TEACHING AIDS REQUIRING EDUCATIONAL TECHNOLOGIES IN THE CONTEXT OF EVALUATION OF EDUCATION

Karel Němejc¹, Lucie Smékalová², Milan Slavík¹

¹ Department of Pedagogy, Institute of Education and Communication, Czech University of Life Sciences Prague (CZECH REPUBLIC)
² Department of Lifelong Learning and Study Support, Institute of Education and Communication, Czech University of Life Sciences Prague (CZECH REPUBLIC)

Abstract

Teaching aids have always been an inseparable part of the educational process. There are a lot of categories of didactic material resources contributing, on condition of their proper use, to more effective achieving of educational goals, to presentation and demonstration of the curriculum in different ways, to activation of students, to motivation to learn, to rationalization and intensification the work of teachers, and many others. Nowadays, with the continuous development of technology-supported learning environment in the digital age and with increasing demands on technology skills of teachers, it is essential to ensure quality of teaching and learning in connection with the effective and trouble-free integration of teaching aids in education, too.

The paper aims to analyze the way of using teaching aids requiring educational technologies (i.e. audio-visual, auditory and electronic teaching aids) based on previous experience of graduates of secondary schools, currently university students. In other words, the exploratory survey is focused on a study of statements of these students about how their secondary school teachers used such teaching aids during the lessons and where, according to them, in the context of these aids their teachers usually made mistakes, it means what must be avoided in the future to ensure the quality of education. The target group consists of undergraduates of bachelor’s degree of the Institute of Education and Communication of the Czech University of Life Sciences Prague specializing in Teacher Training who have successfully completed the course focused on the effective use of educational resources in the educational process. Discussions with the undergraduates and a questionnaire are used as tools of the survey.

Keywords: Teaching aids, technology-enhanced learning, quality of teaching and learning, evaluation, demonstration, view of graduates, common mistakes.

1 INTRODUCTION

Education is generally characterized by the interaction of four main components, i.e. the content, the teacher, the student and also didactic means (material and non-material) are considered to be an integral part of modern education.

Everything that is leading to achievement of educational goals and is contributing to the overall effectiveness of the teaching and learning process, going hand in hand with the quality of education, can be considered as didactic means of the educational process, namely material didactic means (i.e. teaching aids and educational technologies) and non-material didactic means (i.e. methods and forms of teaching) [1], [2], [3], [4], apart from the content and participants of education. There are a lot of categories of didactic material means contributing, on condition of their proper use, to more effective achieving of educational goals, to presentation and demonstration of the curriculum in different ways, to activation of students, to motivation to learn, to rationalization and intensification of the work of teachers, and many others.

With focus on teaching aids, they have always been an inseparable part of the educational process and there is no doubt that education could be hardly achieved with verbal communication only. According to Dostál [5] only few people can now imagine educators of any specialization without teaching aids, relying only on themselves. Teacher talk can be made very much more effective by the support of various didactic means brought into the classroom [6]. There are currently a lot of definitions of teaching aids. As one of the most apt seems to be the definition saying that “teaching aids are means mediating or imitating reality, helping to enhance the illustration (demonstration) and facilitating teaching and learning” [7].

Proceedings of EDULEARN17 Conference
3rd-5th July 2017, Barcelona, Spain

ISBN: 978-84-697-3777-4
As it is clear from the study of literature, a common feature of teaching aids is primarily their illustrative function, consisting in the fact that teaching aids affect the senses and so students get more specific and comprehensive ideas of what they are learning. All this is connected also with other functions of teaching aids that include the following properties: they are the source of the didactic information, they have an immediate link to the curriculum and especially to learning objectives, they contribute to easier memorization of the curriculum, they motivate the students and arouse their interest in the subject matter, they fulfil the role of feedback - inform the students about how they understand the subject matter and specify the learning process, they support the self-study since students can study on their own and out-of-school on the basis of observations, their own experience from the lessons, etc. Students, through the use of material didactic means, form their imagination and are more effective in preparing to move from the theoretical level into the practical, real life, as they can not only hear teachers' explanations and interpretations but they are supported by the integration of appropriate didactic means in teaching and learning [2], [6], [8], [9], [10], [11].

Teaching aids are divided into many categories that differ slightly from one author to another one. A categorisation of teaching aids provided by Dostál [5] and Slavík et al. [8], [11] can be mentioned as an adequate example:

- **Original objects and real phenomena, including products of nature** (e.g. devices and tools, equipment, works of art, samples of materials, plants and animals, rocks, herbaria, taxidermies, processes, etc.),
- **Models** (showing either an object or some principle, static models or dynamic models),
- **Visual teaching aids** (e.g. photos, wall paintings, drawings on the blackboard, maps, overhead projector transparencies, etc.),
- **Auditory teaching aids** (e.g. musical recordings - singing, recordings of musical instruments, concerts, etc., sound recordings of natural phenomena, spoken recordings - listening exercises, dictations, narration, radio broadcasting, etc.),
- **Audio-visual teaching aids** (TV broadcasting, educational movies and videos, computer animations, Internet videos, etc.),
- **Textual teaching aids** (both printed and digital textbooks, workbooks and sheets, professional literature, periodicals),
- **Electronic teaching aids and Internet services** (computer software with an educational potential, educational applications, presentation slides, e-learning, m-learning, etc.).

On the basis of the above mentioned, the importance of integration of teaching aids into the educational process cannot be denied, however, teaching aids as such themselves cannot guarantee an optimal process of education, as the educational environment and especially the teacher, a human factor, play a significant role here. It is just the teacher's ability to work with didactic means, their motivation, experience and willingness to further education, what influences the process, results and quality of education.

Certain groups of teaching aids require, due to their nature, some educational technology to be presented and to deliver the didactic information [5], [7], [8]. Nowadays, with new educational trends and continuous development of technology-enhanced learning environment in the digital age of audiovisual, visual, electronic, interactive and virtual media (e.g. [12], [13], [14], [15]) and with increasing demands on technology skills of teachers, who sometimes have limited training in this area (e.g. a review of the literature by Buabeng-Andoh [16]), it is essential to ensure quality of teaching and learning in connection with the effective and trouble free integration of the group of teaching aids requiring educational technologies, too. That is the reason why audio-visual, auditory and electronic teaching aids are the subject of this exploratory survey. In this respect, teachers should be able to demonstrate and analyze presented teaching aids, to highlight their most essential features and to summarize it all in the whole [4], [8]. However, there are also extremes, such as too many teaching aids included in the teaching unit (rather distracting than supporting the learning process), and likewise, few illustrative materials and teaching aids are a mistake, too [8]. It is therefore necessary to be able to choose the appropriate kind of teaching aids for the educational process and to apply adequate methodological principles in the use of individual groups of teaching aids, such as e.g. the principle of demonstration (visualisation) of the subject matter, the feedback principle, the principle of connection of theory and practice, the principle of individual approach to students, etc.
The quality of work of teachers is considered to be one of the most important aspects influencing the results of students, and thus determining the quality of the educational system as a whole [17]. In this respect Petty [6] mentions that lesson evaluations should be based on the lesson plan’s clearly stated aims and objectives and that the teacher should be also able to evaluate didactic resources to make them effective and interactive, since good resources have activities built into them, or designed to be used with them.

The issue of teaching aids requiring educational technologies has been described only to a small extent and in the Czech environment it has not been explored well, despite the rapid development of the use of educational technologies. To find out insights into the above outlined, the aim of the paper is to analyze the way of using teaching aids requiring educational technologies by the teachers based on previous experience of graduates of secondary vocational schools and grammar schools, namely in the context of evaluation of education.

2 MATERIALS AND METHODS

The aim of the paper is to analyze the way of using teaching aids requiring educational technologies (i.e. audio-visual, auditory and electronic teaching aids) in the context of evaluation of education, in our case based on previous experience and a subjective view of graduates of secondary schools (secondary vocational schools and grammar schools) who are now university students. Thus, the exploratory survey is focused on a study of free statements of these students to open-ended questionnaire items about how their secondary school teachers used particular groups of teaching aids during the lessons and where, according to them, in the context of these aids their teachers probably made mistakes, if any, it means what must be avoided in the future to ensure the quality of education in this respect.

The exploratory survey reflects the following question: What mistakes do teachers make most commonly in their lessons when using teaching aids requiring educational technologies, as perceived by students? In particular, the survey aims to find out whether and what kind of mistakes and bad practices the respondents recorded in the lessons of their teachers at secondary schools in connection with teaching aids requiring educational technologies. Such formulated subjective statements of the students will be quantified and listed as categories of examples of common teachers’ mistakes and bad practices. The survey has the nature of a qualitative research, not because of the respondents, but for its specific issues that require respondents’ own detailed statements.

The target group consists of undergraduates of bachelor’s degree of the Institute of Education and Communication of the Czech University of Life Sciences Prague (IEC CULS Prague) specializing in Teacher Training who have successfully completed the course focused on the effective use of didactic means (both material - teaching aids, educational technologies, and interdisciplinary liked also with non-material means - i.e. methods and forms of teaching) in the educational process, and so having a clear idea and experience with the effective use of material didactic means during lessons and in teaching outside the school environment.

Apart from informal discussions with the students, an anonymous questionnaire was chosen as the most relevant tool of the data collection. Namely, the following items of the questionnaire related to their own opinions and experience were given to the respondents:

1 Audio-visual teaching aids: Write down your opinion(s) on what mistakes (if any) did your secondary school teachers make most commonly in the context of these teaching aids used during their lessons.

2 Auditory teaching aids: Write down your opinion(s) on what mistakes (if any) did your secondary school teachers make most commonly in the context of these teaching aids used during their lessons.

3 Electronic teaching aids: Write down your opinion(s) on what mistakes (if any) did your secondary school teachers make most commonly in the context of these teaching aids used during their lessons.

The questionnaire consisting of the three main open-ended questions and a closed-ended item (tracking the background of the respondent - graduate of a secondary vocational school or a grammar school) was created and distributed to the respondents at the IEC CULS Prague at the end of selected courses of the last two academic years 2015-2016 and 2016-2017.
Due to personal contact of the researchers with the target groups the response rate reached 100%. After sorting the data 196 questionnaires remained valid, thus the total amount of respondents was 196 undergraduates, of which 120 were graduates of secondary vocational schools and 76 were those of grammar schools.

The data were analyzed and processed using descriptive statistics, focusing on the kind of secondary school the respondents graduated from, but regardless of their gender and age. Summarization of the empirical data enabled an insight into the investigated issue and subsequently to interpret the findings detected.

3 RESULTS AND DISCUSSIONS

A total of 196 bachelor undergraduates specializing in Teacher Training participated in the questionnaire survey, namely they were 120 graduates of secondary vocational schools and 76 graduates of grammar schools. They were given and asked to fill in three particular open-ended questions finding their opinion(s) on what mistakes (if any) did their secondary school teachers make most commonly in the context of three groups of teaching aids requiring educational technologies (i.e. audio-visual, auditory and electronic ones) used during their lessons. Since each of the three questions was an open-ended item, the number of respondents’ statements was unlimited. Similarly, if the respondents did not notice any mistakes (bad practices) in their secondary school lessons, there was no need to write down any answer and the space to answer could remain blank. It means that the number of statements does not match the number of respondents (the number of statements may be higher, or even lower when the respondents have concluded that they have not noticed mistakes during the lesson of their four-year secondary school studies).

For the categories of teaching aids that are under our investigation a total of 603 statements were collected through the questionnaire survey (352 from graduates of secondary vocational schools, 251 from graduates of grammar schools), with the following frequencies:

- Audio-visual teaching aids: 150 statements (graduates of secondary vocational schools), 91 statements (graduates of grammar schools), 241 in total,
- Auditory teaching aids: 102 statements (graduates of secondary vocational schools), 92 statements (graduates of grammar schools), 194 in total,
- Electronic teaching aids: 100 statements (graduates of secondary vocational schools), 68 statements (graduates of grammar schools), 168 in total.

The number of responses of both graduates of secondary vocational schools and grammar schools was exceeded only in the case of audio-visual teaching aids. On the other hand, a lower number of statements than respondents was alongside recorded in graduates of both kinds of schools in electronic teaching aids. As for auditory teaching aids, the statements related to teachers of secondary vocational schools were lower, those related to grammar schools were in excess.

The statements of the respondents for all three groups of teaching aids were quantified and divided into appropriate categories of the most common mistakes (bad practices) of teachers in integration of teaching aids in the educational process. Based on analysis of all individual statements, the main categories were listed under the criterion that at least 6 respondents’ statements appear in one of the two kinds of secondary schools. Resulting from this criterion, for statements that occurred sporadically a category “other statements (categories not specified)” was created for each group of teaching aids concerned in the survey.

The percentage distribution of the statements is calculated proportionally in each of the categories of respondents’ responses, namely individually for graduates of secondary vocational schools, those of grammar schools, as well as the sum of all the statements (concerning teachers of both secondary vocational schools and grammar schools) in each of the categories. 25 % of the most represented categories and 25 % of the least represented categories are highlighted in the results.

3.1 Students’ perceptions of the use of audio-visual teaching aids in the educational process by their secondary school teachers

As for the first item of the questionnaire dealing with the evaluation of the use of audio-visual teaching aids the following viewpoints of the undergraduates specializing in Teacher Training were investigated:
Audio-visual teaching aids: Write down your opinion(s) on what mistakes (if any) did your secondary school teachers make most commonly in the context of these teaching aids used during their lessons.

Of the total number of 196 respondents (120 secondary vocational schools, 76 grammar schools), there were 150 statements of graduates of secondary vocational schools and 91 statements of graduates of grammar schools, 241 in total. In accordance with the above given criterion, 11 particular categories and one category for the other non-specified statements were created. The overview of these categories and the percentage distribution of students’ statements (i.e. of the most common mistakes/ bad practices of teachers when using such teaching aids in the educational process) in relation to the type of the secondary school they graduated from are provided in Table 1.

Table 1. Audio-visual teaching aids: the most common mistakes (bad practices) of teachers in their integration in the educational process.

<table>
<thead>
<tr>
<th>Statements concerning teachers of SVS</th>
<th>Statements concerning teachers of GS</th>
<th>Categories of the most common mistakes (bad practices)</th>
<th>Sum of the statements concerning teachers of SVS + GS</th>
</tr>
</thead>
<tbody>
<tr>
<td>% (count)</td>
<td>% (count)</td>
<td></td>
<td>% (count)</td>
</tr>
<tr>
<td>28.00 (42)</td>
<td>20.89 (19)</td>
<td>The length of videos is too long</td>
<td>25.31 (61)</td>
</tr>
<tr>
<td>20.00 (30)</td>
<td>26.38 (24)</td>
<td>Integration of teaching aids without teacher’s instructions, explanations, feedback, etc.</td>
<td>22.41 (54)</td>
</tr>
<tr>
<td>6.00 (9)</td>
<td>8.79 (8)</td>
<td>Imperfect or no knowledge of teaching aids (unpreparedness of the teacher - teaching aids)</td>
<td>7.05 (17)</td>
</tr>
<tr>
<td>7.33 (11)</td>
<td>5.49 (5)</td>
<td>Teaching aids do not correspond to the topic discussed (inappropriate selection of teaching aids)</td>
<td>6.64 (16)</td>
</tr>
<tr>
<td>4.68 (7)</td>
<td>7.69 (7)</td>
<td>Just a meaningless filling of the lesson with the teaching aid (making teacher’s work much easier)</td>
<td>5.82 (14)</td>
</tr>
<tr>
<td>7.33 (11)</td>
<td>3.30 (3)</td>
<td>A frequent rate of the use of such teaching aids during the lessons</td>
<td>5.82 (14)</td>
</tr>
<tr>
<td>5.33 (8)</td>
<td>5.49 (5)</td>
<td>Outdated or not topical teaching aids (content)</td>
<td>5.39 (13)</td>
</tr>
<tr>
<td>4.00 (6)</td>
<td>5.49 (5)</td>
<td>Non-functionality of the educational technology or teacher’s lack of knowledge of how to use the technology required for the demonstration of the teaching aid (unpreparedness of the teacher - educational technologies)</td>
<td>4.56 (11)</td>
</tr>
<tr>
<td>2.00 (3)</td>
<td>6.59 (6)</td>
<td>A poor quality recordings (image, sound)</td>
<td>3.73 (9)</td>
</tr>
<tr>
<td>4.00 (6)</td>
<td>1.10 (1)</td>
<td>An inconvenient volume of recordings</td>
<td>2.90 (7)</td>
</tr>
<tr>
<td>4.00 (6)</td>
<td>0.00 (0)</td>
<td>A low rate of the use of such teaching aids during the lessons</td>
<td>2.49 (6)</td>
</tr>
<tr>
<td>7.33 (11)</td>
<td>8.79 (8)</td>
<td>Other statements (categories not specified)</td>
<td>7.88 (19)</td>
</tr>
<tr>
<td><strong>100.00 (150)</strong></td>
<td><strong>100.00 (91)</strong></td>
<td></td>
<td><strong>100.00 (241)</strong></td>
</tr>
</tbody>
</table>

Note: SVS - secondary vocational schools; GS - grammar schools

Table 1 represented by the results of the undergraduates clearly showed that they recorded certain teachers’ failings of different range connected with the inefficient use of audio-visual teaching aids in the lessons during their four-year secondary schools studies, both at secondary vocational schools and grammar schools.

It is therefore possible to answer the question of the survey: What mistakes do teachers make most commonly in their lessons when using audio-visual teaching aids, as perceived by students?

In all cases, the respondents judged “very long videos” (a total of 25.31 % of the statements) and “the integration of audio-visual teaching aids without teachers’ instructions, explanations, feedback, etc.” what to do (22.41 % of the statements) as the most serious mistakes in teachers’ approach. Such findings reveal that there are teachers who are unable to integrate these teaching aids effectively and
that, on the contrary, such a use and also overuse of teaching aids may be counterproductive as students could easily lose their attention, they are not activated by the teacher, there is no task given and they do not know what to focus on since the most important moments of the educational video are not emphasized by the teacher, it is not clear whether just watch the video or write down notes, or what the essence of watching the video is in relation to the subject matter. Also statements dealing with “the imperfect or no knowledge of the teaching aids linked with the unpreparedness of the teacher” occupied higher positions, mainly on the side of grammar school teachers (8.79% of the statements of grammar schools graduates). This fact is quite sad and it means that some teachers are not ready for teaching since they rely on the fact that they will be able to integrate teaching aids through improvisation in the classroom but just there they may find out the problems that the aid does not work, it is of poor quality, it takes them too long to find the appropriate part of the educational recording, etc.

There were also statements included in other categories, but to a much lesser extent. Even though, it is essential to be aware of them and to avoid such bad practices, such as e.g. “a frequent rate of the use of such teaching aids during the lessons”, “a poor quality of the recordings”, “outdated or not topical teaching aids”, etc. with respect to the effective work of the teacher.

Regarding the category “other statements (categories not specified)” the students noticed to a very small extent such mistakes in their teachers such as e.g. “the teacher turns on the video and leaves the classroom unattended”, “the teacher comments on the video but does not adjust the sound - they shout over the recording”, “classroom conditions are not adapted to the projection (light/ shading the windows)”, “the teacher is not able to stand up appropriately and enters in front of the screen and the projection”, several of the respondents complained that “their teachers did not provide tips to other useful teaching aids for a self-study”. Although these statements pointing to methodical mistakes of teachers appeared in a very rare count it is necessary to realize them and to take them into account in order to provide a quality and effective teaching and learning.

3.2 Students’ perceptions of the use of auditory teaching aids in the educational process by their secondary school teachers

The second questionnaire item evaluated the use of auditory teaching aids through the detected undergraduates’ statements based on their subjective view and experience.

- Auditory teaching aids: Write down your opinion(s) on what mistakes (if any) did your secondary school teachers make most commonly in the context of these teaching aids used during their lessons.

Here, out of 196 respondents (120 secondary vocational schools, 76 grammar schools), a total of 194 statements were recorded and divided into 7 particular categories in accordance with the criterion, that to create a specific category at least 6 respondents’ statements appear in one of the two kinds of secondary schools. 102 statements were of graduates of secondary vocational schools and 92 were of graduates of grammar schools. A category for the other non-specified statements was created, too. The list of the categories and the percentage distribution of students’ statements (i.e. of the most common mistakes/bad practices of teachers when using such auditory teaching aids in the educational process) in relation to the type of the secondary school they graduated from are displayed in Table 2.

In Table 2 there is indicated that in case of the use of auditory teaching aids the respondents noticed various teachers’ mistakes of different range during their four-year secondary schools studies contributing to poorer quality of the educational process, but to a much smaller extent compared to audio-visual teaching aids. This can be explained by the fact that it may be due to a generally lower frequency of the use of auditory teaching aids which are most commonly used in language teaching.

The question of the survey “What mistakes do teachers make most commonly in their lessons when using auditory teaching aids, as perceived by students?” can be answered.

Both graduates of secondary vocational schools and grammar schools agreed that in connection with such teaching aids “an inconvenient volume of audio recordings” was the biggest problem (24.74 % in total), the second most frequent group of responses was categorized as “a poor quality of audio recordings”, mainly on the part of grammar school teachers (21.74 %).

Statements listed in other categories appeared too, to a much lesser extent, nevertheless it is important to prevent from such examples of bad practices in education, such as “imperfect or no
knowledge of the teaching aid”, i.e. the teacher is not prepared well, “non-functionality of the educational technology or teacher’s lack of knowledge of how to use the technology...”, and e.g. “integration of teaching aids without teacher’s instructions, explanations, feedback, etc.” being a common feature for the integration of all kinds of teaching aids, regardless of whether they require educational technologies to demonstrate them, or not.

The following cases emerged very seldom, however they still should be avoided by teachers while teaching. The “other statements (categories not specified)” category included, for example, these expressions: “the teacher does not monitor the activity of the class”, “the selected teaching aid does not correspond to the topic being discussed”, “an outdated (non topical) recording is being played”, or “the teacher comments on the content of the recording and does not turn the sound down, so neither the recording nor teacher’s explanation can be heard”.

**Table 2. Auditory teaching aids: the most common mistakes (bad practices) of teachers in their integration in the educational process.**

<table>
<thead>
<tr>
<th>Categories of the most common mistakes (bad practices)</th>
<th>Statements concerning teachers of SVS</th>
<th>Statements concerning teachers of GS</th>
<th>Sum of the statements concerning teachers of SVS + GS</th>
</tr>
</thead>
<tbody>
<tr>
<td>An inconvenient volume of audio recordings</td>
<td>26.48 (27)</td>
<td>22.83 (21)</td>
<td>24.74 (48)</td>
</tr>
<tr>
<td>A poor quality audio recordings</td>
<td>17.65 (18)</td>
<td>21.74 (20)</td>
<td>19.59 (38)</td>
</tr>
<tr>
<td>Imperfect or no knowledge of teaching aids (unpreparedness of the teacher - teaching aids)</td>
<td>11.76 (12)</td>
<td>14.13 (13)</td>
<td>12.89 (25)</td>
</tr>
<tr>
<td>A low rate of the use of such teaching aids during the lessons</td>
<td>10.78 (11)</td>
<td>2.17 (2)</td>
<td>6.70 (13)</td>
</tr>
<tr>
<td>Non-functionality of the educational technology or teacher’s lack of knowledge of how to use the technology required for the demonstration of the teaching aid (unpreparedness of the teacher - educational technologies)</td>
<td>8.82 (9)</td>
<td>3.26 (3)</td>
<td>6.19 (12)</td>
</tr>
<tr>
<td>Integration of teaching aids without teacher’s instructions, explanations, feedback, etc.</td>
<td>5.88 (6)</td>
<td>5.43 (5)</td>
<td>5.67 (11)</td>
</tr>
<tr>
<td>The length of audio recordings is too long</td>
<td>0.98 (1)</td>
<td>8.70 (8)</td>
<td>4.63 (9)</td>
</tr>
<tr>
<td>Other statements (categories not specified)</td>
<td>17.65 (18)</td>
<td>21.74 (20)</td>
<td>19.59 (38)</td>
</tr>
</tbody>
</table>

Note: SVS - secondary vocational schools; GS - grammar schools

### 3.3 Students’ perceptions of the use of electronic teaching aids in the educational process by their secondary school teachers

Dealing with the last open-ended questionnaire item, there was paid attention to the analysis of the evaluation of the use of electronic teaching aids by the teachers of secondary vocational schools and grammar schools as perceived by their graduates, contemporary university students. The question was:

- **Electronic teaching aids: Write down your opinion(s) on what mistakes (if any) did your secondary school teachers make most commonly in the context of these teaching aids used during their lessons.**

Of the total number of 196 respondents (120 secondary vocational schools, 76 grammar schools), 100 statements were provided by graduates of secondary vocational schools, 68 statements by graduates of grammar schools, i.e. 168 statements in total. Based on the above given criterion, 7 particular categories and one category for the other non-specified statements were created. The categories and the percentage distribution of students’ statements (i.e. of the most common mistakes/ bad practices
of teachers when using such teaching aids in the educational process) in relation to the type of the secondary school they graduated from are shown in Table 3.

Table 3. Electronic teaching aids: the most common mistakes (bad practices) of teachers in their integration in the educational process.

<table>
<thead>
<tr>
<th>Statements concerning teachers of SVS % (count)</th>
<th>Statements concerning teachers of GS % (count)</th>
<th>Categories of the most common mistakes (bad practices)</th>
<th>Sum of the statements concerning teachers of SVS + GS % (count)</th>
</tr>
</thead>
<tbody>
<tr>
<td>26.00 (26)</td>
<td>17.65 (12)</td>
<td>Imperfect or no knowledge of teaching aids (unpreparedness of the teacher - teaching aids) 22.62 (38)</td>
<td></td>
</tr>
<tr>
<td>15.00 (15)</td>
<td>19.12 (13)</td>
<td>The teacher does not continuously check the activities associated with the use of such teaching aids 16.67 (28)</td>
<td></td>
</tr>
<tr>
<td>14.00 (14)</td>
<td>17.65 (12)</td>
<td>Integration of teaching aids without teacher’s instructions, explanations, feedback, etc. 15.48 (26)</td>
<td></td>
</tr>
<tr>
<td>8.00 (8)</td>
<td>8.82 (6)</td>
<td>Non-functionality of the educational technology or teacher’s lack of knowledge of how to use the technology required for the demonstration of the teaching aid (unpreparedness of the teacher - educational technologies) 8.33 (14)</td>
<td></td>
</tr>
<tr>
<td>10.00 (10)</td>
<td>4.41 (3)</td>
<td>Inadequately created presentation slides (illegibility, too much text, font size, colour of the background, etc.) 7.74 (13)</td>
<td></td>
</tr>
<tr>
<td>6.00 (6)</td>
<td>8.82 (6)</td>
<td>The teacher’s pace is too fast when using these teaching aids 7.14 (12)</td>
<td></td>
</tr>
<tr>
<td>9.00 (6)</td>
<td>1.47 (1)</td>
<td>A low rate of the use of such teaching aids during the lessons 5.95 (10)</td>
<td></td>
</tr>
<tr>
<td>12.00 (12)</td>
<td>22.06 (15)</td>
<td>Other statements (categories not specified) 16.07 (27)</td>
<td></td>
</tr>
<tr>
<td><strong>100.00 (100)</strong></td>
<td><strong>100.00 (68)</strong></td>
<td><strong>100.00 (168)</strong></td>
<td></td>
</tr>
</tbody>
</table>

Note: SVS - secondary vocational schools; GS - grammar schools

Obviously, three categories became apparent in Table 3 being represented by the highest number of the statements, both concerning the approach of secondary vocational school and grammar school teachers. The answer to the survey question “What mistakes do teachers make most commonly in their lessons when using electronic teaching aids, as perceived by students?” is as follows.

These three categories cover the following teachers’ common mistakes when using electronic teaching aids: “imperfect or no knowledge of teaching aids - the teacher is not prepared to use the electronic teaching aid adequately)” (mentioned in 22.62 % of the responses) being actually one of the basic conditions of effective education, secondly “the teacher does not continuously check the activities associated with the use of such teaching aids” (16.67 % of all of the mistakes) which may mean that the students do not pay full attention to the given activity so e.g. they can also engage in other activities or the teacher does not know whether the students follow the instructions and if it is in the right way. As for the category “integration of teaching aids without teacher’s instructions, explanations, feedback, etc.” (represented by 15.48 % of all of the statements) it is without discussions that such a teaching and training where the students do not know exactly what to do, why they do it, how they should do it, how much time they have to complete the activity, what the output of the activity is, etc., has no meaning in the learning process for the students, especially when electronic teaching aids are most often integrated into seminars and practical training.

The remaining four particular categories included also a certain amount of students’ observations related to a didactically improper use of electronic teaching aids, but these were of a much lesser extent and they were dealing with “non-functionality of the educational technology or teacher’s lack of knowledge of how to use the technology required for the demonstration of the teaching aid”, “inadequately created presentation slides”, “too fast teacher’s pace when using these teaching aids”, and “a low rate of the use of such teaching aids during the lessons”.

5133
From the category “other statements (categories not specified)” the following mistaken approaches of teachers are worth mentioning: “the teacher relies on the fact that students are already able to use the given teaching aid properly”, “lack of technology such as laptops for students and their independent activities based on electronic teaching aids”, “excessive use of electronic teaching aids during the school year”, “outdated (non topical) aids”, or “the selected teaching aid does not correspond to the topic being discussed”.

4 CONCLUSIONS

The exploratory survey reflected the following question: What mistakes do teachers make most commonly in their lessons when using teaching aids requiring educational technologies, as perceived by students? Analysis of empirical data obtained on the basis of evaluation of the way of the use of teaching aids requiring educational technologies (i.e. audio-visual, auditory and electronic teaching aids) by secondary school teachers as perceived by the target group of their students, i.e. graduates of secondary vocational schools and grammar schools, currently university students, have revealed the finding that teachers make (generally speaking) certain mistakes when integrating these teaching aids in the educational process. This also emerged from discussions with respondents during lectures and seminars where they confirmed that some teachers generally have various deficiencies in the effective use of teaching aids requiring educational technologies.

Most respondents’ questionnaire statements on ineffective teacher approach were given to the group of audio-visual teaching aids which can be explained by the fact that they are used in teaching more often than the other two categories investigated or that right here teachers make most mistakes in their appropriate integration in teaching and learning.

The most common mistakes (bad practices) according to the respondents that teachers (at secondary vocational schools as well as at grammar schools) make, include inadequate or even no knowledge of the presented teaching aid, they obviously integrate the aids into the education without any instructions, commentaries or explanations, the effectiveness of using teaching aids is also reduced by the quality of the presented teaching aid itself. On the other hand, the fact that findings dealing with the category about non-functionality of the educational technology or teacher’s lack of the knowledge of how to use the technology required for the demonstration of the teaching aid were reported to a very small extent, can be considered as positive, taking into account that for the concerned teaching aids the use of educational technologies is inevitable to present the content.

Based on respondents’ free statements we have a clearer idea of the deficiencies that teachers could have in relation to the issues solved and which may have a negative impact on the quality of the educational process. The results could be interesting for educational policy makers, for institutions preparing teachers for their future career and for teachers themselves. However, we are aware that the issue of the evaluation of the effective integration of didactic means in the educational process requires much more attention and so this exploratory survey should be followed by more extensive and long-term studies in the future.

REFERENCES


