THE ROLE OF FIELD CLASSES IN EDUCATION OF PROSPECTIVE TEACHERS IN BIOLOGY

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Abstract. Field classes are indispensable in education of biology and environment protection students, as they allow a future teacher to carry out teaching material bringing together theory and practice through activity. In the framework of Biology Didactics classes the biology students of the Faculty of Natural Sciences at the University of Szczecin participate actively in the works on didactic nature trail in the Arkoñski Woods prepared by Dr. Ewa Fleszar. During the work on didactic natural path the students make themselves acquainted with: field class objectives; field class tasks; field class programmes, e.g. concerning phenology; flora and fauna species. Writing synopsis of field classes for selected lesson units at different teaching levels they acquire sound knowledge based on the ecological contents. Contacts with nature as well as gaining the experience during field classes allow them to obtain competences for working in the field and to understand the objectives of carrying out such classes. Field classes have an effect on developing interests of participants in the subject, and affect the improvement of teaching

performance. Visit to the field forms ecological awareness, which leads to obtaining an ecological culture.

Keywords: field classes, flora, fauna, natural didactic path

Introduction

Biology students of the Faculty of Natural Sciences at the University of Szczecin participate actively in the framework of Biology Didactics classes in the works on natural didactic path in the Arkoñski Woods proposed by Fleszar (2004) and Gwardys-Szczęsna (2004). According to Stawiñski (2000) we call didactic paths the routs marked out specially for didactic purposes with a length of 2 to 6 km. They are established in national parks and reserves, landscape parks or culture and recreation parks, botanical gardens and on other grounds with high natural values.

Natural didactic path in Szczecin came into being with the aim to enable teachers and school students to work in the field and learn from nature. School students should verify the acquired theoretical knowledge in the field, e.g., on natural didactic path. They have opportunity and possibility to apply their knowledge in practical action. A huge role is played here by the tasks that are to be carried out, working conditions, factors during work performance and the results (Fleszar, 1996). In this way the students should develop the competence of field work.

Content

During field classes the person conducting them explains their objective and tasks. Field classes should answer the following purposes: (1) show the participants that there are no other way to become entirely familiar with life and structure of domestic flora and fauna without carrying out field classes; (2) justify greater role of field classes in increasing the knowledge in

relation to lessons carried on in school; (3) acquire the knowledge of carrying unaided observation and develop logical thinking; (4) train the knowledge of planning and co-arranging field classes; (5) perfect measurments and results recording; (6) acquire the knowledge of selecting and employing adequate didactic means; (7) develop appropriate attitude towards nature (Fleszar, 1997).

Such a path should serve various tasks: acquaint participants with objects of nature; acquaint participants with different phenomena occurring in nature; enable enjoying the environment according to assigned plan (instructions); enable developing the knowledge of carrying field observation understood as interacting plant and animal complexes and their relationships with the environment; enable acquiring the habits of cultural communication with nature; enable acquiring the habits of responcible behaviour in environment; encourage teachers and school students and the community to enjoy values of nature, at the same time making popular ideas of protecting the nature; enable observing the effects of anthropopressure in ecosystems; enable merging in the process of education the information from different fields of science, such as biology, geography, history, thus stimulating interdisciplinary teaching; enable developing the knowledge of: carrying observations, keeping appropriate documentation, interpreting results, formulating conclusions and their recording, making use of laboratory and field equipment, making use of guides for identification of plants and animals (Fleszar, 1997).

Within the classes students acquaint themselves with field class programmes, e.g. concerning phenology. Phenology is a biological science that sudies relationships between seasonal changes of weather and climatic conditions and terms of periodic phenomena in the lives of organisms, e.g. seasons of plant blooming, leaf falling, bird coming and flight. By reason of educational system reform, phenological studies should find their place in school and out of school education. In school education they should be carried out both within the programme of lesson hours and that outside them, that is

during science interest groups as well as within Leage for the Preservation of Nature (Fleszar, 2000).

Gymnasium curriculum (Fleszar, 2000)

Grade I	
Telomophytae	Observation of blooming season.
Gymnospermae	Observation of showing up cones, bery-like cones
Angiospermae	and seeds Observation of foliage, blooming, fruit showing up, fruit ripening.
Grade II	
Vertebrata. Fish	Observation of young fry (terms).
Amphibians	Observation of depositing spawn by particular species, showing up tadpoles.
Reptiles	Observation of laying eggs (terms). Observation of preying (terms).
Birds	Observation of bird coming and flight (terms). Observation of constructing nests (terms). Observation of leading out young (terms). Observation of waking up (terms). Observation of starting pairing (terms).
Mammals	Observation of migration season (terms).
Grade III	
Protection of environment and human health	Observation of blooming periods in plants (causing alergies)

During carrying on field classes students learn how to assimilate or conceptualize ecological knowledge. Ecological contents are connected with ecological education, which in reformed school expresses them in currical bases as: educational objectives, school tasks,contents, chievements.

Contents should be accomplished in grammar school and gymnasium. These should require planned actions in order the ecological education to be effective. Thus, the programme is assumed to be accomplished continuously and regularly, both during lessons and field classes. Education reform adopts

as its main assumption the adoption of contents in practical action (Fleszar, 2002).

Subject matter of field classes for gymnasium grade III accomplished on natural didactic path

Curriculum section	Topic	Exercises	Knowledge
Ecology	Review of selected plant species growing in different biotopes and their adaptation to environment	Observations of selected plant species growing in the forest, meadow, at the lake, on peat-bog with the help of guides and atlases. Observations of adapatable features of plants to living in a given environment	Making use of Atlases and guides for plant identification. Identifying selected plant species. Showing ecological adaptations of organisms to biotopes. Observing biodiversity in respective plant complexes
	Review of selected animal species	Identification of selected animal species living in the forest, at the lake, in the meadow, on peat-bog with the help of guides and atlases. Observation of adaptable features of animals to living in a given environment	Making use of atlases and guides for animal identification. Identifying selected animal species. Showing ecological adaptations of organisms to biotopes. Observing biodiversity in respective animal groups.
	Factors limiting the occurrence of animals (range of ecological tolerance)	Examination of abiotic factors (temperature, wind, clouds, humidity) in ecosystem	Listing factors limiting the occurrence of animals. Giving examples of the effect of

		(meadow, forest, forest clearing). Determination of general soil properties with the help of plant soil indicators.	environmental factors on species occurrence. Using professional nomenclature.
	Characteristic features of population	Observation of spatial structure of selected plant population (e.g. of the nettle). Calculation of the numbers and the population density of common plant species. Observation of age structure of duckweed population.	Interpreting population features basing on carried out observations. Representing graphically spatial and age structure of population. Formulating conclusions and general statements. Justifying own opinions.
		Observation of the density of plant population and its effect on growth and development of plants	
Protection of environment	Influence of pollutants on ecosystems functioning	Examination of pH reaction of falling off dust (acid, basic) and observation of its effect on plants. Examination of the acidity of precipitation water. Observation of tree leaves insuries caused by strong reaction of sulfur dioxide and chlorine. Determination of the origin of water basing on suspended matters. Determination of the degree of air pollution with sulfur dioxide using lichen scale.	Indicating examples of unfavourable changes occurring in the atmosphere, hydrosphere and lithosphere due to human activity. Carrying on simple observations and experiments referring to the influence of environment contamination on plants and animals. Interpreting the results of observations and experiments. Detecting cause

			and effect relations.
Protection of nature	Species protection of flora and fauna	Identification of protected plant and animal species using guides and atlases. Taking care of stands of protected plants.	Identifying protected plants and animals. Justifying the necessity of protecting vanishing species
		Taking care of protected animals.	Observing the responsibility of people for preservation of biodiversity.

Natural didactic path in the Arkoñski Woods in Szczecin is about 3 km long and runs through picturesque and interesting, in respect of the nature, areas of the forest. There are the following stops along the route of this natural didactic path.

Stop (point) I: eastern white pine Pinus strobus L.

Apart from it, there are other trees, accompanying ones: Norway spruce *Picea excelsa (Lom.*), Douglas fir *Pseudotsuga (taxifolia)* Mirb., Norway maple *Acer platanoides L.*, pedunculate oak v. menziesii, *Quercus robur L* drooping birch *Betula verrucosa Ehrh*. From among birds there are: European jay *Garrulus glandarius (L.),* chaffinch *Fringilla coelebs L.*, blue tit *Parus caeruleus L.*, great tit *Parus major L.,* coal tit *Parus ater L.*, middle-spotted woodpecker *Dryobates medius (L.)* and pied flycatcher *Muscicapa hypoleuca (Pall.).* Out of amphibians there is grey toad *Bufo bufo L.*

Activities of students are: acquainting with field class objectives and tasks; observing terrestial biotope (ecosystem); observing tree habit (eastern white pine), aspect of trunk, cones; identifying selected plant and animal species; choosing a subject matter for accomplishing with students of grammar school, gymnasium and lyceum in the field in respect of: biotope, diversity and

unity of thallophytes, diversity and unity of telomophytes ecology and environment protection, eucaryote, primary stages of chordates development, selected problems concerning ethology (Fleszar, 2005).

Stop (point) II: pedunculate oak Quercus robur L.

Amphibians living in this area and in the nearest surrounding are: tree-frog *Hyla arborea L.*, grey toad *Bufo bufo L*., spotted newt *Triturus vulgaris L.*, which occur especially in May (pairing season). From among birds one may run across: wood warbler *Phylloscopus sibilatrix Bechts*., black-headed whitethroat *Sylvia atricapilla (L.)*, European nuthatch *Sitta europaea L.*, garden tree creeper *Certhia brachydactyla C.L. Brehm*. and chaffinch *Fringilla coelebs L.*

Activities of students are: acquainting with field class programme, e.g. concerning phenology; observing terrestial biotope (ecosystem); observing tree habit (pedunculate oak), aspect of trunk; identifying selected plant and animal species;choosing a subject matter for accomplishing with students of grammar school, gymnasium and lyceum in the field in respect of: biotope, diversity and unity of thallophytes, diversity of invertebrates, diversity of chordates, diversity of telomophytes; ecology and environment protection, eucaryota, primary stages of chordates development, selected problems concerning ethology (Fleszar, 2005).

Stop (point) III: the Goplana lake (enchantlingly situated, with rush vegetation by its waterside)

. Sandy beaches allow access to the water. Here one could find out: brittle willow *Salix fragilis L.,* European larch *Larix decidua Mill*.; among shrubs: European elder *Sambucus nigra L.,* hedge rose *Rosa canina L*., wrinkled rose *Rosa rugosa Thunb*. Amphibians, that are met here, are: edible frog *Rana esculenta L*., grass frog *Rana temporaria L*., marsh frog *Rana arvalis Nill.,* spotted newt *Triturus vulgaris L*. A large number of animals is

encountered in particular in pairing season. Out of birds one may notice and see European cuckoo *Cuculus canorus L.,* chaffinch *Fringilla coelebs L.,* blackbird *Turdus merula L*. and coming to the water mute swan *Cygnus olor (Gmel*.), coot *Fulica atra L*., mallard duck *Anas platyrhyncha L.*

Activities ofstudents are: acquainting with the method of accomplishing ecological contents; observing aquatic biotope (ecosystem); characteristics of plant complexes and animal groups within the lake; choosing a subject matter for accomplishing with students of grammar school, gymnasium and lyceum in the field in respect of: biotope,diversity and unity of thallophytes, diversity of invertebrates, diversity of chordates, diversity of telomophytes, ecology and environment protection, eucaryota, primary stages of chordates development, selected problems concerning ethology (Fleszar 2005).

Stop (point) IV: the Głuszec lake (here one could observe):

Purple European beech *Fagus silvatica L.,* Norway spruce *Picea excelsa (Lom.),* Scotch pine *Pinus silvestris L.,* pedunculate oak *Quercus robur L*., European larch *Larix decidua Mill*. Amphibians, that may be met here, are: edible frog *Rana esculenta L*., marsh frog *Rana arvalis Nill*., grass frog *Rana temporaria L.,* fire-bellied toad *Bombina bombina L*. Large concentration of these animals occur in springtime during pairing season. Out of birds live here: wood warbler *Phylloscopus sibilatrix (Bechst*.), blackbird *Turdus merula L*., European robin *Erithacus rubecula (L.),* blue tit *Parus caeruleus L*., song thrush *Turdus philomelos (C.L. Brehm.),* chaffinch *Fringilla coelebs L*., brown willow warbler *Phylloscopus collibita (Vieill.),* European wren *Trogladytes trogladytes (L.).*

Activities of students are: observing aquatic biotope (ecosystem); characteristics of plant complexes and animal groups within the lake; choosing a subject matter for accomplishing with students of grammar school, gymnasium and lyceum in the field in respect of: aquatic biotope, diversity and

unity of thallophytes, diversity of invertebrates, diversity of chordates, ecology and environment protection, eucaryota, primary stages of chordates development, selected problems concerning ethology (Fleszar, 2005).

Stop (point) V: the "Uroczysk"

One sees here rich and diverse vegetation - from among trees: Scotch pine *Pinus silvestris L*., drooping birch *Betula verrucosa Ehrh*., Norway spruce *Picea excelsa (Lom.),* brittle willow *Salix fragilis L*., pedunculate oak *Quercus robur L.*; from among shrubs: filbert *Corylus avellana L*., snowberry *Symphoricarpus albus (L.),* rowan *Sorbus aucuparia L.* Out of invertebrates we encounter here snails: amber snail *Succinea putrius L.*, white-lipped grove snail *Cepaea hortensis Mül*l. and brown-lipped snail *Cepaea nemoralis L*. Out of insects one may find ants Monomorium in fenced knolls. Birds, which are to be found in this area and in the surrounding, are: turtle-dove *Streptopelia turtur (L.),* black redstart *Phoenicurus achruros (Gmel*.), pied wagtail *Motacilla alba L*., European cuckoo *Cuculus canorus L.,* blue tit *Parus careruleus L.*, wood pigeon *Columba palumbus L*. To the water comes for feeding: mute swan *Cygnus olor (Gmel*.), mallard duck *Anas platyrhyncha L.* and coot *Fulica atra L.*. Amphibians, which live here, are: grey toad *Bufo bufo L*., tree-frog *Hyla arborea L.,* spotted newt *Triturus vulgaris L*., grass frog *Rana temporaria L.,* edible frog *Rana esculenta L*., and sometimes marsh frog *Rana arvalis Nill*. Large concentration of these animals occur in pairing season Fleszar (2005).

Activities of students are: observing aquatic biotope (ecosystem); characteristics of plant complexes and animal groups within the lake; choosing a subject matter for accomplishing with students of grammar school, gymnasium and lyceum in the field in respect of: biotope, diversity and unity of thallophytes, diversity of invertebrates, diversity and unity of thallophytes, diversity of chordates, ecology and environment protection, eucaryota, primary stages of chordates development, selected problems concerning ethology

Fleszar (1996, 2005); acquainting with field class synopsis; writing field class synopsis according to given instructions.

During the classes of biology didactics and environment protection the students work out field classes synopses for selected lesson units at different teaching levels. Field classes are usually more difficult to carry on for teachers than lessons in school workroom. Preparation to field classes contains many organisational works that concern the conducting person and the participants. Teacher, prior to the date of these classes, has to check carefully in the area whether the scheduled theme may be accomplished there and then inform and prepare school students to that type of classes. School students should obtain readable (clear) instructions in writing, referring to field work, and a list of references related to class theme (Fleszar,1997).

Exemplary synopsis of biology filed classes for accomplishing in the field is presented in the Appendix.

During the classes a special students' attention has been called by the method of teaching in the field classes. This method is field observation. Observation, as one of the active methods in biology teaching, enables school students to understand the world in its unity and complexity, develops in them the ability to learn by themselves, inspires them to investigative work and to express their own opinions and experiences. School students participate very wilingly in field classes and are active during them. This activity manifests itself in greater creativity, i.e. in that that school students perceive and see the world with their all senses. When observing, they can touch, see, and feel; by reason of that all these feelings influence their ability to memorize and understand knowledge. The knowledge acquirred during field work should be used in typical and problem situations. Field classes develop in school students an attitude to factual contents of natural character, external world and self-bieng (Mikołajczak-Półtorak & Gwardys, 2002).

Ecology and environment-oriented education is understood as increasing the ecological awareness that leads to acquirring ecological culture.

Ecological awareness consists of: ecological learning, ecological imagination and ecological ethics. Ecological learning contains the knowledge and competencies referring to the processes that occur in natural environment covering ecosystems and the knowledge on mechanisms of their equilibrium as well as the relationships between forms of human activity in natural environment referring to environment pollutants and hazards and preventive treatment methods. Ecological imagination is the competence and the ability to forsee ecological effects of human activities as well as to notice connections between processes occurrung in environment and civilisation development. This all manifests itself in the ability to plan ecologically safe activities (Fleszar, 2002, 2004)

Ecological ethics is the ability to act in accordance with standards accepted in a given time and era. The acquirred ecological culture comprises: elements of environment protection;

natural methods of preserving the health, with special attention paid to psychophysical equilibrium, harmonious functioning of the man in environment and susceptibility to stress; living consistent with the nature in external and internal harmony (Fleszar, 1995,1998).

Table 1. *Results of the research carried out on students of biology in the Department of Natural Sciences at University of Szczecin in the course of compulsoryPracticum in Didactics of Biology*

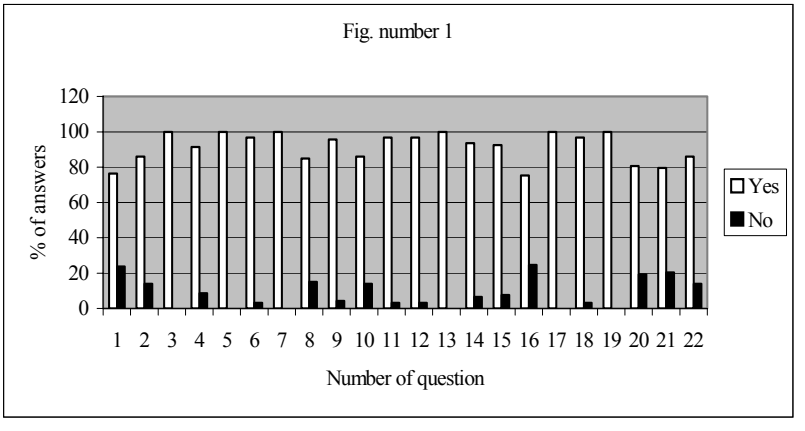
Question number	Ans.	2004 (93)		2005 (101)		2006 (104)		Total (298)	
		Nu	%	Nu	%	Nu	%	Nu	%
1.Field classes develop the habit of exact and systematic work	Y	71	76,34	93	92,08	94	90,38	258	86,58
	N	22	23,66	8	7,92	10	9,62	40	13,42
2. Field classes develop the responsibility for results and effects of work	Y	80	86,02	92	91,09	94	90,38	266	89,26
	N	13	13,98	9	8,91	10	9,62	32	10,74
3. Field classes develop a proper attitude to work	Y	93	100	100	99,01	99	95,19	292	97,99
	N	-	-	1	0,99	5	4,81	6	2,01
4. Field classes develop the competence of planning and organization	Y	85	91,40	90	89,11	98	94,23	273	91,61
	N	8	8,60	11	10,89	6	5,77	25	8,39
5. Field work develops the habit of team work	Y	93	100	101	100	104	100	298	100
	N	-	-	-	-	-	-	-	-
6. A field visit develops aesthetical sensibility	Y	90	96,77	95	94,06	100	96,15	285	95,64
	N	3	3,23	6	5,94	4	3,85	13	4,36
7. Field work increases emotional connection with nature	Y	93	100	100	99,01	101	97,12	294	98,66
	N	-	-	1	0,99	3	2,88	4	1,34
8. Field work helps in understanding the principles and postulates of nature preservation and environmental protection	Y	79	84,95	85	84,16	97	93,27	261	87,58
	N	14	15,05	16	15,84	7	6,73	37	12,42
9. Team work helps to discover talents and interests	Y	89	95,70	90	89,11	91	87,50	270	90,60
	N	4	4,30	11	10,89	13	12,50	28	9,40
10. Field classes develop perceptiveness	Y	80	86,02	92	91,09	93	89,42	265	88,93
	N	13	13,98	9	8,91	11	10,58	33	11,07
11 Field classes influence the forma-	Y	90	96,77	98	97,03	94	90,38	282	94,63

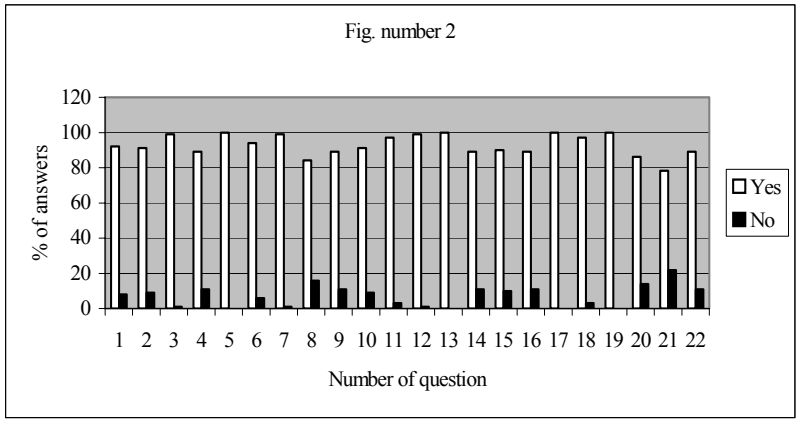
tion of observation skills: - phenological, - ethological, - ecological	N	3	3,23	3	2,97	10	9,62	16	5,37
12. Field classes develop the skill of recognizing plants and animals	Y	90	96,77	100	99,01	98	94,23	288	96,64
	N	3	3,23	1	0,99	6	5,77	10	3,36
13. Field classes enable to teach practical use of theoretical knowledge	Y	93	100	101	100	104	100	298	100
	N	-	-	-	-	-	-	-	-
14. Field classes permit to perceive the dependence of organisms from their habitat	Y	87	93,55	90	89,11	94	90,38	281	94,30
		6	6,45	11	10,89	10	9,62	17	5,70
15. I know and I understand the notion of sustainable development (eco-development)	Y	86	92,47	91	90,10	94	90,38	271	90,94
	N	7	7,53	10	9,90	10	9,62	27	9,06
16. I know what the strategy of sustainable development concerns	Y	70	75,27	90	89,11	92	88,46	252	84,56
	N	23	24,73	11	10,89	12	11,54	46	15,44
17. I know what phenology deals with and to what purpose	Y	93	100	101	100	104	100	298	100
	N	-	-	-	-		-	-	-
18. I understand the notion of biodiversity, that is biological variety	Y	90	96,77	98	97,03	100	96,15	288	96,64
	N	3	3,23	3	2,97	4	3,85	10	3,36
19. I know what Agenda -21 speaks of	Y	93	100	101	100	104	100	298	100
	N	-	-	-	-	-	-	-	-
20. Field classes allow to cover the material concerning environmental protection	Y	75	80,65	87	86,14	90	86,54	252	84,56
	N	18	19,35	14	13,86	14	13,46	46	15,44
21. I know what tasks were undertaken of the Earth Summit in Johannesburg	Y	74	79,57	79	78,22	85	81,73	238	79,87
	N	19	20,43	22	21,78	19	18,27	60	20,13
22. Field classes are more attractive than those taking place in a laboratory	Y	80	86,02	90	89,11	100	96,15	270	90,60
	N	13	13,98	11	10,89	4	3,85	28	9,40

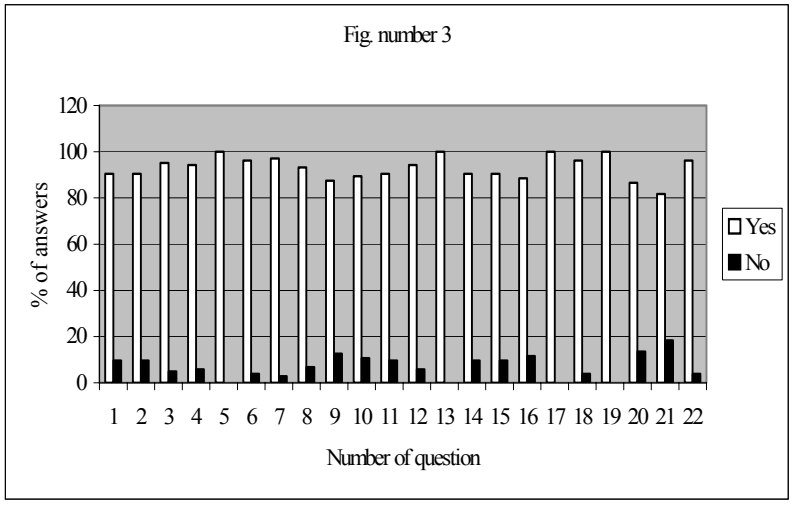
Fleszar (2007): ANS. – answers, Y – yes, N – no, Nu – Number of answers, % - per cent of answers

The research conducted shows that students value the part of field classes "they develop the habit of exact and systematic work (question 1- 86,58 %), "they develop the responsibility for results and effects of work (question 2- 89,26 %), "they increase emotional connection with nature (question 7- 98,66 %), "they help in the understanding of principles and postulates of nature preservation and environmental protection" (question 8-87,56 %), "they influence the formation of ecological observation skills (phenological, ethological)" (question 11-94,63 %), "they understand the notion of sustainable development (eco-development) (question 15 - 90.94 %) as well as the strategy of sustainable development (what it concerns) (question 16-84,56 %) they understand the notion of biodiversity, that is biological variety" (question 18-96,64 %). They know what Agenda 21 speaks of (question 19-100) and what tasks were undertaken at the Earth Summit in Johannesburg (question 21- 79,87 %) (Fleszar (2005a).

Fig. number 1







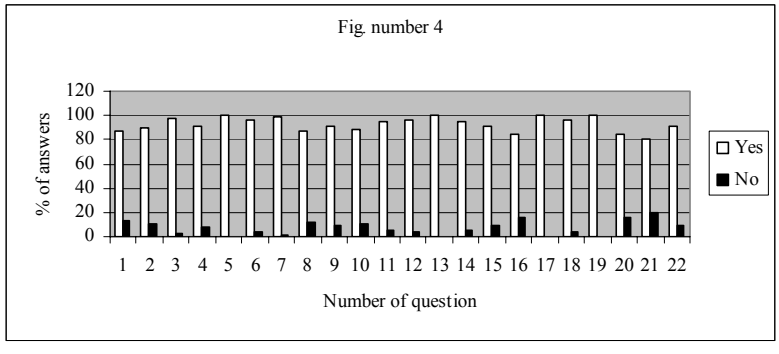


Fig. 1-4 (cf. Table 1 – 2004, 2005, 2006, 2004-2006, respectively

During field classes which take place on natural didactic path the role of teacher is to show students, the prospective teachers of biology and environment protection, the method of accomplishing assumptions of ecology and environment-oriented education. Undoubtedly, these classes may inspire them to further work.

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APPENDIX: FIELD CLASS SYNOPSIS (Gymnasium Grade 1)

Theme*:* "Introducing to aquatic co
mplex plants".
Lesson objectives:
Knowledge:
- understanding the following concepts: natural community, artificial community,
aquatic community,
- understanding the names of selected species of herbaceous plants, shrubs, trees
living in the community,
- understanding living conditions prevailing in the water,
- understanding plant adaptations to biotope.

Acquirements:
- co-operation witinh the group,
- planning of observations,
- making remarks from observations,
- identifying common plant species,
- noticing stratigraphic arrangement of aquatic vegetation,
- showing plant adaptation to biotope,
- formulating conclusions from observations,
- making use of illustrated guides and plant atlases and of apparatuses.

Attitudes:
- manners and discipline during the excursion,
- respect for rare species of native flora,
- implementation of team-work principles,
- development of investigative attitude.

Strategy: P (problem).
Form of classes: field classes.

Method: field observations.
Didactic means: atlases and guides for plant identification, note-books and ball pens, thermometers, litmus papers.
Duration: 2 hours.
Season: spring.
Place: Natural Didactic Path in the Arkoñski Woods, the Wkrzañska Forest (Stops 3, 4, 5) (according to the conducting personås choice).
Preparation of field classes:

- careful examination of the field work area by the teacher,
- preparation of teachers to field work in terms of material and methods.

References:

- atlases and guides for plant identification.

Preparation of school students to field work by the teacher:

- information on excursion date and site,
- stating a theme of classes,
- instructing school students of class obejctives and duration,
- settling on equipment and clothing,
- stating a list of references.

Course of field classes:

- meeting at school in fixed time,
- checking the attendance list, clothing and equipment,;
- departure to field classes,
- partition into 5-6 person groups,
- distribution of equipment and instructions to groups.

Work themes for particular groups:
Group I, Group II
Work up plants of coastal zone of the lake according to given instructions (choose 5 species for observation).
Group III, Group IV
Work up plants of underwater zone of the lake according to given instructions (choose 5 species for observation).
Work instructions for respective groups:

1. Give names of plant species encountered here. Use atlases and guides.
2. Determine living conditions prevailing in the water - describe them:
   - water temperature,
   - water pH,
   - clarity of water reservoir,
   - amount of coming up light,
   - water reservoir pollution.

3. Make a sketch of the external structure of selected plants, mark respective respective
organs.
4. Notice adaptations of the said plants to living in particular zone, describe them.
5. Groups start working (field observation), staying within the eyeshot of teacher.

Work summing up:

-checking the attendance list,
-verbal report from works of particular group,
-instruction to well-order the notes and prepare to discussion in class-room lesson,
-teachers evaluation of field work and discipline of groups during field work,
-home work - elaboration of written reports by particular groups.

During class-room lesson, each group presents their written report from field classes.
Making a note by teacher in a note-book of school student according to instructions.