

How do fluent and poor readers' endurance differ in reading?

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Abstract

It was observed in this research how endurance status of fluent readers and poor readers changed as the text became longer. 40 students of the primary school 4th-grade, 20 were fluent readers and other 20 were poor readers, participated in the research. A narrative text was utilised in the data collection process. Students' oral readings were recorded with a voice recorder, and their cores of reading rates and reading accuracy percentages were obtained by listening to the readings. The scores were analysed with the Friedman and Nemenyi tests. At the end of the analysis, it was seen that fluent readers' reading rates did not differ significantly from the beginning to end of the text, whereas poor readers' reading rates differed in favour of the first parts of the text. Accordingly, the fluent readers read the text at the same rate all the way, while the poor readers' reading rates significantly dropped from the beginning towards the end of the text. Furthermore, fluent readers' reading accuracy percentages differed significantly from the beginning towards the end of the text in favour of the last parts, while poor readers' reading accuracy percentages differed in favour of the first parts. As per the findings, fluent readers' reading accuracy percentages gradually increased, whereas poor readers' percentages gradually dropped. In other words, as the reading time and volume increased, poor readers' reading errors were also increased. These results were discussed in the light of the literature.

Keywords: Reading fluency, endurance, stamina.

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1. Introduction

Research studies on reading have concentrated on the elimination of students' reading difficulties and providing them with fluent reading skill for the past three decades. The reason why fluent reading is considered so important is that its powerful relation with reading comprehension (Fuchs, Fuchs, Hosp & Jenkins, 2001; Jenkins, Fuchs, Van Den Broek, Espin & Deno, 2003; Pikulski & Chard, 2005; Stanovich, 1980). Students eliminating their reading problems and acquiring fluent reading skill at early ages are among the primary targets of educational programmes and reading educators, because fluent reading is regarded as a prerequisite of reading comprehension and general academic achievement (Rasinski et al., 2005).

Reading quality is associated with multi-dimensional behaviours of readers during the reading process. Fluent readers are mentioned by increase in reading comprehension and general academic achievement and positive attitudes. On the other hand, reading difficulty is associated with failure in personal and academic tasks (Clarke, Smith, Paul, Snowling & Hulme, 2017; Dawes, Leita, Claessen & Nayton, 2015; Mahapatra, 2016; Visser, 2014). Visser (2014) put forth deficits of poor readers in their temporal attention spans. Poor readers have shorter temporal attention than normal readers do. Accordingly, decrease in poor readers' temporal attention spans refers to the decrease in their performance of final reading rate. Mahapatra (2016) examined planning behaviours of poor and fluent readers. The researcher drew attention to the strong relationships between planning and word decoding at both the memory and conceptual levels. These results were discussed within the context of neural basis of the planning process. Shaul, Arzouan and Goldstein (2012) concluded that fluent readers and dyslexic readers with reading difficulty have different brain activations during word reading. Accordingly, brain activations of the fluent readers during reading were found to be higher than the dyslexic readers. These studies emphasise especially the cognitive aspect of reading difficulty.

Studies on the concepts of reading difficulty and fluency reading have increased. As a result, the perspective of reading fluency has been constantly changing and expanding. On the other hand, fluency is attached importance not only in reading but also in behavioural sciences (Binder, 1993, 1996). In the general sense, the concept of fluency is defined as the 'exhibition of behaviour with a high rate and accuracy' (Binder, 1996; Johnson & Layng, 1992). First, definitions of fluency in the field of reading are similar, and fluent reading is described rather as word recognition and acquirement of reading rate, in other words, acquirement of automaticity in reading. Yet, the definition of fluent reading has been seen beyond the theory of automaticity and a more extensive definition of fluent reading involving the prosody and comprehension has been focused on (Rasinski, 2006; Rasinski, Rikli & Johnston, 2009). Apart from that, some studies argue that it is possible for a performance in reading to acquire exact fluency only by maintaining this performance for a given period of time (Barger-Anderson, 2002; Deeney, 2010; Gulla, 2012; Hiebert, 2014; Hiebert, Wilson & Trainin, 2010; Snow, 2013). This situation is explained with two concepts: reading stamina and reading endurance. These two concepts tend to be used interchangeably and the same thing is basically meant with both of them. The concept of 'endurance' was preferred in this research.

Endurance refers to the maintenance of a performance without deterioration for a certain period of time and individual's resistance to maintain the performance. It is the ability to protect oneself from being distracted for a long period of time and maintain the attention and performance to do a task (Binder, Haughton & Bateman, 2002). Binder (1993) explains endurance as the preservation of attention for a long period of time when delivering a performance. Endurance is likened to the condition of an athlete during a race. Accordingly, an athlete who has the endurance runs a given distance at a certain pace and does not get tired. He/she can maintain the speed at the beginning until the end of the race (Kubina & Wolfe, 2005). Similarly, a student who has the endurance in reading can deliver a performance at a fixed rate (Binder, 1996).

Endurance in reading is defined as the competence and the ability to maintain the attention when reading a text (Hiebert, 2014). In other words, endurance in reading is the ability to reading a text at

appropriate accuracy, rate and in prosody and by comprehending it for a long period of time (Deeney, 2010, p. 442). The critical point here is the phrase for a long period of time. It is seen how students maintain their attention and performance (endurance) especially as the length of texts increase is considered a vital behaviour in terms of fluent reading, vocabulary and reading comprehension (McGill-Franzen & Zeig, 2015). Deeney (2010) regards fluent reading beyond the elements such as accuracy, rate, and prosody and calls attention to the fact that the concept of 'endurance' which refers to the maintainability of reading performance that needs to be considered. Indeed, it is argued that endurance has a quite important role in students' achievement of fluency (Barger-Anderson, 2002). Therefore, it becomes harder to make assumptions on student's fluent reading skill without taking reading endurance in consideration.

Endurance is the ability to exhibit elements of fluent reading in reading for a long period of time. Per this point of view, reading or not being able to read a certain part of a text is not enough to identify a reader as a fluent or poor reader. This also shows that one-minute measures which are often used in fluent reading measures cannot be sufficient alone for identifying the quality of readers (Deeney, 2010). Indeed, Binder, Haughton and Van Eyk (1990) point to the fact that most teachers use short measures like one-minute measures to assess students' academic or non-academic performances but these fall insufficient in making decisions for students. In this sense, it is possible to argue that word correct per minute (WCPM) studies which are conducted for fluent reading assessment have limitations. Elimination of the limitations requires conducting WCPM applications for longer periods of time and with longer texts.

Teachers need to gravitate towards ensuring fluency and endurance primarily in student behaviours (Binder, Haughton & Van Eyk, 1990). Despite being a critical concept in education in general, in the development of reading skill in particular, endurance has also been a neglected concept (Barger-Anderson, 2002; Deeney, 2010; Hiebert, 2014; Johnson, Freedman & Thomas, 2007). Especially in the research studies on reading fluency, students' reading achievement and fluency level are assessed with one-minute measures of the concepts of accuracy, rate and prosody (WCPM) (Deno, 1985; Hasbrouck & Tindal, 2006; Rasinski, 2010). However, it is necessary to determine the endurance status of students so that their levels of reading fluency can be evaluated more extensively (Deeney, 2010). When the related literature is examined, it is not known sufficiently how fluent readers and poor readers maintain their reading performance when reading a text and whether they can keep their reading rates and reading accuracy levels. In this sense, this research is regarded as being important for contributing to the explanation of reading skill in the literature and to the related field by examining the concepts of reading instruction. It was accordingly aimed with the research to examine the maintainability of reading performance when fluent and poor readers read a text. To this end, the change in students' reading rates and reading accuracy achievements when reading a text was observed.

2. Methods

This study was conducted to observe how students' reading accuracy and rates as their reading skills change when reading a text. An existing situation was examined in the research. The research has the characteristics of descriptive survey from this aspect. Because description and interpretation of an existing situation is taken as the basis in descriptive surveys (Cohen, Manion & Morrison, 2000).

2.1. Participants

The participants of the research were composed of the 4th-grade students who are studying at a primary school in Yuregir district of Adana province. The convenience sampling method was followed to select the participants. The reason why this method was consulted is that convenience sampling method provides convenience to prevent loss of money and workforce (Buyukozturk, Cakmak, Akgun, Karadeniz & Demirel, 2010). One of the researchers in the study is serving as a teacher in the school

where the participants are studying. This provides the research with advantages in terms of time and cost.

There are 65 fourth-grade students at the school. Five of them were defined as inclusion students and are studying in the special education classes. That is why these five students were excluded from the study group. The remaining students were made to read a text orally so that their reading rates and reading accuracy levels could be measured. The results were ranked, and 20 most successful students were identified to be fluent readers and 20 least successful students were identified to be poor readers (Figure 1).

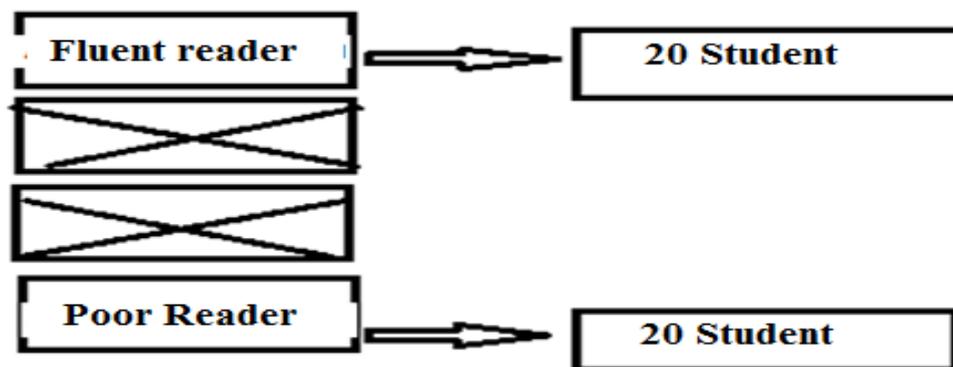


Figure 1. Number of students in the study group

2.2. Data collection and analysis process

Reading Text: As the data collection instrument, a narrative text named ‘Perili Kosk (Haunted Mansion)’ which comprised 1,512 words was used in the research. The descriptive text was written by a Turkish story writer, Omer Seyfettin. For the length of the reading text and its suitability to student levels, four experts who are classroom teachers and specialised in reading education were consulted for opinion. After having stated that the text was suitable, the experts divided the text into three equal parts as per word (Parts I, II and III). Each part was composed of 504 words.

Voice Recorder: It was made sure that the students individually read the text orally and each reading was recorded with a voice recorder. Next, recordings of each oral reading of Parts I, II and III were listened to from the voice recorder repeatedly and scores of reading accuracy and reading rate in each part were obtained. For obtaining the scores of reading accuracy and reading rate, WCPM which is a method of software-based assessment and evaluation developed by Deno (1985) (Table 1). Accordingly, each students’ reading accuracy percentages, reading rate scores and reading durations were obtained in Parts I, II and III.

Table 1. Data collection process

Word count in the whole text	reading type	Parts of text	Fluent readers	Poor readers
1512 words	Oral reading	Part one 504 words	Measurements: Reading Accuracy Reading rate	Measurements: Reading Accuracy Reading rate
	Oral reading	Part two 504 words	Measurements: Reading Accuracy Reading rate	Measurements: Reading Accuracy Reading rate
	Oral reading	Part three 504 words	Measurements: Reading Accuracy Reading rate	Measurements: Reading Accuracy Reading rate

Descriptive statistics, Friedman Test and Nemenyi Test were used for the analysis of the data.

The obtained scores were examined for normal distribution, and it was seen that the data were not normally distributed. Therefore, the Friedman test was used for non-parametric repetitive measurements in related groups. After the Friedman test, the Nemenyi post-hoc test was performed to find the source of difference where significant difference was achieved (Pohlert, 2016).

3. Results

Table 2. Results of the Friedman test regarding fluent readers' scores of reading rate in parts I, II and III

Repeated measurements	N	\bar{x}	SD	Mean rank	χ^2	p
Part one	20	116.504	9.678	31.750	0.555	0.758
Part two	20	116.599	10.758	31.625		
Part three	20	114.298	10.581	28.125		

$p > 0.05$

Table 2 presents the analysis results regarding the change in fluent readers' scores of reading rate among Parts I, II and III of the text. The results show that there was no significant change in fluent readers' reading rates among the parts of the text ($\chi^2 = 0.555$, $p > 0.05$). Accordingly, the fluent readers read the text keeping their reading rate from the beginning to the end.

Table 3. Results of the Friedman test regarding poor readers' scores of reading rate in parts I, II and III

Repeated measurements	N	\bar{x}	S	Mean rank	χ^2	p
Part one	20	72.208	8.600	2.600	27.700	0.000*
Part two	20	71.577	9.815	1.050		
Part three	20	62.244	10.358	1.050		

* $p < 0.05$

The analysis results regarding the change in poor readers' scores of reading rate among Parts I, II, and III of the text are given in Table 3. The results show that there was a significant change in poor readers' reading rates among the parts of the text ($\chi^2 = 27.700$, $p > 0.05$). The results of the post-hoc comparison (Nemenyi Test) for determining among which parts the change in poor readers' reading rate was observed are presented in Table 4.

Table 4. Results of Nemenyi test regarding poor readers' scores of reading rate in parts I, II and III

Parts of text	1	2	3	Groups
1. Part one	1			A
2. Part two	0.709	1		A
3. Part three	00001	0.000	1	B

Note: Bonferroni correction, $0.05/3$ and $p = 0.0166$. The same letters refer to the same groups and different letters refer to different groups.

The analysis results regarding significant source of the changes in poor readers' scores of reading rate among the parts of the text are given in Table 4. The results show that the significant difference was between the third part and the first two parts of the text ($p < 0.0166$). Accordingly, poor readers' reading rates decreased significantly in the last part of the text.

As for the graphic of the results regarding the change in fluent and poor readers' reading rates, fluent readers' reading rate curve generally remained the same from the beginning to the end of the

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text, whereas poor readers' reading rate curve started to drop especially after Part II of the text (Graphic 1).

Graphic 1. Graphic for maintainability of the reading rate performance in fluent and poor readers

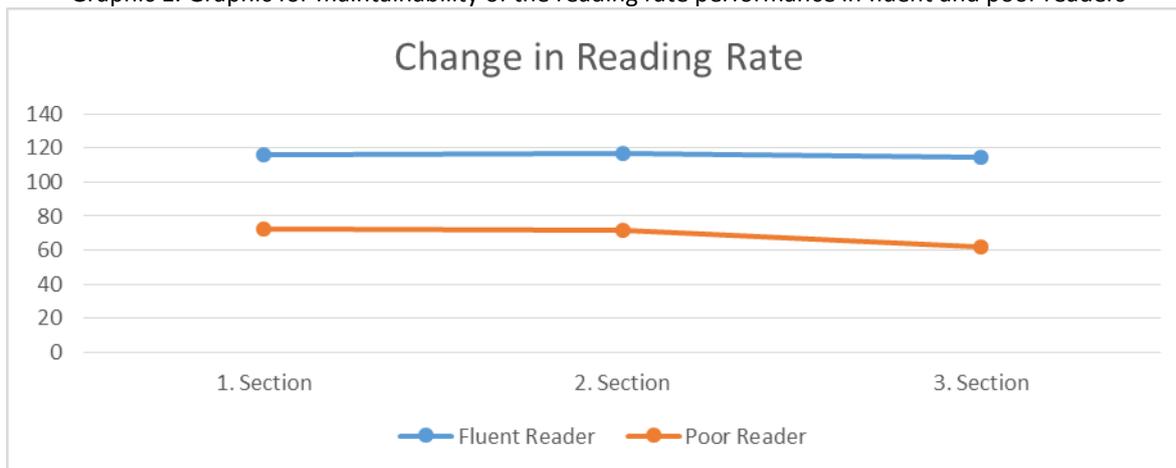


Table 5. Results of the Friedman test regarding fluent readers' scores of reading accuracy percentage in parts I, II and III

Repeated measurements	N	\bar{x}	S	Mean rank	χ^2	p
Part one	20	96.041	1.328	1.250	27.900	0.000*
Part two	20	96.667	1.119	1.850		
Part three	20	97.718	0.891	2.900		

* $p < 0.05$

Table 5 presents the analysis results regarding the change in fluent readers' scores of reading accuracy percentage among the Parts I, II, and III of the text. The results show that there was a significant change in fluent readers' reading accuracy percentage among the parts of the text ($\chi^2 = 27.900$, $p > 0.05$). The results of the post-hoc comparison for determining among which parts the change in fluent readers' reading accuracy percentage was observed are presented in Table 6.

Table 6. Results of Nemenyi test regarding fluent readers' scores of reading accuracy percentage in parts I, II and III

Parts of text	1	2	3	Groups
1. Part one	1			A
2. Part two	0.139	1		A
3. Part three	00001	0.003	1	B

Note: Bonferroni correction, $0.05/3$ and $p = 0.0166$. The same letters refer to the same groups and different letters refer to different groups.

The analysis results regarding significant source of the changes in fluent readers' scores of reading accuracy percentage among the parts of the text are given in Table 4. The results show that the significant difference was between the third part and the first two parts of the text ($p < 0.0166$). Accordingly, fluent readers' reading accuracy percentage decreased significantly in the last part of the text.

Table 7. Results of Friedman test regarding poor readers' scores of reading accuracy in parts I, II and III

Repeated measurements	N	\bar{x}	S	Mean rank	χ^2	p
Part one	20	90.804	2.248	2.600	16.103	0.000
Part two	20	88.482	4.626	2.050		
Part three	20	86.101	5.910	1.350		

* $p < 0.05$

Table 7 presents the analysis results regarding the change in poor readers' scores of reading accuracy percentage among the Parts I, II and III of the text. The results show that there was a significant change in poor readers' reading accuracy percentage among the parts of the text ($\chi^2 = 16.103$, $p > 0.05$). The results of the post-hoc comparison for determining among which parts the change in fluent readers' reading accuracy percentage was observed are presented in Table 8.

Table 8. Results of the Nemenyi test regarding poor readers' scores of reading accuracy percentage in parts I, II and III

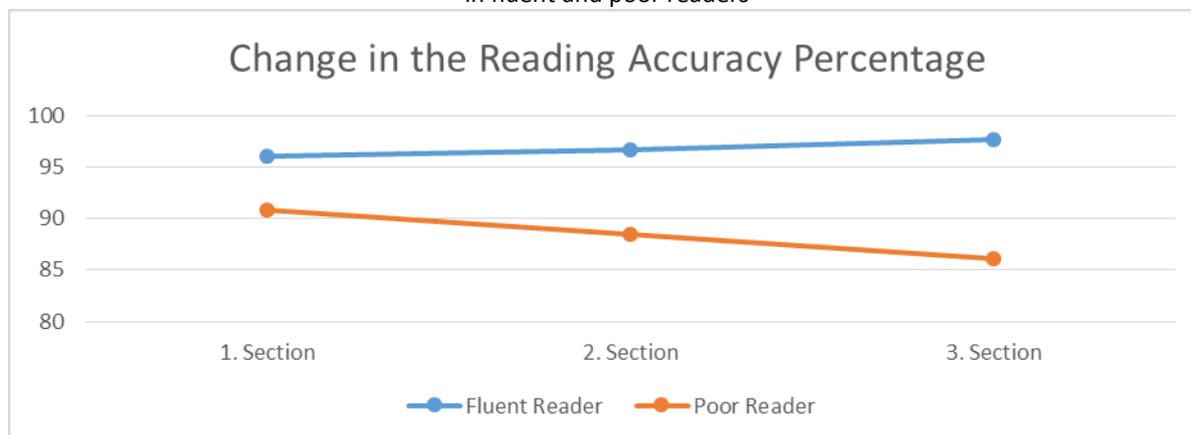
Parts of text	1	2	3	Groups	
1. Part one	1	0.191	0.000	A	
2. Part two	0.191	1	0.069	A	B
3. Part three	0.000	0.069	1		B

Note: Bonferroni correction, $0.05/3$ and $p = 0.0166$. The same letters refer to the same groups and different letters refer to different groups.

The analysis results regarding significant source of the changes in poor readers' scores of reading accuracy percentage among the parts of the text are given in Table 8. The results show that the significant difference was between the third part and the first part of the text ($p < 0.0166$). Accordingly, fluent readers' reading accuracy percentage decreased significantly in the last part of the text. Yet, the second part of the text did not differ from the first and three parts.

As for the graphic of the results regarding the change in fluent and poor readers' reading accuracy percentage, fluent readers' reading accuracy percentage curve generally increased from the beginning towards the end of the text, whereas poor readers' reading accuracy percentage curve gradually dropped after each part towards the end of the text (Graphic 2).

Graphic 2. Graphic for maintainability of the reading accuracy percentage performance in fluent and poor readers



4. Discussion and conclusion

It was aimed in this research to examine the maintainability of fluent and poor readers' reading performance when reading a text. To this end, the change in students' reading rates and reading accuracy achievements when reading a three-part text was observed. Accordingly, fluent readers' reading rates did not differ significantly among the parts of the text, while poor readers' reading rates differed. And whereas the fluent readers managed to maintain their rates at the beginning of the text until the end, the poor readers could not maintain their rates and their reading rates gradually decreased. As for the results of reading fluency levels, fluent readers' reading accuracy differed significantly in favour of the last parts of the text, while poor readers' reading accuracy percentages differed significantly in favour of the first parts. This shows that as the fluent readers read from the beginning towards the end of the text, their reading accuracy percentages increased but fluent readers' reading accuracy percentages dropped. It can be implied from these results that fluent readers exhibit more endurance than poor readers in terms of reading rate and accuracy as the text gets longer. Therefore, poor readers' reading rates decrease, the number of their reading errors increase and they cannot maintain their reading performance as text gets longer. That is why poor readers have lack of fluent reading as well as endurance.

Consequently, it was concluded in the research that fluent readers have endurance whereas poor readers do not have it. These results are also in parallel with the reading and writing literature. Kubina and Wolfe (2005) similarly observed that the existence or lack of endurance has an impact on writing performance. Accordingly, it was observed that the students with endurance maintained their performance on a certain level while the students without the endurance lost the performance after a while. According to Deeney (2010), endurance is an important obstacle especially for students having reading difficulties in maintaining the reading performance. In the other hand, errors increase as the duration is extended in a non-fluent performance. Moreover, as the fluency increases in the exhibition of a behaviour, endurance to the maintainability of the behaviour also increases (Binder et al., 1990; McDowell & Keenan, 2001). Especially the students who are in the bottom part of the reading achievement may become tired when they want to read a long text (Hiebert, 2014). Stanovich (1986) called attention to the fact that poor readers read less and therefore their constant reading gets weaker with the Mathew effect. Similarly, Hiebert (2014) noted that poor readers become incompetent to read longer texts as they read less. The failure of these students in reading may be caused by their affective status against reading. Because poor readers think of reading as a difficult task, do not regard themselves as skilled and exhibit negative attitudes toward reading (Morgan, Fuchs, Compton, Cordray & Fuchs, 2008). Poor readers' reading motivations are lower than fluent readers (Morgan & Fuchs, 2007). Negative feelings against reading reduce the frequency of reading behaviour and make one read gradually less. This turns into the lack of reading fluency and endurance after a while.

Positive and negative experiences during reading may have an impact on students' endurance. Students with poor oral reading fluency often spell what they read and are easily distracted, which affects text comprehension and apprehension negatively (Fuchs et al., 2001). On the other hand, students with high oral reading fluency have several positive experiences during the reading process. Hence, the basic problem here is the problem with reading fluency. Those who cannot read fluently experience lack of endurance. Providing students endurance in reading is also about the development of their fluent reading skills. Because it is reported in previous studies (Binder, 1996; Kim, Carr, Templeton & Bird, 2001; McDowell & Keenan, 2001) that students can overcome the endurance problem by achieving the fluency in behaviour.

The result of this research indicates that reading fluency problem is the endurance problem. Therefore, students' endurance skills in reading need to be improved. This is possible primarily through the development of fluent reading skills, because endurance skills should also be improved, as students' fluent reading skills are enhanced (McGill-Franzen & Zeig, 2015). On the other hand, it can

be ensured that students' behaviours and reading have more fluency and endurance (Binder, 1993; Johnson et al., 2007; McDowell & Keenan, 2001).

4.1. Recommendations

Students' status of endurance should be reviewed so that their reading performances can be identified. Moreover, they need to be provided with in-class or individual instructional support for the development of their endurance skills.

This research was conducted with 4th-grade students. Students' status of endurance should also be observed on different grade levels. Especially with vertical studies, the development of students' fluency skills, their endurance and academic achievements can be investigated. It can be also examined whether students' endurance skills differ among types of text. Finally, the causation between the fluency reading and endurance skills can be investigated.

References

- Barger-Anderson, R. A. (2002). *Impact on fluency: endurance and the use of repeated readings* (3049616 D.Ed.). Ann Arbor, MI: Indiana University of Pennsylvania. ProQuest Dissertations & Theses Global database. Retrieved from <http://search.proquest.com/docview/305473765?accountid=16645>
- Binder, C. (1993). Behavioral fluency: a new paradigm. *Educational Technology-Saddle Brook NJ*, 33, 8–14.
- Binder, C. (1996). Behavioral fluency: evolution of a new paradigm. *The Behavior Analyst*, 19(2), 163.
- Binder, C., Haughton, E., & Bateman, B. (2002). Fluency: achieving true mastery in the learning process. *Professional Papers in Special Education*, 2–20.
- Binder, C., Haughton, E., & Van Eyk, D. (1990). Increasing endurance by building fluency: precision teaching attention span. *Teaching Exceptional Children*, 22(3), 24–27.
- Buyukozturk, S., Cakmak, E. K., Akgun, O. E., Karadeniz, S., & Demirel, F. (2010). *Bilimsel Arastirma Yontemleri*. Ankara, Turkey: Pegem Akademi.
- Clarke, P. J., Paul, S. A. S., Smith, G., Snowling, M. J., & Hulme, C. (2017). Reading intervention for poor readers at the transition to secondary school. *Scientific Studies of Reading*, 21(5), 408–427. doi: 10.1080/10888438.2017.1318393
- Cohen, L., Manion, L., & Morrison, K. (2000). Action research. *Research Methods in Education*, 5, 226–244.
- Dawes, E., Leitao, S., Claessen, M., & Nayton, M. (2015). A profile of working memory ability in poor readers. *Australian Psychological Society*, 50, 362–371. doi: 10.1016/j.jcomdis.2008.01.002
- Deeney, T. A. (2010). One-minute fluency measures: mixed messages in assessment and instruction. *The Reading Teacher*, 63(6), 440–450.
- Deno, S. L. (1985). Curriculum-based measurement: the emerging alternative. *Exceptional Children*, 52(3), 219–232.
- Fuchs, L. S., Fuchs, D., Hosp, M. K., & Jenkins, J. R. (2001). Oral reading fluency as an indicator of reading competence: a theoretical, empirical, and historical analysis. *Scientific Studies of Reading*, 5(3), 239–256.
- Gulla, A. N. (2012). Putting the “Shop” in reading workshop: building reading stamina in a ninth-grade literacy class in a Bronx vocational high school. *English Journal*, 101(5), 57–62.
- Hasbrouck, J., & Tindal, G. A. (2006). Oral reading fluency norms: a valuable assessment tool for reading teachers. *The Reading Teacher*, 59(7), 636–644.
- Hiebert, E. H. (2014, January). *The forgotten reading proficiency: stamina in silent reading*. TextProject Article Series. Santa Cruz, CA: TextProject.
- Hiebert, E. H., Wilson, K. M., & Trainin, G. (2010). Are students really reading in independent reading contexts? an examination of comprehension-based silent reading rate. In E. H. Hiebert & D. Ray Reutzel (Eds.), *Revisiting silent reading: new directions for teachers and researchers* (pp. 151–167). Newark, DE: IRA.
- Jenkins, J. R., Fuchs, L. S., Van Den Broek, P., Espin, C., & Deno, S. L. (2003). Sources of individual differences in reading comprehension and reading fluency. *Journal of Educational Psychology*, 95(4), 719.

- Johnson, H., Freedman, L., & Thomas, K. F. (2007). *Building reading confidence in adolescents: key elements that enhance proficiency*. Thousand Oaks, CA: Corwin Press.
- Johnson, K. R., & Layng, T. J. (1992). Breaking the structuralist barrier: literacy and numeracy with fluency. *American Psychologist*, 47(11), 1475.
- Kim, C., Carr, J., Templeton, A., & Bird, S. (2001). Effects of fluency building on performance over “long” durations and in the presence of a distracting social stimulus. *Journal of Precision Teaching and Celeration*, 17(2), 7–26.
- Kubina, J., Richard, M., & Wolfe, P. (2005). Potential applications of behavioral fluency for students with autism. *Exceptionality*, 13(1), 35–44.
- Mahapatra, S. (2016). Planning behaviour in good and poor readers. *Journal of Education and Practice*, 7(4), 1–5.
- McDowell, C., & Keenan, M. (2001). Developing fluency and endurance in a child diagnosed with attention deficit hyperactivity disorder. *Journal of Applied Behavior Analysis*, 34(3), 345–348.
- McGill-Franzen, A., & Zeig, J. L. (2015). Drawing to learn: visual support for developing reading, writing, and concepts for children at risk. In *Handbook of research on teaching literacy through the communicative and visual arts, Volume II. A Project of the International Reading Association*, 399.
- Morgan, P. L., & Fuchs, D. (2007). Is there a bidirectional relationship between children's reading skills and reading motivation? *Exceptional Children*, 73(2), 165–183.
- Morgan, P. L., Fuchs, D., Compton, D. L., Cordray, D. S., & Fuchs, L. S. (2008). Does early reading failure decrease children's reading motivation? *Journal of Learning Disabilities*, 41(5), 387–404.
- Pikulski, J. J., & Chard, D. J. (2005). Fluency: bridge between decoding and reading comprehension. *The Reading Teacher*, 58(6), 510–519.
- Pohlert, T. (2016). PMCMR: calculate pairwise multiple comparisons of mean rank sums (Version 4.1).
- Rasinski, T. V. (2006). Reading fluency instruction: moving beyond accuracy, automaticity, and prosody. *The Reading Teacher*, 59(7), 704–706.
- Rasinski, T. V. (2010). *The fluent reader: oral & silent reading strategies for building fluency, word recognition & comprehension*. New York, NY: Scholastic.
- Rasinski, T. V., Padak, N. D., McKeon, C. A., Wilfong, L. G., Friedauer, J. A. & Heim, P. (2005). Is reading fluency a key for successful high school reading? *Journal of Adolescent & Adult Literacy*, 49(1), 22–27.
- Rasinski, T. V., Rikli, A., & Johnston, S. (2009). Reading fluency: more than automaticity? more than a concern for the primary grades? *Literacy Research and Instruction*, 48(4), 350–361.
- Shaul, S., Arzouan, Y., & Goldstein, A. (2012). Brain activity while reading words and pseudo-words: a comparison between dyslexic and fluent readers. *International Journal of Psychophysiology*, 84, 270–276.
- Snow, C. E. (2013). Cold versus warm close reading: building students' stamina for struggling with text. *Reading Today*, 30(6), 18–19.
- Stanovich, K. E. (1980). Toward an interactive-compensatory model of individual differences in the development of reading fluency. *Reading Research Quarterly*, 16, 32–71.
- Stanovich, K. E. (1986). Matthew effects in reading: some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly*, 22, 360–407.
- Visser, T.A.W. (2014). Evidence for deficits in the temporal attention span of poor readers. *PLoS One*, 9(3), e91278. doi: 10.1371/journal.pone.0091278