

WWJMRD 2016; 2(1): 6-11
www.wwjmr.com
e-ISSN: 2454-6615

Kalli P. Heric
Department of Special
Education Gonzaga University,
Washington, United States

T. F. McLaughlin
Department of Special
Education Gonzaga University,
Washington, United States

K. Mark Derby
Department of Special
Education Gonzaga University,
Washington, United States

Kimberly P. Weber
Department of Special
Education Gonzaga University,
Washington, United States

Mary Everson
Spokane Public Schools,
Washington, United States

Correspondence:
T. F. McLaughlin
Department of Special
Education Gonzaga
University, Washington,
United States

The delayed effects of repeated reading and direct instruction flashcards for a 10-year-old elementary school student with learning disabilities

Kalli P. Heric, T.F. McLaughlin, K. Mark Derby, Kimberly P. Weber, Mary Everson

Abstract

The purpose of the present research was to evaluate repeated reading and Direct Instruction (DI) flashcards. My participant was a fifth grade male student diagnosed with learning disabilities. He received special education services for reading, written communication and math. The dependent variable was the number of correct words read orally per minute. A multiple baseline design across three reading passages was employed. The overall results indicated that repeated reading with DI flashcards increased the participants reading fluency. The outcomes replicated previous research evaluating repeated reading and DI flashcards.

Keywords: Oral Reading, Number Correct, Fluency, Passage Reading, Direct Instruction Flashcards

Introduction

Students with learning disabilities often struggle with reading face challenges in all other academic areas (Heward, 2013). Reading is an essential skill needed to be successful in the school and social environment. They can face issues such as chronic under employment (Lloyd, 1978). Reading instruction is designed to teach two elements of reading: mechanics and comprehension. Reading fluency increases the student's ability to comprehend what they read.

Fluency is the ability to read quickly and accurately (Rathvon, 2008). The skill is fundamental to master reading (Chard, Vaughn, & Tyler, 2002). Reading comprehension is a direct effect of achieving reading fluency. Fluency is necessary for this skill because a student is able to concentrate on the meaning of the material once the student is able to read quickly and accurately. Explicit reading interventions are necessary in increasing a student's reading abilities. Three strategies that have been used successfully with special need's students, as well as students without special needs, are repeated or assisted reading and *Read Naturally*® (Sweeney, Omness, Janusz, & Cooper, 1992) use of Direct Instruction materials (Engelmann & Carnine, 1982; Erickson, McLaughlin, Derby, Fuehrer, 2015; & Johnson, Luiten, Derby, McLaughlin, Weber, & Johnson, 2001; Marchand-Martella, Slocum, Martella, 2004; Swanson et al., 1998), and using flashcards to reduce errors and increase correct academic responding (Casey, McLaughlin, Weber, & Everson, 2003; LeBrun, Jones, Neyman, McLaughlin, & Schuler, 2014; Stone, Weber, & McLaughlin, 2002).

The use of a Direct Instruction (DI) flashcard procedure has been found to have substantial effects on students with learning disabilities performance in basic skills, including reading (Gersten & Keating, 1987; Lapke & McLaughlin, 2015; Swanson et al., 1998; Thomas, McLaughlin, & Derby, 2015). The DI flashcard procedure can be used to increase reading accuracy and simultaneously support the increase of reading fluency. DI flashcards also employs the use of an error correction procedure. Immediate error correction is an important component of DI flashcards and direct instruction in general (Marchand-Martella et al., 2004). Error correction has been shown to be a data-based and effective strategy to teach of variety of skills, across various populations (Marchand-Martella et al., 2004; Silbert, Carnine, & Stein, 1981). When error correction is employed with DI flashcards, the teacher models the correct response to the flashcard, next, the student and teacher carry this out together. Next, the student must independently provide the correct answer to the error card.

The error card is placed two to four cards back in the stack, so it can be presented quickly after an error has been corrected (Brasch, Williams, & McLaughlin 2008; Glover, McLaughlin, Derby, & Gower, 2010; Hayter, Scott, McLaughlin, & Weber, 2007; Ruwe, McLaughlin, Derby, & Johnson, 2011; Travis, McLaughlin, Derby, Dolliver, & Carosella, 2012). Overall, the use of DI flashcards has been found to be a successful method for teaching academic skills to elementary, middle, and high school students with intellectual disabilities, elementary students with learning disabilities or intellectual disabilities (Hayter et al., 2007; Green et al., 2010; Romjue et al., 2011; Ruwe et al., 2011). A purpose of this study was to determine and replicate the effectiveness of the effects of these procedures on reading fluency with an elementary school student with learning disabilities. A second purpose was to provide an additional replication regarding the efficacy of DI flashcards as well as repeated or assisted reading with an elementary school student (Jasny, Chin, Chong, & Vignieri, 2011).

Method

Participant and Setting

The participant was a 10-year-old elementary school fourth grade student with a specific learning disability. He was receiving special instruction in the resource room of his urban elementary school in reading, writing, and math. Based on the results of the *Woodcock-Johnson Test of Achievement* it was found that the participant's reading, writing and math fluency were all at a mid-second grade level (Woodcock, McGrew, & Mather, 2007). When compared to others at his age level, the participant's ability to apply academic skills is within the low range. According to these scores, he meets the qualification to be diagnosed with a specific learning disability in reading, writing, and math.

The setting for this project was a small urban elementary school located in a large public school district in the Pacific Northwest. The study took place at a table in the back of the school's resource room. During this time, there were four other students in the room, along with two teachers. Each session lasted about 20-30 minutes and was held three to five days a week depending on the daily schedule in the resource and general education classrooms. The sessions occurred at the same time every day in the afternoon. A wide range of research has been carried out over time in this specific resource room classroom (Erbey, McLaughlin, Derby, & Everson, 2012; Everson, M., & McLaughlin, 1996; Fjortoft, McLaughlin, Derby, Everson, & Johnson, 2014; Hyde, McLaughlin, Derby, & Everson, 2009; Lund, McLaughlin, Derby, & Everson, 2012; Mann, McLaughlin, Williams, Derby, & Everson, 2012; Pfaff, McLaughlin, Neyman, Everson, 2013; Volwiler, McLaughlin, Derby & Everson, 2014).

Materials

Three passages ranging from a second-grade to a fourth-grade level were used from the *Journey's Cold Reads* books for the study of reading fluency (Houghton Mifflin Harcourt, 2014). Index cards containing difficult words and phrases from the passages were used for the Direct Instruction procedure and error correction drills. A stopwatch on a phone was used to time the participant's reading of the selected passages.

Dependent Variables and Measurement

The dependent variable for reading fluency was the number of words read per minute by the participant. To measure reading fluency, the participant was instructed to read the passage after they reviewed the words and phrases on the DI flashcards. The reading was timed. Words per minute were determined by dividing the number of seconds needed to read the passage by the total number of words read. This number was then divided by 60 and rounded to the nearest tenth of a minute.

Experimental Design

A multiple baseline single subject design (Kazdin, 2011; McLaughlin, 1983) was used to evaluate the effectiveness of the DI flashcards and repeated reading fluency. Each new passage was read every session in baseline.

Baseline: During baseline, the participant would read the passage selected from the *Journey's* cold reads book. While the researcher was timing the reading, the errors the student made were being recorded. The participant was not provided with any feedback. Once the participant had read through the passage, the researcher made DI Flashcards containing ten words and phrases that were challenging to the participant, which was noted by the researcher during baseline. The participant then began the DI flashcard procedure. Baseline was being recorded for the other two passages while the researcher implemented the intervention on the first passage and once the researcher began the intervention on the second passage, maintenance was being recorded for the first passage while baseline was still being recorded for the third passage.

Repeated readings + DI flashcard procedure: Repeated readings were used as an independent variable for reading fluency. The participant would read the same passage each session until his reading fluency measured 80 wpm or higher for three sessions in a row. The DI Flashcard procedure was an additional independent variable for reading fluency. A flashcard with a word or phrase from the passage was presented to the participant. If the word was read correctly, the card was moved to the back of the deck. If the word was read incorrectly, the correct answer was given to the participant. The participant would then be prompted by "what word?" to repeat the word read correctly by the researcher. The card would then be place a few cards back from the front of the deck. This would insure that missed words would be presented more frequently. Thus, with the combination of repeated readings and the DI flashcard procedure the participant was working on both the accuracy and fluency of reading the passage.

Reliability of Measurement

Interobserver agreement data was collected for all 14 sessions. Each of the sessions was audio recorded on the researcher's phone. The observers would listen to the recording and time the participant's reading of the passage. The observer would then divide the number of seconds it took the participant to read the passage by the total number of words read. Agreement for the participant's words read per minute during each session was 100%.

Results

Our data indicated improvement in oral reading fluency across all passages with the use of repeated readings plus

DI flashcards. During baseline for the first passage “Our Moon,” the participant was reading an average of 71 wpm (range 60-80 wpm). After repeated readings plus DI flashcards, the participant increased to an average rate of 78.5wpm (range 59 to 85 wpm). During maintenance, the participant increased to an average of 138 wpm, almost double his average wpm during baseline. During baseline for the second story, “Land of the Volcanoes,” the participant was reading an average of 66.4 wpm (range 43 to 90 wpm). After the implementation of repeated readings

and DI flashcards, the reading rate increased to an average of 100.5 wpm (range 94 to 127 wpm). The participant increased to an average of 124.3wpm (range 110 to 137 wpm) during maintenance. For the third and final passage “In the Rain Forest,” the participant read at a rate of 84.1 wpm (range 44 to 124) during baseline. During the repeated readings and DI flashcard intervention the participant increased to an average rate of 119.6 wpm (range 111 to 129 wpm).

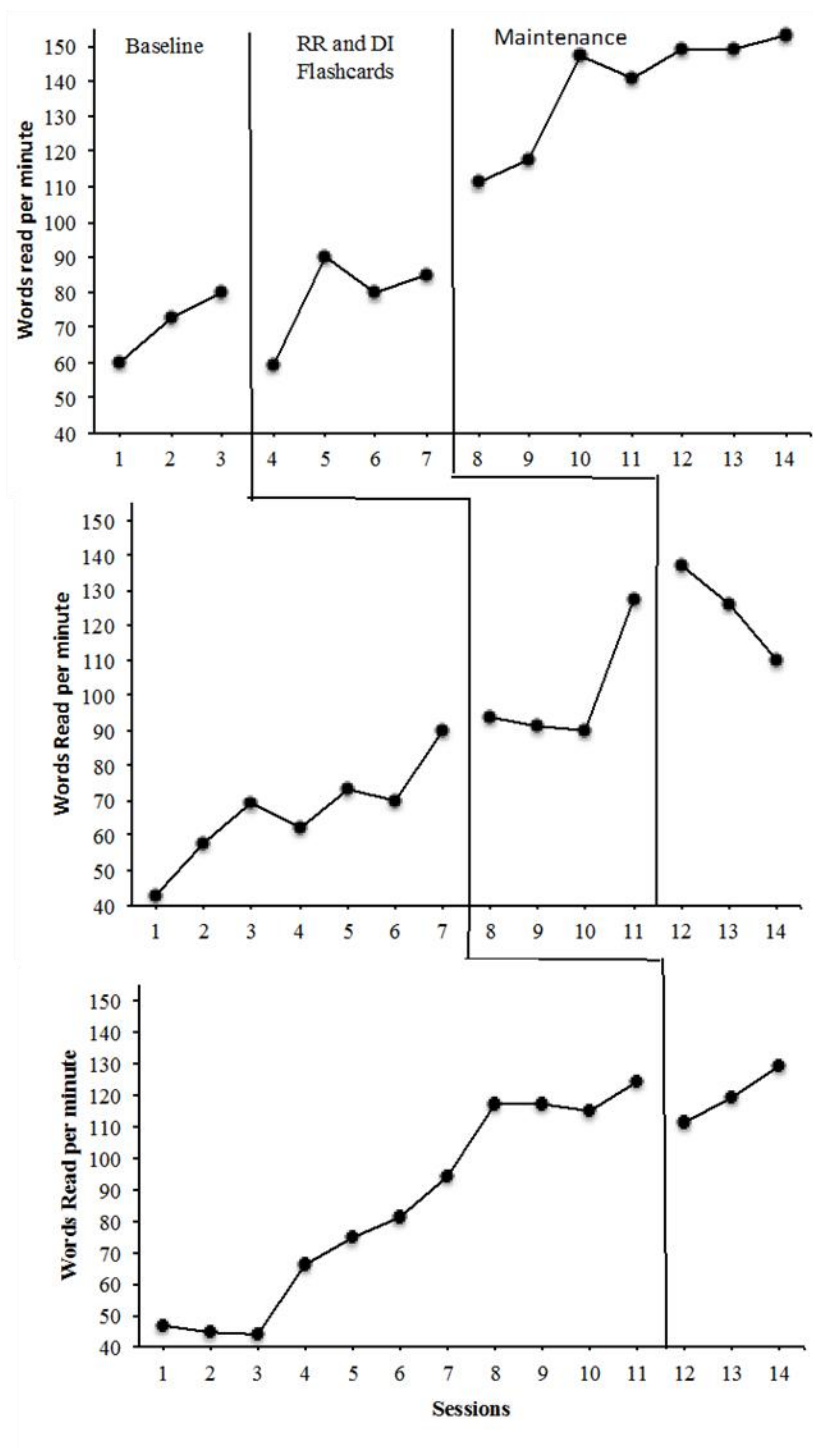


Fig 1: The effects of repeated reading and DI flashcard procedure with a 10 year old student with learning disabilities to increase reading fluency

Discussion

The combination of the DI flashcard procedure with repeated reading was easy to implement in the classroom.

The intervention was practical in terms of time, money, and effort. If a teacher or Instructional Assistant (IA) were to implement this procedure, it would be very easy. The

repeated readings and DI flashcard procedure were successful in increasing the participant's reading fluency rate. The participant enjoyed the program and was highly motivated by the DI flashcard procedure. By giving the participant instant feedback and specific praise when he read a word correctly, the participant was engaged and rewarded by the program. The participant began to feel more confident in his reading abilities as he was reading the passages faster the more times he read them and was accurately reading the words from the DI flashcards within the passages.

The present outcomes replicate much of our previous research employing both repeated reading and flashcards as well as that of others (Herberg et al., 2012; Sweeney et al., 1991; Volwiler et al., 2014). The procedure was free to cost to the researcher and would be very inexpensive for any classroom teacher to implement. The only materials necessary were three passages from the *Journey's Cold Reads* book and hand-made notecards with the words from the passage written on them. A reward was given to the student upon completion of the intervention. The participant was taught how to make his own DI flashcards to continue implementing the strategy at home or in the classroom. The participant was also given the three passages he had been reading throughout the intervention. He shared with the researcher that he was reading them to his mom at home. The whole procedure was carried out without any major problems or setbacks.

Overall, the participant was very cooperative throughout the intervention. At times the participant became frustrated with having to read the passage so many times. However, as he became more fluent and accurate when reading the passages, he was more willing to read. The resource room and the participant's general education teacher were very pleased with the results of the intervention. They were able to see a positive change in the student's ability to read more fluently. Additionally, they saw an increase in the student's confidence when reading in small groups in the resource room and when reading within the general education setting. The one-on-one time the researcher was able to spend with the student was beneficial to the student as he received individualized, focused instruction.

There were limitations in the present case report. First, the improvement in outcomes for Set 3 in baseline may indicate that other variables were affecting our outcomes (Kazdin, 2011). The data collection period was short due to the student teaching schedule of the first author.

The maintenance of treatment effects for Set 1 indicated an increasing trend in student performance after DI flashcards were not being employed. For Set 2, there was a decreasing trend for our participant. Also, we were unable to implement a maintenance procedure for the passage in Set 3. These muddle the efficacy of DI flashcards producing generalization of time, and clearly these outcomes need further study and analysis. These outcomes were also in conflict some of our previous research with DI flashcards (Cravalho, McLaughlin, Derby, & Waco, 2014; Mangundayo, McLaughlin, Neyman, Williams, & Toone, 2013; Skarr, McLaughlin, Derby, Meade, & Williams, 2012). This also supports the notion that generalization of treatment effects needs to be programmed or developed as part of any intervention procedure (McLaughlin, 1976; Stokes & Baer, 1977).

The combined intervention of the DI flashcard procedure

and repeated readings was of importance for our participant. Before, the student was self-conscious about reading in the classroom and even in small groups with peers. Based on the subjective evaluation by the classroom staff, the participant's confidence increased as he began to read more fluently and accurately as the intervention was being implemented. Positive affirmations and praise by the classroom staff appeared to have motivated the student and increased his confidence with reading. The participant was eager to improve his reading skills and worked diligently each session. However, data should have been collected on this issue via questionnaires or counting such statements made by our participant.

Acknowledgements

This research was completed in partial fulfillment for the requirements for an Endorsement in Special Education from the State of Washington and Gonzaga University. The authors would like to thank the participant for his cooperation and desire for learning. Portions of these data were also collected as part of the edTPA. This assessment must be passed for an educational candidate will be certified in the state of Washington.

References

1. Brasch, T. L., Williams, R. L., & McLaughlin, T. F. (2008). The effects of a direct instruction flashcard system on multiplication fact mastery by two high school students with ADHD and ODD. *Child & Family Behavior Therapy*, 30(1), 51-59.
2. Casey, J., McLaughlin, T. F., Weber, K. P., & Everson, M. (2003). The effects of five minute practice, unlimited practice, with SAFMED cards on correct and error rate for two elementary school children with learning disabilities. *International Journal of Special Education*, 18(1), 66-72. Retrieved from: <http://www.internationaljournalofspecialeducation.com/issues.cfm>
3. Chard, D., Vaughn, S., & Tyler, B. J. (2002). A synthesis of research on effective interventions for building reading fluency with elementary students with learning disabilities. *Journal of Learning Disabilities* 36, 386-406.
4. Cravalho, C. J., McLaughlin, T. F., Derby, K. M., & Waco, T. (2014). The effects of direct instruction flashcards on math performance with measures of generalization across elementary students with learning disabilities and autism spectrum disorder. *International Journal of Basic and Applied Science*, 2(4), 16-31. Retrieved from: <http://www.insikapub.com/>
5. Dowd, M., Vickers, D., Rosario, J., Peterson-Peck, S., & McLaughlin, T. F. (2013). A component analysis of assisted reading with a third grade student with a reading deficit in a psychiatric hospital setting. *International Journal of Basic and Applied Science*, 1(3), 530-549. Retrieved from: <http://www.insikapub.com/>
6. Engelmann, S., & Carnine, D. (1982). *Theory of instruction*. New York, NY: Irvington.
7. Erbey, R., McLaughlin, T. F., Derby, K. M., & Everson, M. (2011). The effects of using flashcards with reading racetrack to teach letter sounds, sight words, and math facts to elementary students with learning disabilities. *International Electronic Journal*

- of *Elementary Education*, 3(3), 213-226. Retrieved from: <http://www.iejee.com/index.html>
8. Erickson, J., McLaughlin, T. F., Derby, K. M., & Fuehrer, K. (2015). An evaluation of *Read Naturally*® on increasing reading fluency for three primary students with learning disabilities. *Educational Research Quarterly*, 39(1) 3-21.
 9. Everson, M., & McLaughlin, T. F. (1996). Effects of self-monitoring for students with learning disabilities. *International Journal of Special Education*, 12(1), 85-97.
 10. Fjortoft, A., McLaughlin, T. F., Derby, K. M., Everson, M., & Johnson, K. (2014). The effects of two direct instruction teaching procedures to teach basic skills to two students with disabilities. *Multidisciplinary Journal of Education Psychology*, 4(2), 1-32. Retrieved from: <http://dx.doi.org/10.447/remie.2014.09>
 11. Gersten R., & Keating, T. (1987). Long term benefits from direct instruction. *Educational Leadership*, 44(6), 28-31.
 12. Gilbert, L., Williams, R. L., & McLaughlin, T. F. (1996). Use of assisted reading to increase correct reading rates and decrease errors of students with learning disabilities. *Journal of Applied Behavior Analysis*, 29, 255-257.
 13. Green, C., McLaughlin, T. F., Derby, K. M., & Lee, K. (2010). Using reading racetracks and flashcards to teach sight words to students with disabilities: Effects for acquisition and response maintenance. *Journal of Educational Research: JER*, 13(2), 84-98. Retrieved from: http://www.iub.edu.pk/jer/previous_issue.html
 14. Hayter, S., Scott, E., McLaughlin, T. F., & Weber, K. P. (2007). The use of a modified direct instruction flashcard system with two high school students with developmental disabilities. *Journal of Physical and Developmental Disabilities*, 19, 409-415.
 15. Herberg, J., McLaughlin, T. F., Derby, K. P., & Weber, K. P. (2012). The effects of repeated readings and flashcard error drill the reading accuracy and fluency with rural middle school student with learning disabilities. *Academic Research International*, 2(3), 388-393. Retrieved from: <http://174.36.46.112/~savaporg/journals/issue.html>
 16. Heward, W. L. (2013). *Exceptional children: An introduction to special education* (10th ed.). Upper Saddle River, NJ: Prentice-Hall/Pearson
 17. Houghton Mifflin Harcourt (2014). *Journeys cold reads grade 3*. Boston, MA. Author.
 18. Hyde, C. A., McLaughlin, T. F., & Everson, M. (2009). The effects of reading racetracks on the sight word fluency and acquisition for two elementary students with disabilities: A further replication and analysis. *The Open Social Science Journal*, 2, 1-4. Retrieved from: <http://www.benthamsience.com/open/tosscij/>
 19. Jasný, B. R., Chin, G., Chong, L., & Vignieri, S. (2011). Data replication & reproducibility. Again, and again, and againIntroduction. *Science*, 334, 1225.
 20. Johnson, J. J., Luiten, L. M., K. M Derby, T. F. McLaughlin, K. P. Weber, & Johnson, M. (2001). Evaluating the effectiveness of *Teach Your Child to Read in 100 Easy Lessons* using graded word lists. *Proven Practice: Prevention and Remediation Solutions for Schools*, 3, 68-74.
 21. Kaufman, L., McLaughlin, T. F., Derby, K. M., & Waco, T. (2011). Employing reading racetracks and DI flashcards with and without cover, copy, and compare and rewards to teach of sight words to three students with learning disabilities in reading. *Educational Research Quarterly*, 34, 24-44.
 22. Kazdin, A. E. (2011). *Single case research designs: Methods for clinical and applied settings* (2nd. ed.). New York, NY: Oxford University Press.
 23. Lapke, M., & McLaughlin, T. F. (in press). The effects of direct instruction flashcards to increase number recognition for a five-year-old general education ell student. *World Wide Journal of Multidisciplinary Research and Development*, 1(6), 6-11. Retrieved from: <http://wwjmr.com/vol%201/issue%206/issue%206.html>
 24. LeBrun, C., Jones, S., Neyman, J., McLaughlin, T. F., & Schuler, H. (2014). The effects of a modified direct instruction flashcard system on a 14 year-old-student with learning behavioral issues enrolled in a behavior intervention classroom. *International Journal of Undergraduate Education and Creative Activities*, 6, Article 5, 1-9. Retrieved from: <http://commons.pacificu.edu/ijurca/>
 25. Lloyd, D. N. (1978). Prediction of school failure from third grade data. *Educational and Psychological Measurement*, 38, 1193-1200.
 26. Lund, K., McLaughlin, T. F., Neyman, J., & Everson, M. (2012). The effects of DI flashcards and math racetrack on multiplication facts for two elementary students with learning disabilities. *Journal of Special Education Apprenticeship*, 1(1) 1-15. Retrieved from: <http://josea.info/index.php?page=vol1no1>.
 27. Mangundayao, J., McLaughlin, T. F., Williams, R. L., & Toone, E. (2013). An evaluation of a direct instructions flashcard system on the acquisition and generalization of numerals, shapes, and colors for preschool-aged students with developmental delays. *Journal of Developmental and Physical Disabilities*, 26, 461-473.
 28. Mann, Z., McLaughlin, T. F., Williams, R. L., Derby, K. M., & Everson, M. (2012). The effects of direct instruction flashcards and rewards with math facts at school and in the home: acquisition and maintenance. *Journal of Special Education Apprenticeship*, 1(2). Retrieved from: <http://josea.info/index.php?page=archives>.
 29. Marchand-Martella, N., Slocum, T., & Martella, R. (2004). An introduction to direct instruction. Boston, MA: Allyn & Bacon.
 30. McLaughlin, T. F. (1983). An examination and evaluation of single subject designs used in behavior analysis research in school settings. *Educational Research Quarterly*, 7, 35-42.
 31. McLaughlin, T. F., & Connis, R. T. (1991). Generalization and analysis of behavior: An analysis. *Corrective and Social Psychiatry*, 37(4), 58-63.
 32. Moyer, S. (1982). Repeated reading. *Journal of Learning Disabilities*, 15, 619-623.
 33. Pfaff, E., McLaughlin, T. F., Neyman, J., & Everson, M. (2013). The effects of direct instruction flashcards with math racetrack with addition facts for an

- elementary school student with ADHD. *International Journal of Basic and Applied Science*, 2(1), 124-130. Retrieved from: <http://www.insikapub.com/>
34. Rasinski, T. (2012). Why reading fluency should be hot! *The Reading Teacher*, 65, 516-522.
35. Rathvon, N. (2008). *Effective school interventions: Evidenced-based strategies for improving student outcomes* (2nd. ed.). New York, NY: The Guilford Press.
36. Romjue, H., McLaughlin, T. F., & Derby, K. M. (2011). The effects of reading racetracks for teaching sight words. *Academic Research International*, 1(2), 134-146. Retrieved from: <http://174.36.46.112/~savaporg/journals/issue.html>
37. Ruwe, K., McLaughlin, T. F., Derby, K. M., & Johnson, K. (2011). The multiple effects of direct instruction flashcards on sight word acquisition, passage reading, and errors for three middle school students with intellectual disabilities. *Journal of Developmental and Physical Disabilities*, 23, 241-255.
38. Samuels, S. J. (1979). The method of repeated readings. *Reading Teacher*, 32, 376-381
39. Sherman, B., McLaughlin, T. F., Derby, K. M., & Johnson, G. (2009). The effects of assisted reading using the reading attainment system on time to completion and comprehension for a middle school student with learning disabilities. *Journal of Educational Research: JER*, 12(2), 86-96. Retrieved from: http://www.iub.edu.pk/jer/previous_issue.html
40. Silbert, J., Carmine, D. W., & Stein, M. (1981). *Direct instruction mathematics*. Columbus, OH: Charles E. Merrill.
41. Skarr, A., McLaughlin, T. F., Derby, K. M., Meade, K., & Williams, R. L. (2012). A comparison of direct instruction flashcards and cover, copy, compare to teach spelling to elementary school students. *Academic Research International*, 2(2), 247-263. Retrieved from: <http://174.36.46.112/~savaporg/journals/issue.html>
42. Sweeney, W. J., Omness, C. K., Janusz, K. L., & Cooper, J. O. (1992). Adult literacy and precision teaching: Repeated readings and see/ cover/ write practice to improve reading and spelling. *Journal of Precision Teaching*, 9(1), 6-11.
43. Stone, S., McLaughlin, T. F., & Weber, K. P. (2002). The use and evaluation of copy, cover, and compare with rewards and a flash cards procedure with rewards on division math facts mastery with a fourth grade girl in a home setting. *International Journal of Special Education*, 17(2), 82-91. Retrieved from: <http://www.internationaljournalofspecialeducation.com>
44. Thomas, R., McLaughlin, T. F., & Derby, K. M. (2015). Employing direct instruction flashcards to teach academic skills to students with high incidence disabilities: a review. *International Journal of English and Education*, 4(4), 404-421. Retrieved from: http://www.ijee.org/current_issue
45. Travis, J., McLaughlin, T. F., Derby, K. M., Dolliver, P., & Carosella, M. (2012). The differential effects racetrack procedures for saying letter sounds with two first-grade students with disabilities. *Academic Research International*, 2(1), 372-382. Retrieved from: <http://174.36.46.112/~savaporg/journals/issue.html>
46. Volwiler, S., McLaughlin, T. F., Neyman, J. & Everson, M. (2014, April). *The effects of repeated reading and SAFMED cards with a 10-year-old elementary school student with learning disabilities*. Poster presented at the 10th Annual Spokane Intercollegiate Research Conference, Spokane, WA.
47. Woodcock, R. W., McGrew, W. S., & Mather, N. (2008). *Woodcock Johnson Tests of Achievement (WJ III)*. Rolling Meadows, IL: Riverside Publishing Company.