

Silent Reading Comprehension in Fifth Grade Pupils

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Abstract: The submitted contribution is an introduction to a research study that focussed on the charting of the mode of silent reading comprehension of fifth grade students. Attention is paid to the theoretical concept of the national reading diagnostics by advised practice that more closely introduces the silent reading test. The test is the subject of modification and examination in our research, which is hereafter described as the phenomenon of silent reading. Subsequently we introduce the introduction of the research methodology, including the aims, useful methods, a description of our sample and experimental questions that will follow up with research findings. The data acquisition took place through group administration. The research was conducted with a collaboration of 8 elementary schools and 127 fifth grade students took part in the research study. Statistically significant differences were established from the viewpoint of a) gender (girls scored higher than boys in the explicit score in the original version of the test) and b) the effect of handwriting, where we found marginal statistical significance. This statistical difference lies in the fact that the students who write in traditional cursive score higher in silent reading than the students writing in Comenia Script in the implicit score in the new test version.

Keywords: reading development, silent reading, reading comprehension, assessment of reading

Introduction

Reading diagnostics in advisory (counseling) practice

In Czech counseling system is the assessment of the quality of reading is basis of the pedagogical-psychological diagnostics. For a high-quality handling of this skill belongs to the basic qualifications for a successful education.

The counsellor worker analyzes three

fundamental aspects in the reading test. Among them are quantitative parameters such as the speed of reading and its fluidity, then the error rate and accurate reading in accordance with the template and the last observed aspect is the reading's usefulness that includes the understanding of the read text (Svoboda, Krejčířová & Vágnerová, 2015).

In the traditional assessment of the level of reading comprehension, a child

retells a story that he had just read. In cases when he is unable to recollect specific passages, the examiner poses guiding questions that arise from the read text. In one of the most used reading exams (Matějček et al., 1987), these supplemental questions are precisely formulated; the examiner formulates them according to his experience and current test situation. This method of administration can lead to certain distortions.

The degree of understanding the meaning on sentence level is verified through tasks in which children fill in the missing word from an offered selection (Vágnerová, 2005). This method of examining the skill level of text comprehension can have its limits in the same way as there are limits when we assess the understanding of a text through its retelling. Kucharská (2014) and Schimmel (2016) draw attention that such a way of reproducing a read text can have a considerable effect on the quality of the child's linguistic expression ability and his personality characteristics (ex. anxiety, fear of failure, self-presentation ability etc.). The motivation behind one's own examination can also have an impact on the final result.

Among the most frequently used diagnostics methods belong the *Reading test* (Z. Matějček et al., 1987) that serves as an evaluation of speed, accuracy and understanding of the read text. Other

diagnostic tools are *Testing reading and understanding* (Caravolas & Volín, 2005) that stems from the filling of missing words into sentences. According to Kucharská et al (2014), one of the possible areas of assessing the understanding of a read text is not related however to the child's ability to work with the entire concept of the story. The research project of the GAČR (Czech Science Foundation) "Reading comprehension – typical development and its risks"¹ reacts to the shortcomings of our pedagogical and psychological diagnostics and new tests were developed within its frame. All of the tests were put together on the basis of the same principle - watching both the explicit and implicit levels of understanding. The tests chart the understanding of a reading from the point of view of hearing, loud reading and silent reading. We now introduce in more detail a test that focusses on one of the methods of text comprehension: silent reading that was used, modified and examined in our research study. It is the case of one of the two variants of the test of silent reading and understanding that is conceived for more mature readers (from the third year up), within the frame of the project also a simpler option emerged for beginning readers, but that was not the object of our research.

In our research, we decided to measure the level of reading comprehension by having the students respond to questions,

¹ Research project of the GAČR "Porozumění čtenému – typický vývoj a jeho rizika" [Understanding the read text – typical development and its risks], P407/13-20678S, 2013-2015.

which belongs to the most traditional forms of assessing reading comprehension (Schimmel, 2016). Question responses make it possible to focus on concrete facts and conclusions. In order for the questions to be a good measurement of understanding, they must be based on the text and the reader must read the given text so as to prove an understanding of the question (Schimmel, 2016). In contrast to the current diagnostic tools (Matějček et al., 1987), the created test must be read until the end, only then can the student answer all questions (Kucharská et al., 2015). The question formulation stems from the difficulty of the given text and from the age category of the target group of students to whom the test will be given. The questions should be concisely formulated - they should not include, for example, double negatives that may lead to the distortion of responses.

Going on a trip

The authors of the text are Anna Kucharská and Věra Vykoukalová. The test is composed of 175 word long stories. A text is printed on the register sheet; it is the case of a plot line that describes the departure of a mother and her two children to visit their grandfather. When leaving, the family go through difficulties and remember their experience with the previous departure. There is a recording sheet that is created for the test. The test is conceived for group administration. First, a preprinted text

is distributed to each student who then reads it to himself; there is no time limit at this stage and we wait until all students in the class finish reading. Then, a recording sheet with printed questions is distributed among the students. The maximum time for responding to the questions is 15 minutes. The exact version of the administration and scoring of individual answers lead to the structural layout of the test material and prevents the emergence of random errors when measuring the results.

Introducing the phenomenon of silent reading

We will define the phenomenon of silent reading in opposition to reading aloud, even though we do not see them as activities of completely dissimilar characters, but rather as skills that concur each other especially in the child's developing period and the practice of his reading skills.

Reading aloud is a natural part of the first two years of elementary school when it is used especially within the frame of practicing reading aloud. Students perceive the text on the basis of sound impulses and articulatory movements of speech organs. Thanks to reading aloud, the child as well as the teacher have the chance to quickly correct the fluency and accuracy of the read text.

The introduction of silent reading takes place naturally during the third year of elementary school, for it is in this time when the school increases its

requirements on the student in the area of functional silent reading (ex. independent task work during the lesson). According to Prior & Welling (2001), silent reading begins later in the fourth year.

Researches dedicated to the differences between reading aloud and in silence are at times contradictory, whereas studies describe different results. Experts do agree, however, on that the differences often depend on the students' age and reading level. The disagreement is in the used methods and measurements of charted reading developments. Dissimilar results are also supplied by studies that have the aim to find the age when students move from vocal to silent reading. Reading comprehension is a complex skill that was the concern of many researchers, even though they differ in various approaches to measurement methods (compare Prior and Kragel). We can consider other causes such as the different methods of reading and writing.

The international comparison study PIRLS (2001), which examines the level of reading literacy across the states of the European Union, indicates the fact that students in Czech schools read silently less than in others (Kratochvílová, 2010).

Kratochvílová (2010) highlights that the key to the development of reading literacy - reading comprehension - is actually silent reading, for its focus is dedicated to the work with meanings and does not have to address formal aspects of reading such as the sound

aspect and the short-time memory is not congested by, for example, pronunciation corrections. On the contrary, the reader can use and develop strategies that reading aloud does not allow - for example, skipping some passages or vice versa re-reading them (in the case of miscomprehension).

Methods

Aims of the research and research questions

The primary aim of the research study was the modification of the silent reading test *Going on a trip*. The test makes it possible to observe the students' text comprehension, including the reading strategies through the form of silent reading. The objective of the modification was to increase the test difficulty and to find whether a test is able to differentiate fifth year students, considering the test's previous use for third and fourth year students. During the construction of the method, we stemmed from the 80% success rate of the previously used test and from the published list analysis (Kucharská et al., 2015). The realization of the test's design changes was based on the creation of a new recording sheet. One of the resources for increasing the test difficulty was to double the number of test questions and change the question typology while keeping the text the same. One of our aims was to keep the same test time limit of 15 minutes, therefore the questions were formulated by

declarative sentences that the examined individual either marks as true (YES) or false (NO) and he can also choose the option (I DON'T KNOW). This typology bears sixteen questions. In the remaining six questions, the individual chooses from a word selection with (three to four) words that did or did not appear in the text.

Within the frame of the test, our assessment moves between two levels of reading comprehension - implicit and explicit.

- 1) Implicit comprehension concerns the deduction of information that is not given in the text, it is the case of finding answers to hidden meanings.
- 2) Explicit comprehension concerns searching for factual information in the text.

Our objectives included the verification of the test's statistical parameters so that they could be potentially used for standardization and could then contribute to our pedagogical as well as psychological diagnostics.

Among our secondary aims were the verification of differences between students from the perspective of writing sample and gender. Students who write in the traditional cursive and unconnected lettering - Comenia Script - were included in the research. In previous projects (ex. Kučerová & Hoždorová, 2016), a higher level of writing abilities was proved in the case of students writing in Comenia Script, which could also influence their reading development.

For this reason we investigated whether the performances in silent reading are dependent on the method of writing or not. The inclusion of the influence of gender will contribute to the clarification of the fact whether it is necessary to differ diagnostic approach or intervention to girls and boys.

The first step after modifying the silent reading test was to implement a pilot study in which the new recording sheet was tested and verified. Questions with a 95 to 100% success rate were replaced in the final version of the test, as they would not allow differentiation between performances. It was the case of changing altogether four questions.

We posed the following research questions during the research study:

1. Does the *Going on a trip* test - after our modification - have a discriminatory and communicative value for fifth grade students?
2. Does the writing sample have an effect on the student's success in the silent reading comprehension test?
3. Do we record different results in the silent reading comprehension test for boys and girls?
4. Can we compare the students between each other on the basis of categories in the test and from the aspect of rough scores (explicit and implicit comprehension)?
5. Will an adequate level of reliability be reached after the change of questions in the test?

The quantitative research study was car-

Table no. 1: Sample of 5th grade students

	Traditional script	Comenia Script	In total
Girls	34	33	67
Boys	31	29	60
In total	65	62	127

ried out in the academic year 2015/2016. The data was collected in two time periods – in October and November 2015 and in May and June 2016. In the first wave of the data collection, the students were given the original test version and in the second wave, the students were divided: one half was administered based on the former test version and the second based on the new edited version. More methods that served to chart students reading, scribal and writing were administered simultaneously with the silent reading comprehension test, but they are not part of this contribution.

The test was evaluated according to a given scoring system that contained 24 questions and a maximum number of 40 points. Within the scope of the test analysis, calculations of arithmetic averages

and success rates were assessed from the perspective of percentage occurrence.

Some statistical parameters of the test were also followed and the testing of hypotheses in the given questions were carried out.²

Participants

The research study collaboration was with eight elementary schools; in terms of demographics, five of these schools are located in the capital city of Prague, one is in the Vysočina region and the last two schools are in North Bohemia. Altogether 127 fifth year students participated in the research. From the overall number, the students who participated in only one of the data collection waves were eliminated. The gender in the

² The Reliability (inner consistence) test was calculated as an ordinal alpha, because the test scorings had an ordinal character (sorted category) instead of cardinal (which the classic Cronbach alpha expects). The ordinal alpha has the same interpretation as Cronbach's alpha, but otherwise it is taken into account that for the calculation we use the so-called polychoric correlation that expects a normal distribution of values, which is of course marked by the help of an ordinal scale (Zumbo, B. D., Gadermann, A. M., & Zeisser, C., 2007). The ANOVA method was used to find the differences between the genders and writing sample. The calculation of differences between the students in the original test version in the first and second data collection waves was executed through the couple t-test (Student's). Considering that the difference between the first and second data collection waves was conducted did not have a normal division (Shapiro-Wilk test), even the nonparametric Wilcoxon signed-rank test was calculated.

Table 2: Statistical processing of the students' advancement**Paired Samples T-Test**

Test	Statistic	df	P	Mean Difference	SE Difference	Cohen's d	95% Confidence Interval	
							Lower	Upper
Overall2 - Student's	4.938	68	< .001	1.290	0.261	0.594	0.769	1.811
Overall1 Wilcoxon	1506.000		< .001	1.500	0.261	0.594	1.000	2.000
Explicit2 - Student's	3.727	68	< .001	0.652	0.175	0.449	0.303	1.001
Explicit1 Wilcoxon	984.500		< .001	1.000	0.175	0.449	0.500	1.500
Implicit2 - Student's	3.832	68	< .001	0.638	0.166	0.461	0.306	0.970
Implicit1 Wilcoxon	989.000		< .001	1.000	0.166	0.461	0.500	1.500

research sample is more or less balanced – only lightly do girls outbalance the boys (67:60). There is also a close balance from the perspective of writing font, where the usual writing sample lightly outweighs the Comenia Script (65:62). The average age of the students in the first wave of data gathering is 11,0 years, the second wave took place seven months later. The criteria for registering the students into the research was to fill an informational agreement by the child's parent. The results were processed anonymously under identification codes.

Results

Entry analysis

From the perspective of the tests' item analysis, we can consider the test that underwent our alterations to be more demanding with a higher discrimination value in the results. The overall percen-

tage success of the new test version was 63,63 % (N = 64) whereas for the original test version it was 85% (N = 82). In the new test version, the minimal success rate decreased and a greater variance of success appeared which may add greater sensitiveness to the test when recording individual differences between the students.

The students' advancement at the beginning and end of the school year

Within the framework of checking the statistic differences, significant statistical differences were proved in all of the observed scores (overall, explicit and implicit) in terms of the students' advancement at the beginning and end of the school year. Statistically, the students score considerably better at the end of the school year than at the beginning in the original test version.

Table 3: Statistical processing of implicit scores

Implicit comprehension					
Effect	DFn	DFd	F	P	Ges
Gender	1	60	0,797559	0,375392	0,013118
Script	1	60	3,932486	0,051945	0,06151
Gender : Script	1	60	1,22339	0,273112	0,019982

Reliability

The overall reliability of the tests ranged between the coefficients 0,7 and 0,8; the tests' high reliability was certified by the reliability test. No more significant differences in the reliability of the original and new test versions were recorded. The level of reliability was lower in the comprehension score than in the score of simple comprehension in both test versions.

When constructing the reading comprehension test, a question structure is created, similarly focussed questions are related to the explicit (literal) comprehension and implicit (deduction, reading "between the lines", understanding the connotations) comprehension. However, according to Kucharská et al. (2015), we can doubt that we will find one factor of this comprehension, i.e. that all the questions should correlate together. Some questions can be more related to reading skills, others with cognitive and linguistic abilities, the individual's experiences etc. The child's experiences, mental abilities, ability to use the context and more play a role in the case of the implicit scores. In both test versions we came out with reliability

coefficients that were lower for implicit comprehension. We can therefore presume that it is more difficult to find questions focussed on deduction that would mutually correlate than in the case of explicit, literal comprehension.

Assessing the results from the aspects of the influence of writing sample and gender

In terms of finding differences between the observed changes, the following differences were proved:

- The students who write in cursive obtained better results in the implicit score than the students writing in unconnected font (in the new test). We can therefore speak of a marginal statistical significance ($p = 0,051945$).

Forming what is already included in the texts only implicitly, presuming the contained effects in the collection of claims is the most complicated level of reading comprehension (Průcha, Walterová, & Mareš, 2009). In the average results of individual (explicit and implicit) scores, the students were on average more successful in the implicit than explicit scores. We can say that the fifth grade

Table 4: Statistical processing of explicit scores

Explicit comprehension					
Effect	DFn	DFd	F	P	Ges
Gender	1	77	5,246307	0,024731	0,063788
Script	1	77	0,301406	0,584591	0,003899
Gender : Script	1	77	0,26355	0,609162	0,003411

students have no trouble with deducing hidden information that is more difficult than literal comprehension.

Considering the definitions of the implicit scores, we believe that it is mainly the individual characteristics (cognitive aspects of the students, ability to make use of the context, ability to solve crisis situations, necessary imagination for understanding the context, understanding the relation between two events and more) that are projected into the deduction have influence on the students' results.

- A statistically significant difference was established for the results in the explicit score of the girls and boys. The girls score better in the 2% significance level than the boys (in the second wave of data collection for the original test version).

We could explain the higher scores for girls with their better verbal proficiency and more positive relation with reading that Ronková indicates in her research (2012). Alternatively, it is possible that due to the higher number of read books that is implied on the basis of such

a claim, the quality of comprehension will be on a higher level. Girls also tend to be more motivated in tasks reminiscent of a school situation.

Statistical differences were not manifested in other observed parameters.

Discussion

In our research, we have chosen answers to questions that focus on concrete facts and conclusions and belongs to the most traditional forms of text comprehension (Schimmel, 2016). In contrast with existing diagnostic tools (Matějček et al., 1987), the pupil has to read the entire text and then answer all questions. The possibility to return to the read text eliminates the influence of memory abilities that can influence the pupils' performance when paraphrasing text. In usually used diagnostic methods, the most widely understood reading is read through text paraphrasing, for example Reading Test (Matějček et al., 1987).

There is no possibility in Czech diagnostics for quiet reading. For this reason, we cannot compare domestic

results with other studies. If we compare the results with pupils of the 4th grade (Kucharská et al., 2015, p. 107), we can say that the difficulty of the test has been improved in terms of percent success with a satisfactory degree of reliability. It has been confirmed that older pupils can better manage judgmental questions than younger pupils (1st and 2nd year) who are predominant in literal comprehension (Kucharská et al., 2015). Considering the character of the research study, it is impossible to deduce more general characteristics that could be projected onto the found differences. It is the first case of a test description of prospective differences between the observed indicators. In this case it would be good to verify the differences with more studies in order for it to be possible to describe the potential factors that could affect the silent reading comprehension. A deeper exploration of the Wildová (2012) assumption would be really interesting. Comenia Script will help pupils with learning disabilities, and the general principle of simplicity could help to improve comprehension of the text.

Similarly to other diagnostics tools, the test is necessary to use together with other tests. The analysis of the test of silent reading point out differences between the observed groups of students. We were not interested in generalising the results, but rather in an experimental charting of possible differences. For the generalisation of data, it would be necessary to conduct a research with a greater sample of student population and utilise a bigger battery of diagnostic methods.

We believe that the performed research study will contribute to the verification of the efficiency and utility of the *Going on a trip* silent reading test as a standardisation (as one of the subtests of assessing reading comprehension) and will therefore expand the options of our pedagogical as well as psychological diagnostics.

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