

EXPERT EVALUATION OF SCENARIOS FOR INCLUSION OF EDUCATION ECOLOGY INTO NURSING STUDIES

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Abstract

Already back in the middle of the 19th century, nurse Florence Nightingale pointed out the importance of interaction between human beings and their environment. With the further advance of nursing theories and models, the 20th century nursing theoreticians highlighted man, environment, health and care as the key concepts in nursing. One of the most important achievements in further development of nursing theories is the health system model of Betty Neuman based on systemic approach which analyses interaction between the patient, medical staff and environment. The UN Resolution on UN Decade of Education for Sustainable Development (2005–2014) passed by the General Assembly in 2002 is of great importance in strategic development of education. Over the last thirty years, there has been a lot of research done on ecology of human development, education ecology and change in education in the context of sustainability. The authors of the present article have done extended research including reflection on their personal experience in professional education (L. Peks), practical nursing experience (R. Renigere) and teaching experience in different nursing study programmes. The authors have concluded that there is a contradiction between the nursing study programmes and current developments in nursing theories and models, especially taking into account the latest achievements in the development of education ecology. It is vitally important to include education ecology into nursing studies. A body of experts has assessed scenarios of education ecology inclusion.

Key words: education for sustainable development, education ecology, theories of patient care.

Introduction

Nowadays the ecology concept has become a live issue in many fields. From the ecological point of view, sustainable development of the world community is an utmost challenging task. Such an objective has been envisaged by *Agenda-21 – the United Nations Environment Programme*, which is a comprehensive blueprint of action for the 21st century and was adopted by the UN in Rio de Janeiro in 1992 (UN Department of Economic and Social Affairs, 1992). Sustainable development refers not only to environmental and economic sustainability, but also to human ecology. Human ecology, which is defined as an academic discipline that integrates natural, social

and humanitarian sciences, is one of the directions in ecology researching varied interactions of human and / or social systems and their multidimensional environments in a holistic perspective. One of the directions in human ecology is education ecology – an academic discipline researching varied interactions of human and/or social systems and their multidimensional environments in a holistic perspective from the point of view of education as a human activity field, process and result, a development promoting instrument, contents of interaction, and human and environmental quality. (Katane, 2005, p. 10; Katane & Peks, 2006).

Education is an extremely important instrument in order to ensure sustainable development in other fields. Therefore, it is important to apply ecological approach in education.

Years 2005 to 2014 is the UN Decade of Education for Sustainable Development (UNESCO, 2002). The aim of this decade is to ensure that principles aimed at sustainable development of education are included in the programmes of schools and other educational establishments. Such inclusion would emphasize the crucial role of education on the way to sustainable development and would highlight the fact that the quality and the contents in all the aspects of education and training are significant prerequisites of sustainable development of education.

In their previous research (Alondere, Pēks & Renigere, 2007a; Alondere, Pēks & Renigere, 2007b; Alondere, Pēks & Renigere, 2008; Renigere & Pēks, 2009), the authors have found that, firstly, in the framework of postmodern ecological world outlook an ecological paradigm, or approach to education is evolving; secondly, such concepts as *human development ecology*, *education ecology* and *sustainable education* are being used as complementary notions; and finally, in several nursing and medical care models the interaction of the patient, medical personnel and environment has been recognised as an essential component. In recent years, a term *Nursing Ecological Theory* has been widely used as well.

Historically, already in the 19th century the first nurse – theoretician, Florence Nightingale, (1820-1910) created *Environmental Adaptation Theory*. She was the first to accentuate the impact of the environment on the health of an individual and to focus rather on the client than on the disease. Although Florence Nightingale did not develop a formal theory, her book (Nightingale, 1859) influenced and is still exerting influence on the following future studies in nursing and medical care. The 70ies of the 20th century is regarded as some kind of Renaissance period in the field of nursing. It was the time when Betty Neuman published her health care systems model, which has been highly recognized as both a theoretical statement and a comprehensive guide in nursing practice, scientific research and medical care administration. The third edition of Neuman health care systems model has been expanded further to illustrate the model's relevancy for the 21st century. It is viewed as an appropriate wellness-focused organizing structure, comprehensive and flexible, allowing for creative, collaborative and cooperative interdisciplinary programming for service delivery consistent with evolving holistic social health care trends (Neuman, 1995).

One of the driving forces to ensure sustainable development in nursing would be inclusion of education ecology subject both in formal and informal education study programmes. Inclusion of education ecology in nursing studies is also determined by the rapid development of medical technologies in the 21st century. More often than not medical technologies tend to dominate over the nurse's main professional duty – to be where the human suffering is; likewise, the role of the environment in nursing and care is not always appreciated. It is extremely important to promote ecologically independent approach and lifestyle because knowledge, skills and attitude must be integrated and viewed as one whole, as it is characteristic for ecology science.

Problems of the research. The authors of this paper have found in their former research, which includes reflection on their personal experience in professional education (L. Peks has more than 50 years of experience), nursing practice (R. Renigere has been a practising nurse for 40 years) and academic lecturing experience in three nursing study programmes (R. Renigere), that there is a contradiction between the present nursing studies and the modern nursing theories and medical care models where the dominating aspect is the interaction of the human and the surrounding environment. Unfortunately, the ecological approach is not widely known among the professionals who plan and implement nursing study programs.

The aim of this research is the argumentation of such a scenario in the education of nurses where education of ecology would be included in its full right.

Methodology of Research

The methodology of the research done so far by the authors and exploited in the research described in this paper is based on triangulation strategy. The purpose of triangulation in research is to increase the credibility and validity of the results (Denzin, 1970).

Expert evaluation (Орлов, 2002). Experts evaluated the scenarios of the inclusion of education ecology in the education of nurses. The working group consisting of the authors of this paper and a consultant carried out the selection procedure of experts. The selection criteria for the experts were the following: education (in pedagogy, psychology, medicine); experience in pedagogical work including study program management and medical college administration, as well as experience in patient care. The main criteria were relevant educational background in nursing or education studies, experience in patient care and/or study planning, as well as in academic lecturing. The group of experts was designed to include evaluators working at medical colleges, as well as neutral evaluators. The experts were chosen from different educational establishments in order to prevent a case when long-term employment in a particular institution could be a cause for uniform opinion. Likewise, some experts who had not carried out any research in education ecology so far were selected in order to diminish the factor of any local patriotism of this field. The working group took into account the suggestions of experts already chosen about potential candidates who could join the body of experts (Appendix 1).

The working group planned the expert evaluation, in which the following main evaluation stages were included:

- individual consultations with the experts aimed at ascertaining whether the expert agrees to take part in evaluation, verifying and specifying the knowledge preliminary available by the working group about the candidate's expertise; the expert was acquainted with the evaluation tasks, the questionnaire and the evaluation methods; a unified understanding about the problem under study and terminology used was reached;
- individual expert's work doing evaluation and filling out the questionnaire;
- interviewing the experts;
- processing data obtained from the expert evaluation;
- individual discussions with the experts reflecting on the results obtained in the course of expert evaluation.

The expert's task was to rank the scenarios presented in the questionnaire evaluating their necessity and feasibility. The questionnaire offered a possibility to give a written evaluation of each scenario. Experts compared the possible scenarios of the inclusion of education ecology subject into nursing studies and gave a rank to each scenario.

Each expert did an individual evaluation by filling out the questionnaire independently. After filling out the questionnaire, the authors of this paper interviewed the experts.

While doing expert evaluation in their previous research, the authors had concluded that a large number of variants to be ranked ($n > 3$) makes it difficult to evaluate them differentially. In order to alleviate the ranking and to increase its precision, the experts were offered to use the method of mutual comparison of the scenarios. According to this method not all the scenarios, but only two are compared one with each other.

Descriptive statistics was used to characterize the data obtained in the course of evaluation: the rank mode, the median and the amplitude. Kendall's coefficient of concordance W (Бешелев & Гурвич, 1974) was used to characterize the level of conformity of the experts' opinions. In order to determine the level of significance of the discordance in experts' opinions, chi-square criterion (Preacher, 2009) was applied.

Results of Research

The authors worked out seven possible scenarios (Table 1). The working group selected eight evaluators to perform the expert evaluation.

The level of conformity of the experts is characterized by the coefficient of concordance $W = 0.61$ (level of significance $\alpha=0.01$).

The ranking of each scenario is characterized by Rank R (column 11), and is determined by the sum of ranks given by all experts (column 10), the first place being allotted to the lowest sum of ranks and the last place being allotted to the highest sum. Indicators that are more accurate are median M_e (column 12) and mode M_o (column 13). The congruence of these statistics is indicative of the conformity of the opinions of the experts in the evaluation of the corresponding scenario. The conformity of expert opinions is also characterized by amplitude A (column 14), i.e. the margin between the maximal and the minimal rank (column 2 ... 9). Substantial amplitude difference was observed only in the evaluation of scenario G, which was caused by a different opinion of the *Expert 6*.

Table 1. Inclusion of education ecology subject in nursing studies scenarios and expert evaluation.

Scenarios	Experts*								Sum of the Ranks	Sum of the ranks Rank-R	Median M_e	Mode M_o	Amplitude A
	1	2	3	4	5	6	7	8					
	Ranks												
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
A	7	6	7	7	4	7	7	7	52	7	7	7	3
B	6	7	6	6	3	6	6	6	46	6	6	6	4
C	4	5	5	5	2	4	1	3	29	4	4	5	4
D	5	4	3	4	6	5	5	5	37	5	5	5	3
E	1	3	4	3	1	1	3	1	17	1	2	1; 3	3
F	3	2	2	2	5	2	2	2	20	2	2	2	3
G	2	1	1	1	7	3	4	3	22	3	2.5	1; 3	6

*Body of experts see Appendix 1.

Scenarios

A. Education ecology **should not be included** into formal education programmes of nursing studies. Nurses in non-formal studies i.e. daily work and life, conferences, etc can obtain necessary information and notion about the concept.

B. Education ecology **should not be included** into formal education programmes for nurses. Necessary information and notion about the concept can be obtained by nurses in **non-formal studies** i.e. professional qualification training courses for college graduates

C. Education ecology **should be included** into formal education programmes for nurses as a separate **optional course**.

D. Education ecology **should be included** into formal education programmes for nurses as a separate **mandatory course**

E. Education ecology issues **should be included** into formal education programmes for nurses. **A separate course is not required**. A programme for college academic staff about ecological approach in education should be designed and implemented.

F. Education ecology **should be included** into formal education programmes for nurses both as an **optional course** and as a **part of the study course**

G. Education ecology **should be included** into formal education programmes for nurses both a separate mandatory course and as a **part of the study course**

The experts ranked scenario E as number one. However, its evaluation does not differ significantly from the evaluation of scenarios F and G. Testing by chi-square test statistically, significant differences between the evaluations of scenarios E and D were observed (p value = 0.02). However, in the evaluation of scenarios E and G two different expert opinions were observed, which is indicated by the bimodal distribution of the evaluations ($M_{o1} = 1$; $M_{o2} = 3$).

As the last, seven experts unanimously ranked scenarios A and B. Thus, the experts do not reject the inclusion of ecology education in nursing studies. The way of inclusion is where the opinions of the experts start to differ. The most distinctive from the opinion of other experts are the evaluations given by *Expert 6*.

When analyzing the formal quantitative data together with the commentaries and interviews, it was established that at the initial stage and after gaining some experience, inclusion of education ecology into nursing studies should be carried out by following different scenarios. Initially scenarios C or D could be applied, i. e. education ecology could be included into formal nursing studies as a separate optional course (scenario C) or as an obligatory course (scenario D). Simultaneously a professional qualification-training programme on ecological approach in education should be designed for college staff. After implementation of this program, a transition to a scenario combining scenarios E and G, i.e. inclusion of education ecology issues into formal education of nurses as a part of study courses could be performed by periodically offering professional qualification training programmes in education ecology to college staff members. The analyses of the interviews and the comments, as well as the evaluation of the professional standard of nurse's profession show that it is highly commendable to include a separate optional or mandatory education ecology course into formal education programmes for nurses. More so, an essential part of care practice is preventive work done by the nurse. An integral part of this work is informing and educating society about healthy lifestyle, preventing disease and promoting patients' knowledge about medical treatment and care adequate to the patient's condition.

Discussion

An essential prerequisite for inclusion of education ecology into nursing study programmes is previous research done by many authors into the issues connected with human development, (Bronfenbrenner, 1979; 2005). As a few examples of noteworthy publications in sustainable education development could be mentioned Stephen Sterling's doctoral thesis (Sterling, 2005) and his monograph *Sustainable Education: Re-visioning Learning and Change* (Sterling, 2001).

In Latvia, Sustainable Education Institute founded in 2003 at Daugavpils University and lead by Professor Ilga Salīte has carried out research in sustainable education development (Salite, Salitis & Klepere, 2002). At the Department of Pedagogics of University of Agriculture, research in education ecology was launched in 1998 (Briede & Pēks, 1998). At present, it is being continued at the Institute of Education and Home Economics in a number of Ph D papers. One of them has already been defended (Katane, 2005).

Another research, which has been done in a field similar to the issues discussed in the present paper, is the PhD thesis *Implementation of the Principle of Sustainability in Teacher Education* (Grabovska, 2006). In her PhD thesis, the principle of sustainability in teacher education has been characterized as „a future strategic planning and implementation of problem questions considering the present experience and integration of social, economical and environmental context.”

It should be noted that in nursing education and patient care taking into account the interconnectedness of the human and the surrounding environment it is crucial to note the contemplarity of the three principles mentioned in the research by Rudite Grabovska: the ecological principle, the principle of integration and spirituality. One can only side with the author's conclusion that these three principles express the essence of sustainability.

Rudite Grabovska comes to conclusion that “The implementation of sustainability in teacher education entails four trends of action: education and further education, assessment and

development, cooperation and exchange of experience, management, and policy” (Grabovska, 2006, p. 14). She accentuates the assessment of the existing experience, gained as well from the research done previously by the authors of this paper. The direction towards “education and further education” relates to the recommendations of the experts to implement education ecology studies both in formal and non-formal nursing studies. The fourth policy encourages working out recommendations for changes in normative acts regulating nursing studies and medical care.

More often than not nurses are obliged to perform functions of a social pedagogue, especially in social care centres. From this point of view, Vita Roga’s research *Establishing the Ecological Competence of Social Pedagogues in Rural Community* (2008) is extremely relevant. The ecological competence of a social pedagogue has been characterized as “an integrated entirety of skills and attitudes about the interaction of the human and the surrounding environment, about intrinsic relationships of ecological systems, which ensures social pedagogue’s ability to help in solving problems of individuals and perform preventive activities” (Roga, 2008, p. 15). In the estimation of the authors of this paper, the above-mentioned characteristics could apply to the ecological competence of the nurse. An education ecology course envisages acquiring this kind of competence, and one of the authors of this paper, R. Renigere, has started implementation of an experimental education ecology course at Riga Medicine College. It can be anticipated that the following statement could be attributed to nurse’s work – “the ecological competence as a characteristic feature of a holistic personality when a social pedagogue cooperates with other specialists promotes the development of holistic understanding by these partners about the ecology of human behaviour development and about the factors of social problems in social situations” (Roga, 2008, p. 15).

From the ecological point of view, it is important to note that the interaction of the human and the surrounding environment is more and more intensively taking place in eEnvironment, including the field of health care. In recent years a term eHealth or e-health (Google 2009.09.28.: about 2,090,000 for “eHealth”; about 1,390,000 for “e-health”) is being used more and more often. „eHealth means Information and Communication Technologies tools and services for health. Whether eHealth tools are used behind the scenes by healthcare professionals, or directly by patients, they play a significant role in improving the health of European citizens” (What is eHealth, 2009). The usage of eHealth has great future perspectives in creating positive nursing practice environment and perfecting in nursing study programmes by including education ecology both in formal and in non-formal education.

Conclusion

There is a contradiction between the nursing study programmes and nursing theories and models, dominated by the aspect of the interaction of the human and the surrounding environment, complying with ecological approach. However, this ecological approach is not widely known among the planners and administrators of nursing study programmes, students or nurses. One way to solve this contradiction would be inclusion of education ecology into nursing study programmes, and it could be done by following various scenarios. None of the experts who evaluated the proposed scenarios rejected inclusion of education ecology into the formal and non-formal education of nurses.

It was found that at the beginning stage and after gaining some experience, inclusion of education ecology into nursing studies should be carried out by following different scenarios.

Initially education ecology could be included into formal nursing studies as a separate optional or mandatory course. Simultaneously a professional qualification-training programme on ecological approach in education should be designed for college staff. After implementation of this program, a transition to inclusion of education ecology issues into formal education of nurses as a part of study courses could be carried out by periodically offering professional qualification training programmes in education ecology to college staff members. It is also commendable to continue implementation of separate optional or mandatory ecology courses.

The inclusion of education ecology into nursing studies and the development of positive nursing practice environment should be related to the usage of eHealth and to the development of distance learning in e Environment.

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Appendix 1

Body of experts

Expert 1 – Dr. Paed., more than 40 years of pedagogical experience at university level including study planning and administration. The expert has carried out research in education ecology and medical care theory.

Expert 2 – Dr. Psych, more than 20 years of pedagogical experience at university level as well in psychological consultancy field.

Expert 3 – BA in Nursing, Mg Paed, as well as 5 years experience in clinical practice.

Expert 4 – BA in Nursing, Mg Paed, as well as 15 years experience in clinical practice. A lecturer and a supervisor of clinical practice at a medical college

Expert 5 – Master of Health Sciences, more than 25 years of pedagogical experience at university as well as at a medical college level, including programme planning and administration of nursing studies

Expert 6 – Master of Paed., – PhD student – candidate for a doctor's degree in Education, Head of Study Department, 12 years of pedagogical experience at a college level and 5 years experience of lecturing at university

Expert 7 – a physician, – PhD student – candidate for a doctor's degree in Education Administration, Assistant to the Head of Study Department, 15 years of pedagogical experience

Expert 8 – BA in Nursing, Mg Paed, Head of Study Department, a co-author of study programmes, 23 years of experience of supervising student practice.

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