

Information and consulting environment of the vocational education institution: a barrier-free space

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Abstract

The study focuses on defining and substantiating the concept of the information and consulting environment of a vocational education institution (VEI), which facilitates information exchange, consultative support, and the active involvement of all participants in the educational process. Drawing on environmental, creative-developmental, and systemic-structural approaches, the research outlines the content of the VEI's information and consulting environment and the criteria for its effective organisation. Observation and SWOT analysis reveal digital and sociocultural barriers to the provision of educational services amid military events in Ukraine. By applying retrospective, comparative, systemic analysis, and modelling methods, the study develops a methodology for optimising the organisation of the VEI's information and consulting environment to ensure its inclusivity and accessibility. This environment represents a multi-component system of educational resources and technologies that enable the informatisation, digitalisation, and automation of consulting services. Its well-structured organisation supports the modernisation of the educational process and fosters inclusive engagement through the integration of informational, consultative, diagnostic, interactive, coordinating, professional development, and instructional-methodological functions. Its structure encompasses social, spatial-object, and psycho-pedagogical dimensions. The research identifies significant achievements of Ukrainian VEIs in this area while also highlighting a critical insufficiency in the systemic-structural characteristics of the existing environments. This underscores the need for a qualitative renewal of their conceptual foundations, content, organisational models, and technological solutions. The proposed methodology for organising the VEI's information and consulting environment aims to raise the quality of educational services, enhance inclusivity by integrating participants through information flows, and foster collaboration and co-creation in the institution's development.

Keywords

Ukrainian vocational education system, vocational education institution, information and consulting services, barrier-free environment of the vocational education institution, inclusive information and consulting environment

1. Introduction

The contemporary challenges in education encompass not only the enhancement of specialists' professional preparedness but also the creation of a qualitatively new environment within educational institutions. Such an environment is expected to cultivate essential attributes in future specialists, including competitiveness and readiness for sustained professional success. In turn, enterprises and society as a whole demand specialist who are independent, proactive, and responsible, capable of active engagement and effective interaction in addressing social, production, and economic challenges. The responsibility for preparing such specialists squarely rests with vocational education institutions (VEIs).

Currently, vocational education has experienced a significant decline in prestige, which is attributed to a complex set of factors. These include demographic decline both in Ukraine and internationally, a rise in labour migration, elevated social expectations among young people regarding employment, a misalignment between labour market demands and the quality of workforce training, deficiencies

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in career guidance systems rooted in outdated approaches, the accessibility of education abroad, the growing influence of social media on career decisions and lifestyle choices, transformations in educational organisation driven by the COVID-19 pandemic, and, unquestionably, the ongoing martial state in Ukraine [1, 2, 3].

Against this backdrop, it is important to emphasise that the development of an inclusive and barrier-free information and consulting environment within vocational education institutions is of critical importance for ensuring the delivery of high-quality educational services. Among the pivotal factors are the readiness of both staff and learners to engage in consulting activities, leveraging modern ICT tools, multichannel online consulting formats, and fostering creative, subject-to-subject interactions [4]. The digital space plays a pivotal role in this transformation, as institutions are increasingly adopting electronic educational platforms and 3D modelling technologies to enrich the learning environment [5]. Building an inclusive environment requires architectural, informational, and social accessibility, alongside the provision of an adequate material and technical base [6]. Effective implementation in this regard entails comprehensive teacher training, the establishment of inclusive clubs, and the promotion of student-led initiatives. At the same time, researchers underscore the existence of a gap between the opportunities offered by educational institutions and the extent to which students can fully capitalise on them, thereby highlighting the importance of fostering active learner participation in inclusive education [7].

In view of these considerations, the process demands a fundamental restructuring of consulting services, grounded in a person-centred approach, alongside the transformation of methods for working with information and clients. It also necessitates the reorganisation of data collection, exchange, storage, and processing channels through the deployment of ICT and AI technologies.

2. Purpose

The study is dedicated to identifying and substantiating the concept of an information and consulting environment of a VEI, within which information exchange, consultative support, and maximum inclusion of subjects in the educational process become possible.

3. Design/Methodology/Approach

Based on environmental, creative-developmental, and systemic-structural approaches, the content of a VEI's information and consulting environment, as well as the criteria of its organization, are presented. Through results from observation and SWOT analysis, digital and sociocultural barriers to providing educational services during military events in Ukraine are identified. Employing methods of retrospective, comparative, systemic analysis, and modelling, a methodology is designed to ensure an optimal level of organization of a VEI's information and consulting environment, its maximum inclusiveness and accessibility.

4. Theoretical background

The research concept is based on understanding the *environment* as a system of conditions created in a specific space where the subject's activities occur, and the *environmental approach* is defined as a strategy founded on managing the process of personal development through the creation of a specific environment [8].

Given this, the modern *VEI's educational environment* should be considered a material-technological, social, and physical-spatial environment characterized by intelligent design, accessibility, innovation, business orientation, openness, inclusiveness, and value orientation, which collectively contribute to acquiring lifelong vocational education competencies regardless of geographical, gender, racial, or cultural affiliation [9].

Considering the content of the core categories, the VEI's information and consulting environment is defined as a relevant part of the space for the information society, inside which barrier-free, maximally inclusive information exchange and consulting support for the subjects of the educational process and other interested parties through computer-oriented technologies become possible [10, 11, 12]. This environment is associated with the VEI's information educational environment and embodies the tools and methods of providing consulting services and information exchange for educational purposes. Within its framework, consulting services are supplied to teaching staff, students, administrative and service structures, parents, and social partners to improve the quality of educational provisions [13, 4].

Integrating the qualities of both types of educational spaces (educational consulting and informational educational ones), the information and consulting environment, using ICT and computer-oriented pedagogical technologies, is capable of enhancing the advantages and compensating for some of the shortcomings of each [14, 15]. Its *functions* combine informational, consulting, diagnostic, interactive, coordinating, professional-developmental ones, and functions of pedagogical and educational-methodological support for all subjects in the educational process and stakeholders [16, 17, 18].

It was established in our earlier research that the information and consulting environment is a multi-component complex of educational resources and technologies that provide informatization and automation of consulting services. For this goal, the environment creates opportunities to implement a range of computer-oriented pedagogical technologies and technologies that ensure an appropriate level of consulting services [19, 20, 21, 22, 23, 24, 15] (figure 1).

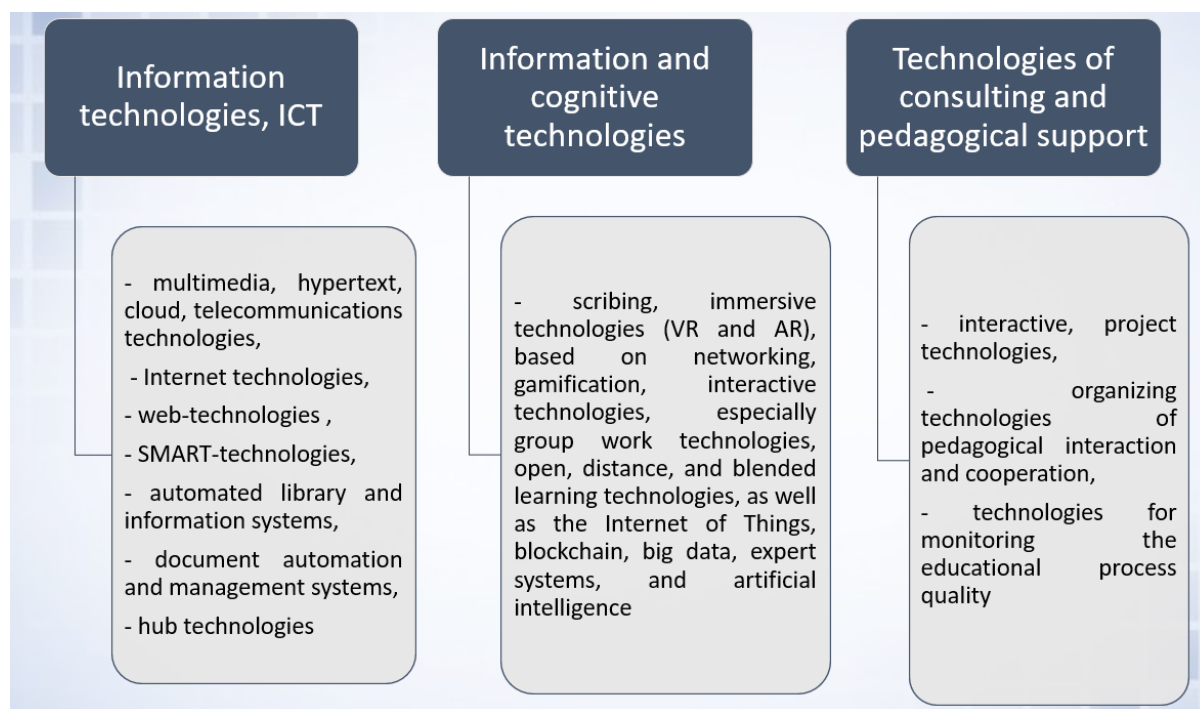


Figure 1: Technologies of the VEI's information and consulting environment.

Most of the mentioned technologies possess didactic properties such as *barrier-free access to information and data* from any geographical area, from any digital device, in a 24/7 format; *personalization* (unlimited opportunities for individualization according to the needs and characteristics of learners); *interactivity* (ensuring multi-subjectivity in the process of educational interaction); *multimedia* (comprehensive involvement of various channels of information perception and ways of manipulating it); *hypertextuality* (free navigation through the text, use of cross-references, reference nature of the information, etc.); *subculturality*, etc. [9, 25, 12].

The information and consulting environment can be distinguished into several components. It consists of the *social component* encompassing the participants of the environment and its socio-cultural surroundings, the *spatial-object component* defining its topographical design, and the *psychological and*

pedagogical component covering methodological support for the implementation of the environmental goals (figure 2).

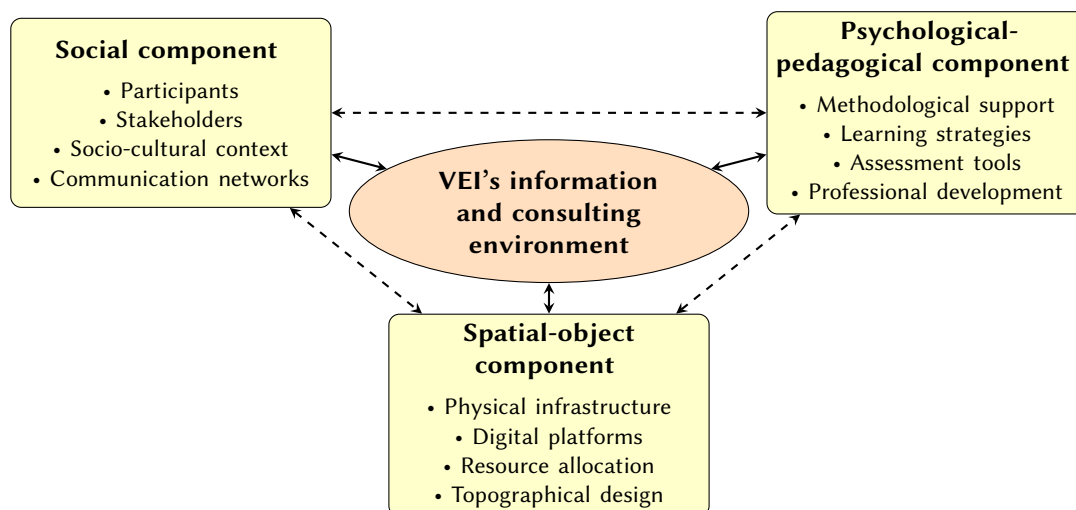


Figure 2: Content and structure of the VEI's information and consulting environment.

The *criteria* reflecting the inclusivity of the VEI's information and consulting environment in the context of removing digital and socio-cultural barriers for its users cover the system-structural criterion, the criterion of readiness of teaching staff and students for consulting activities using the environment's tools, and the level of satisfaction of the subjects of the educational process with the information-consulting services of the environment. The corresponding indicators are presented in figure 3.



Figure 3: Criteria for the inclusivity of the VEI's information and consulting environment [26, 27, 12].

Based on the brightness of their manifestation, the pedagogical monitoring of the state of functioning of the environment becomes enabled according to the unsatisfactory, critical, sufficient and high levels indicators.

These theoretical generalisations provide the foundation for designing a model for the organisation

of the information and consulting environment within vocational education institutions, alongside a system of pedagogical measures aimed at ensuring barrier-free and inclusive access to consulting services for all educational participants and stakeholders.

5. Results

The study of the state of the problem of organising the information and consulting environment in VEIs across Ukraine was carried out over the period 2022–2024. Throughout these years, it engaged a total of 400 students from Kryvyi Rih Applied College of Trade and Hotel and Restaurant Business, the State Educational Establishment “Interregional Higher Professional School of Polygraphy and Information Technologies” (Dnipro), the Private Institution “Centre for Vocational Education and Training” (Kryvyi Rih), the Subdivision “Lviv Professional College of Food and Processing Industry, National University of Food Technologies”, as well as 200 teachers, including 60 members of administrative staff.

The first stage of the empirical research involved conducting a SWOT analysis of the obtained results, which identified the opportunities and threats, as well as the strengths and weaknesses present in this area of VEIs’ activity [12]. This analysis recorded the undeniable achievements of vocational education institutions in establishing modern, functional, and dynamic information and consulting environments that meet contemporary requirements and demonstrate considerable potential (as shown in Table 1).

Table 1

SWOT analysis of the functioning of the VEI’s information and consulting environment.

| Opportunities | Threats |
|--|--|
| <ul style="list-style-type: none"> – Raising the institution’s ranking. – Enhancing the quality of educational services. – Improving information culture and awareness among participants and stakeholders. – Development of innovative consulting structures (techno park, hub, automated systems). – Broad opportunities for training and development within a unified environment. – Automation and modernisation of education and consulting services. | <ul style="list-style-type: none"> – Risk of ranking decline due to insufficient resource provision. – Loss of traditional forms of consultation. – Decrease in inclusivity indicators. – Growth of digital barriers. – Limited development of professional skills and practical training. – Ineffective management of information and consulting flows. |
| Strengths | Weaknesses |
| <ul style="list-style-type: none"> – 24/7 consultative support. – Readiness to use ICT across institutional activities. – Accessible communication for all participants. – High stakeholder and expert engagement. – Implementation of distance, blended, and mobile learning formats. – Reduced costs for educational and consulting services. | <ul style="list-style-type: none"> – Dependence on internet and hardware/software infrastructure. – Reduced live communication. – Additional costs for maintaining the information environment remotely. – Decline in students’ independent learning quality. – Challenges in monitoring the professional development of students and staff. |

Based on the results of the SWOT analysis, a “probability-consequences of threats” matrix was constructed (table 2) [12].

The analysis of the obtained data highlighted the need for a qualitative update of the conceptual, content, organizational, and technical-technological aspects of the functioning of the barrier-free information and consulting environment in VEI (figure 4).

Based on the analysis of primary sources and empirical data, conditions have been identified. They facilitate overcoming difficulties and resolving contradictions in the studied scientific area, ensuring the optimal organization and effective functioning of the VEI’s information and consulting environment. The creation of resource, methodological, technical, and organizational terms, collectively aimed at developing all subjects of the educational process – students, educators, administration, parents, and social partners – secures their effectiveness through the organizational and managerial activities of

Table 2

Matrix of probability – consequences of threats in the organization of the VEI's information and consulting environment

| Probability | Consequences of threats | | |
|---------------|---|--|--|
| | Destructive | Severe | Minor |
| High | Non-functioning environment due to the lack of energy resources | Transition of highly qualified staff/advisers to other institutions | Low readiness level of participants for information and consulting activities |
| Medium | Decrease in inclusivity indicators | Lack of funding to support the environment's resources | The presence of competitors with better-organized (functioning) environments |
| Low | Increase in digital and socio-cultural barriers | The absence of separate information and consulting services in the institution | Inadequate motivation of participants in information and consulting activities |

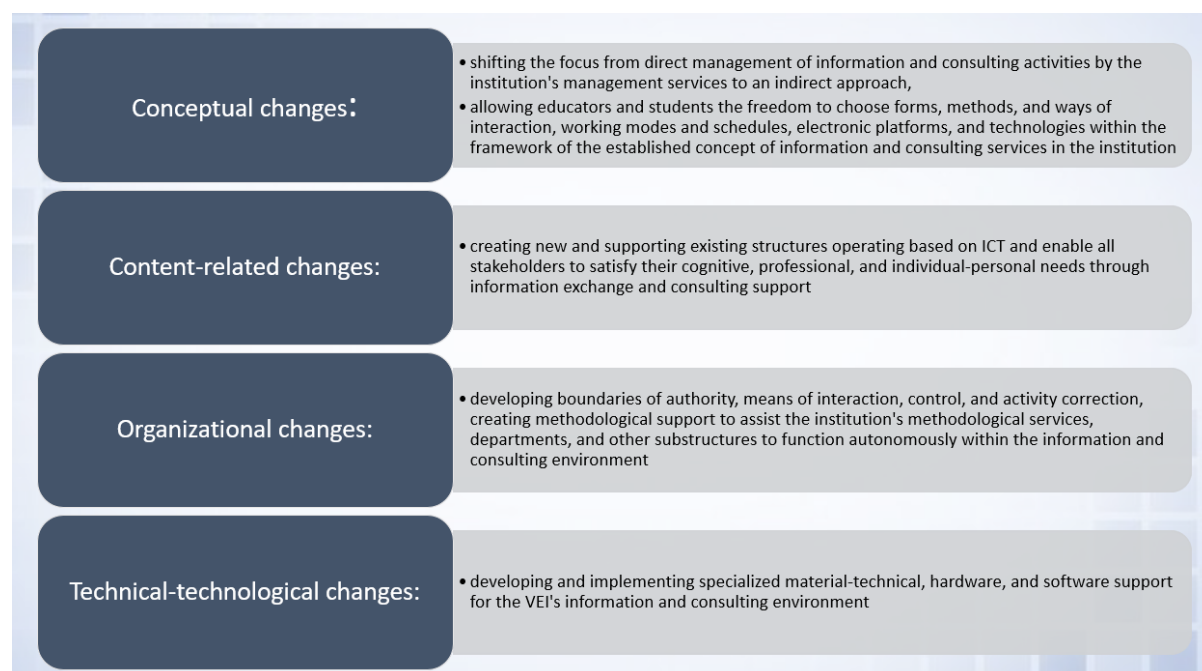


Figure 4: Aspects of comprehensive renewal of the information and consulting environment in VEI.

the administration and educators. This facilitates the formation of an innovative personality in future specialists within a barrier-free inclusive educational environment.

The integration of the above factors allows for the formulation of a comprehensive set of necessary and sufficient pedagogical terms as circumstances under which the components of the VEI's information and consulting environment are in the best possible interconnection. This creates an atmosphere of fruitful collaboration and provides productive teaching, effective management of the educational process, and the provision of quality educational services (figure 5).

To provide direction in organizing an inclusive and barrier-free information and consulting environment in VEI, a special methodology has been developed. The modelling of this methodology was grounded on scientific concepts regarding its goals, objectives, content, stages, forms, and methods, as well as on social expectations concerning its results in addressing the main tasks of the institution; it structured formative influences into the *target*, *organizational and content*, and *evaluate and resultative blocks*.

The *target block* reveals the core principles of organising the information and consulting environment, detailing its goals, objectives, as well as the approaches and principles that underpin the methodology for its implementation in a vocational education institution. The *organizational and content block* of

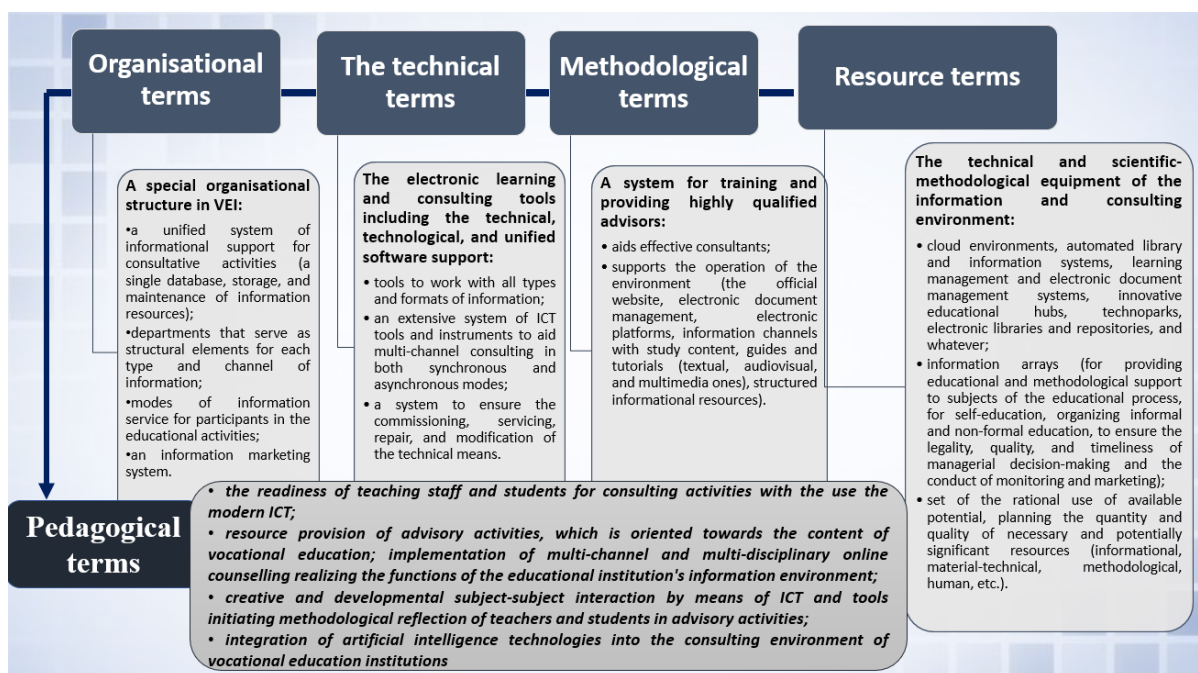


Figure 5: The system of terms for the functioning of the VEI's information and consulting environment [12].

the model specifies the structure, methods, formats, and technologies for setting up the information and consulting environment in the vocational education institution, while also coordinating the logical sequence and phases of this process, namely: organisational-methodical, activity-productive, and control-prognostic ones. The *evaluate and resultative block* outlines the criteria, levels, and diagnostic tools that serve as indicators of the effectiveness of organising the information and consulting environment in the vocational education institution. The intended *outcome* of applying the methodology is to ensure the predominance of sufficient and high levels of organisation of the information and consulting environment, thereby enabling the full realisation of its key functions within the vocational education institution (figure 6).

To ensure the effective implementation of the developed methodology, it is essential to purposefully establish the identified pedagogical terms. It should be emphasised that the optimal organisation of the information and consulting environment in a VEI is facilitated by the creation of these terms.

Specifically, an *adequate level of readiness among the teaching staff and students for consulting activities with the use the modern ICT* allows for the psychological, cognitive, and activity-based training of all subjects of the educational process for utilizing the opportunities provided by the such environment in their personal and professional development.

In order to provide direction in fostering the readiness of the administration, teaching staff, and learners of the educational institution for effective engagement within the information and consulting environment of the vocational education institution, we have developed and piloted a series of four seminars entitled “*The System of Consulting Services in the Vocational Education Institution*” (table 3).

Each session involved the active engagement of both teaching staff and learners in discussing the means of organising the information and consulting environment, the methods and techniques for its implementation, and the exchange of ideas and experiences in the use of digital technologies within the educational institution and the preparation of qualified specialists. Following each session and upon completion of the seminar series, rapid surveys and discussions were conducted with both students and teachers, using Google Forms and the communication tool Zoom. The purpose was to adjust the content and formats of methodological work, to assess participants’ readiness, and to emphasise the necessity of developing consulting services within the educational sector of Ukraine, highlighting the role of innovative technologies and AI as powerful drivers in building inclusive and barrier-free educational environment.

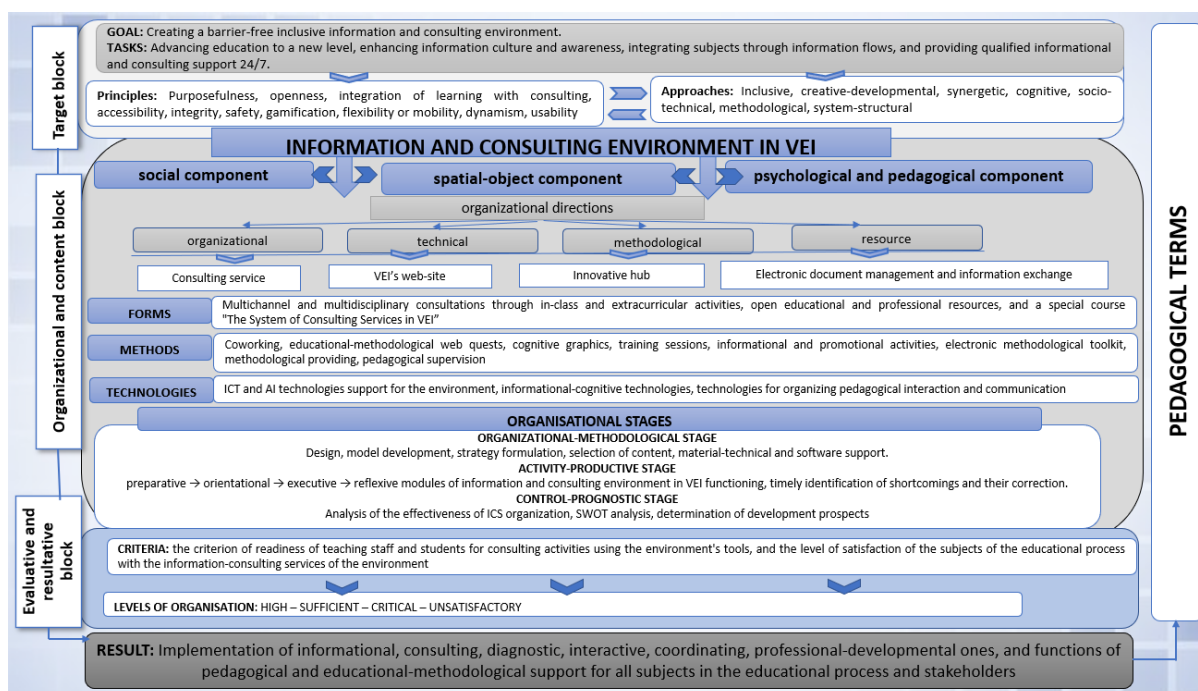


Figure 6: Model of the methodology for organizing a barrier-free inclusive VEI's information and consulting environment.

The next pedagogical term implied *the establishment of resource provision for consulting activities, tailored to the content of vocational education*. This involved the renewal and enhancement of the institution's technical infrastructure, human resources, and educational-methodological support, aimed at strengthening its information and consulting capacity by upgrading the institutional website, training and involving qualified consultants, incorporating open educational resources, employing cloud technologies, leveraging the opportunities offered by MOOC platforms, and integrating artificial intelligence technologies into consulting services.

Our approach was based on the premise that providing advisory activities focused on the content of vocational education enables the use of technical, human, and educational-methodological resources to support the educational process, oriented towards the requirements of the Professional Education Standard and the anticipatory development of the professional field.

Within the framework of the experiment on organising the information and consulting environment of the vocational education institution, and in collaboration with and with the support of the methodological and human resources departments of vocational and professional pre-tertiary education institutions, the following resources were analysed and further developed, with a special focus on fostering inclusivity and barrier-free access to educational and consulting services in the context of martial law. These efforts specifically addressed the enhancement of the following resource components:

- *Technical resources* (the physical component of the environment): a comprehensive catalogue and database were created, priorities and critical factors for their utilisation were identified, a development plan was formulated and aligned with the capacities of partner institutions, employers, and cloud services providers, with particular attention to the integration of AI-driven systems and digital tools to support blended and distance learning and consulting formats.
- *Human resources* (the intellectual component of the environment): training was provided for consultants and supervisors of teaching staff; guest consultative events were introduced; forward-looking professional development plans were developed, along with a model for preparing learners and students to engage effectively with consulting services, including the use of AI tools and innovative educational technologies.
- *Educational and methodological resources* (the informational component of the environment): an

Table 3

Structure of the seminar series “The System of Consulting Services in the Vocational Education Institution” (12 hours).

| No | Seminar topic | Key issues addressed | ICT tools utilised |
|----|---|---|--|
| 1 | The system of consulting services in the vocational education institution (2 hours) | Conceptual foundations of “consulting”: definition, distinctive features, and functions. Objectives of consulting activities in education. Functions of pedagogical consulting. | Institutional websites, methodological hub, coworking spaces, electronic methodological repository, online consulting tools. |
| 2 | The educational institution website as an essential component of the information and consulting environment (2 hours) | Development of criteria for an effective institutional website. The website as a tool for delivering consulting services. Evaluation of top-performing institutional websites. Content management and resource provision. | Institutional website incorporating: electronic library, digital gradebook, methodological and instructional resources, thematic blogs and teacher websites. |
| 3 | Innovation hubs as an effective component of educational modernisation (2 hours) | Goals and functions of the educational hub. Identification of key outcomes of innovation hubs within educational institutions. | Internet servers, e-textbooks, reference materials, encyclopaedias, educational videos, multimedia resources, testing tools. Sector-specific internet servers for individual and group learning and knowledge exchange. Google Workspace, “IT HUB coworking”, NOT-BOX hub. |
| 4 | Electronic document management and its implementation (2 hours) | Stages of introducing electronic document management (EDM) in the institution. Use of electronic (digital) gradebooks. Prospects for EDM integration within educational institutions. | Model of EDM implementation, use of digital gradebooks, electronic archiving, and data exchange through EDM systems. |
| 5 | E-learning tools (2 hours) | Distance learning technologies. Development of digital educational content. Design of cognitive visualisations. Production of video tutorials. | Personal teacher websites (blogs), open educational resources, methods for creating multimedia methodological guides. |
| 6 | Integration of AI into the consulting services system (2 hours) | Opportunities for integrating AI into consulting activities. Personalisation of consulting services through AI. AI tools for analysing information requests and automating responses. Ethical considerations in AI use. | AI-based platforms and tools for educational consulting, chatbots, AI-driven data analysis systems, adaptive learning technologies. |

electronic methodological repository, electronic gradebook, learning management systems, content management systems, thematic pages, social media posts, methodological blogs, workshops, open educational resources, educational content, video tutorials, guidelines, and algorithms were created and systematised, supplemented by AI-based tools and interactive platforms designed to enhance blended and distance consulting services.

The implementation of multichannel and multidisciplinary online consulting, which realizes the functions of the educational institution’s information environment, permits the fulfilment of the potential of various types of consultations, increasing the website traffic of the institution due to the relevance of its resources, and ensuring the significance of the accessible tools of the website (LMS, LCS, messengers, blogs, mobile applications, educational institution web pages, electronic document management and its structural units, electronic library, etc.).

In this context, *the creative-developmental subject-subject interaction via ICT tools, which initiates methodological reflection among teachers and students in advisory activities*, concentrates on organizing an environment where not only information exchange occurs but also the creative application of all resources, their development by the transfer of ideas and project activities involving all subjects engaged

in the information and consulting environment.

This requirement was met by establishing an Innovation Hub within the educational institution. The principal technologies utilised in the operation of the Innovation Hub include coworking (collaborative creative and cognitive activity within a purpose-designed environment), information and cloud technologies, AI, and educational-methodological web quests. The creation of the Innovation Hub began with the collection and systematisation of electronic learning materials and resources to support the educational process. Special emphasis was placed on developing electronic libraries and educational resources, structured in accordance with the needs of users – both consultants and recipients of information and consulting services.

One of the crucial areas of activity within the Innovation Hub is the development of cloud storage systems to centralise sector-specific informational and educational resources, including electronic textbooks and reference materials, encyclopaedias, video tutorials, multimedia tools, testing resources, and other materials selected to support both individual and group forms of learning and consulting. Access routes to these servers were provided on the website of the educational institution.

In this study, the Innovation Hub is viewed not merely as a modern version of an electronic methodological repository, but rather as a cultural environment that enables qualified pedagogical guidance and supervision of teachers' professional development and the educational and professional activities of learners and students. This complex objective was achieved through the implementation of specific initiatives within the framework of the Innovation Hub (table 4).

Table 4

Cycle schedule of activities of the Innovation Educational Hub.

| For managers | For teachers | For students |
|--|--|--|
| Methodological consultation: <i>Opportunities of the institution's Innovation Hub.</i> | Methodological events: <i>Integration of ICT in the management process.</i> | Methodological consultation: <i>Opportunities of the institution's Innovation Hub.</i> |
| Reporting and analytical methodological meeting. | Webinar: <i>Professional competence of the teacher.</i> | Virtual school for preparation for External Independent Testing (EIT). |
| Methodological events: <i>Integration of ICT in the management process.</i> | Web consultation with guest lecturers. | Virtual school for preparation for PISA assessment. |
| Webinar: <i>Professional competence of the teacher.</i> | Scientific and practical seminar: <i>Effectiveness of the institution's methodological work.</i> | Methodological support. |
| Scientific and practical seminar: <i>Effectiveness of the institution's methodological work.</i> | Methodological events: <i>Certification of teaching staff.</i> | Ongoing master classes. |
| Web consultation with guest lecturers. | Methodological support. | Methodological events: <i>Library in the context of distance learning.</i> |
| | Multichannel and multidisciplinary consulting. | Consulting support. |
| | | Multichannel and multidisciplinary consulting. |

An essential pedagogical term was the *integration of artificial intelligence technologies into the consulting environment of vocational education institutions*, with a focus on expanding access to consulting services and ensuring their continuity under the constraints of martial law. Particular attention was given to the deployment of AI-powered chatbots, such as ChatGPT and other specialised consulting bots integrated into institutional websites and learning management systems. These tools provided automated, round-the-clock support to both teachers and learners, offering assistance with navigating educational platforms, accessing methodological resources, and resolving routine academic and organisational inquiries. For example, chatbots were used to guide students through course registration processes, explain assessment criteria, and direct them to appropriate support services. The application of these technologies reduced the workload on human consultants, increased the responsiveness of the consulting system, and maintained inclusivity by ensuring continuous support regardless of users'

location or individual circumstances. The integration of such solutions has strengthened the capacity of vocational education institutions to deliver high-quality consulting services in both blended and distance learning formats while supporting the creation of a barrier-free educational environment [28, 25].

The quantitative, qualitative, and statistical analyses conducted upon completion of the methodology's piloting revealed a positive trend in the levels of organisation of the information and consulting environment in vocational education institutions (table 5).

Table 5

Summarized dynamics of the levels of organization of the VEIs' information and consulting environment in vocational education institutions for the experiment results.

| Criteria | Experimental group | Control group |
|---|-------------------------|-------------------------------|
| The subjects' readiness to interact in the information and consulting environment: | +32%* | +8%* |
| motivational component | +34% | +7% |
| cognitive component | +20% | +8% |
| activity component | +30% | +6% |
| The level of satisfaction with the functioning of the environment | +36.7% | +11.4% |
| System-structural criterion | Critical → High Level** | Critical → Sufficient Level** |

* $\rho < 0.001$ by Pearson's chi-squared test

** $\rho < 0.01$ by Student's t-test

Thus, the findings of the conducted analyses, supported by the data presented in table 5, confirm the effectiveness of the developed methodological approach and the relevance of the identified pedagogical terms. The positive dynamics observed in the levels of organisation of the information and consulting environment demonstrate the potential of the proposed solutions for improving the quality, accessibility, and inclusivity of consulting services in vocational education institutions. These outcomes provide a solid foundation for formulating general conclusions and determining further directions for research and practical implementation.

6. Conclusions

The introduction of a unified information and consulting environment in VEIs has shown significant potential in addressing current educational challenges. The comprehensive methodology developed and tested in 2022-2024 focuses on creating an inclusive, barrier-free environment that supports both personal and professional development for all participants in the educational process. This environment utilizes modern ICT tools, which facilitate the seamless exchange of information and consulting support.

The SWOT analysis conducted revealed key strengths, including the availability of consultative support 24/7 and the integration of ICT in educational activities. However, challenges such as dependence on internet infrastructure and the risk of minimizing "live" interaction were also identified. The findings underscore the importance of resource, methodological, technical, and organizational terms in supporting the optimal functioning of the information and consulting environment.

Quantitative and qualitative analyses post-experiment indicated positive changes in the organization of these environments within VEIs. Specifically, there was a notable improvement in the readiness of educators and students to engage in consulting activities, as well as increased satisfaction with the environment's functionality. The development of innovative consulting structures, such as technoparks and hubs, and the effective use of online and multidisciplinary consultations, integrative of AI technologies were critical in enhancing the educational process.

The scientific-theoretical significance lies in the developed resource provision for consultative activities; ways for implementing multi-channel and multi-disciplinary online consulting; procedures for

creative-developmental subject-to-subject interaction via digital technologies. The practical significance of the results occupies in creating tools for direct and indirect pedagogical management of the process of gradually involving teaching staff and students in information and consulting activities in the form of methodological events and networking; the concept of an innovative educational hub, the structure of the institution's system of electronic document management and information exchange.

In summary, the effective organization of the information and consulting environment in VEs requires a strategic approach that integrates ICT and emphasizes inclusivity and accessibility. This approach not only enhances the quality of educational services but also aligns with the evolving demands of the digital economy and professional standards. The continued development and implementation of such environments are crucial for fostering innovative and competent professionals equipped to meet future societal needs which is particularly important during the wartime and post-war recovery period in Ukraine.

6.1. Limitations

The study was conducted based on two VEs and two institutions of higher vocational education in Ukraine. Its results and main provisions cannot be uncritically applied to the functioning of HEI. Furthermore, considering the continuous digital transformation of all life spheres, it is necessary to periodically review specific provisions of this research in the context of the latest technological trends and changes in the organisation of educational systems.

Declaration on Generative AI

During the preparation of this article, artificial intelligence technologies were used solely as auxiliary tools to enhance the quality of academic writing, to ensure linguistic accuracy, and to optimise the structure of the text. The authors retained full control over the content, structure, and scientific argumentation of the article. AI-assisted tools were applied exclusively for language editing, formatting suggestions, and checking stylistic consistency, without generating original research findings or influencing the scientific conclusions presented in the work. All conceptual development, data analysis, and interpretation of results were conducted independently by the authors.

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