Parents' Views on the Technology Curriculum

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DOI: 10.26907/esd.19.4.04
EDN: IDEYVM
Submitted: 1 March 2024; Accepted: 1 July 2024

Abstract
In September 2023, in Slovakia a curriculum reform of primary and secondary schools, announced by the Ministry of Education, Research, Development and Youth of the Slovak Republic in 2020, has entered in its pilot phase. In this phase first schools have started to teach according the new State Educational Programs, while from September 2026 all schools are expected to teach according to them. The paper presents the selected results of a cross-sectional survey research carried out in three regions of Slovakia with the aim to explore the opinions of parents on the technology curriculum. In each of the three selected regions two urban and two rural schools were involved in the survey research, i.e. parents of pupils attending the given schools were asked which thematic units in their opinion should be taught in technology classes. The collected data were analysed for the whole sample of the respondents, without any differentiation, and in dependence on the segmentation factors of the respondents, which were gender of their children (daughter or son, i.e. male or female) and affiliation of their children to the school they attended (rural school – urban school). The analyses were performed to find out possible significant differences among the results recorded for each of these sub-groups in dependence on the stated segmentation factors.
Keywords: primary and secondary schools (ISCED 1–3), curriculum reform, technology education, technology as a compulsory school subject.

Мнения родителей об учебных планах по предмету технология

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DOI: 10.26907/esd.19.4.04
EDN: IDEYVM
Дата поступления: 1 марта 2024; Дата принятия в печать: 1 июля 2024

Аннотация
В сентябре 2023 года в Словакии вступила в пилотную фазу реформа учебных программ начальных и средних школ, объявленная Министерством образования, исследований, развития и молодежи Словацкой Республики в 2020 году. На этом этапе первые школы начали преподавать по новым Государственным образовательным программам, а с сентября 2026 года ожидается, что все школы будут преподавать по ним. В статье авторы представляют отдельные результаты исследования, проведенного в рамках подготовки реформы учебных программ в трех регионах Словакии с целью выяснить мнение родителей о программах такого школьного предмета, как технология. В каждом из трех выбранных регионов в опросном исследовании участвовали две городские и две сельские школы. Родителей учеников, посещающих данные школы, спрашивали, какие темы, по их мнению, должны преподаваться в рамках технологии как школьной дисциплины. Собранные данные анализировались, с одной стороны, по всей выборке респондентов, без их дифференциации, а с другой – в зависимости от факторов сегментации респондентов, а именно: пол ребенка (дочь или сын) и местоположение школы (сельская – городская). Целью анализа было выявление значимых различий между результатами, полученными от каждой из этих подгрупп.
Ключевые слова: начальная и средняя школа (ISCED 1 – 3), реформа учебных программ, технологическое образование, обязательный школьный предмет технология.

Introduction

Currently the system of regional schooling in Slovakia is facing a challenge of curriculum reform. The intention to change the curricula, implemented to primary and secondary schools (ISCED 1 and 2) within the reform in 2008, was announced by the Ministry of Education, Science, Research and Sport of the Slovak Republic (currently the Ministry of Education, Research, Development and Youth of the Slovak Republic) at the end of 2020. Schools started to teach according to the new State Educational Program already in the academic year 2023/2024 (MŠVRaM SR, 2023). The new State Educational Program for primary and lower secondary schools (in Slovakia these are integrated within so-called basic schools) states particular goals of upbringing and education, profile of a school graduate and a teaching plan (curriculum) (https://www.minedu.sk/statny-vzdelavaci-program-pre-zakladne-vzdelavanie-2023/). What pupils are expected to know at the end of the third, fifth and ninth grade is stated in the content (academic) standards

and performance standards. The content of these documents should be reflected in new School Educational Programs as well as in textbooks, which will be gradually created. In 2025, a third of the schools should have implemented the new State Educational Program, and all the schools will be obliged to teach according to the new curricula from September 2026. The new State Educational Program represents a fulfilment of one of the tasks of the Recovery and Resilience Plan of the Slovak Republic (Úrad vlády SR, 2021a, 2021b).

As Tomáš Drucker (2023), the Minister of Education, Research, Development and Youth of the Slovak Republic, states the curriculum reform does not significantly change the teaching content, as the content of the teaching process is updated regularly. What is important or should be changed, in the Minister's point of view, are the forms of education. According to him, teachers are to work with their pupils in a different way as they have done it until now. While the forms of education were dominantly based on lecturing and testing (or examining), the new forms of education should support development of the pupils' skills, critical thinking, and correct information sorting. In this context, the target goal of the implemented reform is to involve pupils into mutual interaction and less to teach them by rote. The presented statement of the Minister evokes a question to which degree this school reform is really meant as curriculum reform.

Purpose and objectives of the study

In Slovakia, technology is a compulsory subject taught at the second stage of primary or so-called basic schools. In frame of this subject general technology education of pupils and their interest in technology should be developed. At the same time pupils should obtain the basics of technology which are necessary for their further study, and their subsequent integration into the career and personal life of the society (MŠVRaM SR, 2015; ŠPÚ, 2014).

From our point of view, the most serious problem which has to be solved by the curriculum reform is low interest of the youth in technical study programs and technical professions (Hašková & Lukáčová, 2023; Pavelka et al., 2019; Tomková, 2019). This means that the innovated curricula of the subject of technology should excite the young people's interest in technical professions. In light of this, we think that parents' views and opinions on the technology curriculum is very important. The parents' perspective could help increase awareness of the seriousness of this subject, as well as schoolchildren's interest in further study of technical programs. Therefore, we have carried out a broader cross-sectional survey to find out parents' opinions and requirements on the design of the content (or curricula) of teaching the subject of technology at basic schools.

Literature review

According to experts involved in the preparation of the concept of the current school reform, in Slovakia no significant systemic reform fulfilling requirements on current goals, content and forms of education at basic schools has been carried out since the 1970s (Hapalová et al., 2021). This evaluation of the previous curriculum reforms, i.e. the 1996 curriculum reform, the 2008 curriculum reform together with its subsequent modifications or innovation in 2011 (Hašková & Lukáčová, 2022; Hašková & Bánesz, 2015), is considerably debatable.

At this point attention should be paid to the fact mentioned by Porubský et al. (2014) that school reforms and curriculum reforms are more and more connected with political and economic matters rather than the pedagogical ones. The mentioned statement is based on the results of analysis done by different authors (Gouëdard et al., 2020; OECD, 2011; Průcha, 2004; Rýdl, 2003; Le Métais, 1999). Besides the political aspects, a number of researchers (Gouëdard et al., 2020; Viennet & Pont, 2017; Humajová &

Pupala, 2008) pay attention to other three issues: funding (financial resources together with their sustainability), technologies, and institutions. Finances along with appropriate institutional management significantly influence the degree of successfulness of the reform implementation, as a lack of finances together with insufficiencies in institutional management increase teachers' workload and at the same time decrease their enthusiasm for the reform implementation (Berends et al., 2002). This was also partially a case of the implementation of the curriculum reform in Slovakia in 2008 (Hašková & Bánesz, 2015; Kosová & Porubský, 2011; Kaščák & Pupala, 2011; Kmeť, 2009).

The same can be stated in relation to the issue of the aspect of technology, because familiarisation with new accessible information and communication technologies, as well as acquisition of skills to use them within learning and teaching processes, have become an integral part of each curriculum reform. The stated has to be perceived in two dimensions. One dimension is linked with the new curriculum introduced into the schools, and the second dimension is linked with the relevant competences required from teachers (as a result of the new curriculum and the introduction of new teaching methods and technologies). On the one hand, technology expands access of pupils and students to different resources of knowledge, platforms on which they can collaborate, share, discover or create knowledge. On the other hand, technology creates a platform for teachers to share and enrich the teaching materials they use or to teach in online forms, remote or virtual laboratories (OECD, 2015; Trucano, 2016).

All the abovementioned aspects contribute to the efficiency of any curriculum reform, as they are involved in the creation of adequate conditions of the reform implementation. However, the key factor of any curriculum reform's success is the teacher, as the teacher is a direct implementer of reforms. Without enthusiastic, appropriately motivated teachers, having a clear vision of the reform benefits, the best prepared conditions do not ensure the success of the reform (Fullan, 2015; Kisa & Correnti, 2015). For this reason, during the preparation period teachers should be fully familiarized with the conception of a planned reform, its reasons and purposes, expected outcomes and benefits. Then teachers should become convinced of the change benefits, and they should not feel to be simply forced to introduce the announced changes. As Pierce, Kostova and Dirks (2003) state, the new curricula should become "ownership of teachers".

Nevertheless, despite the key role of teachers in the successful implementation of school reforms, one should take into consideration the views of the other stakeholders and engage some cohorts of them into the relevant preparation and implementation processes (Lemke & Harris-Wai, 2015). This should be done regardless the approaches of these stakeholders towards the relevant reform conception are positive or negative. In our case we focused on the group of parents as basic school stakeholders and explored their opinions how the technology curriculum should be designed. We see parents as those who know and are aware of needs of their children through their daily interactions with them, and who are responsible for influencing and shaping their future. To a considerable extent, they are decision-makers deciding about their children's professional career. As to the current school reform and the group of parents as stakeholders of basic schools, the updated curriculum should reflect the adolescents' needs to achieve a high level of professional competences necessary for the digital space of the twenty-first century (Kobylarek, 2019; Maksaev et al., 2021; Pushkarev & Pushkareva, 2017). As the results of the Cedefop's research have shown (Cedefop, 2015), although Europe has highly qualified graduates entering the labour market, still 31% of those whose current job has been their first, have assessed their competence and working skills as insufficient in comparison with the optimal professional profile ensuring them comfortability in their working position.

Methodology

The main aim of the cross-sectional survey research, which was carried out in a very detailed form, was to examine opinions of parents of the basic school pupils on the technology curriculum. For purposes of the survey research a questionnaire was designed. The five parts of the questionnaire consisted of:

– questionnaire items finding out factual data on the respondents (number and gender of their children attending the grades 7 – 9 of the basic school),

– tabular questionnaire item A to find out attractiveness of the subject of technology for their children and their interest in it from the parents' point of view,

– tabular questionnaire item B to find out whether the parents consider particular educational topics included currently in the technology curriculum to be beneficial for general education of their children, as well as for their future professional orientation and career,

– tabular questionnaire item C to find out topics which should be (according to the opinions of the respondents, i.e. parents of the pupils) taught in frame of the subject of technology,

– one open questionnaire item offering the respondents a possibility to give any other comments, assessments, recommendations, requirements to the given subject of technology and its teaching.

The research survey was carried out in three different regions of Slovakia (Čadca, Nové Mesto nad Váhom and Prievidza), at each of them with respondents – parents of pupils attending one of four selected schools there, from which two were urban schools and two were rural schools. In the region of Čadca the total number of the interviewed parents was 206 (Janeček, 2023), in the region of Nové Mesto nad Váhom 208 (Markechová, 2023), and in the region of Prievidza it was 258 interviewed respondents (Ilčíková, 2023). At first, the collected data were analysed separately for each of the three regions, and subsequently findings obtained in each region were mutually compared. Partial analyses were processed on the one hand without any differentiation of the respondents (i.e. for the whole sample of the respondents from the given region, without any their differentiation according to any segmentation factor), and on the other hand for their sub-groups created according to segmentation factors which were either gender of their children (boys – girls, male – female) or affiliation of their children to the school they attended (rural school – urban school). The purpose of these analyses was to find out possible significant differences among the results of each of these sub-groups in dependence on the stated segmentation factors.

Hereinafter, there are presented results of the survey research done in the region of Čadca, tabular questionnaire item C, aimed at the parents' opinions on the topics which should be taught in the technology classes.

Results and their interpretation

Overview of the results

The total number of the interviewed respondents in the region of Čadca was 206 parents. From this number, 109 respondents lived in a city, i.e. their children visited an urban school, and 97 of the interviewed parents lived in the countryside, i.e. their children attended a rural school. From the given total number of the respondents 96 were parents of boys (sons) and 110 of girls (daughters) (Table 1). None of the interviewed parents has both daughter and son attending the given basic schools.

Table 1. *Characteristics of the respondents of the research sample in region of Čadca*

Parents	*Urban schools*		*Rural schools*		*Gender of the child*	
	N	*p %*	*N*	*p %*	*N*	*p %*
of sons	47	23	49	24	96	47
of daughters	62	30	48	23	110	53
Total	109	53	97	47	206	100

Legend to Table 1: N – absolute numbers, p – relative numbers of the interviewed parents

In the tabular questionnaire item C, the task of the respondents was to mark those thematic units from the given list of 20 thematic units which, according to their opinions, should be taught in technology classes (i.e. they should be included into the curriculum of this subject).

Table 2 presents an overview of the results of the collected data:

– for the whole sample of the respondents, without any differentiation of the respondents,

– for the relevant subgroups of the respondents based on their differentiation according to the observed factor of the gender of the respondent's child (daughter or son, F - M),

– for the relevant subgroups based on differentiation of the respondents according to the observed factor of the affiliation of the school which the respondents' children attend (rural school RS – urban school US).

Table 2. *Overview of the number of the respondents (with regard to the observed segmentation factors) suggesting inclusion of the given thematic units into the technology curriculum*

Thematic unit (TU)	*Total*		*P_M*		*P-F*		*P-US*		*P-RS*	
	N	*p %*	*N*	*p %*	*N*	*p %*	*N*	*p %*	*N*	*p %*
1. Simple mechanisms, working with constructional kits	94	46	63	66	31	28	50	46	44	45
2. Connecting electrical circuits, working with el. engineering kits	99	48	55	57	44	40	57	52	42	43
3. Robotization, working with robotic kits	76	37	50	52	26	24	41	38	35	36
4. Working with laboratory technology / equipment	70	34	42	44	28	25	39	36	31	32
5. Working with digital technologies	56	27	33	34	23	21	34	31	22	23
6. Algorithmization, creation of control programs	49	24	25	26	24	22	29	27	20	21
7. Working with 3D printers	59	29	33	34	26	24	30	28	29	30
8. Working with 3D models	63	31	35	36	28	25	38	35	25	26
9. Intelligent machines and their interconnections	75	36	44	46	31	28	38	35	37	38
10. Features of technical materials and work with them	106	51	62	65	44	40	58	53	48	50
11. Development of handicraft skills	114	55	45	22	69	63	47	43	67	69
12. Soil cultivation, gardening	107	52	46	48	61	55	59	54	48	49

Thematic unit (TU)	*Total*		*P_M*		*P-F*		*P-US*		*P-RS*	
	N	*p %*	*N*	*p %*	*N*	*p %*	*N*	*p %*	*N*	*p %*
13. Breeding	77	37	39	41	38	35	46	42	31	32
14. Housing design	99	48	48	50	51	46	53	49	46	47
15. Household operation and maintenance	134	65	67	70	63	57	71	65	63	65
16. Food preparation	136	66	64	67	72	65	73	67	63	65
17. Household economics	142	69	64	67	78	71	76	70	66	68
18. Ecological issues and possibilities of their solutions	121	59	52	54	69	63	56	51	65	67
19. Excursions to industrial enterprises	82	40	45	47	37	34	48	44	34	35
20. Excursions to non-industrial enterprises	77	37	43	45	33	30	46	42	31	32

Legend to Table 2: absolute numbers (N) and relative numbers (p) of the interviewed parents of boys (P-M), of girls (P-F), of children attending an urban (P-US) or rural (P-RS) school

Given the number of respondents, the research results cannot be generalized. However, they have some informative value and indicate the directions in which the further development of the subject curriculum should strategically follow.

Results analysis and interpretation

According to the data presented in Table 2, the content of the school subject of technology should be focused on seven thematic units (TUs), which are the following:

– Household economics (TU_17),
– Food preparation (TU-16),
– Household operation and maintenance (TU-15),
– Ecological issues and possibilities of their solutions (TU_18),
– Development of handicraft skills (TU_11),
– Soil cultivation, gardening (TU_12),
– Features of technical materials and work with them (TU_10).

The above-stated thematic units achieved the highest relative scores. These thematic units were marked by more than 50% of the respondents (of the total number of parents involved in the research survey, without regard to the observed segmentation factors). The particular items are stated decliningly, from the thematic unit with the highest score (TU_17 Household economics – achieved score 69%) to those with consecutively lower scores (TU_10 Features of technical materials and work with them – achieved score 51%).

More or less the same results were recorded in the subgroup of respondents – parents of girls (P_F), as well as among the respondents – parents of children attending an urban school (P_US). In both of these two cases the differences between the results recorded for the whole sample of the respondents, and results recorded for the relevant subgroup of the respondents, created with respect to the segmentation factor either of the gender of their children (girl or son, i.e. female or male) or the school attended by their children (urban or rural one) are statistically insignificant.

To support easier comparison of the results recorded for the whole sample of the respondents (without their differentiation based on the observed segmentation factors) with the results recorded for relevant subgroups of the respondents created in dependence on the respondents' particular observed segmentation factors, the results are visualised in a graphical way in Figures 1–5.

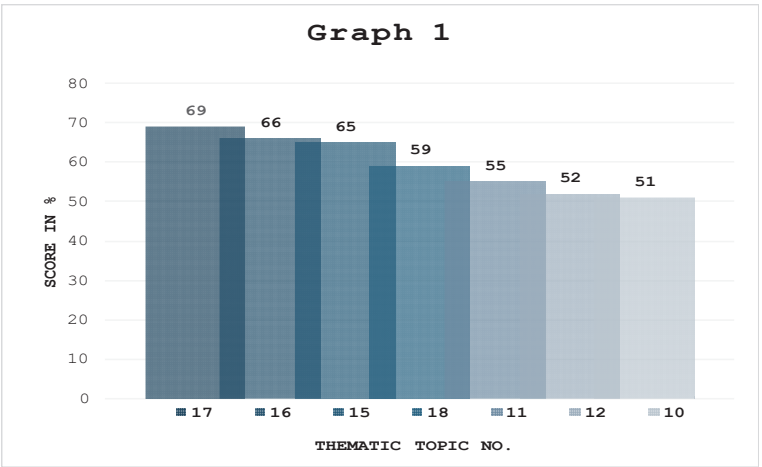

Figure 1. *Ranking of the thematic units with the achieved relative scores above 50 % processed for the whole sample*

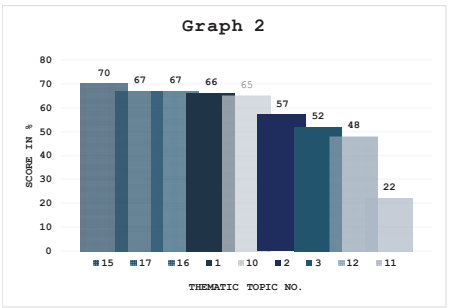

Figure 2. *Most assessed thematic units, results for the subgroup of the parents of boys (P_M)*

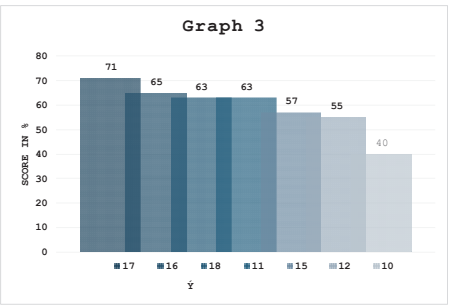

Figure 3. *Most assessed thematic units, results for the subgroup of the parents of girls (P_F)*

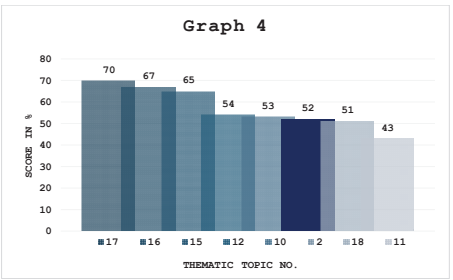

Figure 4. *Most assessed thematic units, results for the subgroup of the parents linked to urban schools (P_US)*

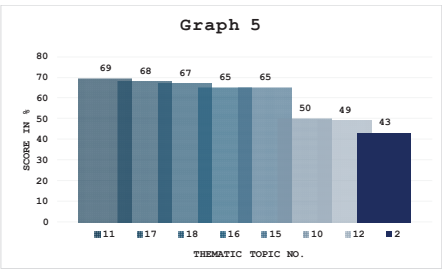

Figure 5. *Most assessed thematic units, results for the subgroup of the parents linked to rural schools (P_RS)*

As to the dependence on the segmentation factor of gender of the parents' children, significant differences occur in case of the respondents – parents of boys (P_M, Figure 2). One very serious difference is that a similarly high relative score above 50 % was achieved,

besides the stated seven thematic units TU_17, TU_16, TU_15, TU_18, TU_11, TU_12 TU_10 also in case of further three topical units TU_1 (Simple mechanisms, working with constructional kits – achieved score 66%), TU_2 (Connecting electrical circuits, working with electrical engineering kits – achieved score 57%) and TU_3 (Robotization, working with robotic kits – achieved score 52%). Another serious difference is a significantly lower relative score recorded at the seventh thematic unit TU_11 Development of handicraft skills. While in case of the whole sample of the respondents the score of this thematic unit was 55%, and in case of the sample of the respondents – parents of girls (P_F) it was even 63%, in case of the respondents – parents of boys (P_M) it was only 22%.

While the respondents' (P_M) call for inclusion of the thematic units TU_1, TU_2 and TU_3 into the curriculum proves the traditional perception of technology as a matter of men, the low number of respondents P_M calling for inclusion of the thematic unit TU_11 into the technology curriculum points out to the decline of the importance of handicrafts in modern society and the labour market too. As for parents of girls, the call for inclusion of this topic into the technology curriculum persists probably with regard to girls' traditional ongoing leisure time activities and artistic hobbies.

The call for inclusion of the thematic unit TU_11 Development of handicraft skills into the technology curriculum from the parents of boys (P_M) is statistically significantly lower in comparison with the call for its inclusion considering the whole research sample. The thematic unit TU_10 Features of technical materials and work with them also recorded a lower score from the parents of daughters (P_F) in comparison with the whole research sample. However, the recorded decline of its score is not so dramatic as it is at the score of the above-discussed thematic unit TU_11 (22% for TU_ 11 by P_M vs. 40% for TU 10 by P_F).

Based on the findings of a previous study when pupils assessed the attractiveness of thematic units taught within the subject of technology, the most interesting thematic units were the ones that involved practical activities (Hašková & Lukáčová, 2022). In the particular grades 6th–9th such topics were:

– 6th grade: making things from wood, metal or plastic,
– 7th grade: making 3D models,
– 9th grade: drawing in graphic programs.

The only exception was the 8th grade, where the most attractive topic for pupils was the world of the household. These results more or less coincide with the parents' statements about what their children should be taught.

In the parents' opinion it is useless to incorporate into the curriculum such thematic units as Working with digital technologies (TU_5), Algorithmization, creation of control programs (TU_6) and Working with 3D printers (TU_7). These topics belong to the group with the lowest achieved score in all three cases (the whole group of respondents, parents of boys, parents of girls). This result, in the context of current general calls for increasing digital skills of Slovak population (Záhorec et al., 2020; Kučera & Jakab, 2021; Pavlíková et al., 2021; Treľová & Krásna, 2021; Stoffová & Horváth, 2019), appears to be a very surprising. Moreover, it is also in discrepancy with pupils' interest (pupils expressed their interest in drawing in graphic programs or making 3D models).

Among the parents of boys there was a huge decline of the score of the thematic unit TU_11 Development of handicraft skills in comparison to the score given by the parents of girls. Totally in case of the evaluation done by the subgroup of the parents of boys this topic item is ranked among the group of the thematic units with the lowest score of 22% (together with TU_5, TU_6, TU_7). Moreover, this item is a unit with the absolutely lowest score (but the differences among the individual items of this group are not significant).

In comparison with the results of the whole group of the respondents (without their differentiation according to the segmentation factors) among the thematic units evaluated as useless with respect to the subgroups of the respondents divided according to the gender of their children were:

– TU_8 Working with 3D models (paradoxically highly appreciated by pupils (Hašková &Lukáčová, 2022) in case of both subgroups of the respondents (P_M 36 % and P_F 25 %);

– in case of the subgroup of the respondents – parents of girls (P_F) such thematic units as Robotization, working with robotic kits (TU_3, 24 %) and Working with laboratory technology / equipment (TU_4, 25 %). This finding can be perceived as a proof of the traditional applied gender-based approach towards the phenomenon of technology.

As to the aspect of the school children attended (rural school – urban school; P_RS, P_US), this aspect was proved as insignificant. The results processed separately for both the subgroups of the respondents P_RS and P_US were statistically the same as the ones recorded for the total group of the non-differentiated respondents (see the graphs in Figure 1, Figures 4, Figure 5).

Discussion

According to Ďuriš (2019b), parents are one of the key actors which can significantly influence the content and quality of technology teaching at basic schools. This statement was made in the context of growing criticism of the underestimation of the technology education importance. Along with that, the results of international monitoring show a decrease of learning outputs of Slovak pupils' achievements within the relevant observed school subjects in comparison with the developed European countries (OECD 2011; 2015). This decline was a long-term one, and it also concerned technology education.

The significant changes in the State Educational Program after 2013 (ŠPÚ, 2014) cannot fully ensure a place the technology education should have as compared to the place it has in European developed countries. After 2015, more attention began to be paid to the technology education from the state administration, and on the basis of a society-wide request (Ďuriš, 2019a). Support to technology education should be offered through the following aspects (Pavelka et al., 2019):

– appreciation of the social contribution of technology education, especially on the part of the state administration, which should implement systemic, conceptual and stable support and development;

– provision of high-quality equipment for teaching the subject of technology;

– to ensure fully qualified technology teachers.

As to the pupils' parents, they should insist on teaching the subject of technology in an adequate way, as well as other school subjects, so that children could acquire relevant manual and working skills. By means of some sponsorship parents can also help to ensure necessary adequate equipment to schools. And last, but not least they can demand from school leaders to ensure qualified staff to teach the subject of technology. Parents should act critically against letting schoolchildren sweep the school yard and collect garbage instead of teaching technology (Ďuriš, 2019).

The State Pedagogical Institute started working on the creation of a new state curriculum framework for basic education from 2021. The development and implementation of the new State Educational Program for basic education has become a priority of the Ministry of Education (MŠVRaM SR, 2023a). The new State Educational Program was approved and accepted in March 2023, and subsequently in September 2023, with its pilot phase, the curriculum reform has entered into the practice (MŠVRaM SR, 2023b). With respect to teaching technology, a question for us is to what degree the requirements or opinions

of parents regarding the content of the subject are reflected in the newly created State Educational Programs.

Conclusion

An overview of the main findings from the survey research in the region of Čadca can be done in three points:

– The segmentation factor of gender of the parents' children (parents of boys versus parents of girls) seems to be significant, while the segmentation factor of the affiliation of the school children attend (urban versus rural schools) seems to be insignificant.

– From the point of parents' view, thematic units which should be incorporated into the technology curriculum in general (independently even on the significant segmentation factor of the gender of children) are the thematic units 10, 12, 15, 16 and 17.

– In opinion of girls' parents, the thematic unit TU_11 should be taught, from the point of view of parents of boys this thematic unit is useless.

– While the results recorded for the whole sample and the results recorded for the subgroup of the respondents – parents of boys regarding the useless topics are TU_5, TU-6, TU-7), from the point of view of girls' parents useless are mainly TU_3 and TU_4.

For interest we present a short comparison of the general results achieved in the region of Čadca (ČDC) with the results achieved in the other two regions, i.e. the region of Prievidza (PRV) and the region of Nové Mesto Nad Váhom (NMV).

To compare with ČDC, the groups of the most required and most useless thematic units in PRV were more heterogeneous. Beside those required in ČDC, the thematic units 1, 2, 3, 5 and 9 were among required in PRV, and in addition to the most useless in ČDC, belonged the thematic units 10, 13, 14 and 20.

The results in NMV, on the one hand, were not so heterogeneous in comparison with the results recorded in ČDC (in case of the required topics), as were the results in PRV, but on the other hand, they partially replicated the results in PRV. Beside those required in ČDC, the thematic units 1, 2 and 9 were also required in NMV, and to the most useless in NMV belonged the thematic units 3, 4, 5, 6 and 12, 13, and 14.

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