

Ewa Mazur- Wierzbicka
Katedra Mikroekonomii
Uniwersytet Szczeciński

MEANING OF ECOLOGICAL EDUCATION FOR THE COMPETITIVENESS OF WORK RESOURCES

Abstract

The ecological policy of the State is harmonized with the European Union Programme and presents new integrated approach which connects the environment protection with many other fields, such as health care, quality of products, decisions taken by customers, spatial planning. That is why Poland faces new challenges, which can be met only with well educated and properly managed personnel. This problem was included in the National Strategy of Ecological Education, which states, among others, that ecological education has to be quickly and comprehensively introduced into the sphere of education, development and appraisal of environment management personnel.

Due to increasing ecological crisis and because of that more and more strict environment protection law, the increase of requirements in this scope seems to be inevitable. This will definitely influence the raise of demand for environmental experts not only within the enterprise sector but also other institutions and organisations.

This is the reason the following issues are presented in this article:

Definition and role of ecological education

The problem of the enterprises demand for ecological knowledge

Challenges for environment protection personnel.

Key words: ecological education, ecological qualifications, labour market, environment protection.

Introduction

The intensification of global ecological crisis symptoms, observed in the modern world, requires implementation of proper actions in order to limit these disadvantageous phenomena. It seems essential to determine the reason of such situation as well as to focus on searching for remedial measures. Having analysed the negative changes in the environment one can come to the conclusion that it is mainly the human behaviour which is responsible for that, both its activities as a producer and a consumer. Seeking for the proper remedial measures one may focus on two ways of approach. The first approach is based on the assumption that the improvement of environment is possible thanks to technological changes, new inventions, new production methods. If it was human activity that caused our present problems such as for example the greenhouse effect, the proper change towards “more friendly production process” may help to fight them. The second approach is the promotion of ecological education. It is assumed that the increase of global ecological crisis can only be stopped by changing the lifestyle and habits, learning to live in harmony with nature, pro-ecological population activities. This approach is in accordance with the principle of stable

development and it is considered in the psychological context¹.

Therefore, it can be seen that in order to prevent further degradation of the environment, it is essential to complement the technological approach with the element of ecological education. Technological changes, which are not supported by the change of lifestyle and habits, will not give the intended effect. Only interaction of these two approaches will allow achieving the improvement of world ecological situation.

Since for the last several dozen years moral, academic and institutional authorities have emphasized the need to revise current approach to the environmental issues, it seems that pro-ecological commitment of enterprises is the answer for that state of affairs. It is shown by implementing in the companies the environment management systems (e.g. EMAS, ISO 14001), environmental programs (e.g. Cleaner Production, Responsibility and Care) creating environment related departments. The above causes that it is becoming more frequent that by filling the posts, mainly managerial, in environmental departments it is required to have the proper ecological knowledge and qualifications. Nowadays, when the rivalry of employees on the labour market is high, these “ecological skills” are undoubtedly more and more important competitiveness factor of labour resources.

It is important as well, that ecologically qualified personnel is also sought after by many institutions and organizations such as public administration offices, monitoring units (provincial, marshal, county, and district authorities, Inspectorate of Environment Protection), schools of different levels, mass media and many other institutions dealing with ecological education, including civic ecological organisations and laboratories and environment research stations.

Ecological education – definition, goals, planes

Ecological, or environmental, education covers the entirety of development and upbringing processes and the whole of influences and functions that shape human personality and his actions towards environment protection problems (Domka, 1996).

Ecological education should be correlated with the processes of learning improvement and verification of knowledge of people dealing with the natural environment because it shapes the relations among human beings, society and environment. The first concept of ecological education appeared on the Conference of United Nations “Man and Environment” in Stockholm in 1972.

The Tbilisi Declaration, accepted on International Conference of UNESCO and UNEP in Tbilisi in 1977 stated that ecological education should (Górka, Poskrobko, Radecki, 2001):

- concern every level and range of both formal and informal education
- have the comprehensive character, extend to whole human life and reflect all the changes to the world
- be interdisciplinary in its approach and contribute to developing the sense of continuity, which links present actions with their consequences for the future generations.

Its particular objectives were agreed as follows:

- to teach the basics of sustainable environment management and the ways of protecting it
- to stimulate creative and innovative actions leading to economical use of natural resources and their maximal protection
- to foster need of respecting ecological norms and bans by individuals as well as groups and whole societies and the need to oppose the environment threatening

¹ Further information in: Zimbardo P.G. , Ruch L. F. Psychologia i życie, PWN, Warszawa 1994.

behaviour

- to develop habits of ecological culture and the sense of moral responsibility for conservation of the goods of nature.
- to implement the ability of interdisciplinary thinking and reasoning, to teach to notice the relation between the condition of environment and the quality of living of each human individual, as well as whole societies.
- to develop international solidarity in the scope of environment protection.

In Poland the appropriate rank of ecological education was given in The Constitution (art. 5 and 74) and in other documents e.g. National Environmental Education Strategy, where goals, which the education should carry out for the sustainable development, were set. And they are (Ministry of Environment, 2001):

1. developing full awareness and stimulating public interest in mutually related economic, social, political and ecological issues.
2. enabling each human being to acquire knowledge and skills necessary to improve the state of environment
3. creating novel behaviour patterns as well as shaping individual, group and social attitudes, values and beliefs which carry concerns for the quality of the environment

In order to pursue the above mentioned objectives it seems essential to (Ministry of Environment, 2001):

1. acknowledge that environment education is one of the fundamental components of the National Environmental Policy
2. incorporate respective elements of environmental education into all areas of public activity, while respecting and taking into account cultural, ethical and religious values
3. secure public access to information about the state of natural environment and about environmental education
4. acknowledge that environmental education is quintessential prerequisite for changing the consumption-oriented character of society.

Ecological education is carried out on two planes. The first one refers to education that takes place in the state education and learning system beginning with preschool level and ending with higher and post-graduate studies. The basic tools that make the formal environmental education possible are specialized textbooks, guides, introducing to school programs the ecological contents by means of interdisciplinary paths (secondary schools), organisation of ecological contests, forming the classes with original programs in the scope of ecology and environment protection, introducing to the academic programs subjects concerning protection and development of natural environment, creating courses and specialities associated with ecological issues.

The second plane of ecological education is the informal education. It can be achieved through passive and active interaction. The passive interaction uses the mass media (television, radio, press), materials such as leaflets, brochures, guides, books adequate to the level of education and age are drawn up, diverse educational ventures (actions), courses, exhibitions are carried out on different levels, from local to global, together with varied ecologic events. As a part of active education one may deal with active educational participation. It is manifested by organising for example tourist hikes, and other undertakings both mass (e.g. Clean the World) and local.

From the environment protection personnel education point of view, formal education concerning the academic level should be particularly developed. However, it should be noticed that ecologic education at the higher level should elaborate the subjects introduced at the previous stages of education. One should be aware, that the issues concerning relations between environment, human and economy are just appearing in

education at the primary and secondary levels, while there are people at the universities that in the nearest future will be acquired by the labour market and will decide how the natural resources and environmental service should be used (Burchard- Dziubińska, 2003).

Well qualified personnel for the environment protection services in offices, institutions and economic units should be trained during degree courses regarding environment protection and environmental management. They should be the specialists of a new type. They should link the specific knowledge of one particular environmental subject with the wide knowledge of general environmental issues and the ability to use it to create the proper relations between the ecological, economical and social factors. The graduate of such course should understand both physical – chemical and ecological processes that mould natural environment as well as social, legal and economic mechanisms that mould human attitudes, action and their expectations towards the environment.

The wide range of interdisciplinary knowledge will also allow the graduate to accommodate flexibly to actively changing conditions of labour market. Acquiring the ecological qualifications expands one's possibilities to get free post because people having such qualifications are sought for by the following units:

- production and service companies
- public administration offices and monitoring units e.g. provincial, marshal, county, and district authorities, Inspectorate of Environment Protection
- nature protection services in national and landscape parks
- laboratories and environment research centres
- industrial environment protection services
- schools of different levels, mass media and other institutions dealing with ecological education including civil ecological organizations
- design offices including spatial planning offices, research institutions and consulting offices working for environment protection benefits
- international institutions including the European Union (Mizgajski, 2003).

It is not possible not to appreciate the role of ecological education on the higher level, also in propagating ecologically oriented behaviour and products. This is the intellectual elite that in the majority influence social, political and intellectual life and through that may shape pro-ecological attitudes of society.

In order to acknowledge that ecological education fully fulfilled its tasks, it should include every range and all levels of both formal and informal education. Therefore, it has to encompass and concern the global changes as well as those regarding the whole life of human being. That is why it should have the interdisciplinary and intergenerational character. One may include the following to its particular tasks: to realize, to inform and to develop attitudes, to gain the knowledge allowing solving environmental problems.

Environment management personnel demand in an enterprise

Higher education, due to training of experts of environmental economics and management, forms part of ecological education. It can be assumed that it is even most important one, if we take into account the average and higher level personnel selection within the enterprise. At the time of intensification of the global environmental crisis, acquired environmental knowledge should become an essential factor at the competitive labour market. Is it so in reality?

Only the personnel demand analysis, reported by the enterprises can give an answer to this question. However importance of heaving an environmental knowledge depends on the enterprises attitude to the environmental issue. The more enterprises report their demand on

the pro-ecologically educated personnel, the more students decide to choose the course of environmental management and the more post graduate courses in this subject arise. In other meaning the choice of a certain course of education does not reflect the interests in the particular field of knowledge but the character of labour market.

The enterprise will search for personnel with environmental knowledge only when it gains factual profits out of it. The possible profits depend on many conditioning, however mainly on:

- business character
- environmental fees
- cost of complying with environmental protection regulations

Due to aforesaid the interest in the environment protection and because of that in employment of experts this field will differ. Taking into account the interest in environment problems, a few levels of enterprises might be distinguished – table 1.

Table 1. Enterprises assignment levels according to the interest in environment problems

Level	Characteristics	Attitude towards environment protection experts
I	<ul style="list-style-type: none"> • lack of interests in problems in relation enterprise – environment 	<ul style="list-style-type: none"> • lack of consciousness of necessity to employ an environment protection expert
II	<ul style="list-style-type: none"> • taking incidental actions in the frame of environment protection problems related to the negative impact of the enterprise to the environment • environment protection actions taken by enterprises are a result of execution of regulations by external institutions (e.g. PIOŚ (state inspectorate of environment protection), WIOŚ (provincial inspectorate of environment protection)) • environmental problems are solved by external co-operating unit (consulting companies, protection installations suppliers) 	<ul style="list-style-type: none"> • arise consciousness of necessity to widen competences of the personnel responsible for contacts with entities solving enterprise's environmental problems (profitability analysis of making use of external services)
III	<ul style="list-style-type: none"> • introduction of control procedures for processes defined as onerous or significant source of ecological risk 	<ul style="list-style-type: none"> • full consciousness of necessity to train the personnel or recruit new one • creating structures, within the enterprise, responsible for lowering the ecological risk and environmental fees (e.g. forming units orientated into the source of the problems)
IV	<ul style="list-style-type: none"> • relations with the environment become strategic for the enterprise • reconstruction of the internal information in order to make it more 	<ul style="list-style-type: none"> • necessity of employment of experts at all management levels, with suitable qualifications for solving environmental problems

	sensitive to environmental issues <ul style="list-style-type: none"> • formation of internal bases of environment knowledge (based on the employed personnel's knowledge and IT) 	<ul style="list-style-type: none"> • necessity of employment of personnel having the ecological knowledge essential to form IT system and its management
V	<ul style="list-style-type: none"> • implementation of environmental management system as well as integration of created within particular functions bases of knowledge into one integrated knowledge of environment • universality of ecological knowledge among enterprise's personnel (which translates into policy of human resource management in the enterprise) 	<ul style="list-style-type: none"> • full consciousness of necessity to train the personnel or recruit new one • necessity of employment of experts at all management levels, with suitable qualifications for solving environmental problems

Source: own compilation based on (Kobyło, 2003)

The choice of the assignment level of the enterprise as well as its report of demand of environment protection experts results mainly from: the scale of making the use of environment sources by the enterprise, the repressive system regulating access to those sources, and more often from the requirements of environmental consumers, which is the consequence of their increasing ecological consciousness. If the costs of making the use of environment have got marginal significance to the enterprises and those enterprises do not come from the group "environmental active enterprises", meaning voluntarily facing the difficulty of being environmental friendly (also in the employment policy point of view, meaning taking care of the level of ecological qualification awareness among employed personnel as well as drawing their attention to the environmental issues while recruiting new personnel), those enterprises have no motivation to suffer costs (including employment) due to organization of the environment protection management at higher levels.

Presently in Poland, despite having the impression of huge sympathy of enterprises towards environmental problems most of them do not exceed the third level. In such situation it is noticeable that the demand for personnel with high ecological qualifications is not as high as it seems after proceeding with analysis of enterprises' declarations in this field. However due to the necessity of adjustment of Polish enterprises to the EU law, i.e. farther amendments to native provisions of law and introduction of new pro-environmental tools, the rise of demand of Polish enterprises for employers having certain ecological qualifications seems to be inevitable. Below summarisation of main three elements of ecological qualifications (Antes, 2005):

1. general environmental knowledge: wide knowledge of environmental problems
2. unique, technical-professional qualifications, depending on the field of activity, which are:
 - knowledge of procedures, understood as having the knowledge and being acquainted with ecologically appropriate procedures
 - knowledge of results understood as the knowledge of (probable) ecological consequences resulting from certain actions (e.g. influence of material or specific kind of construction on the remediation and recycling possibility of certain product)
3. basic qualifications:

- being open towards social and ecological approach to the workstation
- ability to work out comprehensive problems
- readiness and ability to cooperate and communicate outside fields and/or disciplines
- ability to overcome conflicts
- ability to be independent and take over responsibility
- ability to have complex consideration concerning closed cycles and activity structures

Employing environment experts by enterprises is essential due to the function of the enterprise itself in the environment, existing relations enterprise – environment, which result in responsibilities presented in table 2.

Table 2. Responsibilities of enterprises making the use of environment

Source of environmental responsibilities	Responsibilities
Provisions of law	<ul style="list-style-type: none"> • protection of the environment's quality and its resources • obtaining appropriate administrative decisions (licenses, permits, etc.) • environment protection against pollution • paying environmental fees (e.g. due to emission of dust and/or gases to the air, water consumption, draining sewage to water or soil) • paying production, exploitation and concession fees • keeping records of fields and intensity of making the use of the environment (e.g. records of waste, water consumption, draining sewage to water or soil) • proceeding with emission of dust and/or gases to the air, draining sewage to water or soil • working out the document concerning the possibility of serious breakdowns • submission of reports of making the use of the environment to proper institutions
Administrative decisions	<ul style="list-style-type: none"> • obtaining permits for: <ul style="list-style-type: none"> emission of gases or dust to the air water low permits for draining of sewage to water or soil production of waste integrated (concerning: only selected plants, that can have significant impact on environment, having intensive agriculture activity, major damp areas) <ul style="list-style-type: none"> • obeying decisions concerning permissible noise levels • notification of emission of electromagnetic fields to the environment as well as emission of dust to the air
Civil law agreements	For example responsibilities of civil law agreements with water and sewage plants for water supply and with plants dealing with reception, collection and recycling or utilization of waste

Source: own compilation based on (Kawałczewska, 2006).

In addition, apart from the aforesaid responsibilities of enterprises towards environment, if enterprises want to implement environment management systems, they need properly qualified ecological personnel. Such personnel has to possess ecological knowledge as well as desire to improve its ecological qualifications.

Active approach to the environmental problems is characterized by enterprises at III-V level. They are orientated into execution of sustainable development concept, they attach great significance to recruitment of conscious and ecological educated personnel. That is why, as far as the education approach is concerned, they make the use of basic education principles for sustainable development – table 3

Table 3. Basic education principles for sustainable development

METHOD	CHARACTERISTICS	INDEPENDANCE SUPPORT	REFFERANCE TO SUSTAINABLE DEVELOPEMENT
„junior” company	Model venture simulation by learners	high	Possible integration by certain tasks
Environment protection week	Learners work out essential environmental fields	Depending on the complexity of task, relatively high	Defined by ecological subjects, possible social integration
Trips	Visit to the enterprise that is a positive example of environment protection or nature protection within the enterprise	Usually low	Depending on the choice of visited places
Environmental expedition	Oriented into acquaintance of aspects essential for environment within own enterprise	High	Depending on scheduled tasks and orientation on ESD of own company
Experiments	Measurement of energy and materials consumption in the enterprise	Depending on tasks’ division, relatively high	Yes, stressing on both ecological and social impact of certain products
Observation of product’s life cycle	Compilation of social and ecological impact on product’s life cycle	Depending on tasks’ division, relatively high	Yes, stressing on ecological impact related to work
Environmental planning game	Game with division into parts of disputable aspects, e.g. at the communal level	High	Possible thanks to ecological, social and economical interactions

Source: (Siebenhuener, 2000)

Environment Management System (EME) is constructed in accordance with a concept of constant self-improvement, that is why it is logical that enterprises have to be exposed to constant changes if such system is implemented. Newly gained knowledge (including ecological one), is the base for such changes which allows the enterprise to be more effective

as well as lower or neutralize problems related to full, appropriate function of the system.

Due to the fact that EME puts particular emphasize on: an obligation of constant improvement in all kinds of activities it is obvious that it also includes constant improvement of ecological qualifications of the enterprise's personnel via training system (required by EME) or other tools, such as further methods of education for sustainable development – table 4.

Table 4. Further methods of education for sustainable development

METHOD	CHARACTERISTICS	INDEPENDANCE SUPPORT	REFFERANCE TO SUSTAINABLE DEVELOPEMENT
Environmental test	Discussion panel with external experts aimed to sensitize to environment, for all employers	Relatively low	Possible however results are not binding
Future workshop	A few days workshops aimed to department's development or orientation of conflicts that came to a standstill	High	Depends on the interests of participants
Ecological interests group	Group of internal experts aimed to clarify strategic and operation issues at the level of departments and enterprise	Depending on character, usually relatively high	It has to be implemented by participants or management of enterprise
Education system under supervision	Partnership workshop groups works on qualifications via critical self-esteem	Relatively high thanks to group and active education	Generally possible, substantial orientation on ESD
Seminaries	Management takes care of related and specialist questions (based on workshops)	Depending on character, usually low	Possible analysis of natural environment or social aspects
Environmental trip	Participation in projects concerning environment aimed to general sensitization to natural environment	low	Possible due to relation human - nature
Pro -environment week	Includes elaboration on natural environment field with references to the enterprise, with active participation of employers in order to widen interests	Relatively high	Possible

Source: (Siebenhuener, 2000)

Development of ecological qualifications of enterprise's personnel is the result of

different approach to its activity in enterprises with higher ecological consciousness. It happens because given tasks are more ambitious and complex, if they are to do with ecology. (for the reason that the regular task has to be solved in accordance with ecological aspects). It is noticeable in higher comprehensiveness (there is additional criteria concerning ecological conformity), increased variation possibility, lowered ability to structure formation (the ecological activity taken by enterprise may result in new complete possibilities), lower probability (intensification of activities due to diversity of ecological impacts).

Challenges of the environment protection personnel

The reality that surrounds us is changing faster and faster and requires from human beings even more flexibility and interdisciplinarity. Not only taking the present determinants into consideration (not ignoring the present market needs) but also looking into the future which can be noticed in considering, in training the new personnel, contents required in the longer perspective, is becoming more important on the labour market.

Because nowadays it is difficult to predict which information, knowledge and qualifications will be useful in the future and what will determine the competitiveness on the labour market. The subjects that may help to gain the new knowledge by oneself or in education institutions for qualification improvement have to be included in the teaching process and education programs for future personnel.

Practically, this should mean that the graduates receive solid theoretical foundations understood as the knowledge of not only basic professional terminology but also the laws and regularities of nature, society and economy. Knowledge of this kind is necessary when one has to distinguish arising problems disregarding if its solution is exactly specified or is evolving and may be changed.

The 6th Program of European Union actions for environment protection and matching National Ecological Policy for the years 2003-2006 in the perspective for the years 2007-2010 as well as accepted by the Government on the 29th November 2006 Operational Program – Infrastructure and Environment (POIiŚ) for years 2007-2013 in accordance with the project of National Strategic Reference Frames for years 200-2013 (NSRO) are the new challenging areas for personnel.

The actions proposed to realization in the environmental section of Operation Program are generally in conformity with the National Ecological Policy. They ought to lead to the fulfilment of obligations of accession and to unification of ecological standards with the EU Member States. The development and unification of the environmental technical infrastructure is supposed to encourage businessmen to invest their capital in Poland and to create new jobs. At the same time, the support for system and investment actions is anticipated in order to improve the natural environment protection system. The actions taken under this programme will have the strategic and global character.

Having analysed the above mentioned documents one can come to the conclusion that the environmental issues are integrated with the following:

- health care problems – one has to aspire to achieve such quality of environment when the pollution level caused by human is minor and does not cause the threat or human health
- using the natural resources efficiently – the usage of the energy sources, both renewable and conventional, should not exceed environment capabilities, it is vital that the natural resources are used more efficiently and the amount of waste is decreased and the waste itself is recycled,
- the quality of products – one should aspire to introducing the modern, integrated, environment friendly production technologies where the producer takes the responsibility for the product for its whole life cycle,

- consumers' decisions – they should be developed, taking the environmental issues into account, on the basis of the better quality and availability of information that will enable making the right choices,
- spatial planning – it concerns particularly preventing the losses of natural habitats and landscape degradation as well as limiting pollution and communication arduousness.

The new scopes of activities will require their appropriate programs, implementation, and administrative supervision of their realization and to do that properly qualified personnel is needed.

Conclusion

Without any doubt ecological knowledge is becoming more and more important factor of competitiveness on the labour market. After the accession of Poland to The EU it is important to improve ecological consciousness of Polish society. It is one of the conditions that will provide the appropriate place of our country in the united Europe. But to make this happen it is necessary to widely popularize the ecological education, which has to enter the sphere of education, improvement, and appraisal of environment managing personnel quickly and complexly.

Undoubtedly, such opportunities are given by the National Environmental Education Strategy, drawn in 1999 that says: "Environmental education is becoming an important element of civic education which is aimed at creating a sensible enlightened society that accepts the principles of sustainable development, is capable of assessing the state of ecological safety and can participate in the decision-making process". Therefore, one need to aspire that the ecological education will equip the human being with the concrete knowledge, proper norms and values that will motivate him to develop the pro-ecologic attitude. Nevertheless, education can not be dominated by the tendency of "knowing" but rather "understand and act".

Environmental policy, economical instruments or environmental management procedures may effectively improve economic activity competitiveness through facilitating production processes, products and services. In order to do so it is necessary to employ by enterprises the personnel with appropriate qualifications, which in this case are ecological qualifications.

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