage rate, hours, bookings, organization averages.

Table 1. Study of motives for staying in co-working centers of different places of Ukraine

City	Coworking (name)	Staying in space for a minimum fee	Free cookies and coffee	Conducting full-time master classes, meetings with active figures, battles, active communication	Equipment and office equipment	The IT structure is set up	Powerful computers and technical equipment	Space solution design	Microclimate and circle of highly motivated people	Large audience (number of users of different orientation: programmers, marketers, designers, motivators, managers)	Place for rest: games, slot machines, sports equipment	Together
Kyiv	Magazine	15	12	20	22	18	20	16	18	17	14	24
	HUB 4.0	8	5	10	12	12	8	8	6	8	10	12
	NO Workplace	24	28	14	20	22	19	13	15	11	3	30
	Inveria flow space	24	22	26	25	24	26	31	34	24	12	40
Lviv	Communa	12	10	8	11	9	10	12	13	9	7	27
	HUB ZONE	10	8	7	8	9	9	9	12	7	8	22
The Dnieper	access	10	15	8	12	9	12	14	14	12	14	15
Odessa	Platform # 7	8	7	7	12	7	6	9	5	9	4	12
	IQSpace	38	40	40	42	31	18	16	35	25	18	50
Mykolayiv	Like the center	52	40	66	19	18	15	29	61	74	48	80
The total number of answers		201	187	206	183	159	143	157	213	196	138	312

A complete directory of residents with groups and quick search, in addition, an important element is the dissemination of news among users inside the co-working.

An interesting feature of Juwoto software is zoning. Each zone is assigned its own level of access and price for it. The software is tied to zoning and access cost information and is automatically distributed to its residents. Wi-Fi authentication solves the service through the settings for the router with the settings.

One of the priorities when choosing software is loyalty programs. Co-working can set up a system of automatic "compliments". For example, give X hours in the meeting room for every Y hours booked in co-working or a cup of coffee for Z hours. The main thing - neither the administrator nor the barista will ever forget, and the system will remind.

Introducing residents to the environment. For example, if someone suggested an event. The Juwoto service tells the administrator who exactly who is coming to him - a beginner or resident with experience. Depending on this information, it is easy to prepare for the meeting. All participants in the system are divided into "green" (over 60 co-working visits), "yellow" (30 to 60) and "red" (less than 30 visits). This information is a hint for the administrator: "red" will need to be accurately entered into the course, and "green" is already clear.

It should be noted that several software tools can be combined to use the largest range of functionality, for the operation of social networks for the purpose of informing and forming visitor loyalty.

Each university needs a co-working center to raise the practice of higher education applicants to a new quality sword. Such a customer-centric system and market demands will increase the intellectual potential and expand the opportunity of the acquirer to get a job or start a business. By involving all participants in the learning process, it will enable them to acquire not only practical skills, but also obtain additional funds from the university, the teacher, the acquirer, as well as to have the opportunity to cooperate with companies that use the approaches of temporary employees. This is especially important for agricultural education, because Ukrainian producers are just entering the markets of Europe, America, Canada. Therefore, the results of the research will be of great importance for the educational sector of Ukraine.

Conclusions. Preconditions of appearance the co-working centers in the world are identified. The survey made it possible to focus on the priorities of the category of people working in co-working centers, to research the motives of their stay in free space. Respondents' answers confirm that young people are just starting out in the co-working centers, considering the development of a person based on different format of events, modern equipment and infrastructure of the living space. The largest number of co-workings is concentrated in Kyiv, which is explained by the influx of young people into the capital in search of work.

The analysis of the relationships between the participants of the co-working centers made it possible to justify the stages of formation the necessary internal co-working environment infrastructure. Key aspects of the model and the electronic environment are described, software for the organization of work, including specialized systems and Cards Suite, JUWOTO Manager, JSolutions, Timestore and CRM systems are identified. Thus, the overall structure of building co-working includes: software architecture, problem area implemented in the aspect of design and analytical sessions; technological aspect, based on modern technologies of knowledge management, where in the format of the design and network units work with innovative projects, as well as launching new projects; organizational zone where innovative projects are being cultivated; the main element is the administrative one, where different resources are allocated, which provide the organization of space and training on individual trajectories.

Table 2. Functionality of the program is a lot of support for participants of co-working centers

The name of the software	View from mobile			Room reservation system	Catalog of participants	Notification	The smart key	Contact technical support	Access to public information	Access to different co-working areas	Bonuses and promotions
	Mob. version	Androids	IOS								
andCards Spaces	+	+	+	+	+	+	+	+	+	+	+
JUWOTO	+			+	+	-	+	-	+	-	-
JSolutions	+			+	-	-	-	-	+	-	-
Timestore	+			+	+	-	-	-	+	+	-

Table 3. Software features for co-working center administrators

The name of the software	Automated visitor registration Automated cost calculation	Information storage technologies	Room reservation system occupancy view	Catalog of participants	Customer Alerts	The smart key	Accounting and statistics system	Client base analytics	Off-line	Integration with additional modules
andCards Suite	+	cloud	+	+	Targeted Push Alert (Considering Analytics)	+	+	+/- during mailing setup	-	+ Kiosk (reservation booking); Amazom, Uber
JUWOTO Manager	+	cloud	+	+	email, sms	+	+	+	-	-
JSolutions	+	cloud	+	+	email, sms	-	+	+	-	Integration with the cafe module
CRM systems	-	cloud	-	+	email, sms	-	+	+	+	+ accounting systems
Timestore	+	cloud	+	+	email, sms	-	Reporting Designer	+	+	-

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