STRATEGIES USED BY TEACHERS TO SUPPORT LEARNING OF LOWER SECONDARY SCHOOL PUPILS FROM EDUCATIONAL TEXT RESOURCES

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Abstract

The study presents empirical findings related to ways of supporting pupils’ learning based on textbooks and other text-based resources. Based on previous researches and direct participated observation during class (2008-2010) we found that printed textbook has an essential role for learning and teaching. While pupils rarely use it in order to prepare for class, it is used extensively (often and with high frequency) at school and for many purposes [1], [2]. Teachers use them primarily as a resource in order to prepare for classes and often as a guideline for didactic proceeding during their own classes. What role do textbooks have in supporting pupils’ learning and does the role differ from other text-based resources (especially digital ones)? How does or doesn’t textbook help the teaching process and what kind of teaching support can teacher provide thanks to it?

The main goal of the research was to identify strategies used by primary school teachers to support their pupils’ learning when working with educational resources. The research design used qualitative methodological procedures. Based on the content analysis of textbooks and semi-structured in-depth interviews with teachers of various subjects, we verified what kind of educational resources teachers use in their class, to what extent and for what purpose. Subsequently, our goal was to find which components in teaching and learning materials are considered by teachers as supportive and how do teachers use them to make pupils’ learning more effective. Data was analysed through typological analysis. We found out that some of the strategies applied by teachers’ respect constructivist approaches or apply principles that enable active learning. But we also identified strategies that have a rigid character. We assessed these strategies in relation to the learning content, teacher’s teaching concept and the type of educational resource used. The theoretical foundations of the research are socio-cultural approaches and the concept of scaffolding.

Keywords: Textbook, textbook use, educational resources, learning support, scaffolding.

1 INTRODUCTION

A printed textbook is an essential educational relic in Czech schools. It is defined as a “kind of book publication with adapted content, structure and features for didactic communication. It serves both as a part of the curriculum (i.e. it presents a certain section of the planned education content), and as a didactic means, i.e. it drives and stimulates pupils’ learning and establishes teaching activities” [3]. Textbooks are employed during the lessons in a significant amount of time (frequently and for a large portion of a lesson) [4], [5]. Researches assume that they are primarily used by pupils as learning support, but teachers preparing the lessons rely on them as well. Research confirmed that teachers were heavily dependent on textbooks and methodological resources, although they were convinced that they planned the lessons on their own. Research confirms that teachers are heavily dependent on textbooks and methodological resources, although they were convinced that they were planning the lesson themselves [6]. Textbooks serve as a source of knowledge and occasionally even as an exact methodical instruction for proper lesson construction.

Additional printed sources besides textbooks are utilised throughout the learning [7]. Some of them are didactically processed – workbooks, worksheets, atlases, or collections of activities; some possess a secondary educative function – encyclopaedias, dictionaries; other types of materials are created by a teacher due to the difficulty of the educational text or to increase the motivation of pupils. Currently, digital sources are getting more widespread. Lesson observations confirm that it is highly improbable to find a teacher who would not use at least PowerPoint presentations. Various seminars and projects, initiated and supported by the Ministry of Education, Youth and Sports or the European Funds, are fashioned to promote the use of digital sources and their implementation into learning. Czech schools are furnished with multimodal rooms to develop a computer literacy of the pupils. The tendency of digitalisation of learning and teaching resources is deeply related to the modern age. The question...
arises about “how exactly the digital sources support the pupils’ learning?”. However, it is improbable to find the satisfying answer for this question in case of both printed and digital learning and teaching resource.

1.1 Pupils´ support through the learning from text sources, scaffolding

The boundary between success and failure in education lies in the volume of social support pupils are provided by their teachers (or peers). The way of interpretation of the support is particularly important. Level of pupils´ satisfaction depends seriously on their inclusion in the educational activities. Studies confirm that an encouraging climate in a classroom influences the pupils´ beliefs about themselves and the purpose of education positively [8]. Teachers providing pupils with adequate support or even scaffolding contribute to the adequate development of their understanding and active participation in the process of learning [9], [10], [11].

Means of assistance pupils are provided with are not expertly elaborated in the Czech educational context. Recent researches of text and digital materials are focused on the analysis of their content and conditions of use. There is no relevant information about their purpose or reasons why they are used. It seems that learning and teaching resources are chosen rather intuitively and without proper evaluation of their possible positive effect on pupils´ learning. Teachers perceive a textbook as a natural starting point and choose a different resource only in order to increase the motivation of their pupils. Legislatively and methodically established support of the Czech children exists only in the case of talented pupils and pupils with special needs. Teachers are provided with recommendations from the advisory institutions and receive instructions about the proper individual approach to the pupils in order to ease their learning. However, similar recommendations for the majority of pupils are absent.

One of the specific types of support in the educational environment is scaffolding [12]. The term itself serves as a metaphor – as scaffolding supports newly built walls during construction, pupils are given coherent and differentiated assistance throughout their learning. It is provided individually, step-by-step and lasts for a limited period. One of the authors who formulated the term scaffolding in detail and described its significant attributes in the learning process was Stone [13].

Main distinctive features of scaffolding are:

- The adult thoroughly diagnoses a pupil’s recent level of understanding or skills and suggests appropriate support regarding the type of the task.
- The adult is able to provide different types of assistance.
- The support is only temporary and is being gradually removed.

The term scaffolding is virtually unknown in the Czech educational environment. It is commonly related to language education, more specifically to the CLIL – content and language integrated learning method [14], [15]. Similarly, international researches do not provide any unified concept [16], [17]. Only a limited number of concepts study scaffolding’s mechanisms or models [18], [19].

Specific support, i.e. scaffolding, can be provided in the cognitive, metacognitive and affective domain. Cognitive scaffolding assists pupils with decision-making process throughout learning and aids them to identify the key ideas – conceptual scaffolding [20], or directs them towards effective use of tools, sources and processes – procedural scaffolding [21]. The teacher providing the metacognitive type of scaffolding helps pupils to reason their learning processes and encourages their thinking about the most challenging parts of the task. Pupils understand the fundamentals of the problem and are able to react adequately. They also recognise which strategies are helpful in the educational process. Metacognitive scaffolding develops the “higher” cognitive processes [22]. Affective scaffolding is the least elaborated in the professional literature and is not elaborated in this study. The main reason is that affective scaffolding is hardly distinguishable both in the education texts and the teaching.

A teacher ought to be a professional guide helping pupils to form meanings and connect them with the previously received knowledge [23]. A challenging task, particularly in case the pupils are expected to be actively participating in the process [24]. Several investigations refer that rigid approaches overlooking any relations to previous knowledge and promoting the dominant role of the educator are persistently used by teachers [25].

A teacher should be able to use scaffolding strategies to help pupils overcome obstacles and support them in reaching higher levels of knowledge. The strategies are chosen according to the initial level of knowledge. Several suitable strategies are used in learning: modelling, giving hints, prompting, loud
thinking, questions and answers, planning, task structuring, classmates mentoring, feedback etc. Different purposes and means of realisation represent the primary question as it is possible to describe concrete scaffolding strategies by their proper analysis.

Table 1. Scaffolding Intentions [26]

<table>
<thead>
<tr>
<th>Direction maintenance</th>
<th>refers to keeping the learning on direction and maintaining of particular objective</th>
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<tbody>
<tr>
<td>Explanatory and belief structures</td>
<td>the teacher provides explanatory and belief structures that organize and justify</td>
</tr>
<tr>
<td>Reducing the degrees of freedom</td>
<td>taking over a part of task that are more complex so the pupil can complete the task</td>
</tr>
<tr>
<td>Recruitment</td>
<td>keeping students ‘attention to the task and helping them to follow its instructions</td>
</tr>
<tr>
<td>Contingency management</td>
<td>using a system of rewards and punishments to facilitate pupil ‘s achievement and keeping his/her motivation</td>
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</table>

A possible supportive intentions may be, e.g. direction maintenance with the teacher offering purpose-related incentives which may be understood as metacognitive scaffolding. The affective component of personality can be supported by recruitment and contingency management. However, the development of knowledge and cognitive processes is predominantly realised throughout education. The intentions lie in explanatory and belief structures or reducing the degrees of freedom.

Scaffolding means used by the teacher (or thru textbook) leads whether in the direction of conceptual scaffolding (feedback, explaining, questioning), or procedural scaffolding (giving hints, instructing, modelling).

Specific means, orientation, commonly present in textbooks and other textual materials is included by the authors [27].

Table 2. Scaffolding Means (describe ways used by the teacher to provide scaffolding) [26], [27].

<table>
<thead>
<tr>
<th>Feedback</th>
<th>providing information to the pupil him/herself regarding pupils ‘performance</th>
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<tbody>
<tr>
<td>Explaining</td>
<td>providing more detailed information by the teacher</td>
</tr>
<tr>
<td>Questioning</td>
<td>asking questions that require an active linguistic or cognitive answer</td>
</tr>
<tr>
<td>Giving hints</td>
<td>teacher or textbook is a guide to help the pupil proceed, but does not include the full solution</td>
</tr>
<tr>
<td>Instructing</td>
<td>teacher or textbook tells pupils what to do or explains how something must be done and why</td>
</tr>
<tr>
<td>Modelling</td>
<td>offering behaviour for imitation including examples of specific skills</td>
</tr>
<tr>
<td>Orientation</td>
<td>differentiation important from less important; new from old; clarity</td>
</tr>
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</table>

Variability in levels of pupils’ support is achieved by using various scaffolding strategies – from mild guidance to an active individual service.
Several examples of scaffolding strategies observable in the learning are included in the following table. The strategies comprised the core of the interviews with the respondents.

<table>
<thead>
<tr>
<th>Instructional Scaffolds</th>
<th>Description of tool</th>
</tr>
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<tbody>
<tr>
<td>Advanced organizers</td>
<td>Tools used to present new information or concepts. The mode of information organisation helping pupils to understand new and difficult content – e.g. Venn’s diagrams, flow charts, sketches, headlines…</td>
</tr>
<tr>
<td>Modelling</td>
<td>A desirable behaviour, knowledge, or tasks are demonstrated by teachers. Teachers use modelling to: - Demonstrate assignment pupils are supposed to fulfil (e.g. biology experiment) - Provide step-by-step instructions (e.g. illustrating course of action when solving a mathematical example) - Encourage pupils to actively approach a new question or task (e.g. hands-on task)</td>
</tr>
<tr>
<td>Worked examples</td>
<td>A difficult problem or task is illustrated step-by-step by solved examples Frequently used in the Maths and Science lessons, includes three key features: - Question formulation: principle or theory - Step-by-step example: A solution of the example is shown to demonstrate a possible approach - Problem solution: one or more tasks are assigned to practise the skill</td>
</tr>
<tr>
<td>Concept Maps</td>
<td>Graphic means used for organisation, representation and demonstration of relationships between knowledge and concepts (mind maps, spider diagrams, hierarchical or chronological diagrams, system diagrams)</td>
</tr>
<tr>
<td>Explanations</td>
<td>Means used by a teacher to present and explain new knowledge Pictures, graphic organisers, animated videos, audio files and other technological aids are used to achieve more interesting, motivational and meaningful presentation.</td>
</tr>
<tr>
<td>Handouts</td>
<td>Supplementary sources supporting the learning process The means providing pupils with relevant information (e.g. a concept or theory, instructions or educational goals) and practise needed to master recent content and skills.</td>
</tr>
<tr>
<td>Hints, Prompts</td>
<td>Physical or verbal activities helping to induce previous or anticipated knowledge Several types: - Physical – body movements – pointing, nodding, hand or leg tapping. - Verbal – words, claims, questions inducing a proper reaction - Positional – placing materials on specific places encourages a proper reaction of the pupil</td>
</tr>
</tbody>
</table>

2 METHODOLOGY

The presented investigation is a part of broader research focused on the use of teaching and learning resources with regards to pupils’ learning support. In-depth interviews with pupils and their reflection of assistance provided by teachers and teaching and learning resources and direct observations of lessons are used for the investigation as well as analyses of currently utilised textbooks and their supportive elements (features with scaffolding potential).

The main focus is on teachers and their support strategies. The main aim of the empiric part is to answer the question: “Which strategies based on the use of teaching and learning resources are used by primary school teachers to support the learning of their pupils?” The first task was to identify which teaching and learning resources are used in learning. Printed textbooks were the essential subject matter as they serve not only as a source of knowledge but also as a proven methodical assistant used for lessons preparation. Other teaching and learning resources were examined as well: workbooks, worksheets, teacher-created materials etc. Particular interest was laid on the usage of digital teaching and learning resources, more specifically on their typology, structure and reasons for their use. The main aim of the research was to describe means teacher employ to support their pupils’ learning when using teaching and learning resources (both printed and digital), which strategies are used and ways of their
modification. The aim was to identify the supportive strategies in the responses of teachers and compare them. Regarding the main aim, the following partial goals were delimited:

- To realise uninvolved direct observations of learning in chosen subjects to identify educational situations with active use of the support.
- To construct a proposal of in-depth interviews with lower secondary school teachers based on the results of the observations and colloquial discussion about the use of education support via teaching and learning resources.
- To perform individual in-depth semi-structured interviews with the teachers and interpret them using the atlas.ti software.

The research’s design is based on qualitative methodological principles [29], [30]. The first step consisted in the direct uninvolved observation of ten lessons attended by two observers. The main aim was to describe which teaching and learning resources are used during the learning and in which educational context. Use of supportive strategies during the text sources application was observed. The result was a categorisation of situations in which the support based on the text teaching and learning resources took place [30].

Based on the primary assumption, it was possible to create an outline of questions for the interviews with pupils and teachers. The core of the interviews comprised of following partial spheres:

- Types of used textbooks and other printed sources in the learning and frequency of their use
- Types of digital sources in the learning and frequency of their use
- Means of using teaching and learning resources in the learning
- Source of other text materials used by teachers
- Possible support of pupils’ learning through used teaching and learning resources
- Supportive strategies used by the teacher through teaching and learning resources
- Means of support modification through sources towards the target group of pupils (successful pupils, average pupils, failing pupils, or pupils with special educational needs)
- Reasons for using support through teaching and learning resources during the process
- Differences in the use of printed and digital sources.

Data was acquired by semi-structured in-depth interviews realised with five chosen lower secondary school teachers. The participants’ choice was based on the maximum sample variability method [29]. Teachers of different subjects with distinct experience (both beginning and expert teachers); three women and two men were chosen intentionally. Selected teachers perform in a different social environment: schools with a low and high number of pupils, in urban and rural areas.

Paula is a Czech and Music teacher; later, she acquired an additional qualification in ICT. She has got 15 years of working experience. Regina is a linguist. She teaches English and Czech for 24 years. Lisa is a beginning teacher with one year of experience. Her fields are Health Education and Art. Steve teaches Biology and Chemistry for ten years at a rural school. He also teaches ICT and Craft and Technology without proper qualification. Peter teaches Civics and History for ten years.

Interviews were performed from January to March 2019. The respondents were asked to express their consent with recording during the first contact. The more general question was posed to allow teachers formulate opinions about their teaching style and techniques. First question “Which teaching and learning resources do you use in learning and how frequently” was a starting-point of each interview. The teachers were mainly questioned about the nature of the sources used in the learning process, about frequency and reasons for using the resources, and to express the level of satisfaction. The respondents also informed about the particular techniques used to support pupils when working with the resources. Ways of their thinking about scaffolding, modification of learning content through different teaching and learning resources and preferred resources were evaluated. Respondents were prompted to compare ways and reasons for using printed and digital teaching and learning resources and to evaluate the benefits of both categories. They were asked about ways both printed, and digital sources can ease pupils their learning. The teachers evaluated which topics are difficult for the pupils and require a higher level of support.
Moreover, the way of topics modification using the teaching and learning resources to ease the learning was described. Differentiation of supportive strategies – for successful, average and failing unmotivated pupils was discussed as well. All interviews lasted from 59 to 63 minutes and were recorded, electronically shared and coded manually by open and axial coding as well [29] as with Atlas.ti software. Since various studies point out different patterns of teaching and learning materials use, typological analysis is suitable for qualitative data evaluation for the purpose of this research. Regarding the low number of respondents, the main aim was not to create a well-anchored theory but to pilot the means for further use in the pedagogical field. The main aim was to compare the statements of the respondents through created categories and create a final classification of assistance.

3 RESULTS

3.1 Teaching and learning resources used and their choice

Types of used teaching and learning resources were identified in the initial part of the study. A combination of printed and digital resources is utilised by all respondents. The proportion of their use is, however, different. The conclusion confirmed our previous claim in the area of education sources use (e.g. [31], [32]). A change in printed and digital resources ration is confirmed as well. The printed sources, mainly textbooks, manifest a lower frequency of use usage (comp. [1], [2]). Their role in lesson preparation remains stable. The investigation has proven that a lower number of teachers prefer printed sources, majority inclines towards digital teaching and learning resources. Textbooks, workbooks and worksheet are predominantly used. Other sources and text as scholarly books, manuals or news articles are used less frequently. As for the digital teaching and learning resources, interactive presentations, interactive boards, or applications for individual practise of the content using digital devices (tablets, iPads, mobile phones, PCs) are utilised. SMART, Kahoot, Socrative, NearPod or Learning Apps were mentioned. PowerPoint presentations and internet sources – articles, videos, and other apps are used throughout the learning as well.

Different field of interest lied in the ways of acquiring the sources. As for the printed teaching and learning resources, they are only able to choose primary sources. Textbooks and workbooks are most frequently chosen by schools. The acquisition of the digital materials is influenced by an external factor, e.g. participation in a project about using the specific application in learning. Another project involved digital materials creation, e.g. PowerPoint presentations or digital worksheets.

Teachers’ decision to choose actual teaching and learning resources for an individual lesson is vital entry information in the sphere of strategies, supportive means and scaffolding in learning. Four essential pieces of entry information are considered by four teachers not using a textbook as a primary source – the difficulty of the topic, class level, way the topic is presented in a textbook and the best possible means of didactic transformation of the content. Paula:” I always think if I could do it differently. Better. More interesting, which I think is important, more entertaining ... I want to use something classic in the lesson but make it more alive after that.” Lisa:” I try to do something differently, to find somewhere else to make the learning more exciting and to make it easier and better for me as well.” The teachers frequently seek the means to make the learning more entertaining, vitalised, interesting and visual.

In the first part of the interview, the teachers were asked to evaluate the most frequently used textbooks in the Czech Republic and their learning strategies. Among the most appreciated textbooks were those from the Czech publishing houses Fraus and Nová škola. Their clarity, creativity, accompanying tasks, complementary questions, graphic organisation, fun facts and appropriate use of keywords are appreciated and understood as supportive elements. Peter responded to the question about the supportive elements:” If they only have a textbook, then the number of pictures, graphs, visualisations should be as comprehensive as possible.”

The choice of teaching and learning resources influences teachers’ approach to learning as well as scaffolding means, and strategies pupils are provided through the resources.

3.2 Strategies used in supporting the pupils through teaching and learning resources

A textbook is used by one teacher in every lesson, as four comments upon a lower frequency of use. There are also differences in ways of use of the textbook. The first point of interest is the support of pupils through textual material in textbooks. Paula utilises a textbook mainly at the beginning of a new topic. The most important parts of the content are explained using the textbook, which also serves as a
source of examples for further practice. They are transformed into a digital form for iPads. A similar approach is used by Regina in her English lessons. The textbook is used for introduction to a topic which is further practised in a workbook – a printed source. After that, the focus is returned to the textbook as Regina considers an immediate practice as a crucial part of learning.

Since the curriculum is most frequently presented in the form of the text, it was crucial to identify means used by teachers when working with it. Text in the textbook is provided to every pupil, and chosen texts are read. A traditional way of reading with individual pupils reading small parts of the text or a whole class reading at the same moment is preferred by one teacher. Different approaches are realised by other teachers. Lisa: "Well, I do not want to, to open the book and then read one after another and that everyone would read a paragraph... when there are some tasks or questions, we the whole class tries to respond, to answer them." Steve: "No, no, we do not read the text aloud, I often more assign a topic they are supposed to read, and when they are finished, I try to find out what they know. They close the textbook, and I want to hear some links or what they found out what they have read." Steve also utilises texts for group or individual work.

Different tasks are assigned to the texts after reading. The most preferred forms of scaffolding strategies are "Instructing" or "Questioning" [26]. The use of advance organisers strategy is declared as well. Peter: "We try to pull out important features, what is crucial and what they can just let be, to distinguish important/redundant." His approach is justified by the way subjects are processed in the textbooks, more specifically in the learning texts – "Certainly, because I consider some areas too difficult for pupils from 6th to 9th grade. There is too much information." Pupils are instructed to organise new knowledge, which contributes to a better understanding of new content. Another example of advance organisers is presented by Regina, who explains the means used to help pupils understand recent and difficult content: "So, first, we create the cube. Then did you do the cube, do you have the cube? The conjunction in the cube? Yes? Let us move further. A subordinate clause is following the cube..." So, in the end, I instead teach them the procedures or some aids that would help them'. She continues: "And I know that it probably works well." Regina: "I try to make children understand what they are reading about. We explain what the words mean. They look for the answers because it is then projected into all other subjects."

Teachers were also enquired about assisting pupils when solving a difficult task using a printed source. Steve: "I try to give them hints." Regina: "... When I can see they have started (solving the task) and everything is going fine, I let them work. If not, then I "give them hints". "Careful, look what we have talked about, OK?" or I point at something and say, "you did not notice here, remember, you have overlooked it, reread it, OK?" Such guidance questions. Another type of supportive questioning helping pupils to solve challenging tasks is used by Peter: "They are given hints during some problem learning to reach the goal somehow." Questioning is a common form of support. However, teachers the question also as different scaffolding means. Some questions are used to giving hints (e.g. Steve and his hits), the questions are also used to instruct the pupil (e.g. Regina). In the case of two teachers, giving hints is the most frequent scaffolding strategy. In case additional support is needed to solve a problem or task, instructing is used to assist pupils with a proper understanding of the topic. Other frequently used scaffolding strategies include modelling which appears in a wide variety of forms. Modelling is considered as very important since teacher appreciate its link to practise. Concept maps are used by two teachers.

Textual materials in textbooks and workbooks are widely used to practise, which is not anchored in theoretical strategies of scaffolding. It was registered that practice is more frequently linked with digital sources, mainly with applications for portable digital devices (iPad, tablet) and interactive boards. The higher motivation of pupils and the fact that everyone receives immediate feedback in the form of evaluation of the task are the main advantages.

All respondents choose texts themselves. Not an entire canon I used. Lisa: "Maybe, when I am preparing it, the lesson, I am thinking about the class. Like what about them, what class is it. If they can understand the information from the text or not, but sometimes, when I, like, acknowledge that it is difficult or tedious for me as well, or it does not give me anything, I skip it." Textual materials in textbooks also serve as sources of relevant information and hints for the content (what to follow in the curriculum).

Besides the text, also picture description and graphics advance organisers are used by the teachers [26]. Sketches or graphs pupils transform into exercise books are used to help them understand more difficult topics. Discussion based on texts, questions or pictures in the textbook is a frequent method supporting the learning. Steve: "I work, mostly in Biology with those pictures, when they have to understand that it is not important how well they transform it into the exercise book but..."
what they write in it, what is in there… Transform, describe, yes, and after that, they read the text, and we talk about it, for example, about some body system.”

The most emphasised category in the sphere of assistance is graphical features of textbooks. The need for well-made graphics is stressed and understood as an essential part of scaffolding – direction maintenance. Pictures, graphs, schemes as well as interesting tasks and additional information are used for further activities and practise.

3.3 Printed versus digital learning and teaching resources

Our interest also laid in data which explained differences in the use of printed and digital teaching and learning resources and ways teacher think about them. Reducing the degrees of freedom strategy is used by Paula to explain the differences on the example of practice: “So I do it in a way that I ask five fastest (note: those who filled in the printed exercise) who have it for correction, and if it is all correct they receive a point. That is one possibility. Or, we make a colloquial evaluation, but there is a certain possibility of the unreliability of the correction. Moreover, there is one more alternative which is much better - they get the exercise and write it into Socrative – an online tool which gives them an immediate

Use of digital teaching and learning sources leads to different organisation forms diverting teachers from frontal education. Digital sources can catch and motivate the pupils and generally increase their attention. They perfectly fulfil the direction maintenance scaffolding intention. A different result of the printed and digital teaching and learning resources comparison is surprising as teachers not consider digital sources as more effective means to fulfil the goals of education. Lisa: “It is balanced.” Steve: “It depends.” The digital teaching and learning resources will be an object of our further research from the view of scaffolding theory.

4 CONCLUSIONS

Several strategies, desires and means described in the scaffolding theory are used by teachers in the learning process [26]. However, the principle of support being gradually removed is not applied. From this point of view, it is problematic to label the support as scaffolding in the full scale of the term. In the area of scaffolding strategies and means the data confirm that all described means, according to van de Pol theory [26], are used. In the field of printed teaching and learning resources were identified (sorted by the frequency): explaining, modelling, prompts and advance organisers in the same frequency, and concept maps. Various means and strategies used with printed sources respect the constructivist approach of teaching and learning. Only one teacher can be considered as rigid in his/her approach to the text materials.

With regards to the constructivist approach, the frequent change of supportive strategies is considered as an essential fact. If pupils do not understand or are not able to solve a task, teachers choose different means and support strategies or at least alter their forms. The first strategy is not utilised. Scaffolding means and strategies are not altered according to the age of pupils. It is not possible to explain the finding as it will be a matter of further research.

The research pointed out the problem with practise categorisation. This activity is used frequently throughout the education process, and teachers understand it as an important supportive means. Current discussions lead to a question whether it is scaffolding and whether is it possible to categorise it as one of the scaffolding strategies.

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