

The educational impact of implementation the education through adventure discipline in physical education and sports academic curriculum

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Abstract	The inclusion in the curriculum for students of physical education specialization in Romania of a new discipline-Education through adventure (EA) falls within the current trends of practicing physical activities and modernization of the European curriculum. The purpose of the study aims at assessing the educational level of implementation of EA discipline within the academic curriculum of physical education and sport specialization.
Purpose:	Study through the survey method based on a questionnaire concerning the assessment of the educational impact of implementing the EA disciplines.
Material:	72 students from physical education, University of Medicine and Pharmacy Targu Mures. The questionnaire on the assessment of the educational impact of implementing the EA discipline included 15 items with Linckert responses. Statistically processed with SPPS 20: Cronbach's alpha, effect size, the percentage of individual qualifications, the arithmetic mean, the standard deviation, t-test.
Results:	The 15-item questionnaire had a Cronbach reliability scores .792. We identified five patterns that emerged explaining more than 60.2% of the variance. 54.82% consider relevant the educational discipline with maximum response, effect size of each $\geq .683$ items, the results are statistically significant for all items, $p < 0.05$. The study results reveal the major educational impact of EA discipline content, being considered by students as it follows: attractive, useful, effective with innovative relevance in the professional training.
Conclusions:	We recommend the conduct of future studies of impact assessment of EA specific activities on students' motor abilities.
Keywords:	curriculum, theoretical content, practical activities, adventure education, physical education.

Introduction

The improvement of the educational and academic training must aim at adjusting to the international standards and curricular modernization trend. Increasing the competitiveness of academic physical education (PE) can be achieved by implementing within the curricula of some innovative disciplines allowing the acquisition of additional professional knowledge and skills in accordance with the modern requirements and the expansion of practicing forms of physical activities.

The academic physical education curriculum requires the diversification of activities creatively in accordance with: the specific objectives, the academic functions, the students' preferences and the trends in specific areas [1]. The current trends in education have direct implications for the physical education curriculum [2]

A physical harmony creates the base of a higher intellectual yield and can become the foundation of a positive behavior for the individual in society [3].

Analyzing the curricular content situation in the European countries we have found that in many countries there are study programs for the specialization in recreational activities that also include disciplines containing outdoor recreational activities and adventure education. In Romania, in the field of physical education complying with the Romanian Agency for Quality Assurance in Higher Education (ARACIS) standards [4] there are 3 specializations: physical education and sports; sport and motor performance; physiotherapy and special motricity and the standards do not provide within the "Training disciplines and specializations for the bachelor's degree" any discipline specialized on education through

adventure.

In the latter of the 20th century, many who used adventure activity for educational proposes used the terms experiential education and adventure education synonymously [5].

Adventure education focuses on growth and development through activity based on experiential education principles. Adventure education improves motor and psychical capacities by exploring real circumstances.

Previous research on the implementation of EA specific activities showed significant improvements of psychological issues [6-7] and the educational components [8-13].

The discipline Education through adventure includes a synthesis of interdisciplinary and trans-disciplinary knowledge concerning history, psychology, education, ecology, geography, philosophy, culture [12, 14-17].

Adventure education has many positive outcomes. A meta-analysis of studies identified forty major adventure education outcomes, grouped into the following six categories: leadership, self-concept, academic, personality, interpersonal, and adventuresomeness [18]. Adventure education has many positive outcomes. A meta-analysis of studies Identified forty major adventure education outcomes, grouped into the following six categories : leadership, self-concept, academic, personality, interpersonal, and adventuresomeness [18].

The main skills specific to the organization and to conduct activities of adventure education and outdoor education are of the following type: technical, safety, organizational, instructional, facilitation, flexible leadership experience-based judgment, problem-solving, decision-making, effective communication, professional ethics [19].

We believe that in addition to the skills acquired through the educational adventure activities, participants also acquire some knowledge and skills such as: kinetic, technical, psychological, geographical, artistic and cultural.

According to specialists the content of the academic curriculum needs to be diversified by using some innovative and attractive varied environments (terrestrial, aquatic and aerial, indoor, outdoor) and some modern methods and technologies which will lead to students' improvement: motor and technical training skills, theoretical and professional knowledge, of the functional capacity etc. [1, 3, 20-22].

Purpose and hypothesis

The faculties and the study curricula in the field of physical education have the role to contribute to the professional training of future physical education teachers in line with the specific current and modern trends.

The aim of our study was to assess the formative and educational level of implementation of a new discipline education through adventure within the curriculum of physical education and sports specialization at the University of Medicine and Pharmacy in Targu Mures.

The hypothesis of the study started from the assumption that the implementation of an innovative adventure education discipline, will have the educational and formative relevance on students from physical education and sports specialization and will contribute to acquiring new knowledge and creating specific professional skills.

As a result of the increasing impact of recreational activities such as adventure education and the extension of facilities by increasing the number of adventure parks in Romania, we have designed and implemented to students in physical education and sports specialization a new discipline Education through Adventure (EA) with mandatory nature, provided for the third year of study, with a total of 28 classes of theory and 28 classes of practical works. The education through adventure discipline was included in the 5% stipulated within ARACIS standards that allow the inclusion in the curriculum of new subjects at the university's option.

The topical content of the theoretical courses of Education through Adventure:

1. Adventure education – experiential education: concepts, features, principles;
2. Adventure education – means, elements;
3. Interrelation: education through adventure, experiential education and adventure learning;
4. Indoor adventure education - forms of organization and practice;
5. Adventure education in adventure parks - forms of organization and practice;
6. Adventure education through mountain and off road activities - forms of organization and practice;
7. Urban adventure education - forms of organization and practice;
8. Aquatic adventure education - forms of

organization and practice;

9. Mountaineering tourism- general aspects, forms of organization and characteristics;
10. Guidance Techniques on the map and complementary;
11. Planning and preparing a mountain road itinerary and behavior during trips;
12. Behavior in adventure and tourism activities;
13. Specific equipment to adventure activities;
14. Survival and rescue techniques.

The content of practical work lessons of Educational adventure discipline:

- Lesson 1-3. Organization and conduct of adventure education activities;
- Lesson 4-6. Trails and adventure activities - indoor;
- Lesson 7. Team building exercises during adventure education lessons;
- Lesson 8-12. Specific activities of adventure education -outdoor;
- Lesson 13. Survival techniques;
- Lesson 14. Practical and methodical assessment.

We present below three examples of practical and methodical programs provided within the outdoor practical works carried out in a modular system (merged in 3 days):

1. Photo Trip Town Adventure: moderate effort; it is for people with a basic level of fitness and good health. The itinerary may take place in Brasov 5-6 km. The aim of this adventure tour is to discover the main monuments of our town by walking and to make photos and to take information about them. Every participant will receive one map of the town and a paper with the main monuments, which need to be discovered and photographed. Evaluation: total time will be measured and turned into points. After the trip every group of 3-4 persons will make one presentation about what they have seen and what they have learnt.
2. Park Aventura Brasov Challenge: effort moderate/high according to the chosen tour, a high level of fitness. Every group of 3-4 persons has to pass three routes with different difficulties. Evaluation: total time will be measured and turned into points.
3. 7 Stairs Canyon Adventure: Description: The first part of the route means walking 3.1 km through forest, then climbing the canyon. The way back will be covered by help of the flying fox (2.5 km with 21 parts) Along this route there will be placed some check-points, where the participants will have to fulfil some specific tasks. Evaluation: total time will be measured and turned into points. Extra points will be awarded for the fulfilment of the check-point tasks.

Material and method

Participants: The study comprised 72 students from physical education and sports specialization from the University of Medicine and Pharmacy Targu Mures, 58 boys (80.5%) and 14 girls (19.5%) with the average age 21.84. All the participants in this study were volunteers.

Procedure: The research was carried out between

October 2015 - January 2017. The assessment targeted a survey based on a questionnaire concerning the degree of satisfaction and the educational impact of the implementation of adventure education discipline. The questionnaire contains 15 items with Linckert responses (5), 1 representing the minimum and 5 the maximum level of appreciation. The questionnaires were developed with the help of Google Form and the students were directly provided with them to the end of the course.

Statistical analyses

The resulting data were statistically processed with SPSS 20.

To assess the reliability or the internal consistency of the questionnaire it was calculated Cronbach's alpha statistic index. To assess the relevance and the effect size for each group of students were calculated the number and the percentage of subjects in relation to the maximal responses (5) for 4 grade and 3 on each item (Table 1). The statistical analysis included: the arithmetic mean, the

standard deviation, the mean deviation error, the student t-test, the significance threshold p, for $p < .05$ and the effect size d (Table 2). Effect size is just a more commonly used as effect size measure, used in meta-analyses and summarizing strength of bivariate relationship [24].

We used to identify the important factors the Rotation Method: Varimax with Kaiser Normalization ,we took into account all the 15 items of the questionnaire. After identifying the relevant factors, the next step was to rename them according to the most relevant results to each factor (Table 3). Only items which had the positive values of higher than-0.4 and 0.4 on one factor contributed directly to this pattern and were considered after renaming the factor. A high score of the items for a pattern indicated a high educational relevance.

Results

The average number of the subjects that rated the assessment questionnaire of the educational impact of EA

Table 1 .The statistical analysis of responses weight according to Linckert scale (5) on each item on the questionnaire assessing the educational impact of implementing EA discipline

Items	Responses weight n (%)		
	5 points	4 points	3 points
Item 1. How innovative is EA discipline?	32 (44.4%)	30 (41.7%)	10 (13.9%)
Item 2. How do you appreciate the complexity of the curricular theoretical topics included in EA discipline sheet?	32 (44.4%)	28 (38.9%)	12 (16.7%)
Item 3. How do you rate the educational relevance of theoretical concepts specific to EA ?	30 (41.7%)	35 (48.6%)	7 (9.7%)
Item 4. How do you rate the educational relevance of 7 Stairs Canyon Challenge program?	40 (55.6%)	24 (33.3%)	8 (11.1%)
Item 5. How do you rate the educational relevance of Brasov Adventure Park program??	43 (59.7%)	22 (30.6%)	7 (9.7%)
Item 6. How do you rate the educational relevance of Photo Adventure Trip program?	36 (50%)	35 (48.6%)	1 (1.4%)
Item 7. How do you assess the attractiveness of the programs included in EA discipline?	43 (59.7%)	25 (34.7%)	4 (5.6%)
Item 8. How do you assess the complexity of the practical work topics included in the discipline sheet?	36 (50%)	33 (45.8%)	3 (4.2%)
Item 9. How do you rate the educational relevance of the practical module of survival techniques?	46 (63.9%)	16 (22.2%)	10 (13.9%)
Item 10. How do you rate the assessment method of EA discipline?	46 (63.9%)	15 (20.8%)	11 (18.3%)
Item 11. How do you rate the formative impact on the motor ability of the programs included in the discipline?	42 (58.3%)	22 (30.6)	8 (11.1%)
Item 12. How do you assess the collaboration and the mutual aspects in order to accomplish specific tasks within the programs included in EA discipline?	46 (63.9%)	17 (23.6%)	9 (12.5%)
Item 13. Do you consider that EA discipline implementing in the curriculum is efficient in training teachers with physical education specialization?	36 (50%)	28 (38.9%)	8 (11.1%)
Item 14. Rate the consistency between the discipline content and the expansion trend of physical activities practicing forms	43 (59.7%)	20 (27.8%)	9 (12.5%)
Item 15. After the course completion will you continue to implement in your future activity the accumulated knowledge and experiences?	41 (56.9%)	20 (27.8%)	11 (15.3%)

n - number of Participants

Table 2. Descriptive statistics for the results of the questionnaire assessing the educational impact of the Educational Adventure implementation

Items	x	SD	SEM	t (71 df)	d	p
Item 1. How innovative is EA discipline?	4.3056	.70489	.08307	51.829	.985	.000
Item 2. How do you appreciate the complexity of the curriculum theoretical topics included in EA discipline sheet?	4.2778	.73585	.08672	49.328	.982	.000
Item 3. How do you rate the educational relevance of theoretical concepts specific to EA?	4.319	.646	.08565	56.714	.897	.000
Item 4. How do you rate the educational relevance of 7 Stairs Canyon Challenge program?	4.4444	.68974	.08129	54.676	.805	.000
Item 5. How do you rate the educational relevance of Brasov Adventure Park program??	4.5000	.67135	.07912	56.877	.845	.000
Item 6. How do you rate the educational relevance of Photo Adventure Trip program?	4.4861	.53056	.06253	71.747	.976	.000
Item 7. How do you assess the attractiveness of the programs included in EA discipline?	4.5417	.60369	.07115	63.837	.759	.000
Item 8. How do you assess the complexity of the practical work topics included in the discipline sheet?	4.4583	.57989	.06834	65.237	.934	.000
Item 9. How do you rate the educational relevance of the practical module of survival techniques?	4.5000	.71158	.08622	52.193	.703	.000
Item 10. How do you rate the assessment method of EA discipline?	4.4861	.75046	.08844	50.724	.684	.000
Item 11. How do you rate the formative impact on the motor ability of the programs included in the discipline?	4.4722	.69144	.08149	54.883	.762	.000
Item 12. How do you assess the collaboration and the mutual aspects in order to accomplish specific tasks within the programs included in EA discipline ?	4.5139	.71193	.08390	53.800	.683	.000
Item 13. Do you consider that EA discipline implementing in the curriculum is efficient in training teachers with physical education specialization?	4.3889	.68290	.08048	54.533	.895	.000
Item 14. Rate the consistency between the discipline content and the expansion trend of physical activities practicing forms ?	4.4722	.71152	.08385	53.334	.741	.000
Item 15. After the course completion you will continue to implement in your future activity the accumulated knowledge and experiences?	4.4167	.74588	.08790	50.245	.782	.000

x- mean arithmetic; SD - standard deviation; SEM - Standard Error Mean; d - effect size; p - level of probability.

discipline implementation with maximum grade (5) were 32.45 students, representing 54.82%; 4 grade - 24.66 students, representing 34.26% and grade 3 - 7.86 students, representing 10.91% (Table 1).

Statistical processing of the questionnaire for the sample of students highlighted the results statistically significant for $p < 0.05$, the average value of the questionnaire was 4438, where the average minimum value was 4.278 and the average maximum value was 4.542.

A Principal Component Analysis (PCA) was

conducted on 15 items with orthogonal rotation (varimax). The Keiser-Meyer-Olkin measure verified the sampling adequacy for analysis, $KMO=0.651$, which are above Keiser's criteria (>0.5). Bartlett's test of sphericity $\chi^2(105)=207.22$, $p<0.001$, indicated that correlation between items were sufficiently large for PCA.

An initial analysis was run to obtain eigen values for each component in the data. Five components had eigen values over Keiser's criterion of 1 and in combination explained 60.2% of the variance.

Table 3. Items Relevance for the 5 identified patterns - Rotated Component Matrix

Items	Components				
	1	2	3	4	5
Item 1. How innovative is EA discipline?	-.056	.205	-.001	.745	-.304
Item 2. How do you appreciate the complexity of the curricular theoretical topics included in EA discipline sheet?	.239	.624	-.132	-.093	-.072
Item 3. How do you rate the educational relevance of theoretical concepts specific to EA ?	.699	.030	.084	-.084	.080
Item 4. How do you rate the educational relevance of 7 Stairs Canyon Challenge program?	.067	-.144	.043	-.111	.780
Item 5. How do you rate the educational relevance of Brasov Adventure Park program??	.166	-.231	.010	.786	.199
Item 6. How do you rate the educational relevance of Photo Adventure Trip program?	.101	.039	.846	-.011	.133
Item 7. How do you assess the attractiveness of the programs included in EA discipline?	.817	.108	.038	.000	.072
Item 8. How do you assess the complexity of the practical work topics included in the discipline sheet?	.608	.111	.353	.351	-.216
Item 9. How do you rate the educational relevance of the practical module of survival techniques?	.191	.232	.615	-.082	-.036
Item 10. How do you rate the assessment method of EA discipline?	.221	.419	.277	.005	.468
Item 11. How do you rate the formative impact on the motor ability of the programs included in the discipline?	-.044	.488	.068	.344	.570
Item 12. How do you assess the collaboration and the mutual aspects in order to accomplish specific tasks within the programs included in EA discipline?	.325	.584	.249	-.039	.061
Item 13. Do you consider that EA discipline implementing in the curriculum is efficient in training teachers with physical education specialization?	.542	.424	-.196	.227	.192
Item 14. Rate the consistency between the discipline content and the expansion trend of physical activities practising forms ?	-.193	.704	.355	.084	-.056
Item 15. After the course completion you will continue to implement in your future activity the accumulated knowledge and experiences?	-.150	-.044	.485	.350	.116
Eigen values	2.173	2018	1.78	1634	1,424
Variance explained %	14.0%	13.45%	11.92%	10.98	9.49

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization a. Rotation converged in 11 iterations. The primary factor loadings are in bold font.

Discussions

The Cronbach's alpha coefficient for 15 items is .792, valid number 72, suggesting that the items have high internal consistency.

The pooled results (Table 1) highlight superior percentages obtained to all items for the maximum response 5. For grade 5, the maximum percentage was 63.9% accounting for items concerning the educational relevance of: the practical module of survival techniques (item 9), the assessment method for EA discipline (item 10), the aspects of cooperation and mutual support to accomplish specific tasks for EA discipline (item 12), and the minimum percentage value was 41.7% being registered to item 3 concerning the educational relevance of the EA specific theoretical concepts. For grade 4, the maximum percentage value was 48.6% obtained to Item 6 concerning the relevance of the educational program Photo Trip Adventure and the minimum percentage value

was 20.8% to item 10 concerning the assessment method for EA discipline. For grade 3, the maximum value was 18.3% obtained at Item 10 concerning the assessment method for EA discipline and the minimum percentage value was 1.4% to Item 6 concerning the educational relevance of the program Photo Trip Adventure. It is relevant to mention that no student has awarded the grades 1 or 2.

According to the assessment scale of Cohen's effect size [23], for $p < 0.05$ (Table 2) the study highlights a big effect $\geq .80$ in the following items: the complexity of theoretical curricular themes included in EA sheet discipline, the complexity of theoretical curricular themes included in EA discipline sheet, the educational relevance of the theoretical concepts specific to EA, the educational relevance of Challenge 7 Stairs Canyon program, the educational relevance of Adventure Park Brasov, the educational relevance of Photo Trip Adventure program,

the complexity of the practical works topics included in the sheet discipline, the implementation efficiency of EA discipline within the curriculum of training physical education teachers.

An average level of the effect size (values between .50 and .80 values) was registered in the case of the following items: the attractiveness of the programs included in EA discipline, the educational relevance of the practical module of survival techniques, the assessment method in EA discipline, the formative impact on the motor ability of the programs included in the discipline, the cooperation and mutual help aspects in order to accomplish the specific tasks within the programs included in EA discipline, the consistency between the content of the discipline and the expansion trend of practicing forms of physical activities, the further implementation in the future activity of the gained knowledge and experiences.

It is relevant that there were no values of the effect size smaller than .683.

After processing the results, five patterns were obtained (Table 3) that were renamed according to the most relevant value obtained on the vertical so: F1- The attractiveness of EA programs; F2 - The consistency between the discipline content and the trend; F3 - Photo Trip Adventure; -Adventure Park Brasov F4, F5 - Challenge 7 Stairs Canyon.

The analysis of the survey results for each of the 5 patterns highlighted that there are no negative values inferior to -0.40 for the group of students with physical education and sports specialization.

For the first pattern which accumulates 14% of the variant called the Attractiveness of EA programs, they were identified as relevant the following questions of the questionnaire: the educational relevance of the theoretical concepts specific to EA, the attractiveness of the programs included in EA discipline, the complexity of the practical works topics included in the discipline, the efficiency of EA implementation within the training curricula of the physical education teachers.

The second pattern called The Consistency between the discipline content and trend include important information regarding the complexity of the theoretical curricular themes included in EA discipline sheet, the assessment method in EA discipline, the formative impact on the motor ability of the programs included in the discipline, the cooperation and mutual help aspects in order to accomplish the specific tasks within the programs included in EA discipline, the efficiency of EA implementation within the training curricula of the physical education teachers, the consistency between the content of the discipline and the expansion trend of practising forms of physical activities.

The third pattern called Photo Adventure Trip includes great relevance of information regarding: the educational relevance of the Photo Adventure Trip program, the educational relevance of the practical module of survival techniques, the further implementation in the future work of the gained knowledge and experiences.

The fourth pattern called Adventure Park Brasov

comprised 10.98% of variance targeting relevant information about: the innovative degree of EA discipline, the educational relevance of Brasov Adventure Park program, the assessment method of EA discipline.

The fifth pattern called Challenge 7 Stairs Canyon includes assessments of the following information: the educational relevance of 7 Stairs Canyon Challenge program, the formative impact on the motor ability of the programs included in the discipline.

The education should be changes. This change is produced under the impact of the pedagogical tradition, that of the contemporary word problem and the future being know that "future order to the present" [24]. The curriculum means a path to cover, organizing and triggering learning, transforming the student in an adaptive manner [25].

Evaluation is a way for adventure programs to document their worth by providing evidence of their contributions to society, or other desirable outcomes the program has achieved [26].

Searching of ways to improve students' health, development of some kinds of sports, creation of favorable conditions for formation of youth's positive attitude to healthy life style, training of professional-applied skills of future specialists and other can be considered to be the main purpose of such researches [27].

Our studies have shown that ,by running adventure education programs students were perceived as more competent in the social and professional environments, aiming at the intra-professional, ethical, and theoretical aspects of their professions[14.28].

Modernizing the learning process by combining different ways and contexts is based on the exploration and experimentation of sporting and recreational activities of adventure type that promote the growth of functional mobility and the intellectual potential of students from the Faculty of Physical Education and Sports [14].

Conclusions

The study outcomes reveal the major impact of the Educational Adventure content on the educational and satisfaction aspects to students in physical education and sports specialization.

The Education through Adventure course content is considered by some of the students attractive, useful, efficient with innovative relevance for the training of the future teachers of physical education and sports.

The expanding forms of practising recreational physical activities being in line with the modern trends in the field ,require the updating of the academic curricula to students with physical education and sports specialization, which will help to improve the professional competences and the Education through Adventure discipline represents a viable alternative in this regard , which has been highly outlined by the results of our study.

Conflict of Interests

The author declares that there is no conflict of interests.

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