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Student Ecological Culture Development in Higher School Professional Education Context

Asafova Elena Vladimirovna
V.I. Ul'ianov-Lenin Kazan' (Privolzhskii) State University, Kremlevskaya St. 18, Kazan, Russia

Abstract: In study attention is focused on development importance of ecological culture in students necessary for implementation by higher school graduates of follow-up professional activity according to the concept of "sustainable development" of nature and society. Objective of this research is to identify pedagogical conditions promoting increase of student ecological culture during training in higher education institution in the context of professional training. Diagnostics of student ecological culture based on application of researcher's technique of ecological representations, belief, installations, behavior and activity self-assessment. It is shown that ecologically corresponding behavior and ecologically reasonable practical activities of students have lower level of development in comparison with ecological representations, belief and installations. Student performance during the forming experiment of the ecologic-focused educational and research and design and creative tasks corresponding to preparation profile in courses "Fitoimmunity and Protection of Plants" and "Pedagogics" promoted increase in their ecological activity that is reflected in increase of active and practical component of ecological culture assessment. Participation of students in design and creative and educational and research activities for ecological perspective models the situations arising subsequently in professional activity and demanding acceptance of crucial decisions.

Key words: Ecological culture, students, higher school, ecologic-focused professional and educational environment, interdisciplinary approach, educational and research and design and creative tasks

INTRODUCTION

Professional education in higher school provides development and improvement in the adult trained professional competences as well as increase of general cultural level. Creative formation of person in his activity is possible only in conditions of harmonious professional and common cultural, social and moral development. Assimilation of common cultural component of higher education promotes emergence at intelligence qualities of graduates (Imasheva and Trushnikova, 2012). Education directed, among other on development of student ecological culture will promote expert understanding of different profiles of economic, political and ecological interdependence in modern world (Marlinskaia and Shishmakova, 2008). Value of the above said increases due to the need of nature and society "sustainable development", implementation of professional activity taking into account ecological safety. Therefore, development of personality ecological culture now has the status of education state standard.

Ecological culture is considered as the highest manifestation of person's ecological education and his ecological competence (Ignatov, 2011). It is a measure of personality civilization characterizing her activity and behavior in society and nature environment (Niiazova, 2012). Ecological competence is necessary for each higher school graduate. Gagarin (2014) characterizes professional and ecological culture as personal quality reflecting general readiness of future expert responsibly to treat environment his ability to use ecological knowledge, representations, abilities in professional activity as well as characterizing features of ecology-focused outlook, personality behavior and activity. In the context of future graduate professional activity professional and ecological culture is component of personality professionalism which is shown as ecological competence (Ivashchenko, 2012). Therefore, modern high school education has to be aimed at development of ecological culture of personality and ecology-professional competences. In this regard, student readiness increase for ecologically expedient professional activity is one of important tasks of the higher school in modern conditions.

Educational university environment has considerable potential for increase of ecological culture trained and developments of ecological competences. Their formation happens under the influence of purposeful pedagogical influences and factors some of which are connected to ecology-focused professional and educational environment organization (Niiazova, 2012). Among future higher education institution graduates ecology-focused professional training efficiency conditions the following are important: educational process humanization, increase in various types of innovative educational, cultural, social

activity of students, initiation, stimulation and support of student's initiatives. According to the theory of contextual training, it is necessary to model consistently in activity forms (educational, quasi professional, educational and professional) for students of future professional activity content in compliance with its subject and social context (Verbitskii, 2001). Then result of knowledge processing acquired during training in higher education institution, abilities, experience of practical activities are belief which define the responsible personality relation to nature, cause valuable orientations and installations of students. It is shown that than educational level, especially accurate installations of personality on protection of surrounding nature (Grunenberg and Kuckartz, 2003) and higher ecological consciousness is higher (Kuckartz and Rheingans-Heintze, 2006).

MATERIALS AND METHODS

In the research diagnostic technique developed by us based on self-assessment of ecological representations, belief, installations, behavior and activity and allowing to study features of student ecological culture development is used (Asafova, 2003). During 2003-2007 technique passed approbation and about 600 pupils and students became respondents. In view of that ecological culture is integrated category incorporating a set of components from which most often distinguish cognitive, emotional and aesthetic, valuable and semantic and activity we allocated indicators and criteria which can be used for student ecological culture characteristics:

- Ecological interests presence, fundamental ecological knowledge and representations and also skills of interaction with natural objects
- Belief and values system formation characterizing relation of personality to nature
- Ecological importance of educational and research work updating
- Ecological subject scientific researches performance
- Constant need for communication with nature and readiness to bear responsibility for results of interaction with it

RESULTS AND DISCUSSION

The 259 students of 3-4 courses of Kazan university which are trained in branches of "Biology" and "Sociology" (2008-2014) took part in real research. We noted that students who are trained for biologists have higher level of ecological knowledge in comparison with students sociologists (reliability of distinctions: if $p \leq 0.05$) (Fig. 1). Ecological installations, belief students, future

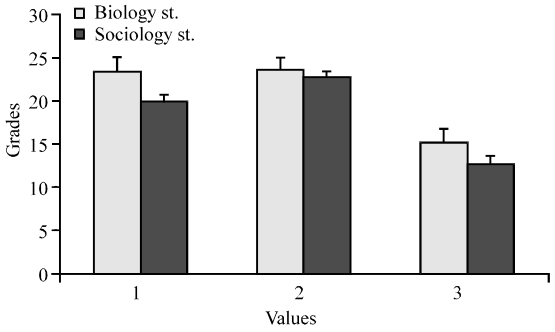

Fig. 1: Student ecological culture development self-assessment: I ecological knowledge and representations (maximum score 35); II ecological consciousness (belief, installations) (maximum score 35); III ecological behavior (activity) (maximum score 30)

biologists and sociologists, estimate equally. Results presented by us specify that activity component in structure of personality ecological culture is the least developed for most of respondents. Namely: ecologically corresponding behavior and ecologically reasonable practical activities as indicators of ecological culture remain with most of students on average (12-15 points) level that makes ≤50% of the greatest possible score (Fig. 1).

According to other researchers, activity component of ecological culture (competence) also is the least developed for students who are trained on different educational programs (Shvets *et al*., 2013). Practical type of motivation is inherent for 25% of students that points to insufficient application of gained knowledge in activity (Niiazova, 2012).

Participation in ecological activity need awareness is connected with strengthening of ecologic-informative activity motives in the heart of which inter subject application of knowledge lies. One of pedagogical conditions directed on increase of educational and professional motivation is student involvement in educational and research works, design and creative tasks performance which are realized on interdisciplinary basis and are aimed at professional and common cultural (in this case ecological) competences development.

In forming experiment, we found out features of ecological culture dynamics in particular ecological behavior and activity when performing of ecology-focused tasks in cycle natural-science ("Fitoimmunity and plant protection") and humanitarian ("Pedagogics") disciplines.

Course "Fitoimmunity and Plant Protection" for biology students assumes use of ecological material practically on each occupation during semester. So, when

studying the section "General Ideas of Plant Protection" the accent is made on integrated system of protection based on ecological approach. Preventive actions directed on prevention of undesirable consequences but not on fighting against them when intervention in environment and damage which can be caused thus is minimized are considered. In subject "Agrotechnical Method of Plant Protection" special attention is paid to fertilizer modern forms application and quantity calculation is carried out taking into account all necessary requirements. Close attention in section "Chemical Plant Protection" is paid to questions of applied pesticides toxicity, features of their decomposition in environment components, observance of sanitary and hygienic application conditions and also influence on protected plants metabolism. Section "Biological Method of Plant Protection" contains the greatest volume of ecology-focused material, since it is about opportunities which are available in nature and use in protection of various organisms plants and products of their activity. Such protection means environment safety is discussed. Classes come to end with excursion to bio-factory where students get acquainted with production technology of plant protection biological means and then make statements on their application in plant growing.

In "Pedagogics" to students, future sociologists, it was offered to perform educational and creative task which consisted in development and approbation of express questionnaire allowing to define attitude of Kazan State University students to ecological situation in campus territory and also personal contribution to change the ecological situation developed. Therefore in ecological education of future professional problems solution one of the fundamental ecological education and upbringing principles is the principle of interrelation global, national and local history in disclosure of environmental problems in educational process was realized. Work on drawing up the questionnaire demanded the use of abilities in subject activity (sociology) as well as updating of environmental problems in educational process. After development of questions for poll questioning forms were prepared and students sociologists are included in educational and research activities for carrying out poll and the analysis of its results.

Other design and creative task option of "Environmental Problems on Classes in Sociology" was it is offered students sociologists by preparation for student teaching passing. Design and creative activity included:

- Choice of courses Special Disciplines (SD) on sociology assuming realization of interdisciplinary approach (sociology ecology)
- Selection occupation subject according to training program directed on environmental problem updating
- Occupation plan and structure definition, occupation goal forming (educational, developing, educational), choice of corresponding methods and forms of education
- Occupation plan discussion and its critical analysis during group discussion

Implementation of mini-project was carried out by groups of 4-5 people. Students offered the following disciplines on sociology and subjects where solution of ecological education problems is possible:

- Social problems sociology: "Designing of social and ecological problems in the Republic of Tatarstan", "Environmental pollution as social problem"
- City and village sociology: "Chicago school as ecological direction in sociology"
- Work sociology: "Ecological bases in labor production"
- Safety sociology: "Habitat as object of manipulation"
- Business sociology: "Ecological culture problem of in entrepreneurial activity"

In subsequent, when scheduling occupation and definition of its structure students considered possibility of ecological material use for subject disclosure, i.e. in educational and creative activity realized interdisciplinary approach. On final stage during group discussion directed on presented plans of occupations analysis there was their adjustment for possible subsequent use purpose during student teaching. Such options of design and creative tasks in "Pedagogics" course correspond to contextual training and allow to apply professional knowledge, abilities on sociology to ecological education problems solution.

Ecological culture component structure analysis, namely ecological behavior and activity of students at repeated diagnostics showed that their attraction to performance of practice-focused educational tasks on interdisciplinary basis leads to increase of ecological activity. For biology students the tendency of increase in participation in ecological educational and research activity and among sociology students there is reliable increase in comparison with results stating experiment (Table 1).

Therefore, use of natural-science and humanitarian disciplines ecological potential and performance of interdisciplinary design and creative tasks provide formation future ecology graduate with abilities, readiness to put ecological knowledge into practice and promote development of ecological culture.

Table 1: Change of active and practical component (III) of student ecological culture (score)

Variables	Biology students	Sociology students
The stating experiment	15.2±1.5	12.3±0.8
The forming experiment	16.4±1.1	17.0±0.9***

Reliability of distinctions: ***if $p \leq 0.001$

Summary: Results received during research specify that educational bringing-up activity in higher education system promotes development of responsible attitude to nature and in general, ecological culture of students. Educational process subjects coordination of purposes according to personal focused subject-subject pedagogical paradigm, creation by teacher of educational ecology-focused activity experience acquisition conditions, developments of motivation, relations and for students development of ability and readiness for ecological activity and also experience of this activity allow to increase ecological culture and ecological competence of higher school graduate. Ecological perspective in educational process updating, pedagogical environment relevant organization is directed on ecological education problems solution and improvement of university graduate training. Use of courses ecological potential may provide formation of personal positive relation to environment in future professional, stability of his social and professional position and attraction to design and creative activity helps to apply professional, including, ecological knowledge in practice, develops activity and independence of students. Therefore, further orientation to ecological education role increase in higher school will promote improvement of graduate professional training as creative persons having professional and ecological culture and aimed at continuous improvement.

CONCLUSION

One of pedagogical conditions defining increase of future graduate responsibly to treat environment and to show ecological culture in professional activity readiness is organization during training of ecologic-focused educational environment and activation of students when performing educational tasks on interdisciplinary basis. It is concluded that in higher school increase of student ecological culture happens due to implementation of educational professional activity on interdisciplinary basis.

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