

THE IMPACT OF ELECTRONIC TUTORIALS ON ORTHOGRAPHY OF MOTHER TONGUE AT PRIMARY SCHOOLS

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Abstract

Recent years have shown a boom of electronic language tutorials at primary schools and their more frequent use during language lessons. The quality of native language writing among young Czech students has deteriorated dramatically at the same time. A great number of teachers argue that orthography of written language is deteriorating due to an increased use of electronic tutorials at schools which are supported by dichotomous e-learning systems based primarily on clicks by the electronic mouse on a single trained letter or word. In 2011, the research project dealing with the Czech language tutorials was initiated and designed in a partnership with primary schools in the Czech Republic and was finished in 2012. The authors defined the following research questions: (1) "Have language tutorials based on dichotomous tests had an impact on written language of young learners?"; and (2) "Are electronic learning programs at primary schools appropriate for mother tongue teaching?". The first quantitative experiment tested a sample of 200 Czech respondents divided into parallel experimental (students aged between 11 and 15 who were taught by Czech language tutorials) and control groups (students taught without this electronic help). The research compared results of Czech orthography tests. The most widely used educational tutorials, namely Terasoft and EMPE company were investigated. Orthographic language tests which are often used at schools during Czech lessons were randomly selected and study results of both groups before and after learning of the specific topic were compared. The empirical data obtained from the evaluation tests were examined via Statistica 10 to verify or falsify a zero hypothesis that teaching of Czech orthography at primary schools with language tutorials does not cause more errors in writing coherent sentence structures. Zero hypotheses were based on the results of the Mann-Whitney U test rejected in all grades and showed statistically significant differences in the results of experimental groups at each grade separately. The researchers showed that the dichotomous exercises in language tutorials are due to the focus on isolated words an inappropriate tool for teaching Czech orthography and, therefore, they should not be used as the sole means of e-learning technology in mother tongue teaching. Findings of this experimental research provide a compelling case for the importance of additional research on the impact of electronic language tutorials on written language of young children.

Keywords: *Czech language, electronic tutorials, orthography of mother tongue*

1. Introduction

The current trend of teaching the mother tongue tends to implement e-learning programs, which, among other things, provides schools which use it a pleasing image of modern educational facilities. On the contrary, Dvořáková writes that during the research in France in 1991 among students of language courses 85-96% of respondents prefer printed learning materials instead of electronic tutorials [Dvořáková, 1999]. European Social Fund (ESF) financing has brought funds to educational institutions allowing to develop or purchase tutorials for teaching in individual subjects during the last two years. This has changed their methodology

entirely. According to a Ministry of Education report of November 2011, 90 percent of primary schools participated in the project ESF - EU money for schools. In the Czech language lessons and in other subjects, the latest educational programs are being used, and investments in computer labs moved the students to the computer screen, where the training is based on a special program mainly practicing a single phenomenon. Shohamy claimed that there is the need to include aspects of test use in construct validation originates in the fact that testing is not an isolated event; rather, it is connected to a whole set of variables that interact in the educational process. Results obtained from tests have serious consequences for individuals as well as for programs, since many crucial decisions are made on the basis of test results [Shohamy, 1993]. Many teachers of the Czech language, initially skeptical of mouse-clicking programs, became convinced, based on testing task results, that this language teaching method is a useful and effective supplement of traditional teaching process. All this is confirmed by the electronic test results of checking the effect of such programs on teaching mother tongue in primary schools within the period of 2010 to 2012, comparing two parallel sets of 5th to 9th class pupils – one using tutorial software and the other with classical training. The results were evaluated based on completed e-learning tests with dichotomous responses. Conclusions have proven significantly better test results within the group using computer-aided teaching. On the contrary, the pupils from the experimental group were significantly worse in the classically written tests and dictations, having no choice of dichotomous option and forced to write whole words, phrases or sentences. Therefore we decided to start a research project on testing groups of 5th to 9th class primary schools pupils, testing language phenomena on complex structures, where the pupils were forced to fill-in whole words or phrases manually. We disrupted their automated habits of dichotomous choice of an isolated phenomenon, so typical for modern educational programs that do not reflect written text integrity as a complex and focus only on isolated letters, special words or declination or conjugation paradigm of the Czech language. We have analyzed all written tests and gained interesting material, reflecting the risk of certain software for Czech grammar training, and highlighted its shortcomings for the acquisition of mother tongue skills in writing.

With the modernization trend of mother tongue teaching, a whole series of software tutorials were prepared in order to facilitate work for both teachers and students, especially in Czech language lessons, where the frontal teaching method has prevailed so far, with a predominance of written tasks in workbooks. Most of this software for mother tongue teaching is based on selection from a finite set of answers, often only dichotomous. Writing such programs is very simple, but their structural simplicity tempts their authors to testing details and isolated facts only. The consequences that this form of teaching brings can influence the acquired language competencies very significantly. Unfortunately, the issue of the proper use of training programmes in the field of mother tongue teaching is not popular among researchers and there is not many publications in this area [Dostál, 2009].

2. Design

We started the research in February 2011 and ended in January 2012. For the experiment we chose the most widely used Czech language tutorials - Terasoft and EMPE software. A sample of 200 respondents was divided into parallel experimental and control sets of pupils from 5th to 9th classes. Validity of the results was subsequently verified by statistical data processing in Statistica 10 software. The written tests were scheduled regularly on a monthly basis, focusing on a selected portion of grammar curriculum each month. The research questions were defined by the authors as follows: (1) "Do language tutorials based on dichotomous tests have an impact on written language of young learners?", and (2) "Are electronic learning

programs at primary schools appropriate for mother tongue teaching?". The test results were processed collectively regardless of grade at first, i.e. all the results of the 5th to 9th class were divided into group A (control) and B (experimental). The null hypothesis stated that the experimental training using dichotomous closed tasks in the tutorials has no effect on student performance. The first result is evident from the box-chart showing the distribution of the error rate already:

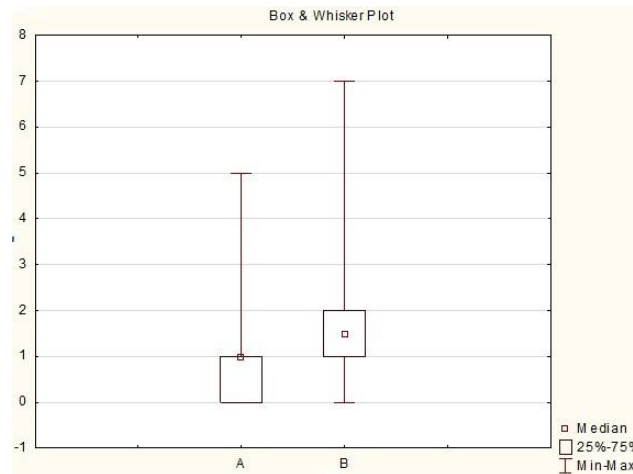


Figure 1 Results of the control and experimental groups (February 2011 - January 2012)

The results of the experimental group B have shown higher incidence of errors according to this chart. To test the null hypothesis, we performed normality test for both sets A and B first, using both Shapiro-Wilkes test and Lilliefors test. In either case, the hypothesis that both sets come from a normal distribution had to be rejected, as can be seen from histograms:

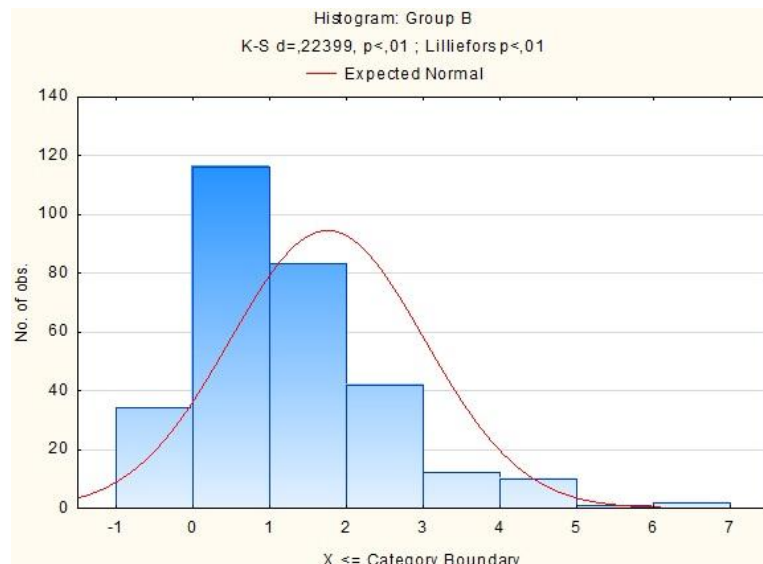


Figure 2 Control group A histogram

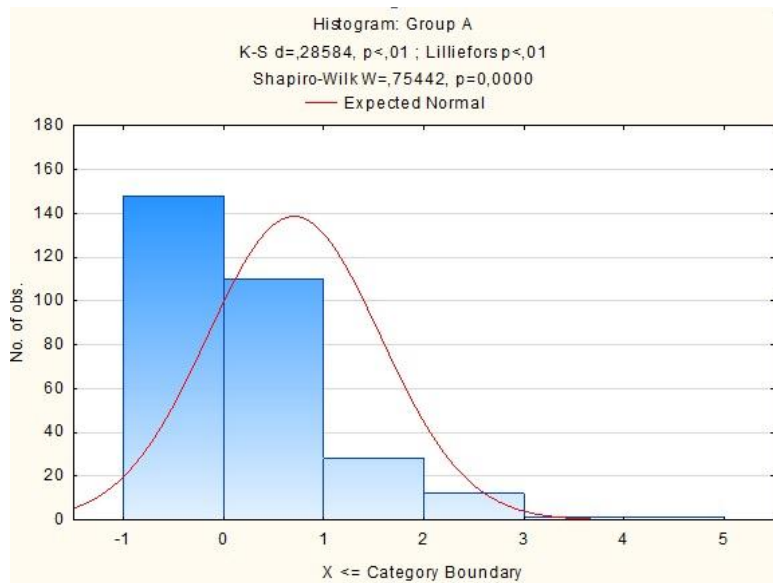


Figure 3 Control group B histogram

For this reason, we chose two-sided unpaired nonparametric Wilcoxon test (often referred to as the Mann-Whitney U test) for null hypothesis testing with the following result:

Mann-Whitney U Test (ABall.sta)									
By variable Group									
Marked tests are significant at p <.05000									
variable	Rank Sum A	Rank Sum B	U	Z	p-value	Z adjusted	p-value	Valid N A	Valid N B
Number of mistakes	66769,00	113531,0	21619,00	-11,0125	0,000000	-11,5343	0,00	300	300

Table 2 Results of the Mann-Whitney U test

According to the results of this test, we can reject the null hypothesis. The difference was statistically significant. Group B with experimental teaching has proven worse performance and increased error rate in all standards.

Given the above results, confirming the impact of educational programs based on closed dichotomous sets on a larger error rate in spelling phenomena, we decided to find out whether the design simplicity focusing on isolated linguistic units practicing does influence the acquisition of language competence in certain grades of primary school only. We thus created the same null hypothesis for each standard separately. Box plot, however, clearly shows that student performance in the experimental group B is worse than Group A performance regardless of grade.

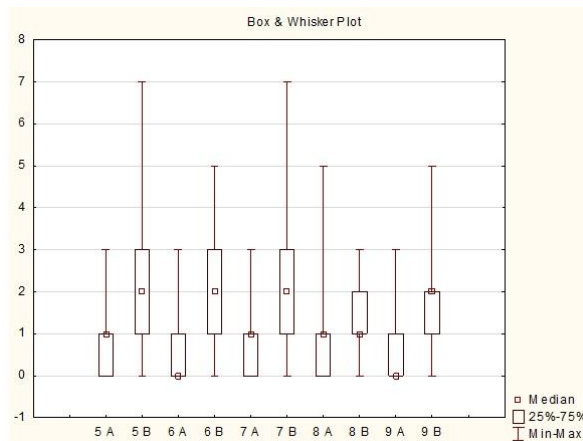


Figure 4 Test results per grade

The null hypotheses based on the results of Mann-Whitney's U test were rejected in all grades and have proven statistically significant differences in the experimental group results for each grade. The test results confirmed our alternate hypothesis that the use of simply designed training programs based on practicing and testing isolated phenomena in the form of dichotomous response tasks results into a higher error rate in coherent written texts.

3. Conclusions

Software tutorials for mother tongue teaching become increasingly popular teaching method at primary schools. This kind of study support is currently still one of the most widely used in language teaching. In the Czech language teaching we meet software whose design simplicity allows students to practice the spelling of only isolated phenomena in the dichotomous roles, which in the case of longer coherent text leads to a higher error rate. Although quasi-experimental research between 2010 and 2012 has shown, via electronic testing of spelling phenomena, that computer-aided Czech language teaching is more efficient than the traditional frontal teaching method without a computer, an additional experiment investigating the error rate of students from the experimental group in writing longer sentence segments has not confirmed former results. We have demonstrated, therefore, that the dichotomous tests focusing on isolated phenomena are unsuitable for teaching Czech grammar and should not be used as the sole technological means of the mother tongue teaching.

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