

Health Literacy in Pupils in the Context of Research of Resulting Curriculum of Health Education*

Michaela Hrivnová

*Palacky University, Faculty of Education, Department of Anthropology and Health Education and Centre for Research of Healthy Lifestyle,
•ikovo nám. 5, 771 40 Olomouc, Czech Republic
Telephone: +420 585 635 512 E-mail: michaela.hrivnova@upol.cz*

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ABSTRACT Health literacy is one of the basic literacies formed during the educational process in elementary school. Health literacy is a prerequisite for health promotion and a healthy lifestyle for minimizing diseases and their development. In the second level of elementary schools in the Czech Republic, health literacy is primarily developed in Health Education. The research study aims to evaluate the level of the resulting curriculum adopted by pupils in grade 9 of elementary schools in the context of newly formulated educational standards. The research tool applied was a didactic test designed in compliance with the expected outcomes of Health Education according to the framework educational program for elementary education and according to the developed educational standards. This paper presents the results of the second research stage based on 250 pupils. The initial results show that the average achievement of the didactic test was 42.5 percent.

INTRODUCTION

According to the World Health Organization (WHO), health literacy is defined as *“the cognitive and social skills, which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health”* (Holcík 2009). According to Liba (2005: 5), *“this includes a balance between mental and physical stress, purposeful physical activity, rational nutrition, harmonious relationships between people, responsible sexual life, rejection of drugs, responsibility in the area of work and life, personal and work hygiene.”* The concept of health literacy is regularly used in foreign countries. However, in this country the concept is relatively new, and as stated by Holcík (2010: 5), *“it is natural that it takes some time before the concept of health literacy becomes a usual part of education, and before more extensive domestic experience can be used.”* The field of health literacy is also important for persons with disabilities (Růžicka 2013).

In other countries, the issue of health literacy is addressed by a number of studies (Brown et al. 2007; Hubbart and Rainey 2007; Wu et al. 2010; Abel et al. 2015).

Health literacy is a prerequisite for health promotion and a healthy lifestyle and for minimizing diseases and their development. Currently, a

number of research studies point to risk behavior of children and youth that can threaten their current or future health [for example, the following studies: National report “Health Behavior in School-aged Children: WHO Collaborative Cross-National study HBSC” (Kalman et al. 2011), the International ESPAD study (The European school project on alcohol and other drugs 2011, online)]. Mortality statistics show that the most frequent causes of death in the Czech Republic are still cardiovascular diseases and cancer (Zdraví 2020 2014: Annex 1, 3-8).

In 2015 the National Institute of Public Health carried out the study on health literacy, which was supported by the WHO and the Ministry of Health of the Czech Republic. The results demonstrate that the “overall health literacy, compared with the average of eight EU countries is lower”, and that “insufficient health literacy was observed in almost sixty percent of the population” (Kucera 2015: 5).

These non-communicable diseases (lifestyle diseases) can be minimized or delayed by effective prevention and an active approach to health. This requires thorough education in the area of health literacy from an early age (Chrásková 2014). The need for considering individual specifics of the development of health literacy in pupils is highlighted by Petrová et al. (2012). Sigmund et al. (2014) and Kvintová et al. (2014) point out the impact on health later in adult age and

confirm the relations between an active lifestyle and overall life satisfaction in a different age group. In the Czech sociocultural context, interesting methodology of lifestyle research (in the form of, for example, lifestyle limitations) with emphasis on the qualitative approach repeatedly applied Chrastina et al. (2014).

The system of education in the Czech Republic offers space for teaching health literacy in the 2nd stage of elementary schools, specifically in the educational field of Health Education. Since 2007, the education has been governed by the framework educational program for elementary education, and as a result, the health education is taught as a separate subject in ninety percent of elementary schools, mostly two lessons per week throughout 4 years or more (Hrivnová 2014). The content of the “curriculum” is divided into six thematic units, that is, interpersonal relations and forms of coexistence, life changes and what they involve, healthy lifestyle and self care for health, health risks and their avoidance, value and promotion of health, and personality and social development (FEP EE 2013: 81-83). The objective and mission of this educational field is to support and develop a proactive approach of pupils to their health and the health of others, motivate for a healthy lifestyle, and minimize the development of risk behavior, that is, form health literacy in pupils. Reissmanová (2010) believes that the existing defined competences in the curricular document for elementary education FEP EE should also include health competence, which would help increase the level of health literacy.

In 2015, the Ministry of Education, Youth and Sports and other professionals drafted the educational standards of health education, which define special indicators to specify the content of the expected outcomes and determine their minimum levels. In these standards, schools have definitions of minimum educational levels in the specified fields of education. The standards should help teachers achieve the educational objectives defined in the school educational program. To verify the achievement of individual indicators and expected outcomes, the educational standards of health education provide illustrative tasks. Faultless achievement of an illustrative task means that the expected outcome was achieved at a minimum level. The minimum level of the standards is then expressed by an assumption that the tasks will be correctly accomplished by eighty percent of pupils in grade

9 elementary school (Hrivnová 2015). According to the Ministry of Education of the Czech Republic, the educational standards were drafted as a result of the TIMMS and PISA assessment reports, and an OECD report on the assessment of the 2012 results.

The assessment of the evaluation standards is one of the key areas of curricular research, in this case of the resulting (achieved) curriculum. Janík and Švec (2009) point out that individual constructs of the curriculum are not sufficiently elaborated. In health education, the research of various levels of the curriculum is insufficiently described and there is a small number of relevant research studies (Hrivnová 2015).

Regarding the fact that there is no research on the resulting curriculum (and only few research studies addressing other levels of the curriculum) the research study focused on the educational field of health education using a didactic test to identify the level of the resulting curriculum in pupils of grade 9 in elementary schools, that is, the level of their health literacy.

Objectives

The objective of the communication is to present the second stage of the following research study: “Research of the level of adopted curriculum of elementary school pupils in health education”, which is a part of the following student grant competition project at Palacky University, Olomouc: Perception of subjective impact of health disability/presence of chronic disease and concept of health awareness and literacy (IGA_PdF_2015_003).

The main objective of this project research is to identify the level of the resulting curriculum adopted by pupils in grade 9 of elementary schools in the context of the developed educational standards of health education, and to analyze the results with respect to the minimum level of the standards (achievement of eighty percent by pupils in grade 9 of elementary schools).

This main objective implies several partial objectives of the project. The following are particularly important for this communication:

- ♦ To develop evaluation tools based on the formulated educational standards of health education.
- ♦ To investigate the adopted curriculum for pupils of grade 9 of elementary school using the developed evaluation tool for health education—achieved/resulting curriculum.

- ♦ To evaluate the results, analyze the relationship between the expected outcomes (indicators) of individual educational fields with the results achieved by pupils in grade 9 of elementary schools.
- ♦ To evaluate the observed results in relation to the educational standards, that is, with their intended minimum level. That is, to find out whether the success rate achieved in the submitted tests was at the level of eighty percent and whether the educational standards are defined at a minimum level.

METHODOLOGY

On the basis of the defined objectives, the researchers developed an evaluation tool, a didactic test for health education. This is an absolute performance didactic test (criterion-referenced). The test is constructed on the basis of the criterion-referenced test principles (Chráska 2007). The success criterion is the content of curriculum, that is, its predetermined level. The test/test items are evaluated in terms of complete achievement (the pupil has achieved/knows, or has not achieved/does not know the content of the curriculum). With respect to a degree of specificity of knowledge monitored by the test, in this research the test focuses on the results of learning and measuring of what pupils have learned in the respective areas. In terms of the project timeline, this is an output test presented at the end of the educational period, that is, at the end of the second level of elementary school or grade 9.

Individual items of the test precisely reflect the formulated expected outcomes of health education according to FEP EE (2013). The area of health education comprises a total of 16 expected outcomes, and therefore, the didactic test includes 16 questions/items. The items/test questions are formulated according to the educational standards of health education, specifically the illustrative tasks included in the educational standards. If there are two illustrative tasks for a single expected outcome, only one illustrative task was selected for the didactic test. If the illustrative task was formulated as an assignment, its content was formulated in an appropriate way for use in the didactic test. The didactic test was consulted with experts from other Faculties of Education in the Czech Republic, experts from

the National Institute for Education and professional elementary school teachers.

Note: The exact wording of the expected outcomes of the educational field of health education, which are associated with various didactic test items, can be found in the FEP EE (2013: 81.) or in Høivnová (2014). The expected outcomes of health education are such that (HE stands for Health education) -9- means grade 9 of elementary school, -1- indicates the thematic unit (there is only one for HE), and the last numeral, that is, -1- to -16- represents the number of the expected outcome). The expected outcomes are formulated so that it is clear what a pupil should have achieved at the end of elementary school. The text of the didactic test/test items can be obtained from the author.

The research was conducted between March and June 2015, and it involved pupils from grade 9 of elementary schools in the Czech Republic. The tests were distributed by instructed students of the Faculty of Education in Olomouc enrolled in teaching health education for the 2nd stage of elementary schools. The students were trained by the researcher, obtained written instructions for submitting the tests, information about the research for the headteachers of the elementary schools involved, informed consent forms for the headteachers, questionnaire for the headteachers and copies of the didactic tests (all documents can be obtained from the author).

At the moment, a total of 915 completed didactic tests for pupils in grade 9 elementary schools in the Czech Republic are registered. Now (after the 2nd stage of evaluation of the research) the results from 250 elementary school pupils from the Olomouc region are presented.

The evaluation of the data results was carried out by means of standard procedures (Hendl 2006; Gavora 2010).

RESULTS

The analysis of the results focused on individual test items (16 items—16 expected outcomes for the educational field of health education) of the didactic test with regard to whether they were answered correctly or incorrectly (incorrect answers also include blank items of the didactic test, where it can be assumed that the pupil did not know the correct answer). The results are presented in Table 1.

Table 1: Analysis of individual test items of the didactic test for educational field of health education

<i>Didactic test item / expected outcome for the educational field of Health education</i>		<i>Number of correct answers</i>	<i>Number of incorrect answers</i>	<i>Proportion of correct answers (%)</i>
1	Explain in your own words the difference between legal standards and ethical rules <i>HE-9-1-01</i>	120	130	48.0
2	Give at least three examples of behaviours that contribute to the formation of a good social atmosphere or that disrupt such atmosphere <i>HE-9-1-02</i>	116	134	46.4
3	Decide whether the mentioned concepts are basic or higher human needs <i>HE-9-1-03</i>	135	115	54.0
4	In the following examples of behaviours tick those that can promote health in adolescents and those that can threaten it <i>HE-9-1-04</i>	156	94	62.4
5	Indicate which of the possibilities characterizes primary prevention <i>HE-9-1-05</i>	163	87	65.2
6	From the selection of life values choose five that you consider most important, and arrange them in order from the most to the least important <i>HE-9-1-06</i>	238	12	95.2
7	Match the symbols with drinks that are suitable for you for frequent daily consumption; drinks that you can consume every day, but only in a limited amount; drinks that you should consume occasionally and drinks that you should not consume at all. <i>HE-9-1-07</i>	0	250	0.0
8	Decide whether the statements are true or false (lifestyle and other diseases) <i>HE-9-1-08</i>	16	234	6.4
9	Assess the mentioned factors influencing the health and development of an individual <i>HE-9-1-09</i>	141	109	56.4
10	Which muscle groups are strengthened by the given exercises? <i>HE-9-1-10</i>	72	178	28.8
11	Decide whether the statements are true or false (sexual education) <i>HE-9-1-11</i>	26	224	10.4
12	Of the factors affecting the choice of a future life partner choose five that you consider most important <i>HE-9-1-12</i>	223	27	89.2
13	Mark each of these addictive substances with L or I. L = legal, I = illegal <i>HE-9-1-13</i>	165	85	66.0
14	Mark those rules that are consistent with safe behaviour on the internet and social networks <i>HE-9-1-14</i>	14	236	5.6
15	Decide and indicate which causes could have led to the accident depicted on the picture <i>HE-9-1-15</i>	47	203	18.8
16	Mention at least 5 emergency situations in the Czech Republic <i>HE-9-1-16</i>	42	208	16.8

The analysis shows a considerable disparity in correctness/incorrectness of the answers to the items of the didactic test, that is, achievement of the expected outcomes formulated for the educational field of health education. The highest number of correctly answered questions was observed for the expected outcomes HE-9-1-6 and HE-9-1-12. These items were the only ones exceeding the expected threshold of eighty percent achievement by pupils in grade 9 of elementary schools. The lowest number of correctly answered questions was observed for the expected outcomes HE-9-1-7 with no correct answers (0%), in the case of HE-9-1-8 and HE-9-1-14 the success rate of only about six percent, in the case of HE-9-1-11 the whole didactic item

was correctly answered by approximately ten percent.

If the results of the didactic test as a whole are analyzed, it can be said that none of the pupils of grade 9 of elementary schools in the research sample of 250 pupils answered all 16 test items correctly. The results are presented in Table 2. Table 2 shows the conversion of points from the didactic test to successful achievement, the numbers of pupils in absolute and relative figures according to their point scores in the didactic test for the educational field of health education, the final column shows the cumulative number of converted points achieved in the test.

The success threshold in the didactic test designed in accordance with the educational

standards for health education was eighty percent to achieve the minimum level of the educational standard. If successful test completion required all items to be correctly answered (100%), the researcher would have to conclude that none of the pupils of the research sample of 250 individuals achieved such results. If the successful test completion required eighty percent (or more) of correct answers, this would be achieved by two pupils, that is, about one percent. If successful test completion required seventy-five percent (or more) of points in the didactic test, this would be achieved by about four percent of pupils. If successful test completion required fifty percent (or more) of points, this would be achieved by 100 pupils, that is, forty percent.

Table 2 also shows the cumulative number of converted points achieved in the didactic test. The cumulative number was 1706 points, and when converted to the 250 pupils involved in the second stage of the research this means that *on average, the pupils achieved 6.8 points in the didactic test, which corresponds to a success rate in the didactic test of health education of about 42.5 percent.*

DISCUSSION

The results of the items that are closely associated with the level of health literacy in pu-

pils, particularly in relation to non-communicable epidemics (HE-9-1-08), indicate a lower level of health literacy in pupils, similar to the study of health literacy (Kucera 2015), which points to a lower level of health literacy in the adult population of the Czech Republic.

Achievement in the final didactic test at this level points to a need for increasing the level of health literacy in pupils [which is, inter alia, the objective of the national strategy for health protection and promotion and disease prevention - Health 2020 (2014)] and even to adjust the standards for elementary education – health education (2015), specifically the illustrative tasks for the minimum level.

[Author's note: Currently, the Ministry of Education and the National Institute for Education are developing the following document: "Methodological comments on the standards for elementary education – Health education (annotated illustrative tasks)", where the outcomes of the research resulted in a shift of illustrative task HE-9-1-07 from the minimum level of difficulty to the excellent level].

CONCLUSION

The objective of the communication was to present the second stage of the following research study: "*Research of the level of adopted curriculum of elementary school pupils in health*

Table 2: The results of the didactic test for the educational field health education

<i>Number of points in the test</i>	<i>Points converted to test achievement in %</i>	<i>Number of pupils</i>	<i>Relative number of pupils%</i>	<i>Cumulative number of converted points</i>
16	100	0	0.00	0
15	94	0	0.00	0
14	88	0	0.00	0
13	81	2	0.80	26
12	75	9	3.60	134
11	69	8	3.20	222
10	63	15	6.00	372
9	56	40	16.00	732
8	50	26	10.40	940
7	44	29	11.60	1143
6	38	44	17.60	1407
5	31	24	9.60	1527
4	25	31	12.40	1651
3	19	13	5.20	1690
2	13	8	3.20	1706
1	6	0	0.00	1706
0	0	1	0.40	1706
		250	100.00	1706

NB: one point in the didactic test represents one correctly answered item.

education”, which is a part of the following student grant competition project at Palacky University, Olomouc: *Perception of subjective impact of health disability/presence of chronic disease and concept of health awareness and literacy* (IGA_PdF_2015_003).

The objective of the research was to evaluate the developed educational standards for health education by means of a didactic test designed in accordance with the educational standards, and to determine the level of the resulting curriculum of health education in pupils in grade 9 of elementary schools in the Czech Republic. The educational standards were designed at a minimum level with an expected success rate of eighty percent of pupils at the end of elementary school.

The analysis of the results in the monitored sample showed that none of the pupils achieved completely correct (one hundred percent) test results. If the researchers reduced the success limit to fifty percent, this would be achieved by forty percent of pupils.

Based on these results, the researchers can conclude that the monitored sample of 250 pupils in grade 9 of elementary schools met the requirements of the didactic test in the educational field of health education at a level of 42.5 percent.

RECOMMENDATIONS

The findings described above suggest that the results of the resulting curriculum are of average to below average values. Therefore, it will probably be necessary to monitor the implemented curriculum of health education, which forms the resulting curriculum, that is content of the curriculum learned by the pupils (knowledge, skills and attitudes). This is the only way of improving the quality and level of health literacy among pupils at the end of elementary education. It might also be necessary to revise and adjust the project curriculum and to formulate the expected outcomes and educational standards of health education in order to decrease their levels, which might however, present a risk of a decreased level of health literacy in pupils. It is rather desirable to strengthen the competences of teachers by means of lifelong learning, their own health literacy and especially their didactic skills in the field of health education. To formulate strict results however, this will require fur-

ther research-based findings concerning the curriculum of the educational field of health education in elementary education in the Czech Republic at all levels.

NOTE

“The paper is dedicated to the following project: ‘Perception of subjective impact of health disability/presence of chronic disease and concept of health awareness and literacy’ (IGA_PdF_2015_003).

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