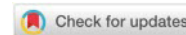


INTERACTIVE EXERCISES WITH FEEDBACK AND THE INDIVIDUALIZATION ASSESSMENT IN THE WORLD AROUND US ELECTRONIC TEXTBOOKS

Mladen Botic*

¹University of Pristina – Kosovska Mitrovica, Teacher education Faculty, Serbia;

e-mail: mladen.botic@pr.ac.rs



Abstract: In this research, the contribution of interactive tasks with feedback to the values of individualization in coursebooks *The World Around Us* (in the first and second grade of elementary school in Serbia) has been researched. The research was conducted in February 2024. on the mixed sample consisting of a purposive sample of the coursebook *The World Around Us* for the first and the second grade of elementary school published by Klett and a random sample of 115 teachers employed in elementary schools in the area of Zlatibor district (Serbia). The data, being collected by Scaler - IZPI-VIUDN ($\alpha = .850$) and processed with descriptive statistics and the Mann Whitney's U test confirmed that the content analysis determined that teachers have positive assessments on the contribution of interactive tasks with feedback to the individualization of teaching the subject *The World Around Us* in the first and the second grades; that the electronic e-coursebooks *The World Around Us*, published by Klett in the first and the second grade of elementary school met the expectations regarding the representation of interactive tasks with feedback that contribute to the value of the individualization in the teaching of the mentioned subject, as well as that the teachers have agreed assessments about it and that they have not significantly affected their teaching experience and the class they have been teaching. The results of the research are presented in the form of the conclusion and pedagogic implications are given as well.

Keywords: e-book, feedback, individualization, interactive tasks, *The World Around Us*.

Field: Social Sciences and Humanities

1. INTRODUCTION

The impact of technology on the implementation of digital technologies in the classroom has led to a change in the role of participants in the instruction process. The use of new information technology tools has led to a change in the goals, content, and implementation of learning activities. Learning with modern teaching aids (computers and the internet) enables students to engage in interactive distance learning. This type of instruction places the teacher in the role of a regulator, organizer, and leader of the instruction process, while the student becomes the teacher's collaborator, active participant, and creator. In these roles, students become more active, acquire knowledge faster, discover and solve problems, thus creating favourable conditions for the individualization of the instruction process. Interactive assignment followed by the feedback contribute to this.

Starting from the fact that interactive assignments are mainly intended for individual student activity in or outside of school, a valid question arises regarding how they should be solved. Each student has their own needs and capabilities, as well as their individual learning style. This also applies to the ways in which they will solve exercises. In order for the effect of individual student work in solving interactive exercises with feedback to be greater, teachers are expected to guide students in learning how to solve these individually. This has been a common issue in some research in the field of inclusive education, where individualization in learning is applied in working with students who, for various reasons, require additional support in education (Milenovic et al., 2024; Trbojevic et al., 2023; Milenović, 2013).

Compared to traditional instruction, which is dominated by frontal teaching techniques and content meant for the average student, individualized instruction is an innovative approach that expresses its uniqueness in terms of differentiating learning materials according to individual student characteristics. The innovation of individualization lies in its ability to take into account different student abilities. As such, it helps teachers to more flexibly organize the instruction process and create conditions in which students will learn how to learn on their own. Continuous evaluation is necessary for students to know how much they have learned. One way of testing students' knowledge is through interactive exercises with feedback, which represent very useful material that fits into students' prior knowledge and individual abilities. According to Pastuović, the best individualization is achieved when "children face individualized exercises of moral reasoning, which are one level above their current level, thus in the zone of proximal development" (Pastuović, 2008: 262).

*Corresponding author: mladen.botic@pr.ac.rs



These exercises that lead to individualization must require engagement, autonomy, and activity from students. Exercises that allow for interactivity with feedback represent the most complex form that must be adapted to students' developmental levels and demonstrate effective results in the instruction process. In order for students to know which assignments correspond to their intellectual abilities, Zihel suggests that more complex exercises be coloured red, tasks for average students green, while tasks for weaker students be coloured white. This classification, along with feedback for students who are progressing well, will ensure that they review what they have learned. Students who are progressing less well are given the chance to learn something new because feedback can interest students and stimulate the achievement and creation of the zone of proximal development.

In order to achieve efficiency in individualizing assignments, it is necessary to create a well-designed didactic textbook for a specific age group of students, which has a developmental-formative role that contributes to building knowledge in students (Ivić et al., 2013). Starting from the basic requirement of individualized instruction, which implies adapting learning material to the needs and abilities of students, there is a need for examples and exercises intended for individual student work to be tailored to their needs and abilities. Interactive exercises with feedback in such learning circumstances represent a significant means of individualization that contributes to the value of individualization when teaching the World Around Us in the first and second grades. For interactive exercises with feedback to contribute to individualization when teaching the World Around Us in the first (Vitas et al., 2023) and second grades (Djuković, 2023), it is necessary to improve textbook materials, as scientific theory and teaching practice have shown that "...the textbook is a powerful means of influence. The better it is, the more powerful it is" (Plut, 2003: 19). This especially applies to electronic textbooks, which, more than printed textbooks, contribute to individualization in instruction.

2. MATERIALS AND METHODS

The goal of this research is to determine the presence of interactive exercises in the electronic textbook "World Around Us" for the first and second grade elementary school students in Serbia, and their contribution to the values of individualization in instruction, as well as to identify teachers' stance about the values of individualization in electronic textbooks. This was determined through theoretical analysis of electronic textbooks from the publisher Klett and empirical research on a sample of 115 teachers in elementary schools in the Zlatibor District (Serbia).

This research started from the general assumption that interactive exercises with feedback significantly contribute to the values of individualization in electronic textbooks World Around Us, but they are differently represented in textbooks from different publishers. The study was conducted in February 2024 on a mixed sample, consisting of a purposive sample of World Around Us textbooks for first and second grade from the publisher Klett, and a random sample of 115 teachers working in elementary schools in the Zlatibor District (Serbia). According to teachers' teaching experience, the sample structure is: a) up to 20 years – 53 (46.10%) and b) more than 20 years – 62 (53.90%). Depending on the grade teachers teach, the sample structure is: a) first grade – 63 (54.80%) and b) second grade – 52 (45.20%). The research employed content analysis method, documentation method, descriptive method, and transfer method. Research techniques included surveying and scaling.

Data were collected using the Scaler – IZPI-VIUDN, consisting of five items with a five-point Likert scale of agreement intensity. The items were adopted from a section of the scale related to the values of individualization contained in the combined instrument constructed by Novak Laketa (1995: 390) for research on textbooks in elementary school. The scale is of Likert type with a five-point agreement intensity scale: 1) strongly agree; 2) mostly agree; 3) undecided; 4) mostly disagree; and 5) strongly disagree. The meaning of the items was partially aligned with the needs of this conducted research, representing only terminological rather than substantial changes in the meaning of certain items.

During the research, some metric characteristics of the scale, which was adopted and whose metric characteristics were examined during the research itself, were investigated.

Table 1. Cronbach Alpha Statistic

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	N of Items/Reliability statistics
a1	13.8609	10.542	.704	.807	5/ .850
a2	14.0696	11.364	.615	.831	
a3	13.6174	12.221	.492	.848	
a4	14.1304	10.150	.785	.785	
a5	14.1652	10.490	.712	.805	

Source: Botić, 2024

The data (Table 1) show that all correlation values are positive, and the reliability coefficient has reached a satisfactory level. The reliability coefficient of the instrument has reached a satisfactory level ($\alpha = .850$).

3. RESULTS

The research results on the contribution of interactive exercises to the individualization of “World Around Us” lessons in the first and second grade, as well as the representation of interactive exercises with feedback contributing to the values of individualization in electronic textbooks “World Around Us” from the publisher Klett for the first and second grade, are presented according to the calculated frequencies and percentages.

Table 2. Teachers’ opinions about the contribution of interactive exercises to the individualization of “World Around Us” lessons (M and SD)

Items	M	SD
The electronic textbook contains a sufficient number of activities designed for the most advanced students in "World Around Us" lessons;	3.6000	1.05797
The electronic textbook suitably offers multiple problem-solving with differing degrees of difficulty and requires students to choose which ones to solve independently in "World Around Us" lessons (the easiest requirement);	3.3913	.99733
The electronic textbook suitably requires students to solve only the exercises provided in "World Around Us" lessons (easy requirement);	3.8435	.96964
The electronic textbook suitably requires students to both compose and solve exercises independently in "World Around Us" lessons (more challenging requirement);	3.3304	1.04899
The electronic textbook suitably requires students to identify a problem, formulate it, and ultimately solve it independently in "World Around Us" lessons (the most challenging requirement).	3.2957	1.05941

Source: Botić, 2024

The values of calculated means and standard deviations (Table 2) show that the majority of the data are clustered around the mean value of 3.5000. The deviation below the optimal mean value of all means is highest for the statement that the electronic textbook suitably requires students to solve only the provided exercises in “World Around Us” lessons – easy requirement (M = 3.8435; SD = .96964), for which teachers mostly agreed with the statement. The smallest deviation was found in expressing the opinion that the electronic textbook suitably requires students to independently identify a problem, formulate it, and ultimately solve it in “World Around Us” lessons – the most challenging requirement (M = 3.2957; SD = 1.05941).

Table 3. Teachers’ opinions about the contribution of interactive exercises to the individualization of “World Around Us” instruction

Items	Strongly agree – f (%)	Mostly agree – f (%)	Undecided – f (%)	Mostly disagree – f (%)	Strongly disagree – f (%)
a1	22 (19.10)	48 (41.70)	27 (23.50)	13 (11.30)	5 (4.30)
a2	14 (12.12)	41 (35.70)	41 (35.70)	14 (12.12)	5 (4.30)
a3	31 (27.00)	49 (42.60)	22 (19.10)	12 (10.40)	1 (.90)
a4	14 (12.20)	41 (35.70)	34 (19.60)	21 (18.30)	5 (4.30)
a5	13 (11.30)	41 (35.70)	34 (29.60)	21 (18.30)	6 (5.20)

Source: Botić, 2024

The research results show that the highest agreement among teachers is regarding the statement that the electronic textbook suitably requires students to solve only the exercises provided in “World Around Us” lessons – easy requirement, where teachers mostly agree with the statement. Such a stance of teachers suggests that the textbooks are tailored to the average student. A lower level of agreement is observed regarding the statement that the electronic textbook contains a sufficient number of exercises developed for above-average students in “World Around Us” lessons. The lowest level of agreement is expressed regarding the statements that the electronic textbook appropriately offers multiple problem-solving exercises of varying difficulty levels and that students choose which ones to solve (easiest

requirement); that students both compose and solve exercises independently (more challenging requirement); and that students independently identify a problem, formulate it, and ultimately solve it in "World Around Us" lessons (most challenging requirement) (Table 3).

Table 4. Interactive exercises in the electronic textbooks "World Around Us" for the first grade published by Klett.

Types of exercises	f	%
Fill-in-the-blank exercises with provided options/solutions	44	40
Alternative assignments	12	10.91
Multiple choice assignments	33	30
Choosing the correct answer exercises	9	8.19
Classification tasks	6	5.45
Matching tasks	6	5.45
Total:	110	100

Source: Botić, 2024

The representation of assignments of different types with feedback in the electronic textbook by Klett amounts to 110 exercises distributed across six topics and six types of exercises. The data (Table 4) show that in the electronic textbook "World Around Us" for the first grade, Fill-in-the-blank exercises with provided options/solutions are the most prevalent - 44 (40%). The next ones are multiple-choice assignments - 33 (30%); alternative assignments - 12 (10.91%); choosing the correct answer exercises - 9 (8.19%); while the least represented exercises are classification and matching tasks - 6 each (5.45%).

Table 5. Interactive exercises in the electronic textbooks "World Around Us" for the second grade published by Klett.

Types of exercises	f	%
Fill-in-the-blank exercises with provided options/solutions	14	12.84
Alternative assignments	13	11.93
Multiple choice assignments	30	27.52
Choosing the correct answer exercises	8	7.34
Sorting tasks	7	6.42
Classification tasks	17	15.60
Matching tasks	20	18.35
Total:	109	100

Source: Botić, 2024

According to the data shown in Table 5, it can be seen that the representation of interactive exercises with feedback in the electronic textbook by Klett amounts to 110, which are distributed across five topics and seven types of assignments. Regarding the types of assignments, the highest number of assignments is Multiple choice assignments - 30 (27.52%). The next ones are matching tasks - 20 (18.35%); classification tasks - 17 (15.60%); Fill-in-the-blank exercises with provided options/solutions - 14 (12.84%); alternative assignments - 13 (11.93%); Choosing the correct answer exercises - 8 (7.34%); and sorting tasks - 7 (6.42%).

Table 6. The interdependence of the influence of teachers' opinions about the contribution of interactive exercises to the value of individualization in electronic textbooks "World Around Us" published by Klett.

Source	Type III Sum of Squares	df	Mean Square	F	p
Corrected Model	56.295 ^a	3	18.765	.755	.522
Intercept	50327.709	1	50327.709	2025.312	.000
Teaching experience	.185	1	.185	.007	.931
Class	1.346	1	1.346	.054	.816
Teaching experience * Class	54.728	1	54.728	2.202	.141
Error	2758.279	111	24.849		
Total	53824.000	115			
Corrected Total:	2814.574	114			

Source: Botić, 2024

The data (Table 6) show that regarding the influence of teachers' years of experience and the grade they teach in school on their opinions about the contribution of interactive exercises with feedback to the values of individualization in electronic textbooks "World Around Us" for the first and second grades published by Klett, no statistically significant difference was found. This applies both to the individual influences of teachers' teaching experience and the grade they teach, as well as to the combined influence on their assessments of the contribution of interactive tasks with feedback to the value of individualization in electronic textbooks "World Around Us" in the first and second grade.

4. DISCUSSION

The results of the research presented in this paper have confirmed the necessity of individualized instruction. Electronic textbooks and exercises with feedback provide personalization and respect for students' individualities. Advanced software ensures a wide range of elements, from student prior knowledge to creating a unique model that adapts to the student.

The results of the analysis of the second-grade textbooks show that the textbooks issued by Klett achieve individualization through the usage of different types of exercises. In the analysed first-grade textbook, Fill-in-the-blank exercises with provided options/solutions play a leading role, followed by multiple-choice assignments. The least representation is observed in classification and matching tasks. Concerning the second-grade textbook, the imbalance in the representation of exercises according to categories is smaller compared to the first grade. Interactive exercises with multiple-choice solutions take the lead. The next ones are matching tasks, classification tasks, fill-in-the-blank exercises with provided options/solutions, alternative assignments, and choosing the correct answer exercises. According to the analysis, the least representation is observed in sorting tasks.

The representation of these types of exercises provides individualization at different levels of complexity. For below-average students, exercises involving factual recognition are present. Average students have the opportunity to apply knowledge through understanding the content, while above-average students have the opportunity to apply what they have learned. The results indicate that as the level of knowledge application increases, the range of representation of lower-level assignments decreases. In pedagogical literature, the use of assignments with simpler and shorter answers is exclusively for assessing lower-level knowledge (Popham, 2003). This approach to "World Around Us" instruction through individual work using differentiated content exhibits all the characteristics of inclusive education, where content is tailored to the needs and abilities of students (Milenović, 2013). Such an approach to instruction is a characteristic of innovative education systems (Milenovic & Botic, 2023; Milenovic et al., 2023).

The research results have shown that there is no statistically significant difference within the group of teachers' years of experience and the grade they teach regarding their opinions about the contribution of interactive exercises with feedback as valuable for the individualization in electronic textbooks "World Around Us" for the first and second grades published by Klett. Statistically significant differences were not found regarding the individual influences of years of experience and the grade teachers teach concerning their opinions about the contribution of interactive exercises to the individualization in "World Around Us" lessons. Depending on teachers' years of experience, the results could have been different. Based on contemporary psychology, younger individuals (generally, and often in terms of work experience, although it is not always the case) are eager for success, more progressive, willing to introduce innovation in their work, and to professionally develop compared to older individuals who are accustomed to a single way of working for many years and have found comfort in a certain job, thus are not willing to change anything in their work (Guzina, 1986). The same applies to teachers included in this research where contrary results were found. However, these results can be understood considering the fact that individual student work has always been highly valued and emphasized in instruction. Furthermore, textbooks have remained an irreplaceable learning tool to this day, as indicated by the results of numerous studies (Blagdanić & Lukić, 2021). Generally consistent opinions of teachers regardless of their years of experience regarding the contribution of interactive exercises with feedback to the individualization in "World Around Us" lessons are understandable for these reasons.

Based on the previous conclusions regarding the types of exercises and the achievement of individualization in "World Around Us" textbooks for the second grade of elementary school, it is unequivocal that textbooks, in terms of exercises with feedback, more fully meet expectations. Such a conclusion is drawn, at least based on the results obtained from the analysis of the selected textbook, so this conclusion applies to them. The results of the conducted research can encourage a different and even more comprehensive approach to the design of "World Around Us" textbooks, at least regarding exercises with feedback.

5. CONCLUSION

Based on the results of empirical research and critical analyses presented in this paper, several significant conclusions can be drawn. The theoretical analysis has determined that interactive assignments significantly contribute to the value of individualization in electronic textbooks "World Around Us" because they are only represented in these textbooks. The empirical research found that the electronic textbooks "World Around Us" published by Klett for the first and second grades met expectations in terms of the representation of interactive exercises with feedback, thereby creating opportunities for achieving individualization through the use of interactive exercises with feedback. The frequency of interactive assignments varies across learning topics and assignment types, as shown by the research results presented in Tables 2 and 3. The research results also indicated that teachers generally have consistent opinions about the contribution of interactive exercises with feedback to creating conditions for individualization in instruction, which precisely reflects the values of individualization in the electronic textbooks "World Around Us" published by Klett.

Based on the research results, it is expected from textbook authors to directly participate in creating content for electronic textbooks for elementary education in the future, rather than having technical editors from publishing houses primarily create content on their behalf in the same manner. Additionally, it is expected that the content continuously innovates and adjusts to the needs and abilities of students. This approach will create conditions for individualization in class teaching and enhance the values of individualization in electronic textbooks for elementary education. Interactive exercises with feedback will contribute significantly to this endeavour, and it is necessary to introduce them more extensively in the classroom, particularly in individual student work and learning.

Based on the research results and derived conclusions, and considering that this paper, besides its theoretical (scientific) significance, also has practical implications, some pedagogical implications can be provided as recommendations to teachers on how to effectively guide students in more efficient individual work and learning. Teachers are expected to direct students to carefully read and think about interactive assignments several times before solving them, or to carefully consider the information and video clips they have reviewed, and if necessary, to write down what is significant for solving the interactive assignment during that time. Afterward, it is necessary to sequentially work on assignments with the note that students need to correctly solve each step of the exercise. It is also important for students to write down concepts and terms and their meanings that they have learned in this way, which will benefit them in their further learning. It would be beneficial if teachers could also train parents on the basics of individual student work using electronic textbooks, which would further contribute to more effective individual work and learning of students, and the use of interactive exercises with feedback would enhance the value of individualization in "World Around Us" instruction.

REFERENCES

- Blagdanić, S. & Lukić, J. (2021). Metodički potencijal modela obrnute učionice u nastavi prirode i društva [Methodological potential of the flipped classroom model in Nature and Society lessons]. *Inovacije u nastavi – časopis za savremenu nastavu*, 34 (3), 43-60.
- Djuković, I. (2023). Svet oko nas – udžbenik za drugi razred osnovne škole (udžbenik u elektronskom obliku) [The World Around Us - textbook for the second grade of elementary school (e-textbook)]. Beograd: Klett.
- Guzina, M. (1986). Kadrovska psihologija [Personnel Psychology]. Beograd: Naučna knjiga.
- Ivić, I., Pešikan, A. & Antić, S. (2013). *Textbook Quality. A Guide to Textbook Standards*, Book Series: Eckert. Expertise. Volume 2. Göttingen: &R Unipress.
- Laketa, N. (1995). Udžbenik u osnovnoj školi [Textbook in elementary school]. Univerzitet u Beogradu, Učiteljski fakultet.
- Milenović, Ž. (2013). Inkluzivna nastava [Teacher in inclusive education]. Beograd: Zadužbina Andrejević.
- Milenović, HŽ. & Botić, M. (2023). Inovativni nastavni sistemi u nastavi o prirodi i društvu na nivou inicijalnog obrazovanja. *DHS – Društvene i humanističke studije*, 8 (1), 453-476.
- Milenović, HŽ., Jeremić, B. & Markov, Z. (2024). Prerepoznavanje problema u ponašanju kod dece predškolskog uzrasta iz ugla vaspitača. *Specijalna edukacija i rehabilitacija*, 23 (1), 43-59.
- Milenović, HŽ., Vasiljević, D. & Botić, M. (2023). Digitalne kompetencije učitelja za primenu e-udžbenika u nastavi o prirodi i društvu. *Research in Pedagogy*, 13 (1), 53-66.
- Pastuović, N. (2008). Cjeloživotno učenje i promjene u školovanju [Lifelong learning and changes in education]. *Odgovorne znanosti*, 10 (2), 253-267.
- Plut, D. (2003). Udžbenik kao kulturno-potporni sistem [The textbook as a cultural-support system]. Univerzitet u Beogradu, Filozofski fakultet, Institut za psihologiju.
- Popham, J. (2003). *Test Better, Teach Better: The Instructional Role of Assessment*. Alexandria: ASCD.
- Trbojević, A., Jeremić, B., Milenović HŽ. & Lazić, B. (2023). Representation of Roma Content in Curricula and Textbooks at the Initial Education Level in Serbia. *International Journal of Cognitive Research in Science, Engineering and Education (IJCRSEE)*, 11 (1), 115-127.

Botic, M. (2024). Interactive exercises with feedback and the individualization assessment in the world around us electronic textbooks, *SCIENCE International journal*, 3(2), 151-157.
doi: 10.35120/sciencej0302151b UDK: 373.3.091.26:37.091.64-028.27(100)

Vitas, T., Krstić, S. & Stepanović, M. (2023). Svet oko nas – udžbenik za prvi razred osnovne škole (udžbenik u elektronskom obliku) [The World Around Us - textbook for the first grade of elementary school (e-textbook)]. Beograd: Klett.

