

Sources of learning eleven years old elementary school students in Science class

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ABSTRACT

The research aimed to gain an insight into the habits of using different additional sources of knowledge/information when learning teaching content from the Science subject. From 28 elementary schools all over Croatia, 930 students participated in the research. Fifth-grade students' opinions were analysed with regard to gender, size of place of residence, the final grade from the Science and Society subject in the 4th grade of elementary school, and the used teaching methods and strategies in the Science lesson. Through an online survey, students were supposed to choose an additional source of knowledge that they use most often when something is not clear to them when learning the teaching content of the Science subject. When processing the teaching topics, the students learned through collaborative discovery learning, discovery learning or a traditional form of learning. The results showed that the chosen learning method affects the student's choice of learning sources with an inversely proportional relationship and an increase in the use of communication sources (teacher, friends, parents) in relation to individual sources (textbook, notebook, Internet), in accordance with the increase in direct learning, and thus the independence of learning. The textbook is still the main source of information when learning, but collaborative research learning is encouraged along with the use of the Internet and more varied use of other learning sources. The results indicate that it is extremely important when planning to teach to choose a learning method that will enable students of the alpha generation to be dynamic during learning and have the freedom to choose learning strategies and problem solving.

Keywords: *collaborative discovery learning; alpha generation; Internet; conversation*

INTRODUCTION

Learning sources are mediators of information that can improve and enrich teaching, help create a stimulating atmosphere for learning, increase motivation and contribute to positive attitudes of students towards individual subjects and learning, and help in the construction of knowledge and understanding of content (Koren, 2014). Koren (2014) divides learning sources into human resources, original reality and teaching aids. One of the basic visual teaching aids used in classes to motivate and understand topics or problems since the time of Comenius is the textbook (Borić and Škugor, 2011). Beside textbook students, also use internet and notebooks as a source of learning (Matijević et al., 2013). In addition to textbooks, notebooks and the Internet, important sources of learning are also human resources that include teachers, parents, media representatives, guest lecturers, other students (Koren, 2014). The goal of this research is to gain insight into the habits of using various additional sources of knowledge/information when learning teaching content from the subject Science of fifth-grade elementary school students.

METHODS

In the research participated 930 eleven years old (457 boys and 473 girls) fifth-grade students from 28 schools all over Croatia. The students took an online survey created in the Google forms application in Science class. The question was: To study Science when something is not clear to me, I most often use: a) a textbook, b) a notebook, c) the Internet, d) I ask the teacher, e) I ask my parents, f) I ask a friend. The question tested on a sample of 80 students, in order to assess the reliability, validity and objectivity of the questionnaire (Cronbach Alpha 0.77). The teaching methods and strategies that used during the processing of teaching topics were collaborative discovery learning, discovery learning and traditional teaching.

RESULTS

The analysis of the use of learning resources indicates that more than half of the examined students (61.38%) use the textbook as a basic source of information. In the second place is a notebook (13.44%), followed by the Internet (8.82%). Very few students use communication for additional clarification during learning (15.87 %). If they ask for help, most of them will first ask a parent (8.36%) and only then a teacher (5.08%) or a friend (2.43%). ANOVA indicates significant differences in the characteristics of students related to the choice of learning sources with regard to grade ($F = 3.185$; $p < 0.05$) and learning method ($F = 4.603$; $p < 0.001$) and the absence of significant differences with regard to gender ($F = 1.957$; $p > 0.05$) and size of place ($F = 1.161$; $p > 0.05$). Post Hoc Tukey HSD analysis of the influence of the final grade on the selection of learning options shows only minor significant differences in use between textbooks and notebooks (mean difference = 0.171; $p < 0.05$). With the method of learning, except for the ratio of using textbooks to notebooks (mean difference = 0.248; $p < 0.05$), somewhat larger significant differences were also observed with the use of textbooks compared to the Internet (mean difference = 0.302; $p < 0.05$). It was found that very good students use notebooks significantly more than textbooks while excellent students do ($Z = 1.507$; $p > 0.05$). The method of learning significantly affects the used sources of knowledge and it shown that students who learned traditionally used the textbook much more (70%) than students who used discovery learning (66%) and collaborative discovery learning (53%). Collaborative discovery learning encourages students to communicate with teachers the most (7%) and students that used such learning used the internet (11%) and notebook (17%) much more than students who used other types of learning and other sources of learning are used to a greater extent than just textbooks (from 35% to 56%).

DISCUSSION AND CONCLUSION

Research has shown that most students use textbooks to learn biological content that is not clear to them. Similar results were obtained by Jukić Matić and Gracin (2020) in their research on elementary school students. The Internet as a source of learning is only in third place, and its rare use as a source of learning may also indicate outdated teaching methods (Arbunić and Kostović-Vranješ, 2007; Matijević et al., 2013). The result that students ask the teacher very rarely (Dillon 1981) for help and clarification indicates that well-structured work oriented towards always new learning during teaching students do not feel that they can go back to previous content or ask the teacher if something is not clear to them (Chu, 2007). For this reason, it would be especially important, during revision lessons to include activities in which students will feel comfortable if they ask questions (Chu, 2007). Students rely very little on their classmates when it comes to learning, which should change in the direction of increasing activities that encourage collaborative learning and joint problem solving (Slavin, 1999). Research such as Batarelo and Marušić (2006) shows how students from larger cities use the Internet

more often for learning, which confirmed in this research. Although the size of the place affects their choice of the Internet as a source of learning, it is important to be aware that the way of learning encouraged by teachers, such as collaborative discovery learning, has a greater influence on choosing the Internet as a source of learning than the size of the place itself (Arbunić and Kostović-Vranješ, 2007). Such an observation is encouraging and indicates that nowadays technology is increasingly equally available in all areas (Stamenković, 2014). Both boys and girls use textbooks and notebooks equally often for studying, and boys use the Internet more often, while girls ask for help. Moreover, the research by Matijević et al. (2013) showed that there is no difference in the perception of the textbook by gender. Regarding the use of the Internet, gender differences may also be due to the greater tendency of boys to search for information on the Internet compared to girls, which may be influenced by the early exposure to technology of current fifth-grade students (Amrit, 2020; McCrindle and Fell, 2020). The results showed that excellent students use the textbook significantly more than the notebook than very good students do. Such a conclusion mostly related to traditional ways of teaching and learning (Arbunić and Kostović-Vranješ, 2007). This research has shown that students who apply collaborative discovery learning are more independent and free in their search for information and use the Internet much more than students who learn traditionally and who use textbooks as a source of information most often. Such results have to do with the application of sources of information and learning in the class itself (Arbunić and Kostović-Vranješ, 2007). It is shown that students exposed to collaborative discovery learning achieve better communication with teachers and ask them much more if something is not clear to them compared to students who learned in the discovery and traditional way (MacDonald and Miell, 2000). These results explained the positive atmosphere that occurs in classes where students in their learning are less structured and thus have more freedom to choose their approach to learning and problem solving (Johnson et al., 1983). Teaching and learning activities in which teaching content is connected to student observations and research, and which, as is characteristic of collaborative discovery learning, assume a more significant scope of student involvement. In the discussion, not only their observations but also the observations of other students and their comparison and critical judgment, significantly contribute to learning and conceptual understanding (Bargh and Schul, 1980). What we must take into account when choosing teaching methods and strategies is the fact that students of the current fifth grade are members of the alpha generation, which is represented by children born since 2010 and who have been exposed to technology, information, and travel since early childhood (Amrit, 2020). They spend a lot of time in front of screens and much less in social interactions with their peers; they lack concentration and attention and media literacy (McCrindle and Fell, 2020). Research shows that for the acquisition of skills and competencies of students of the alpha generation, it is best to use teaching methods and strategies that will be oriented toward social forms of work and dynamic enough to maintain student concentration and that will enable them to create their path to acquiring knowledge. This implies choosing a learning method, choosing learning and problem-solving strategies and self-evaluation (Steyn, 2015; Swanzen, 2018; Ziatdinov and Cilliers, 2022). One such way of learning is collaborative discovery learning in which students are encouraged to think critically and where they have the opportunity to participate in the creation of the learning process and atmosphere in the class (Steyn 2015). That collaborative learning is suitable for the learning of the alpha generation students shown by the results of this research, which shows that students taught in this way use diverse sources of information for learning.

LITERATURE

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