

# THE COMPARISON OF THE PRIOR KNOWLEDGE OF FIRST GRADE STUDENTS REGARDING THE ABILITY TO IDENTIFY THE INITIAL AND FINAL SOUNDS, NAME THE LETTERS OF THE ALPHABET, READ AND WRITE

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The phonological awareness ability affects reading and writing. At the beginning of the 1st grade, students have various prior knowledge in the areas of phonological awareness, reading and writing. We wondered about the possible consequences in the field of children's literacy after the pandemic. The purpose of the empirical research was to assess and compare the prior knowledge of students at the beginning of the 1st grade before the systematic literacy instruction regarding the ability to identify the initial and final sounds in a word, perceive and name the letters of the alphabet, read words, write letters and words before and after the pandemic. We individually assessed 514 first-graders. The first group of students was assessed in 2017 and the second in 2023. Differences between groups of students were analysed using a t-test for independent samples. The results indicate that students' prior knowledge has been decreasing, therefore, changes are necessary.

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# PRIMERJAVA ZMOŽNOSTI ZAZNAVE ZAČETNEGA IN KONČNEGA GLASU, POIMENOVANJA ČRK ABECEDA TER BRANJA IN PISANJA UČENCEV 1. RAZREDA PRED SYSTEMATIČNIM OPISMENJEVANJEM

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**Ključne besede:**  
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kurikulum za vrtnice,  
pandemija,  
starši

Zmožnost glasovnega zavedanja vpliva na branje in pisanje. Na začetku 1. razreda imajo učenci različno predznanje na področju glasovnega zavedanja, branja in pisanja. Po pandemiji smo se spraševali o morebitnih posledicah, ki jih je ta pustila na področju pismenosti otrok. Namen empirične raziskave je bil preveriti in primerjati predznanje učencev na začetku 1. razreda pred sistematičnim opismenjevanjem na področju zmožnosti zaznavanja začetnih in končnih glasov v besedi, prepoznavanju in poimenovanju črk abecede, branju besed ter pisanju črk in besed pred pandemijo ter po njej. Individualno smo preverili predznanje 514 učencev 1. razreda. Oblikovali smo dve skupini. Prvo skupino učencev smo preverili v letu 2017, drugo pa v letu 2023. Razlike med skupinama učencev smo proučili s t-preizkusom za neodvisne vzorce. Izsledki raziskave so pokazali, da se predznanje učencev zmanjšuje, zato so nujne spremembe.



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## 1 Introduction

Children are constantly exposed to the press in their everyday life. A child who shows a greater interest in printed text will more often initiate joint reading, read familiar words, will more often observe printed texts in his environment, ask about the meaning of what is written, find out that what is spoken can be written down and then read. It is important that parents and educators make sure that they read various books (e.g. fairy tales, encyclopaedias, poetry) and provide pleasant experiences in reading in the preschool period of children, thereby ensuring early literacy in children (Strickland, 2011; Marjanovič Umek et al., 2020). A study (Paratore and Jordan, 2007) reports the positive effects of home-kindergarten and home-school partnerships because the work at home has a significant impact on some of the building blocks of reading literacy: vocabulary, narrative comprehension, phonological and phonemic awareness, responding to texts and producing texts (Haramija et al., 2020).

Phonological awareness affects reading and writing, so early learning of phonological awareness is recommended. The phonological awareness includes sensitivity to the sound structure of the language and the conscious ability to distinguish, combine and manage sound units of different sizes. Differences between phonological awareness skills based on word structure include whether the primary task is working with syllables, or beginnings of words, or rhymes, or sounds. A study (Anthony et al., 2006) found that phonological awareness is the best predictor of children's ability to distinguish writing from other activities (such as drawing).

Phonemic awareness is the highest level of phonological awareness and includes the ability to hear and identify the sounds in a word. It also includes identifying sounds in a word, manipulating sounds in a word, segmenting a word into sounds and merging sounds into words (Zorman, 2005).

Lonigan et al. (1998) note that the ability of phonological awareness generally increases with students' age. Anthony et al. (2006) found that older preschool children have a better developed latent ability of phonological awareness compared to younger ones.

The authors of researches (McGee & Ukrainetz, 2009; Mesmer & Griffith, 2005; Zorman, 2005; Manyak, 2008; Lonigan et al. & 2009; Strickland, 2011) emphasize the introduction of exercises to stimulate the level of phonological awareness in a playful way already in the preschool period or in kindergarten and continuing in the 1st grade of primary school. D. S. Strickland (2011) highlights the learning of phonological awareness as a key activity in reading development. He recommends that teachers use a specific strategy for training students in the tasks of naming various concrete objects or pictures, while students should pay attention to the spoken words at the level of individual levels of phonological awareness (initial sound, final sound, number of sounds in a word, breakdown of a word into individual sounds). Ongoing feedback and teacher's help are crucial in this process.

The individual levels of phonological awareness develop in a specific sequence based on complexity. Researches (Chard & Dickson, 1999; Ropič, 2016; Ropič, 2017; Ropič Kop, 2020; Ropič Kop & Klar Zadavec, 2021; Ropič Kop, 2022) confirm that the ability to identify the initial sound develops before the ability to identify the final sound. Research results (Levin, 2007; Ropič, 2016) show that the success of identifying the initial and final sounds in a word is influenced by monosyllabic and polysyllabic words, which is the length of the words, whether the initial sound of the word is a consonant or a vowel, whether the final sound of the word is a consonant or a vowel.

A research in which children aged five to five and a half were compared with those aged five and a half to six years is also interesting for our study. It was found that compared to younger children, older children were more successful in naming the final sounds in a word, naming capital letters, they were able to read more words, write more letters and words (Marjanovič Umek et al., 2020).

Students with a successfully developed ability to detect initial and final sounds read individual words already at the beginning of the first grade (Ropič Kop & Klar Zadavec, 2021; Ropič Kop, 2022; Ropič Kop & Klar Zadavec, 2022).

The study, based on the monitoring of preschool children up to the fourth grade of elementary school in the development of early literacy and later in the development of literacy, points to important facts. In early readers, compared to non-early readers,

more successful phonological awareness skills were recorded. Literacy progressed equally for everyone, but literacy development was faster for early readers than for their peers (Tafa & Manolitsis, 2008).

Already in the pre-school period, we notice that children identify and name individual letters. The authors of more modern studies (Liu et al., 2022; Clayton et al., 2020) also note that naming letters significantly predicts reading and writing words. Students who confidently read aloud the words identified as the most challenging at the start of 1st grade had no difficulty reading easier words as well. The study (Ropič Kop & Klar Zadavec, 2022) found a connection between the ability to read words aloud in the first grade and reading aloud in the third grade, namely, it is related to the time of reading aloud, to consideration of rhythm and expressiveness, to the accuracy of reading, to oral answering to lower-level and higher-level comprehension questions after reading aloud. Some researches (Gellert & Elbro, 2017; Ropič Kop & Klar Zadavec, 2022) have found a reduced effect of phonological awareness on reading in older students and also in reading more demanding words.

Preschool children, especially children in a stimulating environment, are surrounded by activities that encourage them to write spontaneously. Learning to write is a challenging activity. What the child wants to write, he says out loud or in his mind, which is why we say that writing is the conversion of sounds into letters. Individual sounds are strongly connected in syllables and therefore more difficult to identify, distinguish and parse. Some sounds have a short pronunciation, others have a prolonged pronunciation. All this affects the conversion of sounds into letters. Students learn about letters and sounds in monographic procedures for teaching letters in the first grade i.e. in the systematic literacy instruction (Križaj Ortar et al., 2000). Mirror writing is most often noticed in students at the beginning of the first grade, so it is very important that the teacher instructs the correct writing direction when teaching letters.

One of the largest international surveys in the field of education is PISA. The results of the latest survey conducted in 2022 show a negative trend in reading literacy in Slovenia and are below the average of OECD member countries. A Finnish study (Manu et al., 2021) studied and confirmed on a sample of 1010 children the

correlation between pre-reading skills (letter naming, phonological awareness, vocabulary, listening comprehension) of children in kindergarten (6 years) and reading comprehension in the 9<sup>th</sup> grade (15 years).

When entering primary school, there are differences in children's skills, which should be reduced through education. We are interested in the state of prior knowledge of students at the beginning of the first grade. The aim of our empirical research was to test and compare the prior knowledge of students at the beginning of the first grade before the systematic literacy instruction regarding the ability to identify initial and final sounds in a word, recognize and name letters of the alphabet, read words, write letters and words. To obtain the most realistic situation possible in this area, we chose a sample size that we could individually verify ourselves. We formed two groups. The prior knowledge of group G 1 was tested in 2017, when the Curriculum from 2011 was binding for teachers. In 2018, the Curriculum was updated. Here we must emphasize that all students attended the first grade for only one month. In group G 2, we tested the prior knowledge in 2023. The Curriculum for Kindergartens (1999) was relevant for work in kindergarten. We used the same instruments to test the prior knowledge of the students of both groups.

Mainly because of the pandemic in the meantime when primary schools and kindergartens functioned differently than they used to, we hypothesized that at the beginning of the first grade, students will demonstrate lower abilities in identifying the initial and final sounds in a word, recognizing and naming the letters of the alphabet, reading words, writing capital letters and words with capital letters on the prior knowledge test in 2023.

## **2 Method**

We tested 514 students individually. There were 256 first graders in group 1 (G 1) and 258 first graders in group 2 (G 2). Students G 1 and G 2 differed significantly in that a period of six years had passed between the prior knowledge testing of one group and the other, and different Curricula (2011, 2018) applied to them in primary school, even if only for one month. Moreover, we must not overlook the fact that, during a certain interim period, we experienced a pandemic that significantly altered life and work in Slovenia and, to some extent, affected the students of G2.

To test the ability to identify the initial and final sounds in a word, we used sixteen pictures that the students first named. This allowed us to avoid difficulties (e.g. when identifying the final sound, a problem may arise due to using different names for images in case of diminutives – miš, miška). The student received one point for each appropriate initial/final sound in the word, namely he/she could score a maximum of 16 points in the task of identifying the initial sound in the words and also a maximum of 16 points in the task of identifying the final sound in the words.

In the continuation of the test, they identified and named 25 capital letters of the Slovenian alphabet, which were not written in the regular sequence. The capital letters of the alphabet were written on a sheet of paper. The students received one point for each correctly named capital letter. They could score a maximum of 25 points.

If they knew at least some capital letters, we offered them to read 16 words written in capital letters. We arranged the words according to difficulty level from easier i.e. monosyllabic words to complex words. They read the words aloud. The students received one point for each word read correctly. They could score a maximum of 16 points in this task.

The students wrote four capital letters by dictation. The letters were an integral part of various strokes (vertical, horizontal and oblique line, semicircle, arc, etc.). They wrote on an unlimited surface. When writing letters, the correct shape of the letter was important, not the size of the individual parts of the letter. When writing capital letters, the students could score a maximum of 4 points.

If they were at least partially successful in writing letters, we dictated four more words, which followed each other in difficulty level. Two words were monosyllabic and two were compound. For writing capital letters in words, we followed the same criteria as in the previous task of writing letters. The students could score a maximum of 4 points when writing words in capital letters.

In both tasks, both when writing capital letters and when writing words with capital letters, we observed students' mirror writing. If the student mirrored at least one of the mentioned letters, we marked it with 1. If we did not find mirror writing in the student, we marked it with 0.

For the analysis of differences between groups of first-grade students in the ability to identify the initial and final sounds in a word, recognize and name letters of the alphabet, read words, write letters and words, and the presence of mirror writing when writing capital letters, we used the t-test for independent samples. The obtained data were processed with the software tool IBM SPSS Statistics 29. The results are presented in tables and interpreted.

### 3 Results

Table 1 presents the results of a t-test for independent samples showing no statistically significant difference ( $P = 0.115$ ) in the ability to identify the initial sound between the groups of students at the beginning of the 1st grade before systematic literacy instruction. There is no great difference in the arithmetic mean of the two groups, namely in G 1 they detected 12.24 and in G 2 12.86 initial sounds in a word out of sixteen words. A significant difference in the standard deviation of G 1 and G 2 was also not recorded, nevertheless, it showed big individual differences between students in the ability to identify the initial sound. The obtained results prove that the ability to identify the initial sound in first grade students (G 1, G 2) is approximately equally developed in the same period of the school year, although six years have passed between the examination of the prior knowledge of G 1 and G 2 students.

**Table 1: Comparison of achievements in the identification of the initial sound in words of G 1 and G 2 students.**

| Group | N   | M     | SD   | F (p)         | t (p)         |
|-------|-----|-------|------|---------------|---------------|
| G 1   | 256 | 12.24 | 4.68 | 1.865 (0.173) | 1.579 (0.115) |
| G 2   | 258 | 12.86 | 4.31 |               |               |

Table 2 shows the results of the identification of the final sound in words. The t-test for independent samples does not show a statistically significant difference ( $P = 0.808$ ) between the groups of first graders in the ability to identify the final sound in



a word. When comparing the achievements of the arithmetic averages of the students of both groups, we note a slightly greater success of G 1 students in the ability to identify the final sound in a word, namely by 0.13 compared to their peers after six years. We also notice in the comparison of the standard deviation of the two groups that it is slightly increased in G 2 (SD = 6.15) compared to G 1 (SD = 5.83). The standard deviation points to big individual differences between the students of the two groups. The students' ability to identify the final sound in a word is approximately equally developed at the beginning of the first grade of primary school in G 1 and in G 2, which means that we do not record a significant difference, even though the intervening period of six years had passed.

**Table 2: Comparison of achievements in the identification of the final sound in words of G 1 and G 2 students.**

| Group | N   | M    | SD   | F (p)         | t (p)         |
|-------|-----|------|------|---------------|---------------|
| G 1   | 256 | 7.54 | 5.83 | 2.403 (0.122) | 0.243 (0.808) |
| G 2   | 258 | 7.41 | 6.15 |               |               |

The third table shows the results of the t-test for independent samples of students of groups G 1 and G 2, in which there is no statistically significant difference in recognizing and naming letters of the alphabet. We tested all 25 letters. The arithmetic means of G 1 and G 2 indicate a smaller difference in the recognition and naming of letters of the alphabet. The results show that years ago, G 1 students had recognized and named almost one letter of the alphabet more than G 2 students did. The standard deviation is the same in both groups and also indicates great individual differences between students.

**Table 3: Comparison of achievements in recognizing and naming letters of the alphabet of G 1 and G 2 students.**

| Group | N   | M     | SD   | F (p)         | t (p)         |
|-------|-----|-------|------|---------------|---------------|
| G 1   | 256 | 16.61 | 8.42 | 0.001 (0.969) | 1.045 (0.297) |
| G 2   | 258 | 15.83 | 8.42 |               |               |

The results of the independent samples t-test in Table 4 show a statistically significant difference (P = 0.004) in word reading ability between the groups of first graders before the systematic literacy instruction. G 1 students had read an average of 5.34 words out of sixteen, while their peers in G 2 only read 3.79 words. In G 1

we note a larger standard deviation (SD = 6.29) compared to the standard deviation in G 2. We found large individual differences in both groups.

**Table 4: Comparison of word reading achievements of G 1 and G 2 students.**

| Group | N   | M    | SD   | F (p)          | t (p)           |
|-------|-----|------|------|----------------|-----------------|
| G 1   | 256 | 5.34 | 6.29 | 10.427 (0.001) | 2.897 (0.004 *) |
| G 2   | 258 | 3.79 | 5.82 |                |                 |

The results of the t-test for independent samples of students of groups G 1 and G 2 in writing letters (Table 5) do not show a statistically significant difference between the groups. There is, however, a tendency to show a more successful writing of dictated four letters in G 1 compared to G 2. The standard deviation in the compared groups is exactly the same and high in both groups. We find that there are greater differences between students in writing letters before the systematic literacy instruction.

**Table 5: Comparison of writing achievements of G 1 and G 2 students.**

| Group | N   | M    | SD   | F (p)         | t (p)         |
|-------|-----|------|------|---------------|---------------|
| G 1   | 256 | 2.53 | 1.59 | 0.005 (0.942) | 1.824 (0.069) |
| G 2   | 258 | 2.28 | 1.59 |               |               |

In Table 6, we do not find a statistically significant difference between the groups when comparing the writing of monosyllabic words. The arithmetic means show a better ability to write two monosyllabic words in group G 1 (M = 0.80) compared to G 2, where on average they wrote 0.69 words correctly. The standard deviation indicates great individual differences in both groups of students.

**Table 6: Comparison of achievements in writing monosyllabic words of G 1 and G 2 students.**

| Group | N   | M    | SD   | F (p)         | t (p)         |
|-------|-----|------|------|---------------|---------------|
| G 1   | 256 | 0.80 | 0.85 | 0.674 (0.412) | 1.570 (0.117) |
| G 2   | 258 | 0.69 | 0.86 |               |               |

The results of Table 7 do not show a statistically significant difference in the writing of two polysyllabic words between groups of students. The writing of dictated words was more challenging compared to the writing of monosyllabic words, as one dictated word consisted of two syllables and one of three syllables. In the arithmetic

mean of word writing, we do not notice major differences between G 1 and G 2 students. The standard deviation again points to great individual differences between the students of the two groups.

**Table 7: Comparison of achievements in writing polysyllabic words of G 1 and G 2 students.**

| Group | N   | M    | SD   | F (p)         | t (p)         |
|-------|-----|------|------|---------------|---------------|
| G 1   | 256 | 0.29 | 0.61 | 1.018 (0.313) | 0.558 (0.577) |
| G 2   | 258 | 0.26 | 0.58 |               |               |

Emerging literacy brings joy and satisfaction to writing, as well as certain difficulties. Children, then students at the beginning of the first grade, want to write. During this period, we notice problems in writing regarding the shape of strokes, the direction of strokes, the size of the letters, mirror writing etc. Table 8 shows the results of the mirror writing comparison, as this problem occurred most often in writing on both tests. The arithmetic means of the mirror writing of letters indicate the same proportion of students in both groups. We also find the same standard deviation in mirror writing between G 1 and G 2 students.

**Table 8: Comparison of achievement in mirror writing of capital letters of G 1 and G 2 students.**

| Group | N   | M    | SD   | F (p)         | t (p)         |
|-------|-----|------|------|---------------|---------------|
| G 1   | 256 | 0.23 | 0.42 | 0.218 (0,641) | 0.234 (0.815) |
| G 2   | 258 | 0.23 | 0.42 |               |               |

## 4 Discussion

Our hypothesis is confirmed in the comparison of achievements in word reading. In this, there is a statistically significant difference, or the biggest difference between students. The students we tested in 2017 were more successful in the word reading ability. We have not proved statistically significant differences in the other items. G 2 students were slightly more successful in identifying the initial sound in a word. In the 2017 test, G 1 students were more successful in identifying the final sound, in recognizing and naming letters, in writing letters, in writing monosyllabic words, in writing multisyllabic words. We have not found any differences in mirror writing.

Teachers cannot significantly influence the ability of identifying the initial and final sounds in a word in one month, considering the Curriculum for Slovene (2011, 2018). We assume that the Kindergarten Curriculum, especially in the second age period, should promote phonological awareness through play. This can be supported by the findings that older preschool children have a developed latent capacity for phonological awareness (Anthony et al., 2006), so we recommend encouraging the ability of phonological awareness in the preschool period through play. We can listen to the sounds of animals, means of transport, musical instruments, etc. We syllabize words with children using certain stimulation (e.g. we syllabize the word describing a picture and, in that, place the corresponding number of circles; when syllabizing the word, children clap and count the syllables, etc.). Using the name of a specific object in the playroom and in the yard of the kindergarten, we identify the initial sound in the word. Exercises are performed frequently and for a short time.

When comparing the achievements of students G 1 and G 2 in identifying the initial and final sounds in a word, we note that the students' abilities in identifying the final sound in a word are significantly reduced compared to the identification of initial sounds in a word. We also note poorer identification of final sounds in words in both groups of students, as it is a more demanding ability, which is also pointed out by other researches (Chard & Dickson, 1999; Ropič, 2017; Ropič Kop, 2020; Marjanovič Umek et al., 2020). Following the example of exercises to stimulate the ability to identify the initial sound in a word, we will identify the final sound in a word. This is a significantly more demanding ability, as it is more difficult for children to detect the last sound in a word. It takes a lot of practice. We also recommend practicing the enunciation of shorter words and words with a simple structure.

We are not surprised by the result in word reading. We can assume that during the pandemic, there were fewer opportunities for the favourable development of the aforementioned abilities in kindergarten. We are aware that reading, especially initial reading or combining sounds (letters) into a word, is a very demanding activity.

It is very difficult to justify the findings in writing letters by dictation. We note that the Kindergarten Curriculum (1999) was valid for kindergartens before the first and second test. In the interim period, we had a pandemic in the country, which certainly affected work in kindergarten and at home, as well as children's emerging literacy. We assume that there is an effect of the mentioned on the prior knowledge of children in kindergarten and students at the beginning of the first grade in writing letters and writing words.

## **5 Conclusion**

By analysing the characteristics of differences between groups of first-grade students in the ability to identify the initial and final sounds in a word, recognize and name letters of the alphabet, read words, write letters and words, and the presence of mirror writing when writing capital letters in 2017 and 2023, we find that students' prior knowledge decreases.

We are aware of the limitation of our research, as it is not a representative sample. The instrument used to test students' prior knowledge of literacy at the beginning of the first grade had already been used in several generations of students for the needs of differentiation and individualization. We are satisfied with it. Despite everything, we think that it can be shortened in the instrument part that tests the reading of words. We would reduce the number of words to the same as when writing words, while maintaining the level of difficulty. With the aforementioned, we will also shorten the time of the test.

In support of our belief regarding the need to develop the phonological awareness through play in the preschool period, research findings emphasize that early readers have better phonological awareness abilities and their literacy development is faster compared to their peers. (Tafa & Manolitsis, 2008).

Perhaps the results of our research also reflect the powerlessness of parents to encourage activities that stimulate emerging literacy skills. It may be necessary to consider a partnership between kindergarten and parents and also between primary school and parents in simple exercises to promote phonological awareness and other activities that encourage basic literacy. Educators/teachers should devote more help

to parents as well. Some researchers (Paratore and Jordan, 2007) emphasize the positive effects of the aforementioned cooperation.

The conducted research primarily provided information on the state of students' prior knowledge upon entering primary school and was helpful to teachers in creating differentiation and individualization in classes. Also, our research pointed to certain problems in the mentioned area and has something in common with the results of the PISA survey. In our research, we found a poorer prior knowledge of literacy at the beginning of the first grade. PISA shows poorer reading literacy among fifteen-year-olds.

If we aim to achieve better outcomes in reading literacy across all grades of primary school, we need an effective Kindergarten Curriculum, as well as a Curriculum for Slovene language in the first educational period.

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