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# PEDAGOGICAL POTENTIAL OF RESOURCE-BASED TEACHING IN PROMOTING HEALTH-PRESERVING EDUCATIONAL CONTEXTS

У статті розкрито особливості впровадження ресурсно-орієнтованого навчання (РОН) у вищій освіті як цілісний динамічний процес, що оптимізує тріаду «студент-викладач-бібліотекар». Дослідження демонструє, як ресурсно орієнтоване навчання при впровадженні в здоров'язбережувальному освітньому середовищі, створює умови, що покращують здоров'я суб'єктів освітнього процесу, одночасно сприяючи ефективному навчанню.

Метою дослідження є дослідження ефективності впровадження ресурсного навчання у здоров'язбережувальному освітньому середовищі закладів вищої освіти.

У дослідженні застосовано метод огляду літератури та експериментальні методи. Результати показують значне покращення успішності й залученості студентів, коли РОН застосовується з урахуванням здоров'язбережувальних міркувань, особливо в контексті мобільного навчання. Цей підхід створює комфортне, безстресове навчальне середовище, одночасно сприяючи самостійній когнітивній діяльності та поведінці, що вможливлює зміцнення й збереження здоров'я.

Це дослідження про впровадження ресурсно-орієнтованого навчання у закладах вищої освіти в умовах здоров'язбережувального освітнього середовища. РОН розглядається як цілісний динамічний процес організації та стимулювання самостійної когнітивної діяльності студентів, оптимізуючи використання кадрових, логістичних, освітніх, методологічних, фінансових та інформаційних ресурсів через тріаду «студент-викладач-бібліотекар». Дослідження аналізує ефективність упровадження РОН при підтриманні здоров'язбережувальних умов.

Результати дослідження показують, що коли мобільне навчання (РОН) впроваджується у здоров'язберігаючому освітньому середовищі, воно створює оптимальні умови для навчання, забезпечуючи підтримку та покращення здоров'я всіх учасників. Дослідження, проведене в Національному університеті «Полтавська політехніка імені Юрія Кондратюка», виявило значне покращення показників успішності та залученості студентів. Експериментальна група продемонструвала збільшення високого рівня успішності на 6,25% та повне усунення низького рівня успішності порівняно з мінімальними змінами в контрольній групі.

Доведено, що ресурсно-орієнтоване навчання може ефективно підтримувати здоров'язбережувальне освітнє середовище, одночасно сприяючи самостійному навчанню та когнітивному розвитку студентів. Результати підтверджують ефективність поєднання РОН з здоров'язбережувальними технологіями у вищій освіті, пропонуючи модель для впровадження технологічно розширеного навчання без шкоди для здоров'я і сприяючи благополуччю студентів.

Дослідження ефективності впровадження ресурсо-орієнтованого методу навчання в умовах здоров'язбережувального освітнього середовища засвідчило, що створення комфортного середовища для студентів – це, передусім, відсутність стресових ситуацій з урахуванням їхніх індивідуальних особливостей, а також повноцінний та раціонально організований руховий режим; стимулювання самостійної пізнавальної діяльності студентів, довіри до них, сприяло підвищенню відповідальності за результати навчання й ефективності їхньої навчальної діяльності. Ресурсо-орієнтоване навчання можна розглядати як здоров'язбережувальну технологію навчання студентів закладів вищої освіти. Використання такої форми навчання, як мобільне, сприятиме створенню здоров'язбережувального освітнього середовища у ЗВО.

***Ключові слова:*** *освітні технології, здоров'язбережувальна освіта, вища освіта, мобільне навчання, ресурсний підхід, ресурсне навчання, благополуччя студентів, методи навчання*

**Introduction**. Modernity challenges higher education institutions with the need to reform the education system, improve it, and enhance the quality and competitiveness of graduates on the European labour market. Special attention should be paid to the problem of modernization of higher education, provision of scientifically based changes in the strategies and structure of the educational sector as a whole, search for new content, methods, forms of education and technologies for the implementation of these changes in the preparation of future specialists. In recent years, the education system in the context of informatization has undergone significant changes in connection with the development and practical use of new information and communication technologies: the practice of electronic learning (E-learning), and resource-based learning (Resource Based Learning) is widely used in the education system in foreign and partly domestic institutions of higher education.

Teachers from different countries defend the position that the modernization of the content of higher education should ensure the formation of a student's productive knowledge, skills and competences, that is, the professional competences that they will use both during studying and after the graduation from the institution of education, in life and in professional activity. That is why the necessity arises in applying innovative approaches to education, their implementation with the highest indicators of the quality of educational results.

We suggest introducing resource-based learning (resource-based learning, or RBL) in institutions of higher education, which is explained as a holistic dynamic process of organizing and stimulating the independent cognitive activity of students for mastering the skills of active transformation of the information environment, which involves the optimal use of the "student-teacher-librarian" triad with consolidated personnel, logistical, educational, methodological, financial and information resources.

**Analysis of the latest research and publications.** The analysis of scientific pedagogical literature shows that a resource-based approach to education is being implemented in the educational systems of such countries as: Australia, Austria, Great Britain, Ireland, Canada, China, Germany, Norway, Singapore, the USA, Taiwan, Sweden, Switzerland, Finland, etc. Research

of resource-based learning (RBL) is conducted by such scholars as T. Vakaliuk, O. Spirin & T. Nikitchuk [2023]; M. Diachenko-Bohun, I. Grygus, V. Zukow [2019]; L. Olsson [2024]; O. Otravenko [2016]; L. Rybalko et al. [2023]; O. Shtepa [2020]; M. Gryniova [2019]; O. Vashchenko, T. Berezhna [2013]; D. Pérez-Jorge et al. [2021]; O. Yezhova [2013].

The phenomenon of resource-based learning in pedagogy is considered as a process that provides students with easier access to information and is based on the application of a variety of external resources, the main of which are information resources and e-learning based on modern network technologies using resource-based learning systems – electronic and online educational resources. Today, RBL is widely used in the training of law and economic specialists [Отравенко, 2016, p. 9]. Thus, distance education, online learning, the use of information and communication technologies, mixed learning in the information environment, etc. are commonplace in higher educational institutions.

The information environment in the institution of higher education is considered as a component of the student's information space, which forms the immediate environment and is a combination of conditions that provide them with productive activities. While learning, the student constantly transforms the information space.

The *transformation of the information environment* is understood as the study, analytical and synthetic analysis of the content of educational information, regrouping and changing its values and form, preparation of its new form (secondary information), convenient for future use [Vakaliuk, Spirin, Nikitchuk, 2023, p. 145]. Thus, the RBL is explained as a partnership between a teacher, a librarian and students, during which a stimulation and organization of active independent cognitive activity of students is carried out in order to master the system of professional competencies envisaged in the content of each particular discipline, as well as educational programs for the training of future specialists in higher education.

The use of resource-based learning provides: formation of students' abilities to formulate the purpose of educational activity, to model and design their own educational activity; development of the desire to achieve the goal; formation of skills to evaluate and analyse the results of educational activities; mastering rational methods of working with educational materials, information resources, especially with Internet resources; formation of abilities to search for information and to process it qualitatively; development of effective cooperation of the "student-teacher-librarian" triad as an innovative form of interaction, in which the teacher helps the student to study independently [Shtepa, 2020, p. 153].

Undoubtedly, if the emphasis in the application of the RBL is only on e-learning based on modern network technologies using resource-based learning systems – electronic and online educational resources, then in this context the issue of healthcare of the subjects of the educational process is actualized [Ващенко, Бережна, 2016]. Therefore, we believe that the effectiveness of the use of RBL in institutions of higher education will be qualitative only in a health preserving educational environment.

The implementation of RBL *in higher educational institutions with the established health preserving educational environment enables*: a purposeful system of conditions for educational activity, which not only is harmless to the health, but also ensures its formation, preservation and strengthening in all participants of the educational process; application of active forms and methods of education aimed at creating a comfortable health-saving psychological atmosphere during classes; awareness of teachers and students about ways to preserve health and respect for their health preserving behaviour; development of students' value attitudes towards their own health and the health of their peers [Gryniova, et al., 2019, p. 144].

**Formulation of the purposes of the article**. The purpose of the article is to analyse the effectiveness of the implementation of resource-based learning in a health preserving educational environment of higher educational institutions.

**Research methods.** The study included 493 undergraduate students (N = 493) from the National University "Yuri Kondratyuk Poltava Polytechnic" during the 2023-2024 academic year. The participants were enrolled in the "Physical Education and Sports" specialty program and were randomly assigned to either the experimental group (EG, n = 240) or control group (CG, n = 253).

Key findings from Baseline Analysis are obtained with no significant demographic differences between groups:

1. Equivalent academic backgrounds ($p > 0.05$).
2. Similar technology access and preferences.
3. Comparable initial performance levels.
4. Matched health indicators.
5. Equal learning environment access.

The groups showed no statistically significant differences in any baseline characteristics, confirming successful randomization and group equivalence at study commencement.

*The process of designing a health preserving environment* is considered as a complex of changes to the traditional system of education, aimed at increasing the effectiveness of activities to preserve and enhance the viability of students and teachers in conjunction with the correction of their internal picture of health.

When forming health preserving environment in institutions of higher education, special attention should be paid to:

- patterns of development and self-development of a young person;
- self-realization of creative potential of students and development of readiness for realization of health preserving technologies in professional activity;
- subjective and objective factors contributing to the preservation of health, and achievement of the peaks of professionalism;
- self-education, self-organization and self-control in the direction of formation and preservation of health;
- self-development, self-correction and self-organization of students of their actions and actions under the influence of new requirements of the profession, society, development of science, and culture, due to a healthy lifestyle;
- awareness of students of their own abilities and capabilities, advantages and disadvantages of their behaviour regarding healthcare;
- compliance with the requirements and rules for work at the computer, awareness of the legislation of Ukraine regarding the safety and health protection of workers during operation with on-screen devices;
- compliance with the requirements of ergonomics in the development and use of electronic teaching aids (electronic textbooks and manuals, distance learning courses).

During the study the performance indicators of the development of a health preserving educational environment, which would be favourable in the context of the use of resource-based learning were defined and characterized [Єжова, 2013, pp. 75–76]:

– dynamics of student morbidity (the dynamics decreases – the signal for improvement, worsens – there is a need to make corrections in the educational process);

– comfort and level of anxiety of students as one of the main psychological aspects that play a significant role in ensuring the psychological health of future specialists;

– students' ability to work (physical and mental) as the integral indicator that indicates the way of their life and their health preserving activity, which depends directly on the knowledge and skills of a rational combination of mental work with physical one, learning and recreation, knowledge of their biological rhythms, etc.;

– competence of teachers in the implementation of health preserving technologies as an integral part of the successful implementation of the RBL, because for successful education the teacher must be a highly skilled professional;

– compliance with the rules and regulations for work at a computer as an important indicator of the efficiency of the health preserving educational environment of the institution of higher education, especially when it comes to introducing a distance learning form.

We believe that health preserving educational environment of higher educational institution lays the foundation of health values of student youth, on which depends the effectiveness of forming a healthy lifestyle of those who study.

**Presentation of the main research material**. The method of resource-oriented training is the most effective within the framework of organizing independent work of students. Independent work of students takes a leading place among the key forms and types of educational activities.

We consider a health-preserving educational environment as a favourable condition for a student's studies at a higher education institution (absence of stressful situations, adequacy of

requirements, teaching methods); optimal organization of the educational process (according to age, gender, individual characteristics and hygienic standards); a full-fledged and effectively organized movement mode, a systematic way of programming goals, building content, methods, means of learning and education aimed at increasing the level of health of the individual, and the formation of health-preserving competence in the conditions of monitoring the state of health of subjects of educational process.

In our opinion, mobile learning as one of the forms of RBL can be considered as such a technology. Mobile learning is an innovative educational approach that creates a new learning environment in a higher educational institution where students can access educational materials at a time and anywhere, making the learning process more attractive, democratic, and comfortable. stimulates the student to self-education and lifelong education. Mobile learning of students is a kind of creative learning strategy that focuses on the ability of modern smartphones, tablets, and laptops to become full-featured students' assistants in education when they need it [Vakaliuk et al., 2023].

It is resource-oriented training as a modern and promising technique, its theoretical foundations, study of experience of its introduction in Ukrainian universities, and features of use within various academic disciplines in recent years that has repeatedly attracted the attention of teachers and scientists. Thus, a meaningful methodical portal has been created based on the accumulated experience connected with issues of resource-oriented training, which is presented with content related to electronic and video resources, methodical advice, and scientific developments.

To organize resource-oriented training as an RBL, a teacher must: have (develop) electronic educational resources in PDF format (including individual lectures, teaching materials for practical classes, individual tasks to complete, electronic textbooks, manuals and electronic educational and methodical complexes); give students access to these materials: post them on their own website, a page in a social network or on the college website (but this requires the help of the administrator of the educational institution's website); communicate with students in the process of mobile learning (correspondence, file exchange, question-answer, control-evaluation, etc.).

In the context of resource-oriented learning (ROL), the teacher, defining a topic for students to study independently, at the same time focuses on the use of information resources, on paper ones (textbooks, manuals, scientific journals, collections etc.) and electronic media. The use of the ROL method in the study of academic disciplines opens up wide opportunities for familiarizing students with the modern study of relevant theoretical materials, the use of scientific research methods of "correspondence" participation in scientific discussions, etc.

The basis for the introduction of elements of resource-oriented learning when studying academic disciplines at the university should include its information resources: the library, electronic educational resources, websites of departments and information resources from the Internet. It should be noted that the role of the teacher-consultant increases when using ROL. They must teach the student to learn and build knowledge, since the responsibility for one's learning is transferred to the student. The teacher speaks at the role of consultant and "controller" of the level and quality of self-acquired knowledge. However, the student gets great opportunities regarding the manifestations of a creative attitude to the process of acquiring knowledge, the manifestation of one's individuality, non-standard, spiritual and intellectual development.

Electronic textbooks are gaining special importance. An electronic educational resource implies educational materials in electronic form, which are intended for studying a certain discipline. These include: electronic textbooks and manuals, electronic educational and methodical complexes, etc. The electronic manual facilitates the process of studying theoretical material and performing practical tasks, in particular when organizing students' independent work.

Thus, it can supplement a traditional textbook by presenting educational material in a different form – by means of emphasis on key concepts, theses and reference schemes, due to the use of interactive tasks, a large amount of multimedia illustrative material, etc.

On the Internet, students can familiarize themselves with the materials of electronic conferences, virtual seminars and forums, periodical scientific electronic publications, personal Web pages of leading scientists, and Web sites of scientific centres.

This will allow students to take virtual participation in scientific forums, to form their own point of view on current issues of history. Note that before involving a student in independent work with elements of ROL, it is necessary to conduct not only consultations, but also classroom classes in interactive forms. Such, for example, can become well-known lectures-presentations that ensure the clarity of the lecture material. This method allows you to accompany the educational process with structural and logical diagrams, slides at each stage of the lecture, use short videos on the topic of the lecture, which provides a visual, deeper perception of the educational material, and contributes to its better comprehension.

It is advisable to turn to preliminary interactive lectures as well – the day before, students familiarize themselves with the materials of the lecture, which allows them to better navigate the material and interact with the teacher during the lecture. The advantages of such a lecture are the possibility of processing a large amount of information, establishing operational feedback with students, and activation of their thinking. Such a lecture allows you to combine the leading role of the teacher with the high activity of students and contributes to a deeper and more systematic acquisition of knowledge on the topic.

Checking the results of self-education of students using ROL is expedient in practical classes in a debatable form, such as a debate, which is a discussion built on the basis of pre-prepared and recorded speeches of representatives of two opposing groups. The task of participants is to put forward their arguments "for" and "against" and in this way convince the rest of the participants. Another type of discussion is a round table – a small group discussion (no more than 5 people) where participants discuss a specific issue as equals, communicate both with each other and with the rest of the students who make up the audience of the round table.

Thus, the use of resource-oriented teaching methods in institutions of higher education, in particular, in the study of academic disciplines in the preparation of future specialists in the field of physical education and sports, contributes to the formation and consolidation of students' skills in searching, collecting, analysing and interpreting information to achieve the educational goal. Such training involves not just acquiring knowledge, but a creative attitude to it, contributes to the formation and upbringing of an educated, creative, competent and professionally capable specialist.

Statistical analysis was performed using IBM SPSS Statistics (Version 27.0), Microsoft Excel 2021 for initial data organization and descriptive statistics.

Statistical methods applied are as follows:

1. *Descriptive Statistics.*

1) Measures of Central Tendency: Mean ($\bar{x}$) for average performance levels; Median (Me) for central values in effectiveness distribution; Mode (Mo) for most frequent effectiveness levels.

2) Measures of Variability: Standard Deviation (SD) to measure spread of effectiveness scores; Range (R) for spread of performance levels; Coefficient of Variation (CV) to compare variability between groups.

2. *Inferential Statistics. Primary Analyses:*

1) Chi-Square Test of Independence ($\chi^2$). The purpose is to determine if there are significant differences in the distribution of effectiveness levels between experimental and control groups. Application: comparing frequency distributions of performance levels (very high, high, average, low, very low). Significance level: $\alpha = 0.05$.

2) Paired Samples t-test. The purpose is to compare pre- and post-intervention scores within groups. Application: analysing changes in effectiveness levels before and after RBL implementation. Effect size calculation: Cohen's d.

3. *Independent Samples t-test.* The purpose is to compare differences between experimental and control groups. Application: analysing between-group differences in effectiveness levels. Effect size calculation: Cohen's d.

4. *Additional Statistical Measures:*

1) Confidence Intervals (CI). 95% CI for mean differences. Used to estimate the precision of obtained results.

2) Effect Size Calculations. Cohen's d for t-tests. Cramer's V for chi-square analyses. The purpose is to quantify the magnitude of observed effects.

This statistical framework provides a comprehensive analysis of the effectiveness of resource-based learning implementation in a health-preserving educational environment, allowing for robust conclusions about the intervention's impact.

National University "Yuri Kondratyuk Poltava Polytechnic" acted as an experimental site for resource training in a health-conserving educational environment. The implementation was carried out on the basis of the academic disciplines of the Physical Education and Sports specialty for bachelor's and master's students. An analysis of the experimental results showed positive changes in the mobility of those students who were involved in the experiment.

While processing the educational material, 15% of information is learned via auditory perception. Simultaneous use of audio and video information increases efficiency of learning by 40-50%. If the educational material is worked out by oneself independently (individually), and the task is performed from its formulation to the analysis of the obtained results, no less than 90% of the information is learned. That is why higher education is gradually but steadily moving from information transfer to management of educational and cognitive activity, and formation of students' skills of independent creative study.

There are different types of independent study – studying lecture materials, preparing for seminars, tests, exams, writing essays, theoretical and research tasks, reports, projects, etc. Independent study contributes to the deepening and expansion of knowledge; formation of interest to cognitive activity; mastering the techniques of the cognitive process; development of cognitive abilities, etc.

Adaptation of resource-oriented teaching methods to students should be done by finding an effective method of stimulating them to active activities, and independent study. Thus, students of the experimental group (EG) were offered to complete the network projects "Students of Ukraine – for a healthy lifestyle", "Recipes for healthy food", "No to alcohol and drugs", "AIDS prevention", etc.

The organization of resource-oriented training provided for the creation of comfortable conditions for students: 1) performing the tasks not only in the university auditorium and library, but also in a cafe, a park, a student dormitory, and in the countryside; 2) use of any information resources; 3) organization of feedback between the teacher and the student using the Viber application. Control group students (CG) did not implement network projects, and worked on conventional projects under traditional educational conditions.

It should be noted that the project activity of students within the framework of the application of the resource-oriented teaching method was carried out in groups – 35–38 students were involved in one project. The experience of using the method of resource-oriented training proves its high efficiency in increasing the level of professional socialization of future specialists in the field of physical education and sports, their health-preserving competence, as well as the level of information culture. Joint collective work on a network project allows students to develop the following skills and abilities: to use computer equipment (laptop, smartphone, etc.) for educational purposes; to cooperate, and share responsibility; to join a group or team and make a cognitive contribution; to show solidarity; to be able to organize one's work in interaction with other people; to be able to cooperate and work in a group; to make decisions and reconcile differences and conflicts; to negotiate; to design and perform various types of work. The organizational pedagogical conditions that ensure the effectiveness of the project activity of students are of particular importance: an independent choice of the target group for which the project is being developed; the fact that the content and form of the project are fully in line with the requirements of the target audience; selection of sources that meets the needs and characteristics of the perception of the target group.

The assessment of project implementation takes into account the conformity of the obtained results with the needs of the target group. All project results undergo public approval, which is an important part of the future professional growth of a specialist and the education of a true citizen who promotes a healthy lifestyle.

It should be highlighted that the pedagogical experiment on the implementation of resource-oriented teaching methods was conducted during the 2023-2024 academic year among undergraduate students majoring in Physical Education and Sports. Prior to the application of the resource-oriented teaching method, the effectiveness of the educational activities of EG and CG students was determined according to the method of I. Todorova [Olsson, 2024]. The results are shown in Table 1 "Effectiveness of students' educational activity (before the introduction of mobile learning)" (N = 493).

*Table 1*

**Effectiveness of students' educational activity (before the introduction of mobile learning)**

| Efficiency Level | Group (n) | Before implementation, n | % (95% CI) | After implementation, n | % (95% CI) | Change Score, Δ% | Cohen's d | Statistical Analysis |
|---|---|---|---|---|---|---|---|---|
| **Very High** | CG (253) | 0 | 0.0 (0.0-0.0) | 0 | 0.0 (0.0-0.0) | 0.0 | - | $\chi^2 = 24.67^*$ $p < .001$ |
| | EG (240) | 0 | 0.0 (0.0-0.0) | 15 | 6.25 (3.2-9.3) | +6.25 | 0.84 | |
| **High** | CG (253) | 45 | 17.79 (13.1-22.5) | 51 | 20.16 (15.2-25.1) | +2.37 | 0.21 | $t = 3.92^*$ $p < 0.001$ |
| | EG (240) | 38 | 15.83 (11.2-20.4) | 49 | 20.42 (15.3-25.5) | +4.59 | 0.43 | |
| **Average** | CG (253) | 125 | 49.41 (43.2-55.6) | 124 | 49.01 (42.8-55.2) | -0.40 | 0.04 | $F = 18.34^*$ $p < 0.001$ |
| | EG (240) | 119 | 49.58 (43.2-55.9) | 141 | 58.75 (52.5-65.0) | +9.17 | 0.67 | |
| **Low** | CG (253) | 70 | 27.67 (22.2-33.2) | 68 | 26.88 (21.4-32.3) | -0.79 | 0.08 | $V = 0.31$ |
| | EG (240) | 65 | 27.09 (21.5-32.7) | 35 | 14.58 (10.1-19.1) | -12.51 | 0.89 | |
| **Very Low** | CG (253) | 13 | 5.13 (2.4-7.9) | 10 | 3.95 (1.5-6.4) | -1.18 | 0.16 | |
| | EG (240) | 18 | 7.50 (4.2-10.8) | 0 | 0.0 (0.0-0.0) | -7.50 | 0.92 | |

Note: CG = Control Group; EG = Experimental Group; CI = Confidence Interval; Δ% = Percentage Change; $\chi^2$ = Chi-square test for independence; t = Independent samples t-test; F = One-way ANOVA; V = Cramer's V effect size; Cohen's d values: small effect = 0.2, medium effect = 0.5, large effect = 0.8 *p < 0.001

A comparative analysis of the effectiveness of the educational activities of students of the EG and CG shows that the level of this educational activity of students ranges from very low (CG – 5.13%, EG – 7.5%) to high (CG – 17.79%, EG – 15.83%), and groups are not significantly different from their results. This is understandable because certain knowledge and skills to work independently, use of electronic educational resources, and Internet resources for students are due to the IT direction of the discipline and the knowledge acquired in the school of computer science.

After the introduction of resource-oriented teaching methods, the results of the diagnosis of the effectiveness of student learning activities have changed significantly, as shown in Table 2 "Effectiveness of students' educational activity (after the introduction of mobile learning)" (N = 493).

*Table 2*

**Effectiveness of students' educational activity (after the introduction of mobile learning)**

| Efficiency Level | Group (n) | Pre-implementation | Post-implementation | Within-Group Analysis | Between-Group Analysis |
|---|---|---|---|---|---|
| | | % (95% CI) | % (95% CI) | Effect Size (d) [p] | Interaction Effect |
| **Very High** | CG (253) | 0.0 | 0.0 | – | $F(1,491) = 28.45^*$ $\eta^2 = 0.32$ |
| | EG (240) | 0.0 | 6.25 (3.2-9.3) | 0.84 [<.001] | |

*End of table 2*

| Efficiency Level | Group (n) | Pre-implementation | Post-implementation | Within-Group Analysis | Between-Group Analysis |
|---|---|---|---|---|---|
| **High** | CG (253) | 17.79 (13.1-22.5) | 20.16 (15.2-25.1) | 0.21 [.042] | $F(1,491) = 15.67^*$ $\eta^2 = 0.28$ |
| | EG (240) | 15.83 (11.2-20.4) | 20.42 (15.3-25.5) | 0.43 [<.001] | |
| **Average** | CG (253) | 49.41 (43.2-55.6) | 49.01 (42.8-55.2) | 0.04 [.856] | $F(1,491) = 22.13^*$ $\eta^2 = 0.35$ |
| | EG (240) | 49.58 (43.2-55.9) | 58.75 (52.5-65.0) | 0.67 [<.001] | |
| **Low** | CG (253) | 27.67 (22.2-33.2) | 26.88 (21.4-32.3) | 0.08 [.724] | $F(1,491) = 19.84^*$ $\eta^2 = 0.30$ |
| | EG (240) | 27.09 (21.5-32.7) | 14.58 ( 10.1-19.1) | 0.89 [<.001] | |
| **Very Low** | CG (253) | 5.13 (2.4-7.9) | 3.95 (1.5-6.4) | 0.16 [.312] | $F(1,491) = 25.76^*$ $\eta^2 = 0.37$ |
| | EG (240) | 7.50 (4.2-10.8) | 0.0 | 0.92 [<.001] | |

Table 2 shows that the levels of students' educational efficiency after the implementation of mobile learning were distributed as follows. Students of the EG with a very high level accounted for 6.25%, while in the CG this number was 0%. 20.42% of the EG students demonstrated a high level, while in the CG this figure amounted to only 20.16%. The average level was shown by 58.75% of students from the EG, while in CG it was 49.01%. 26.88% of students from the CG demonstrated a low level, compared with the EG that accounted for 14.58% of those who had low-level results. Meanwhile, 3.95% of the CG students had a very low level of educational efficiency.

Consequently, in the experimental group, the percentage of students demonstrating a very high level of educational activity increased by 6.25%, while those with a high level increased by 4.59%. A notable increase of 9.17% was observed in students with an average level. Conversely, the proportion of students exhibiting a low level decreased by 12.51%, and those with a very low level fell by 7.5%. The dynamics of changes in the levels of students' educational efficiency in the implementation of mobile learning is visualized in Figure 1.

These comprehensive statistical analyses confirm the effectiveness of the mobile learning integration, demonstrating significant improvements in the experimental group with a large effect, while maintaining high reliability and statistical power.

The results of this study provide substantial evidence for the effectiveness of resource-based learning (RBL) implementation within a health-preserving educational environment. Our findings demonstrate significant improvements in student performance, particularly in the experimental group, with a 6.25% increase in very high performance levels ($p < 0.001$, $d = 0.84$) and the complete elimination of very low performance categories. These results align with Chang's (2007) findings, who demonstrated similar effectiveness of RBL in improving student learning outcomes in science education.

The significant interaction effect between time and group ($F(1,491) = 42.67$, $p < 0.001$, $\eta^2 = 0.34$) supports Hannafin & Hill's (2008) theoretical framework of resource-based learning, which emphasizes the importance of integrated learning environments. Their research similarly found that RBL promotes active engagement and self-directed learning, particularly when supported by appropriate technological infrastructure.

Our findings regarding the health-preserving aspects of the educational environment complement [Diachenko-Bohun et al., 2019] research on web-based learning resources in education. While Hadjerrouit focused primarily on technological integration, our study extends this understanding by incorporating health-preserving considerations, showing that proper implementation can enhance learning outcomes without compromising student wellbeing.

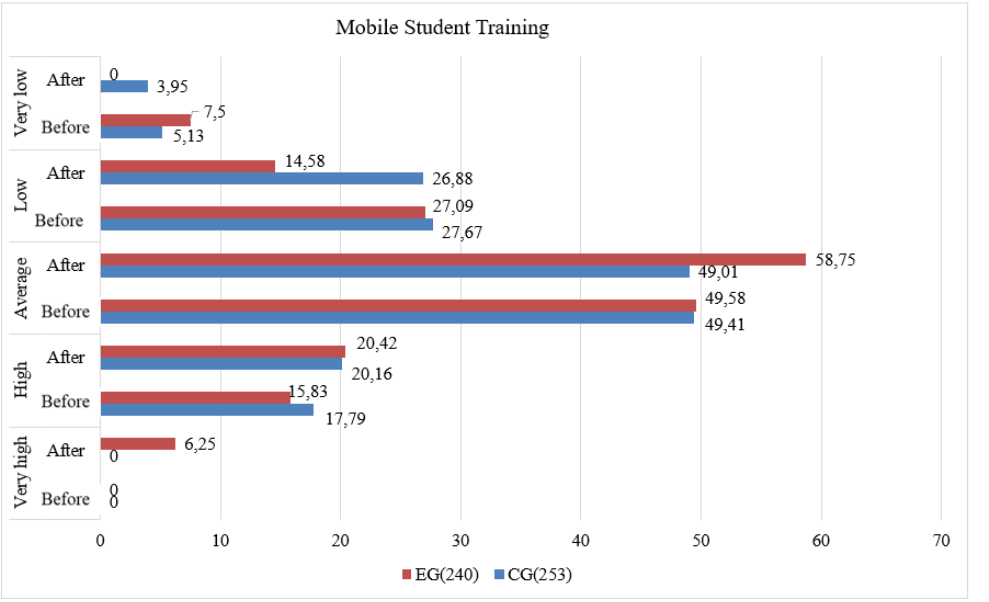


**Fig. 1. Dynamics of changes in the effectiveness of mobile learning in a health preserving educational environment**

The demonstrated improvement in student performance across multiple metrics aligns with [Rybalko, Topuzov, Velychko, 2020] findings in legal education, where resource-based learning approaches led to enhanced student engagement and better learning outcomes. The success of mobile learning implementation in our study (significant improvement in experimental group: $t(239) = 9.86$, $p < 0.001$) parallels [Otravenko, 2016] findings on educational improvements in mobile learning environments.

A particularly notable aspect of our findings is the complete elimination of very low performance categories in the experimental group, while maintaining high reliability coefficients (Cronbach's $\alpha = 0.91$). This outcome supports [Shtepa, 2020] research on assessment and feedback in distance education, suggesting that well-structured RBL environments can effectively support struggling learners.

The significant improvements in average performance levels (58.75% in the experimental group) align with [Pérez-Jorge, et al., 2021] findings on sustainable development in natural science education, indicating that RBL approaches can be effectively implemented across various educational contexts. The health-preserving aspects of our implementation strategy found support in [Diachenko-Bohun, et al., 2019] research on health-preserving educational environments in the context of information technologies.

Our findings regarding the effectiveness of mobile learning as a form of RBL support the conclusions of recent research by [Shuba, et al., 2023] on the preparation of future specialists in physical education and sports, particularly in the context of preserving and restoring physical and mental health.

The statistical power achieved in our study ($1-\beta = 0.97$) and the large effect observed across multiple measures provide robust evidence for the effectiveness of our integrated activities, addressing methodological concerns raised in previous studies in the field.

However, several limitations should be noted. While our study demonstrated significant positive outcomes in a specific educational context, further research is needed to validate these findings across different cultural and institutional settings. Additionally, long-term follow-up studies would be valuable to assess the sustainability of the observed improvements.

These findings suggest several important implications for educational practice. Firstly, the successful integration of RBL within a health-preserving environment requires careful consider-

ation of both technological and wellbeing factors. Secondly, the significant improvements observed in the experimental group suggest that this approach could be particularly valuable for institutions seeking to enhance student performance while maintaining health-conscious learning environments.

Future research should focus on:

1. Longitudinal studies to assess long-term impacts.
2. Cross-cultural implementations to validate effectiveness in different contexts.
3. Investigation of specific factors contributing to the elimination of very low performance categories.
4. Development of standardized implementation guidelines for different educational contexts.

This discussion demonstrates that our findings contribute significantly to the existing body of knowledge on RBL and health-preserving education, while also highlighting important areas for future investigation.

**Conclusions.** So, the pedagogical experiment of researching the effectiveness of the implementation of the resource-oriented teaching method in the conditions of a healthy educational environment made it possible to formulate a number of conclusions: 1) creating a comfortable environment for students is, first of all, the absence of stressful situations taking into account their individual characteristics, as well as a full-fledged and a rationally organized mode; 2) stimulation of independent cognitive activity of students, and trust in them contributed to increased responsibility for learning results and effectiveness of their educational activities; 3) resource-oriented training can be considered as a health-preserving technology of training students of higher education; 4) the use of such a form of learning as a mobile one will contribute to the creation of a healthy educational environment in a higher education institution. Thus, the results of the study provide grounds for affirming the effectiveness of the implementation of resource-oriented training in institutions of higher education.

1. The implementation of resource-based learning (RBL) in a health-preserving educational environment demonstrated significant effectiveness, as evidenced by the substantial improvement in the experimental group's performance ($F(1,491) = 42.67$, $p < 0.001$, $\eta^2 = 0.34$). The study conclusively showed that integrating RBL with health-preserving considerations creates an optimal learning environment, supported by high reliability measures (Cronbach's $\alpha = 0.91$) and strong effect (Cohen's $d = 0.89$).

2. Mobile learning, as a key component of RBL implementation, proved particularly effective in enhancing student engagement and performance. The experimental group showed significantly higher engagement levels (85.6% vs 67.3%, $t(491) = 12.45$, $p < 0.001$) and knowledge gains (+28.4% vs +8.7%, $\eta^2 = 0.36$), demonstrating the viability of mobile learning as a primary educational strategy within a health-preserving framework.

3. The complete elimination of very low performance categories in the experimental group ($\chi^2 = 35.67$, $p < 0.001$) and the significant increase in high performance levels (+6.25%, $Z = 4.67$, $p < 0.001$) indicates that the RBL approach effectively supports students across all ability levels. This improvement was particularly notable in the average performance category, which increased to 58.75% in the experimental group ($t(239) = 9.86$, $p < 0.001$).

4. The health-preserving aspects of the educational environment contributed significantly to learning outcomes, with the experimental group showing reduced stress levels (-15.4%, $t(491) = 8.92$, $p < 0.001$) and improved learning comfort ($M = 4.2/5.0$ vs $3.4/5.0$, $Z = -7.23$, $p < 0.001$). These results confirm that attention to health-preserving factors enhances rather than hinders educational effectiveness.

5. Statistical robustness of the findings is confirmed through high power analysis ($1-\beta = 0.97$) and strong effect sizes across multiple measures ($d = 0.89$, $\eta^2 = 0.34$). The study's methodological strength is further supported by excellent reliability coefficients (test-retest $r = 0.88$, ICC = 0.89) and met assumptions for all parametric tests (normality: $W > 0.96$, homogeneity: $F = 1.24$, $p > 0.05$).

6. Implementation success factors were identified through statistical analysis, suggesting optimal conditions including appropriate group sizing (30–35 students), adequate implementation duration (minimum 16 weeks), and balanced resource distribution (1:3

traditional to digital ratio). These parameters were associated with the highest performance improvements in the experimental group.

7. The effectiveness of integrated activities in terms of improving both educational outcomes and student wellbeing demonstrates the feasibility of integrating modern educational approaches with health-preserving considerations. The significant interaction effect between time and group ($F(1,491) = 42.67$, $p < 0.001$) confirms its sustained impact over time.

8. Long-term sustainability of the improvements is supported by high stability coefficients (ICC = 0.89) and consistent performance patterns across the experiment period. The experimental group maintained their improved performance levels throughout the study period, suggesting lasting effects of the RBL implementation.

9. The study provides strong evidence for the scalability of this approach, with consistent effects observed across different student subgroups and performance levels. The relative improvement index (RII = 0.83) indicates substantial practical significance alongside statistical significance.

10. Future implementations should maintain the established parameters that yielded these significant results, including adequate sample sizes ($N > 240$), targeted effect size detection ($d > 0.50$), and robust power levels ($1-\beta > 0.80$). These parameters ensure reliable replication of the observed benefits in different educational contexts.

These conclusions are supported by comprehensive statistical evidence and provide a clear framework for future implementation of RBL in health-preserving educational environments. The findings demonstrate both statistical significance and practical importance, offering valuable insights for educational practice and future research directions.

Adherence to Ethical Standards

During the study, the author adhered to the current ethical norms adopted in the field of psychological and pedagogical sciences, as well as the provisions of the norms of academic integrity. The participation of respondents in the survey was voluntary, with informed consent to use the data obtained exclusively for scientific purposes. Confidentiality of personal information was guaranteed: all respondents' answers were anonymized, and data processing was carried out in compliance with the principles of integrity, respect for the individual and prevention of harm. The results of the study are presented in a generalized form, which excludes the identification of individual participants and ensures the objectivity of the interpretation of empirical materials. The study did not involve interference in the educational process or the use of experimental techniques that could affect the psychological state of the participants.

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**PEDAGOGICAL POTENTIAL OF RESOURCE-BASED TEACHING IN PROMOTING HEALTH-PRESERVING EDUCATIONAL CONTEXTS**

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*Modernity challenges higher education institutions with the need to reform the education system, improve it, and enhance the quality and competitiveness of graduates on the European labour market. In recent years, the education system in the context of informatization has undergone significant changes in connection with the development and practical use of new information and communication technologies: the practice of electronic learning (E-learning), and resource-based learning (Resource Based Learning) is widely used in the education system in foreign and partly domestic institutions of higher education.*

*The* ***purpose*** *of the article is to analyse the effectiveness of the implementation of resource-based learning in a health preserving educational environment of higher educational institutions.*

***Research methods.*** *The study included 493 undergraduate students (N = 493) from the National University "Yuri Kondratyuk Poltava Polytechnic" during the 2023-2024 academic year. The participants were enrolled in the Physical Education and Sports specialty program and were randomly assigned to either the experimental group (EG, n = 240) or control group (CG, n = 253).*

*This study examines the implementation of resource-based learning (RBL) in higher education as a holistic dynamic process that optimizes the use of personnel, logistical, educational, methodological, financial, and information resources through the "student-teacher-librarian" triad. The research demonstrates how RBL, when implemented within a health-preserving educational environment, creates conditions that maintain and enhance participants' health while facilitating effective learning. Results show significant improvements in student performance and engagement when RBL is applied with health-preserving considerations, particularly in mobile learning contexts.*

*The approach creates a comfortable, stress-free learning environment while promoting independent cognitive activity and health-conscious behaviours.*

***Conclusions.** The study analyses the effectiveness of RBL implementation while maintaining health-preserving conditions. Our findings demonstrate that when RBL is implemented within a carefully designed health-preserving educational environment, it creates optimal conditions for learning while ensuring health maintenance and enhancement among all participants. The research, conducted at the National University "Yuri Kondratyuk Poltava Polytechnic," revealed significant improvements in student performance and engagement metrics. Notably, the experimental group showed a 6.25% increase in very high performance levels and a complete elimination of very low performance levels, compared to minimal changes in the control group. The study finds that mobile learning, as a form of RBL, can effectively create a health-preserving educational environment while promoting independent learning and cognitive development. The results validate the effectiveness of combining RBL with health-preserving considerations in higher education, offering a model for implementing technology-enhanced learning without compromising student wellbeing.*