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DEVELOPMENT OF SOCIAL ABILITIES IN SCHOOL THROUGH ADVENTURE EDUCATION

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Abstract

Adventure education is a form of experiential education that is focused on interpersonal and intrapersonal development through adventure activities. Research has shown that this form of education is effective in the development of aspects like communication, cooperation, teamwork and leadership. This paper analyses the effect of an adventure education program, implemented in school, over the development of social abilities of 10-12 years old students. The program, consisting in orienteering activities, initiatives, specific games, and adapted rope course elements, was implemented between September 2016 - June 2017, during the physical education lessons. In this quasi-experiment, with a pre- and post-test design, the effect of the program was measured using the ROPELOC questionaire. Results show a significant increase of the scores of the experimental group on the scales Leadership Ability, Coperative Teamwork and Social Effectiveness, compared to pre-test. Compared to the control group, there were no significant differences between groups at post-test, but the experimental group had significantly bigger growth scores on all three scales. All significance was considered at $p<0.05$. Effect sizes calculated for the difference of growth between groups indicate a large to medium effect for Leadership Ability and Cooperative Teamwork and a medium effect for Social Effectiveness. The results alllow us to conclude that the program implemented has contributed to the development of the social abilities of the students in an important way.

Keywords: Adventure education, social abilities, physical education.

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1. Introduction

Adventure Education is a form of experiential education that uses adventure activities in order to develop interpersonal and intrapersonal skills and abilities (Ewert & Garvey, 2007; Hattie, Marsh, Neill & Richards, 1997; Priest, 1999; Stremba, 2009; Walsh & Aubry, 2007). Interpersonal refers to the way in which two or more people relate in a group and intrapersonal refers to the way an individual relates with himself (Priest, 1999) but this concept also includes cognitive or physical skills, personal values and mental or emotional states (Ewert & Sibthorp, 2014). This form of education has a history of about 80 years, and is sometimes refered to as outdoor education, wilderess education or more recently adventure programming (Daniel, 2009; Neill, 2008; Priest, 1999).

Research shows that this form of education has been succesfully used in many countries to develop aspects like comunication, cooperation, teamwork, leadership (Cooley, Holland, Cumming, Novakovic, & Burns, 2013; Goldenberg, Klenosky, O'Leary, & Templin, 2000; Harun & Salamuddin, 2010; Paisley, Furman, Sibthorp, & Gookin, 2008, Sibthorp, Paisley, & Gookin, 2007), overall social competence (Attarian, 1996; Gray & Patterson, 1994; Martin, 2001; Moote & Wodarski, 1997; Neill, 2008), as well as aspects of the self-concept, skills or values (ex: American Institutes for Research, 2005; American Camp Association, 2005; Cooley et al., 2013; Goldenberg et al., 2000; Kellert, 1998). Adventure education has also had succes improving group dynamic, cohesion or team spirit (Goldenberg, McAvoy, & Klenosky, 2005; Cooley et al., 2013).

Because of the succes identified by qualitative and quantitative research, many schools have included adventure education programs in their curriculum and have used them to complete their students preparation for life (Evans, 2000; Hammes, 2007; Prouty, 2007; Johnson, 2012; Round Square, n.d.).

2. Problem Statement

Social competence, mentioned in literature sometimes as interpersonal competence or inteligence (Neill, 2008a), or as social skills (Ewert & Sibthorp, 2014; Scrutton & Beames, 2015) refers to the ability to behave in social situations (Ewert & Sibthorp, 2014; Gresham, Cook, & Crews, 2004). Social competence includes aspects like communication, assertivity, support, empathy, cooperation, problem solving and conflict resolution (Moscovici, 1998) and some say leadership (Ewert & Sibthorp, 2014). These skills and abilities have an important effect on relations, health, hapyness and work effectiveness (Moscovici, 1998) and when it comes to students they have an impact on academic results (Gresham et al., 2004). According to Walker, Colvin and Ramsey (1995, as cited in Quinn, Jannasch-Pennell, & Rutherford, 1995) these abilities are necessary to initiate and maintain positive social relations.

Moreover, it seams that there is a conection between antisocial behaviours and the lack of social skills and abilities (Lonigro, Laghi, Baiocco, & Baumgartner, 2014; Quinn et al., 1995; Samson, Ojanen, & Hollo, 2012; Moscovici, 1998). According to Walker et al. (1995, as cited in Quinn et al., 1995), antisocial students have a hard time integrating because they perceived various social situations in the wrong way or they lack the skills and abilities to manage a certain situation. Crick & Dodge (as cited in Lonigro et al., 2014) have also supported the idea that antisocial reactions are caused by the ability to interpret the social language.

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So, it seems that for successful integration into society the students need to be given the opportunity to develop their social abilities and for what we have seen adventure education has the tools and means to do just that.

We believe that the development of social competence should be a priority of the educational system and we think that children and teenagers from Romania could also benefit from the use of adventure education programs in this respect. Beside the principles that make such programs work like learning through direct experience and challenge while working in a team (Ewert & Sibthorp, 2014; Walsh & Golins, 1976), these programs have the big advantage of being loved by students (Walsh & Aubry, 2007) as they fulfil our need of adventure (Raiola & O'Keefe, 2009; Quinn, 1999).

3. Research Questions

Can we introduce adventure education in Romanian schools and have similar results to those reported by international programs?

4. Purpose of the Study

To check if an adventure education program, constructed and adapted to be used in school will improve the social abilities of middleschool students.

The study presented here is part of the main reasearch done for the doctoral thesis of the lead author that analysed the impact of the above entioned adventure education program on interpersonal, intrapersonal and motor development.

5. Research Methods

The study is a quasi-experiment, with a pre- and post-test design and was conducted with the help of 54 students, 10-12 years old, from 4 middleschool classes studying at a private school. Both the experimental and the control groups were made up of a fifth and a sixth grade resulting in 29 students in the control group and 25 in the experimental group. The distribution of the classes was done at random.

5.1. Methods and tools

To measure the impact of our program we used the Review of Personal Effectiveness and Locus of Control (ROPELOC) questionnaire. This questionnaire analyses actions and behaviours that indicate if a person is effective in certain key aspects of life (Richards, Ellis, & Neill, 2002). The instrument was created to be used in adventure programs or other type of experiential programs and has been tested on over 10000 subjects throughout the 17 years of development (Richards et al., 2002). ROPELOC has 14 scales out of wich Social Efectiveness, Cooperative Teamwork and Leadership Ability are testing for social abilities. The instrument has 45 items, making it relaively short considering the amount of dimensions measured, and is using an 8 points Likert scale.

The program implemented consists in navigation activities, adventure education specific games, initiatives and adapted low rope elements. Initiatives are activities specific to adventure education that consist in tasks that need to be solved with the help of all the members in the group. The rope elements

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are usually challenge courses set at some height above the ground where the participant can only receive psychological support from the group, but we adapted them in the form of initiatives, increasing their role in interpersonal development. For orienteering, a variety of activities have been used to enable the students to apply map navigation skills and spatial orientation, in pairs or small groups. The games selected were aimed at activating and preparing the students for the session, and most were based on pair or group work. Since the program was implemented during physical education lessons, the dynamic of the activities was an important aspect of the selection criteria for the program.

Data was later analysed using SPSS 2.0.

5.2. Organization of the study

The students in the experimental group took part in adventure type activities for one hour every week during an additional physical education lesson. Each adventure session was preceded or followed by a discussion designed to help the students process the information and transfer the skills from that activity to other contexts. Facilitating methods were chosen according to the activity performed in the lesson, but in general we made the students reflect and analyse the experience under guidance, or we built a story around the activity to ease transfer of learning. Direct front loading was only used when the students were getting stuck and were about to give up.

While the experimental group took part in the adventure education program, the control group took part in an addition physical education lesson every week that was used as an extension of the regular PE lessons.

The ROPELOC questionnaire was applied at the beginning of the school year and again at the end of it using self-assesment. The questionnaire was translated into Romanian and the participants received instructions before filling in the form. The forms were checked straight after allowing mistake like double answers or skipped questions to be corrected straight away.

The data resulted from the tests was added to an excel document, and after matching the final tests with the initial ones, cases were given codes and names were removed. Cases suspected of incorrect completion of the questionnaire were eliminated from the study.

6. Findings

Despite applying the full ROPELOC questionnaire to the group of students involved in this quasi-experiment, this paper will only present the findings related to the social abilities scales. Information related to the other scales will be published separately.

Table 01. Results of dependent t test for the experimental group, for the social abilities scales

Scale	Paired differences			t	p
	Mean	Standard deviation	Standard error of the mean		
Cooperative Teamwork	.786	1.403	.280	2.802	.010
Leadership Ability	.693	1.493	.298	2.321	.029
Social Efectiveness	.746	1.244	.232	3.000	.006

Note: All statistics are calculated at 24 degree of freedom

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As can be seen in Table 1, the analysis of differences between the final test and baseline showed significant results at p<.05 for the experimental group for all three social abilities scales. On the other side, the control group did not get any significant results.

In order to see the importance of these results, we have also calculated the effect size for each scale, using Cohen's *d*, and we identified a medium to high effect size for Cooperative Teamwork (d =.56) and Social Effectiveness (d =.60) and a medium effect size for Leadership Ability (d =.46). According to Cohen (1988), and effect size of .80 is large and should be noticeable, .50 is medium and .20 is small and irrelevant.

Compared to the initial test, this program appears to have a greater impact than adventure programs in general and the impact of the program seems to be much higher than that of outdoor educational programs. However, the small number of participants in our study compared to the large number of subjects collected by meta-analyses requires caution in generalizing the findings.

Looking at the data in comparison with studies using the same instrument we notice similar results regarding effect sizes. A study by Greffrath, Meyer, Strydom, and Ellis (2011), which used the ROPELOC instrument and analysed the effects of two programs, achieved, compared to the baseline, similar effects on Social Effectiveness (ES= .58), smaller for Leadership Ability (ES = .38) and larger for Cooperative Teamwork (ES = .70). Bowen and Neill (2013) used a tool developed from ROPELOC but using similar or identical constructs to measure the effects of a rehabilitation program through expeditions. They achieved effects of ES=.30 for Communication Skills and ES= .21 for Cooperation relative to baseline testing.

As a standard for social skills, Bowen and Neill (2013) adventure therapy programs have calculated an average effect size of ES=.44 out of 151 effects, while Hattie et al. (1997) calculated an average effect size for social competencies of ES=.43 out of 74 effects, both effect sizes being calculated in relation to the initial test. The results obtained in our program for Social Effectiveness (ES=.60) is all the more important because it is above this average.

The only average effect size found in the literature for Cooperation was ES =.34 in Hattie et al. (1997) and is based on 24 effects. Our pre-post effect size of .56 is considerably higher, thus underlining the importance of the results obtained.

For Leadership Skills, in the meta-analysis of Hattie et al. (1997) was calculated an effect size of ES=.38 out of 222 effects, and in adventure therapy programs an effect of ES=.35 out of 25 effects was calculated, both pre-post. Significant results and and ES of .46 pre-post in our study suggest a greater effect than the average adventure program.

Relative to the control group, although the difference in gain shows a more than average effect of the program, from the point of view of the final impact, the reported effects are small, suggesting subtle changes of the subjects in the experimental group compared to those in the control group. This impact is seen as being below that of other studies, especially if we are talking about those based on applicative paths or ropes, but they are in line with the expectations of specialists in programs with adolescents, since the effects of programs on them tend to be small on average.

By comparing the final scores of the scales we found that there are no significant differences between groups at p<.05, even if the experimental group scores are somewhat higher. The effect sizes

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calculated for the difference between the final scores of the two groups are small to medium for Leadeship Ability (d =.39) and Cooperative Teamwork (r =.17) and only small for Social Effectiveness (r = .12). Because of the abnormal distribution of the end scores for the last two scales, the groups were compared with Mann-Whitney U test instead of the independent t test and effect sizes were computed and interpreted acordingly. Unlike for Cohen's d, for the U test .5 means a large effect, .3 medium and .1 a small one (Cohen, 1988).

Table 02. Independent t test results for gain scores, for the social abilities scales

Scale	t	p	Mean difference	Standard error of difference
Cooperative Teamwork	2.627	.011	.977	.371
Leadership Ability	2.849	.006	1.145	.402

Note: All statistics are calculated at 51 degree of freedom

However, when comparing the gain scores of the two groups we found significant differences for all three scales, with the experimental group having larger gain. Due to the abnormality of the distribution of the scores, for the Social Effectiveness scale the comparison was done using the Mann-Whitney U test, and the differences were significant at p = .022. For the other two scales, the t test results can be seen in Table 2.

When it comes to the gain scores, the effect sizes indicate a large to medium effect for Cooperative Teamwork (d = .72) and Leadership Ability (d = .78), and a medium effect size for Social Effectiveness (r = .32).

So, the pre-post effect size for Cooperation is also supported by the magnitude of the effect size between gain scores. A study by Harun and Salamuddin (2010) on the effects of a program of outdoor activities has indicated significant better results in regard to the development of cooperative skills of the participants compared to the control group, and the effect size has been calculated at ES=.34, similar to our end results comparison effect.

Comparing the progress of the two groups during the experiment in regard to leadership, significant differences were found in favour of the experimental group and a large effect (ES=.78) was calculated for the difference between gain scores, but only small-medium effect for the end results. Harun and Salamuddin (2010) have also obtained significant improvements in the leadership qualities of the participants of their study, achieving an ES of .60.

One aspect that needs to be considered in the interpretation of the data is the average decrease of control group scores between baseline and the final test. Although we can assume that such a decline is due to internal or external factors which have also affected the experimental group, it could be that there are factors that have only affect the control group. For this reason, the comparative data between the groups should be analysed together with comparative data between the initial and final testing of each group. Fortunately, this does not substantially alter the results of the study.

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7. Conclusion

Taking into account the results obtained from this study we can say that the adventure education program implemented has brought benefits to the pupils in terms of interpersonal development, but in order to obtain lasting effects, continuity is needed. The students in the experimental group experienced an overall development if we take into account the significant difference of score between the two test moments, but the experimental group did not become significantly more developed in terms of social abilities, as measured by this questionnaire, at the end of the program. The magnitude of the calculated effect sizes suggests that the program has some importance in terms of the changes it generates, even if the differences seen after one year of implementation between the groups are still modest.

The fact that increases in Cooperative Teamwork, Leadership Ability and Social Effectiveness are significantly higher for the experimental group allows us to say that the results of our study are not accidental and that such a program can be replicated with the same beneficial effects on pupils. Moreover, considering that the magnitude of the effect has been calculated as large to medium for these scales, we could say that such a program deserves the effort to be implemented in Romanian schools as it promises to strongly support the development of the social abilities of the students.

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