Revista Românească pentru Educație Multidimensională
ISSN: 2066-7329 | e-ISSN: 2067-9270
Covered in: Web of Science (WOS); EBSCO; ERIH+; Google Scholar; Index Copernicus; Ideas RePeC; Econpapers; Socionet; CEEOL; Ulrich ProQuest; Cabell. Journalseek; Scipio; Philpapers; SHERPA/RoMEO repositories; KVK; WorldCat; CrossRef; CrossCheck

2020, Volume 12, Issue 3, pages: 24-43 | https://doi.org/10.18662/rrem/12.3/307

Developing Healthcare Competency in Future Teachers

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Abstract: The progressive mankind has realized that medicine has only relative possibilities in the elimination of the results of destructive processes in the human body and mind, whereas preventive measures, propaedeutics, physical education and sport and other forms which eliminate causes rather than effects are more effective. Experimental work aims to verify the effectiveness of pedagogical conditions, which assure the process of developing healthcare competency in future teachers. The research is based on a hypothesis that healthcare competency of future teachers can be successfully developed under the following pedagogical conditions: enhancing future teachers' motivation; creating learning space; designing the content of training based on interdisciplinarity; accomplishing pedagogical tasks with healthcare content; organizing students' extracurricular activities based on their diversification; implementing healthcare self-development during professional training. The first experimental group (EG 1) comprised 95 respondents, the second experimental group (EG 2) – 99 respondents, the third experimental group (EG 3) – 97 respondents; the first control group (CG 1) – 101 respondents, the second control group (CG 2) – 105 respondents. Results. The high level of healthcare competency formation in EG 1 (33,68%) exceeds similar figures in CG 1 (20,79%) by 12,89%. In EG 2, this difference in comparison with CG 2 amounts to 20,17%. In CG 1 and CG 2, there were many respondents at critical and low levels –46.53% and 53.33% respectively. In EG 1, EG 2 and EG 3, the number of respondents at critical and low levels ranged from 21.63 to 25.26%. Conclusions. Healthcare competency is successfully formed in the process of realizing the developed system and implementing the determined pedagogical conditions. Conclusions. Healthcare competency is successfully developed in the process of realizing the developed system and implementing the determined pedagogical conditions.

Keywords: *educational space, interdisciplinarity, pedagogical tasks, extracurricular activities, self-development, motivation boost.*

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How to cite: Maksymchuk, B., Matviichuk, T., Solovyov, V., Davidenko, H., Soichuk, R., Khurtenko, O., Groshovenko, O., Stepanchenko, N., Andriychuk, Y., Grygorenko, T., Duka, T., Pidlypniak, I., Gurevych, R., Kuzmenko, V., & Maksymchuk, I. (2020). Developing Healthcare Competency in Future Teachers. *Revista Românească pentru Educație Multidimensională, 12*(3), 24-43. https://doi.org/10.18662/rrem/12.3/307

1.Introduction

At the beginning of the third millennium, a healthcare component of the education process and life of the society as a whole has more and more frequently been investigated by pedagogues, psychologists, physiologists and sociologists; they usurped the field that used to exclusively belong to medical competency. Thus, the unification of sociology and psychology, valeology and pedagogy, medicine and ecology has been observed in Ukraine lately. These tendencies should be taken into account in pedagogy since it is the initial operational component of the formation of prospective human potential. Such integration is especially crucial in social and educational policies of developing countries. A teacher's health is an essential precondition for successful transmitting acquired competencies to the next generations in the process of their professional activities. The only way to succeed in achieving this is to apply the forms and methods of physical education and sports within other educational subjects.

The problem of developing healthcare competency has been extensively studied in doctoral theses by Andriushchenko (2015), Bakhmat et al. (2019), Behas et al. (2019), Bezliudnyi et al., (2019), Bobrytska (2006), Boichuk (2009), Byvalkevych et al., 2020, Dzhurynskyi (2013), Dmytruk (2015), Drozhyk (2015), Gerasymova et al. (2019), Halaidiuk et al. (2018), Harkusha (2015), Kaletnik et al., (2011), Khoroshukha (2015), Koziuk et al., (2020), Kozlovskyi (2010), Makoviichuk et al. (2020), Maksymchuk (2016a; 2016b; 2017a; 2018b), Maksymchuk et al. (2018), Melnyk et al. (2019), Meshko (2012), Ostafiichuk (2014), Sebalo, & Teslenko, (2020), Sheremet et al., (2019), Shulha (2016), Sitovskyi et al. (2019), Voskoboinikova (2013), Zakharina (2013), Zavydivska (2012). The process of developing future teachers' healthcare competency is greatly influenced by scientific attainments of the scholars elaborating the problem under investigation (Becker, 1974; Braus, 1993; Brown, 1992; Bucher, 1960; Glanz et al., 1990; Jensen, 1999; Kivanagh, 1980; Kok, 1991; McClelland, 1973; Noack, 1987; Prochaska & DiClemente, 1984; Rifkin, 1991; Rychen, 2003; Short, 1985). The analysis on the experience of future teachers' professional training in the USA and European countries proves that competency-based approach to both raising the next generation and training teachers is one of the major trends in teacher training. The successful transmission of pedagogical experience to the next generations of teachers is provided not only by the progressive conditions, methods and techniques of educational activities but also by a clear realization of the multiple-vector intellectual, emotional and

practical set of competencies. The elicitation of health-preserving tendencies in foreign pedagogy is quite valuable for the current research. Despite the tradition of teaching this subject abroad, there also co-exist or contradict heteromorphous health-preserving approaches that can be characterized as the domination of intrapersonal and extra personal cultural, social and mental dominants. Thus, American scholars hold to the principle of multi-education and reasonable sufficiency in healthcare development of a child's intrinsic traits and introduction of useful information and external influences, while the contrary accents are still quite firm in Europe: the maximum saturation with the knowledge about the world and themselves or the highest possible accentuation of a pupil on themselves and their inner world. Thus, the American ("sufficient") and European ("optimal") traditions of the approach to health protection and promotion can be distinguished.

2. Material & methods

The formative stage of the experiment was conducted at Mykhailo Kotsiubynskyi Vinnytsia State Pedagogical University (Vinnytsia, Ukraine), Communal Higher Educational Establishment «Kherson Academy of Continuing Education» of Kherson Regional Council (Kherson, UKRAINE), Lviv State University of Physical Culture (Lviv, Ukraine), Rivne State University of the Humanities (Rivne, Ukraine), Lutsk Institute of Human Development University "Ukraine" (Lutsk, Ukraine), Open International University of Human Development "Ukraine" (Vinnytsia, Ukraine), Pavlo Tychyna Uman State Pedagogical University (Uman, Ukraine), Mariupol State University (Mariupol, Ukraine). The experiment comprised 497 students (Year 1 – Year 5). The first experimental group (EG 1) included 95 people; the second experimental group (EG 2) – 99 people; the third experimental group (EG 3) – 97 people; the first control group (CG 1) – 101 people; the second control group (CG 2) – 105 people.

Pedagogical projects on the system of developing future teachers' healthcare competency include theoretical justification of pedagogical conditions for developing healthcare competency of future teachers.

The first pedagogical condition involves developing future teachers' motivation for developing healthcare competency. Only the teacher whose healthcare competencies and personal qualities seem natural and serve as a background to his/her didactic activity can motivate the student. Extreme values of healthcare activity can be the moments of either borderline or cognitive dissonance, otherwise, the student who reflexively

perceives physical and psychological dimensions of his or her health can see "false" or deliberate expediency in the teacher's actions. Students' motivation towards healthcare activity and self-improvement is based on axiological imperatives and motives.

The development of motivation in EG students and lecturers was based on the author's methodologies for developing healthcare competency in future teachers: compiling didactic cinquains and essays, analyzing and choosing relevant topics for educational projects within the framework of the interdisciplinary project on quality of life and health. Particular attention is paid to the behaviour, which, in contrast to the patterns (normal reflexive forms of responses and behaviour in typical situations) allows the participant of the education process to gradually and evenly modify his/her reaction and activity and, subsequently, behaviour, actions, worldview, etc.

The second pedagogical condition involves creating learning space favourable for forming future teachers' healthcare competency, which in turn can solve the problem of co-adaptation (the process of adjusting sociocultural experience obtained as a result of acculturation to general professional objectives of learning). The process of creating such learning space is aimed at enriching and expanding a creative potential of educational opportunities, which the student can independently choose and master to create his/her own learning space (educational projects taking into account healthcare aspect of professional activity). This objective was successfully realized due to the organization of additional courses and sports clubs at departments of physical education. At this stage, pre-formulated educational and professional tasks are selected, developed, modelled and designed. Indeed, the student theoretically develops the content and technologies for implementing a particular social and healthcare project with the use of an algorithmic scheme. The results of students' projects on the healthcare and professional learning space were diagnostically justified and correlated with the stages of integration of healthcare and vocational education, namely, acculturation, co-adaptation and synergy.

The third pedagogical condition involves designing the content of developing future teachers' healthcare competency based on interdisciplinarity. Physical education lessons, which do not include excessive mental workload on the student, contain motivation-oriented teacher activities. This, however, does not imply that intellectually stimulating courses should be isolated from the healthcare component. On the contrary, physical, hygienic and healthcare components in such lessons as Math, Ukrainian, Chemistry, Fine Arts are behaviorally and cognitively dissonant and, thus, important. Therefore, professional training of subject

teachers should be conducted by specialists in general pedagogical areas, specialized areas, physical education, medicine, school hygiene, etc.

Universal pedagogical competencies should be incorporated in the following subjects: Education Methodology, Ecology Principles, Valeology Principles, School Hygiene, Health and Safety, Pedagogical Mastery. Cultural, psychological and general pedagogical subjects should create an axiological basis, which will serve as the philosophical basis of school valeology. Physical education, however, should be given a special role due to its direct body-oriented influence on the young person. No other subjects perform such a function. It can be partially performed only by extracurricular activities, namely dancing, applied sports, tourism, etc., which are not required by curricula and are optional. A positive solution to this problem could be healthcare modification of the university course on physical education, along with its inclusion to the list of compulsory subjects. This would spare young people with adequate health from excessive workloads and form optimal or at least minimal healthcare competencies in them. Even if biology, anatomy or physical education teachers are more able to establish motivational connections with the subjects they teach and form healthcare culture in their students, it is still much harder for humanities and natural sciences teachers. Here the emphasis is placed on pedagogical mastery, various relevant components of education content and even improvisations. According to a survey of leading methodologists and experienced teachers, the tradition of introducing healthcare component to such non-specialized subjects as Math, Physics, Chemistry includes: a) organizing physical "minutes"; b) explaining the physical and chemical nature of human homeostasis and metabolism; c) conducting joint integrative lessons within the framework of correlations Biology – Chemistry, Anatomy – Physiology, Valeology – Ecology, etc.

According to the studies conducted within the framework of this research, the following didactic blocks are most approximate healthcare topics to physical education: injury assistance and other types of emergency care; individual healthcare metrology; the nature of energy exchange between the individual and the environment and the calculation of personal energy consumption with the help of typical formulas (in kilocalories); self-regulation skills, relaxation skills, a break from stressful, emotional, problematic and other situations.

The fourth pedagogical condition involves integrating cognitive and reflexive functions in the process of accomplishing pedagogical tasks with healthcare content. A pedagogical situation aimed at generating a short-term specific interest may serve as a minimum link on the way to achieving

the ultimate healthcare goal. Here are some examples of topic-based integration of cognitive and reflexive functions when solving healthcare pedagogical problems following these types of professional activity. Organizational and pedagogical activities include developing and implementing healthcare projects aimed at the physical development of young people. Informational and analytical activities include assessing the effectiveness of healthcare projects. Entrepreneurial activities include developing new healthcare business plans.

The most common trends in the integration of cognitive and reflexive functions when solving healthcare pedagogical problems involve conducting physical education lessons and extracurricular healthcare activities in general education institutions (Halaidiuk et al., 2018); preparing educational and methodical materials for conducting physical education lessons and extracurricular healthcare activities based on the existing methodologies of healthcare education; developing projects with the aim to create healthcare expositions for university museums; developing healthcare projects related to creative activities of children's art groups, studios, sections, etc.

The fifth pedagogical condition involves organizing students' extracurricular activities directed toward developing future teachers' healthcare competency. Healthcare competencies were long recognized as voluntary involvement of labour and educational groups in various cultural and sport mass events. In this case, individual opportunities and needs were often ignored, and the call of duty was put forward: the citizen should be healthy, and the indicators should be high. The throwbacks of then-physical education and the stereotypes of teachers and lecturers' approach, to some extent, still exist. Moreover, the excessive struggle with them has led, in our opinion, to the abolition of certain positive traditions: the presence of clear norms (some reductions rather than complete cancellation was required for non-medical groups), the compulsory course on physical education at universities, etc.

One of the problems in developing healthcare competency and culture in future teachers during physical education lessons is insufficient differentiation of training programmes for different faculties and specialties: the future teacher should be able to adapt his/her subject and pedagogical skills to implement healthcare tasks during teacher placement. The subject teacher is provided with significant and, at the same time, limited opportunities to influence consciousness and health of the student less with didactics and more with education. Therefore, extracurricular activities and different examples of healthcare and physical culture are considered to be

the most suitable for this purpose. It is well-known that physical education lessons in teacher education institutions traditionally include organizational questions, warm-up, field and track workout, games (relay races, movement games), game sports. As evidenced by student surveys, lecturers rarely include the theoretical and motivational component in traditional physical education lessons. Even more rarely, they give lectures on physical education. Such a situation is partially improved by additional courses on physical education at primary education faculties, physical education faculties, music education faculties (music and rhythmic, aerobics, dancing, etc.).

The emphasis is placed on the selection of effective methods, modification of programmes, optional components and integrated learning. All this suggests only the presence of motivation, willingness and sense of duty in the teacher. In each particular case (at faculty or university), the physical education teacher kept a record of material inventory, visual aids and sports equipment and was familiar with the order of their use. Indeed, economic conditions can be applied to each person: some students can attend paid lessons, courses, other institutions and others cannot. Therefore, it is valleologically expedient to equally treat financial opportunities and personal needs of students, since this influences their healthcare development.

The sixth pedagogical condition involves future teachers' healthcare self-development during physical training. In connection with the personality-oriented approach, which, together with competency-based one, forms the synergy of healthcare development of the teacher and student, it is necessary to include self-development and self-improvement skills into the structure of pedagogical competency. This quality implies "competency in professional self-development", which can be interpreted as "a holistic and systematic set of generalized knowledge in the domain of professional self-determination and self-realization". Therefore, if competencies are integral qualities, it can be considered as the ability to apply knowledge and experience in practice and in a particular life or teaching situation to adequately solve the problem, self-regulation and professional reflection.

Thus, it can be solved with the use of a dualistic approach through changing stereotypes, attitudes and values within the framework of physical education, using available, albeit partially destructive, motivations, stereotypes and attitudes. However, unconscious natural needs largely remain the most powerful resources of the human psyche directed at health-preserving self- and mutual improvement. As a rule, young people interpret

them differently, namely as the willingness to be beautiful, attractive, fashionable, successful.

Therefore, self-development and reflection skills of future teachers provide opportunities for effective self-organization and self-correction of valeological activities and impact the quality of professional skills. Studying the mechanisms of modelling healthcare activities assessable in the context of reflection can influence the personal transformation of the obtained individual experience. The main aim of this indicator diagnostics consists of designing an adequate personal sphere.

The experimental research of the scientific issue under consideration stipulated practical verification of conceptual approaches, the system of developing future teachers' healthcare competency during physical training and the determined pedagogical conditions. The pedagogical experiment was aimed at introducing the elaborated model of the system of developing future teachers' healthcare competency, including its main constructs. The programme of the research and experimental work comprised four consequent stages: establishing, formative, evaluating and correcting, and concluding.

4. Results

Surveys among students and testing the levels of development of future teachers' healthcare competency during physical training conducted before and after experiment demonstrated the substantial rise of the level of development of future teachers' healthcare competency during physical training. In the CG, the marginal level (38.83% before the experiment) decreased to 23.79% towards the end of the experiment; correspondingly the low level of valeological competency, which had made up 36.89%, decreased to 26.21% by the end of the experiment. The medium and high levels of valeological competency in the CG increased by 12.13% and 13.60% correspondingly. In the EG, the marginal and low levels decreased by 30.58% and 20.27% correspondingly, while the medium and high levels by the end of the experiment increased by 19.93% and 30.93%. The foregoing confirms that developing healthcare competency in the EG was almost twice as intense as in the CG.

Table 1 presents the outcome of the generalized comparison of the results concerning the efficiency of the model of developing future teachers' healthcare competency during physical training in CG and EGs. Table 1 shows that the high level of formation of future teachers' valeological competency during physical training in the EG 1 (33.68%) exceeds the

corresponding index of the CG1 (20.79%) by 12.89%. The difference in rates between the EG 2 and the CG 2 is 20.17%. A significant number of the respondents with marginal and low levels were recorded in the CG 1 (46.53%) and the CG 2 (53.33% of the respondents), while in the EG 1, EG 2 and EG 3 the students with marginal and low levels are recorded in quite small numbers (21.63-25.26%). The foregoing confirms that quite a large number of the respondents in the EG 1, EG 2 and EG 3 who at the establishing stage of the experiment had had low and medium levels of development of healthcare competency during physical training increased their rates.

Table 1. *Dynamics of levels of future teachers' healthcare competency measured at various stages of the pedagogical experiment*

Levels	Tests		Groups				
			EG 1	EG 2	EG 3	CG 1	CG 2
			95 respondents	99 respondents	97 respondents	101 respondents	105 respondents
Marginal	Opening test	abs.	40	42	40	40	40
		%	42.11	42.42	41,24	39.60	38.10
	1st intermediate test	abs.	34	38	35	34	34
		%	35.79	38.38	36.08	33.66	32.38
	2nd intermediate test	abs.	28	32	29	32	32
		%	29.47	32.32	29.90	31.68	30.48
	Final test	abs.	11	12	10	22	27
		%	11.58	12.12	10.31	21.78	25.71
Low	Opening test	abs.	31	30	33	35	41
		%	32.63	30.30	34.02	34.65	39.05
	1st intermediate test	abs.	27	25	29	31	36
		%	28.42	25.25	29.90	30.69	34.29
	2nd intermediate test	abs.	22	22	26	29	34
		%	23.16	22.22	26.80	28.71	32.38

	Final test	abs.	13	11	11	25	29
		%	13.68	11.11	11.34	24.75	27.62
Medium	Opening test	abs.	20	21	19	20	20
		%	21.05	21.21	19.59	19.80	19.05
	1st intermediate test	abs.	25	25	24	25	25
		%	26.32	25.25	24.74	24.75	23.81
	2nd intermediate test	abs.	29	29	27	27	27
		%	30.53	29.29	27.84	26.73	25.71
	Final test	abs.	39	40	39	33	32
		%	41.05	40.40	40.21	32.67	30.48
High	Opening test	abs.	4	6	5	6	4
		%	4.21	6.06	5.15	5.94	3.81
	1st intermediate test	abs.	9	11	9	11	10
		%	9.47	11.11	9.28	10.89	9.52
	2nd intermediate test	abs.	16	16	15	13	12
		%	16.84	16.16	15.46	12.87	11.43
	Final test	abs.	32	36	37	21	17
		%	33.68	36.36	38.14	20.79	16.19

Thus, the results of the final test give grounds to assert that the groups under investigation showed significant divergence regarding the number of respondents with different levels of development of healthcare competency. The conclusion was confirmed utilizing mathematical statistics methods using Pearson's chi-squared test, which let compare the divisions and assess the statistical significance of the divergences. Null hypothesis H_0 implied that in the experimental groups involved in the pedagogical experiment the respondents did not show considerable differences regarding the levels of development of healthcare competency.

The essence of the alternative hypothesis H_1 consists of the following: the levels of development of future teachers' healthcare

competency shown by the members of generalized control and experimental groups differ substantially.

If $\chi^2_{emp} < \chi^2_{cr}$, the null hypothesis is accepted; for $\chi^2_{emp} > \chi^2_{cr}$ the null hypothesis is declined and the alternative hypothesis is accepted.

The results of the formative stage of the experiment (the final test) with the use of Pearson's chi-squared test prove that if the levels of significance between the experimental and control groups in the division by the levels of the development of healthcare competency are 0,01 and 0,05, the null hypothesis should be declined and the alternative hypothesis should be accepted, which means that the division of the respondents belonging to these groups by the levels of the development of healthcare competency is unequal, and the differences are not accidental – they are caused by the implementation of the elaborated set of pedagogical conditions, and in case of need can be gained repeatedly under the similar conditions. The elaborated pedagogical conditions are sufficient for the efficient functioning of the system of developing future teachers' healthcare competency during physical training.

Discussion

Therefore, we agree that pedagogical conditions include not only the factors of direct and targeted influence but also the whole range of continuously operating factors, whose culmination is marked by social and legal support and protection (Fillipieva, 2007). In this regard, T. Shapovalova's hypothesis (2006) about the parameters within which the individual can realize an obvious or hidden need for health improvement and health preservation can be confirmed: the individual constantly identifies and evaluates his/her activities, compares and surrounds himself/herself with a certain continuum. Health-preserving space focused on this interaction is viewed as a collection of the most individually organized factors in the preservation and strengthening of health.

In contrast to Bakhmat et al. (2018), it is proved that interdisciplinary connections are considered not only as a desirable component of education content. The current research shows that they perform a methodological function in learning since they reflect a generalized form of relations between the components of educational subjects. As a result, one can observe how a new way of thinking is formed and the ability to see the general in the concrete and analyze the concrete in the context of the general is developed.

The research also proves the view of Maksymchuk et al. (2018) that pedagogical conditions for developing healthcare culture include such components as creating individual educational paths towards self-improvement; developing complex tasks based on interdisciplinary connections and introducing an integrated specialized course on Health-Preserving Principles of Professional Training for Future Physical Education Teachers; independent work towards physical and healthcare self-improvement.

The second group of the obtained indicators includes a research by Halaidiuk et al. (2019), who highlight the "internal" model of the future teacher: provided there are at least initial healthcare needs and knowledge, the student can form the "culture of young people's health" under the guidance of experienced teachers, within the framework of which a self-preserving environment is formed, and hence health-preserving, psychophysical, hygienic self-observations and all kinds of recreational activities. It is important that the future teacher understands the value of health and can teach his/her students how to preserve it before working in a school.

It is proved that the greatest problem in realizing healthcare concept of Ukraine mostly refers to a) poor awareness of the need for such activities at all levels and b) ambiguous methodological basis at the level of preschool, school, university and non-educational methodology and organization of this process rather than insufficient financial support (Koziuk et al., 2020).

Conclusions

Therefore, one can confirm the effective implementation of a set of pedagogical conditions since the changes in the values of the levels in the EGs show an increase in the capabilities of participants in the pedagogical experiment.

Despite the general legal perfection of the basic laws and a considerable amount of the research projects on valeology, the inclusion of healthcare in every sphere of young people's lives, especially in their extracurricular activities is still insufficient. Nevertheless, the promising fact is the implementation of the continuous system of healthcare education in higher education institutions, which implies the focus on the unsupervised educational and practical activities and the predominance of practical pieces of training and seminars in correlation with a student's professional orientation. The extracurricular and extraprofessional elements, the inclusion of healthcare accents in non-specialized subjects (exact and partially natural

sciences), as well as forming future teachers' healthcare competency during physical training are still not adequately regulated.

Acknowledgement

All the authors organized control and/or experimental groups at their universities. The formative stage of the experiment was conducted at Mykhailo Kotsiubynskyi Vinnytsia State Pedagogical University (Vinnytsia, Ukraine), Communal Higher Educational Establishment «Kherson Academy of Continuing Education» of Kherson Regional Council (Kherson, UKRAINE), Lviv State University of Physical Culture (Lviv, Ukraine), Rivne State University of the Humanities (Rivne, Ukraine), Lutsk Institute of Human Development University "Ukraine" (Lutsk, Ukraine), Open International University of Human Development "Ukraine" (Vinnytsia, Ukraine), Pavlo Tychyna Uman State Pedagogical University (Uman, Ukraine), Mariupol State University (Mariupol, Ukraine). The experiment comprised 497 students (Year 1 – Year 5). The first experimental group (EG 1) included 95 people; the second experimental group (EG 2) – 99 people; the third experimental group (EG 3) – 97 people; the first control group (CG 1) – 101 people; the second control group (CG 2) – 105 people. Also, all the authors developed the methodology of the experiment and pedagogical conditions for developing health-promoting competency in future teachers.

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