

AVIOR: Implementation study synthesis report

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Methodological background

The main objective of the AVIOR project is to improve the basic numeracy and literacy skills of migrant children and to reduce the achievement gap between native and non-native pupils in Europe. As several researches have shown, mother tongue promotion and bilingual schooling have clear positive effects not only on the development of mother tongue but also on children's abilities in the majority school language and overall achievement in school (see Cummins 2001¹; Collier & Thomas 2017²). In order to achieve the goal of the AVIOR project and to support teachers who teach children with migrant background, numerous teaching materials incl. language games and posters, reading and math materials etc. were selected, adapted and translated into different languages to enable their use as bilingual teaching materials in kindergartens and primary schools for children aged 4-8.

To evaluate usability and efficiency of bilingual teaching materials, the teachers from Croatia, Estonia and Germany tested materials in local schools and kindergartens and provided feedback on their user experience. Teachers were asked to describe, how and what they and their students think of the materials, which activities work better and why, what could be added or amended. Implementation reports by each country were drawn up based on this information.

The aim of the report is to synthesize the results of country reports and to analyze the actual use of these materials in classrooms and the benefits as well as the limitations of their use. The report is based on implementation reports by Petra Jurlina and Sanja Brajković (NEPC; Croatia), Claudia Koehler (Farafina Institute; Germany) and Eve Mägi (Center for Policy Studies Praxis; Estonia). A summary of the report will be translated into Croatian, Estonian and German and will be made available online.

The network partners actively stimulated their networks of schools to use bilingual resources. Materials were promoted in schools or via contact persons at schools. Altogether, teaching materials were implemented in seven educational institutions (incl. 4 kindergartens and 3 primary schools). Materials were used with children aged 4-8, who either have an immigrant background or speak a different language at home than the school language. See Table 1 for more details.

¹ Jim Cummins. (2001). "Bilingual Children's Mother Tongue: Why is it important for education?", Sprogforum. 19.

² Virginia P. Collier & Wayne P. Thomas. (2017). „Validating the Power of Bilingual Schooling: Thirty-Two Years of Large-Scale, Longitudinal Research“. Annual Review of Applied Linguistics. 37. 1-15. 10.1017/S0267190517000034.

TABLE 1. IMPLEMENTATION OF MATERIALS BY COUNTRIES

Country	Number of institutions	Number of teachers	Languages	Materials
Croatia	2 (incl. 1 primary school and 1 kindergarten)	4	Croatian- Boyash	<ul style="list-style-type: none"> • Maths, Naturally! - "What is heavier?" • Maths, Naturally! - "How many...?" • Maths, Naturally! - "Adding" • Maths, Naturally! - "Draw yourself" • Language game "Completing words" • Language game "Three word puzzle"
Estonia	2 kindergartens	4	Estonian- Russian	<ul style="list-style-type: none"> • Audio material "Listen and Do" • Math game "Counting and Joining" • Reading material "Chocolate Cake on Hawaii"
Germany	3 (incl. 2 primary schools and 1 kindergarten)	6	several languages (incl Arabic, Russian etc.)	<ul style="list-style-type: none"> • Multilingual books ('Chocolate Cake on Hawaii') • Multilingual instructions ("Listen and Do") • Audio stories "Betthupferl" by Radio Chanel Bayerischer Rundfunk (<i>additional material</i>)

Materials were piloted between November 2018 and June 2019.

To evaluate implementation of AVIOR bilingual teaching materials, teachers were asked to give feedback on each of the teaching materials they used. It was necessary to explain the selection and use of the material. Teachers needed to describe how they and their students liked the teaching material and how the material helped the teacher to reach their goals. It was also important to collect feedback on any difficulties teachers might have had experienced in using the AVIOR bilingual teaching materials.

Questions for teachers can be found in the annex to the report.

In December 2018, materials were also presented to a professional community of preschool and primary school teachers and language experts in Croatia during the focus group organized as a part of the conference of Roma Early Years Network-Croatia (REYN-C) to get wider feedback about the materials. Feedback from the focus group is also considered in this report.

Results

Selection and use of materials

Materials were primarily chosen depending on children's interest and preferences for different topics but teachers also took into account the age of children and accordance of materials to the study program (e.g. week topics in kindergarten) or planned learning outcomes (in primary school).

The country reports did not indicate exactly which materials, if there were any, were rejected by teachers during the selection process. Teachers selected materials according their best knowledge and did not specify why they excluded other materials.

Since the piloting process took place within the early stages of material design, there were some indications that teachers preferred materials which were ready to be used and did not need much pre-work. Hence, it appears to be important for teachers that the materials do not require much effort before using them in the classroom.

Materials were mainly used in the (class)rooms of kindergarten or primary school during regular study work. In one kindergarten teaching materials were used during playtime.

In the Croatian case, primary school students used materials during breaks as well. It was aimed to encourage their independent introduction to the visuals and the assignments. Materials were put in the reading corner of the classroom and children from other classrooms were invited to show them materials written in Boyash.

In addition, materials were also shared with some families to use them with children at home. Teachers collected feedback from parents about their user experience and a separate report was prepared on the basis of this information.

For the pre-school teachers, using AVIOR materials was the first time when they used bilingual materials in this language (dominant minority language in this area in the last 70 years in Croatia).

Benefits of bilingual teaching materials for teachers

Teachers' experience of using AVIOR bilingual teaching materials was essentially positive and it helped teachers in reaching their goals.

Regarding the use of materials, the following aspects were mentioned and appreciated by the teachers:

- Instructions are clear, specifically worded and understandable;
- Instructions are written in both languages;
- Teaching materials are appropriate for the target group, taking into account their age and level of proficiency;
- Theme of reading material was relevant and the message was understandable for the children, the story was fascinating and funny for kids.

Teachers highlighted several benefits of AVIOR bilingual teaching materials that supported their work with children:

- Bilingual teaching materials enabled teachers to use them even if they do not speak the child's first language;
- Using bilingual materials increased the number of learning situations as well as children's chances for learning (in preschool);
- Teaching materials allowed to teach multiple topics at the same time (e.g. counting, colors, and domestic animals);
- Audio materials helped to better focus children's attention. According to one kindergarten teacher, children listen to audio materials more carefully, compared to the situation where the same material is read by the teacher;
- AVIOR materials allowed teachers to assess children's vocabulary in their mother tongue and to find out whether there are differences in the children's mother tongue proficiency.

Using AVIOR bilingual teaching materials encouraged teachers to go further with bilingual teaching. An example from Croatia illustrates it very well:

One teacher, after using AVIOR materials, gave children the task to write down a text about themselves in their first language. The children kept asking: "In Boyash? Really? I can really write in Boyash?". After that the children read their assignments while sitting on the 'Author's chair'. The text was translated into Croatian and then both versions were placed on the classroom wall.

Benefits of bilingual teaching materials for children

According to teachers' feedback, bilingual materials support the development of the mother tongue the most. Of course, the age of the child and the level of his/her mother tongue proficiency is important here. More specifically, the following aspects were noticed by teachers:

- Bilingual teaching materials foster mother tongue competences incl. learning words and terms that are not usually used by families in every-day conversations;
- Bilingual materials enable children to learn how to read and write in their own language and it was found to be very motivating for them;
- By using their own language, children adopt new concepts much easier.

It was also mentioned that using mother tongue in study the process had clear positive emotional effects for children:

- Children felt happy when teachers used their language in classroom or sent homework instructions to parents in their mother tongue;
The children were delighted, motivated, they were laughing. When I asked them what was funny, they replied that it was because it was written in their language. (Primary school teacher)
- It fostered children's self-confidence and courage to use their mother tongue (e.g. presenting books in mother tongue as their favourite books);
- Children experienced success and it motivated them to continue with the task;
- Children understood the importance to know and preserve their mother tongue (also in case they have to return to their countries of origin).

Another important finding was that the use of bilingual teaching materials helped children to better understand the meaning and importance of language skills. This was especially noticeable in groups of students with several different mother tongues.

- Bilingual teaching materials helped to understand the differences between languages (e.g. alphabet, letters, sounds);
- Children discovered similarities between languages and identified language-families;
- The materials lead to intense discussions in class reflecting on several aspects of the use and value of languages;
- Children understood the benefits of knowing more languages;
- Using teaching materials fostered discussions in class about children's skills, potentials and learning needs.

Use of multilingual teaching materials increased respect and tolerance towards other languages and people from other cultural backgrounds:

- To experience the situation of not understanding another language, leads to increased empathy with and respect for newly arrived students and increased children's sensitivity and tolerance towards other languages;
- Respect towards migrant children by classmates increased (e.g. after understanding that migrant children know languages that others do not know).

An important finding is that AVIOR teaching materials are also appropriate for children with learning difficulties (e.g. children who follow individualized curriculum). According to the teacher's feedback, children who followed individualized curriculum were very interested in the materials and very precise and accurate in using it.

AVIOR teaching materials allowed group work and discussions. Since children used materials in groups (in primary school), it was an opportunity for them to talk to each other (those who know the language and those who do not know it) about different things, like how to translate a word.

Problems encountered by teachers

Although teachers who implemented AVIOR bilingual teaching materials pointed out mainly positive aspects in their feedback, few problems and obstacles also occurred during the testing period.

In some cases, the use of materials was complicated for the teacher as the materials were not entirely designed and finished before piloting started which made the process time-consuming for teachers to prepare the materials. It was noted that not all instructions of games were translated into the language of studies for the time when testing started. Teachers had to take care of the final preparation of materials (e.g. cutting out, coloring) and it took more time than it was expected. In one case, this was the main reason why the teacher used materials to a lesser extent than she had originally planned. *If they were available in a ready-made form, the use of materials would be more convenient and frequent.* (kindergarten teacher)

Integrating the use of materials into the study process was challenging to some teachers as it needed careful planning. The theme of a teaching material had to correspond to the kindergarten weekly topic. During the test period, it was a challenge for at least one teacher.

Planning the time required to complete a task also needed testing, as when starting out, teachers could not immediately calculate how much time it takes to switch from one activity to another (e.g. "Listen and Do").

In a study group of students with diverse cultural backgrounds, teachers found it difficult to use instructions other than the language of instruction because they could not read or pronounce in another language. For that reason the use of teaching materials remained rare. In few cases, the help of other teachers was used (e.g. Arabic teacher read the story in Arabic) and in other cases, students were able to help them, but with younger children this is not possible. It also turned out that students were somewhat frustrated when they found that they are not able to read in their mother tongue.

Some doubts about illustrations were also expressed. Illustrations might sometimes not work for smaller children who would not be able to tell "if a caterpillar is bigger than a lion" just from looking at the illustration. At the age of 4 it is conceptually hard to connect it to a real and living animal or thing.

Regarding one of the teaching materials, the teacher noticed, that the hardest thing for the children was waiting calmly for their turn and letting others think and act. However, this seems to be a universal problem with certain types of activities in a larger group and not directly related to the implementation of bilingual teaching material.

Proposals for improvement

When giving feedback, teachers also suggested how to further develop teaching materials or expand their use.

Plastic-covered/ coated teaching materials can be used several times. In addition to the teacher-guided study process, children could take and use materials at the classroom 'learning corner' during break (in primary school) or playtime (in kindergarten).

As the experience of using AVIOR audio materials was positive, some teachers expressed their wish to have audio materials for each topic on the curriculum.

Teaching materials that require reading skills are suitable for use in primary school as most children are not yet able to read in the kindergarten. One adaptation which could be made for pre-school children is to add drawn instructions.

Teachers suggested writing down more precise instructions in the foreign language for children/parents, so that they could read out the exact instruction for the assignment to the children when they explain the exercise. At the moment there is the explanation for the teacher but they do not need the explanation in the minority language as they do not understand it.

An instruction is necessary for teachers how to read out to the children who don't understand the official language of the school well (for instance, teachers need to know how exactly to pronounce "take a pencil and now color this" in the language the material is used).

The size of the group is also important. When a pre-school teacher uses AVIOR materials and works with a language he/she does not speak, the teacher should not work with more than 2-3 children in a group since children could not read yet.

Limitations

Some limitations of the analysis must be considered when interpreting the results and extending them to all AVIOR bilingual teaching materials. First, relatively few educational institutions were involved in piloting of the teaching materials. Each teacher independently selected the appropriate study materials and the preferences turned out to be very different. As a result, it was possible to evaluate the overall experience of teachers in using the bilingual teaching materials, but not the relevance of an individual teaching material, as this would require a larger number of teachers and different target groups to test the same teaching material.

Teachers' feedback was rather general at times. As the country experts had autonomy to adjust the questions, the three countries used somewhat similar, but not exactly the same questions for the assessment of the implementation of teaching materials. The approach allowed teachers to highlight the aspects that were most important to them and decide on the level of detail of their responses. For example, little background information was provided in country reports on children with whom the material was used (age, number of students, home language, etc.).

Differences in the organization of the study and curricula across countries might have influenced the implementation of AVIOR materials. In some cases it was difficult to integrate the use of teaching materials into the study process during a limited period, especially when the teacher could not use ready-made teaching materials, and it might have affected the user experience. Therefore, the rare use of teaching materials in some cases did not depend on the quality of the bilingual teaching materials but on other factors.

For the next similar projects, it is important to pay attention to the following aspects to ensure maximum results when evaluating teaching materials:

- Materials should be tested by more teachers for more solid and in-depth feedback;
- Questions for teachers should be more detailed in order to obtain more accurate feedback from teachers incl. information about children/ students;
- Teachers need sufficient time to prepare the use of teaching materials. it is important to make sure that teaching materials are ready for use so that teachers do not have to do extra work to use them.

Conclusions and recommendations

Implementing AVIOR multilingual teaching materials in seven educational institutions in Croatia, Estonia and Germany proved that bilingual teaching materials are undoubtedly necessary for teaching students whose mother tongue is other than the language of instruction of school or kindergarten. Materials were tested in groups of children from different backgrounds (incl. mother tongue, age, type of institution) in different countries.

Teachers' experience was overwhelmingly positive and the use of bilingual teaching materials helped teachers to achieve their goals. The teaching materials were age-appropriate for the children and the instructions were simple and easy to understand.

Bilingual materials supported the development of the mother tongue proficiency incl. vocabulary, reading and writing skills. Children learned words that are not used in every-day conversation by families and tried to read and write in their own language.

The use of mother tongue in teaching helped to increase children's self-confidence and was emotionally important to them. Children experienced success and it motivated them to continue with the task.

As an important added value, bilingual teaching materials allowed to discuss with children about the meaning and importance of languages and increased tolerance for other languages.

Although the overall user experience was definitely positive, some issues need more attention when using AVIOR or other bilingual teaching materials.

The user experience was influenced by the target group of the students. It is difficult for a teacher to use several different languages for teaching. Help from other teachers was used in such situations, and in some cases students who could read in their mother tongue were also engaged. Nevertheless, the user experience appeared to be somewhat more positive in situations where all children have the same language background, than for a group with multiple language backgrounds. The size of the group should be up to 2-3 students if the teacher has to teach in a language he/ she does not know.

There were also cases where **the study materials could not be used as planned because it was more time consuming than initially planned or the topics did not fit well into the study program.** The teaching materials were not yet finalized, which required additional work from the teachers. When using new materials, it is sometimes difficult for the teacher to predict exactly how much time it will take to complete the assignment. For the longevity of the materials, it is important that they are laminated (covered with plastic).

Based on the analysis, it is not possible to make recommendations on specific study materials as this requires more testing and feedback from users. However, here are some suggestions for further development of bilingual teaching materials that could be considered in the future:

- To add a note on each teaching material, how much time should be planned by a teacher to use this material, it would help teachers to plan their teaching process;
- To add drawn instructions that help pre-school children to understand the task;

- To create more precise instructions in the mother-tongue to help children/ parents to understand the task;
- To add guidelines for pronunciation that would help teachers to read out instructions to the children especially when the material is used with younger children or when a child doesn't understand the study language of the school or kindergarten;
- To provide plastic-covered teaching materials (especially language and math games) that last longer and allow children to use or play with them also during breaks or playtime.

Given the positive experience of implementing AVIOR bilingual teaching materials in Croatia, Estonia and Germany, it is important to promote and expand the use of the materials in other educational institutions. It is necessary to translate the teaching materials also into other languages so that more teachers and children could have the opportunity to use them in teaching and learning.

Annex

Questions for teachers

Main purpose: **to find out what teachers (for 4-8 years old age group) and children think of the materials; which activities work better and why; what could be changed in the content, layout, design or other elements in the material**

Questions TEACHERS AND STUDENTS (Estonia and Germany)

Material A (fill out which material it was)

1. When did you use the material? Why this one? Were there any materials that you rejected during the selection process? Why?
2. Please: describe the setting: With whom and at what location (classroom? Outside? Field trip?)
3. How did you like the material? What did you like about material?
4. How did your students like the material? What makes you think so?
5. Was it difficult to use the material? Why?
6. Did the material help in reaching your goal? How?
7. Please write down any other relevant experiences!

Croatian edits to the main material

OPINION OF (PRE)SCHOOL TEACHERS ABOUT AVIOR MATERIAL (fill out separately for every exercise/ assignment)

(specify material name) _____

1. Why did you choose this material?
2. Describe the group of children you used the material with?
3. When did you use it when working with children and how many times?
4. What is your experience with working with this material? (how did the children respond? Have you achieved goals that are foreseen? Are any changes to the material needed? Have you had any difficulties in using the material?)
5. Did you use the material in any other way? If so, how?
6. Would you recommend this bilingual material to your colleagues?
Yes No
7. Do you want to continue using bilingual materials in your work?
Yes No
8. Additional comments: