

## The Easy Way to Reform Education

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Rec date: May 06, 2015, Acc date: May 21, 2015, Pub date: May 25, 2015

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### Introduction

Historically, many authorities on the subject of literacy instruction have stressed the importance of adequate practice in printing alphabet letters. Marcus Quintinianus (a first-century Roman rhetorician) has been quoted as writing, that with regard to becoming literate, "Too slow a hand impedes the mind" [1].

In 1912, Maria Montessori wrote, in effect, that teaching young children to print letters is easy, that it is easy to teach children to read after they have practiced printing alphabet letters, but that it is difficult to teach children to read if they have not practiced writing them.

Marilyn Jager Adams noted that prior to the onset of the twentieth century the "spelling drill" was the principal means of inducing literacy for several millennia [1].

More recently, several published authors have called attention to the dearth of research on the possible link between printing practice and the acquisition of literacy in young children, but objective studies of the relationship are still lacking [2-4].

This author has made the assumption that emphasis on practicing printing alphabet letters increases the fluency with which children can print them. It was therefore decided to examine the relationship between fluency at printing the alphabet in preliterate children, and their subsequent success in learning to read well.

This method suffers the disadvantage of requiring children to be able to recite the Alphabet in order to print the different letters both legibly and at a rate sufficient to demonstrate that they have practiced enough to have become "printing fluent." However, it was considered superior to other methods of assessing fluency in printing alphabet letters in young children. Such children have limited attention spans. It was therefore decided to measure the number of alphabet letters children write during a timed twenty-second interval, and multiply that number by three in order to obtain a "letters-per-minute," or "LPM," value for each child.

During the early months of 2002, five first-grade teachers were enlisted from teacher-related Internet list serves, to do a cooperative study of the relationship between fluency in writing the alphabet, and concomitant reading skill.

The printing rate of each child was listed by teachers submitting classroom data, and each was matched by the subjective teacher assessment of the child's relative reading skill. The assessments were A, B, C, D and E, to designate "excellent", "above average", "average", "below average" and "possible reading problem", respectively.

A total of 94 children in five first-grade classrooms were studied. When the letter grades were converted to numbers (4, 3, 2, 1, 0), "average relative reading ability" could be determined for subgroups of students, defined as printing at different rates.

Among the sixteen children who printed faster than 40 LPM, the average reading score was 3.6. Among the 33 children who printed from 30 to 39 LPM, the average was 2.9. For the 26 children writing at 20-29 LPM, it was 2.3. For the 21 children who wrote more slowly than 20 LPM, it was 1.6.

During this current school year, a number of kindergarten teachers have submitted series of similar studies on their classrooms to the k1writing listserv, accessible at [www.yahogroups.com](http://www.yahogroups.com). By the end of February 2004, a total of five teachers had submitted serial data on a total of 106 kindergarten students, including data for the month of February.

The relative reading skills of the kindergartners were ranked according to a three-level system: "reading better than grade level", "doing well at grade level" and "lagging behind expectations". In the opinions of their teachers, six children were already reading at second grade level or above.

Statistical analysis of the correlation again yielded similar results. Among the eighteen children who printed the alphabet faster than 40 LPM, 72% were "above grade level," and only one was "lagging." Among the eighteen children who wrote more slowly than 20 LPM, none was above grade level in reading skill, and half of them were "lagging" in this regard.

A tabulation of these findings is revealing. It is informative to look down the column of LPM figures for these 106 children, and observe the correlations. These data are presented in Table 1.

The correlation between reading skill and fluency at printing alphabet letters in Kindergarten and first-grade is readily apparent. This correlation was known to each of the experienced [kindergarten] teachers participating in this study even before the study was done. The experiment, then, was designed to answer the question as to whether this correlation is one of causation, or merely coincident with some other unidentified factor.

The kindergarten teachers involved have each been able to achieve a level of printing fluency that is considerably above what is generally achieved by American kindergarten students. The printing rates of their kindergarten children are comparable to the rates of the first-grade students in the original study, whose teachers had NOT been previously monitoring printing rate. If the cause of the correlation were in the opposite direction, and it is having learned to read which drives printing fluency, then one would expect the correlation to weaken in classrooms where printing fluency has been intentionally contrived. However, we here see the correlation has persisted intact.

This year, each of the kindergarten teachers has been making a dedicated effort to induce objectively measurable printing fluency in the students as the school year progresses. Each of the five kindergarten teachers has emphatically proclaimed that this practice is found to be immensely helpful in turning young children into readers.

A number of the classrooms have high percentages of poverty and minority children, and none of the children could read at the beginning of the kindergarten school year. It was found that printing fluency, which we arbitrarily defined as 40 LPM or faster, is achieved at different times by different children, and that such fluency is an excellent indicator of when children will learn to read, as well as indicating which children have become successful at reading at any particular point in time.

It was also observed that printing fluency gradually improves in almost all cases with continued practice writing the alphabet letters. Failure to cooperate during the time allocated by teachers for dedicated printing practice seems to be the main limiting factor in the development of printing skill.

None-the-less, our data suggest that fluency in writing the letters of the alphabet is a reasonable goal for all normal children by the end of first-grade.

But it appears that printing fluency does not at all correlate with reading ability much beyond the first-grade level. One teacher submitted data on 54 fourth-graders, demonstrating no difference at all in the median alphabet-printing rates between children who had been formally identified as reading below grade level, and the other students [5].

It is also apparent that printing skill is by no means a necessary prerequisite for literacy.

Many children learn to read before they are fluent at printing alphabet letters. On the other hand, virtually all children who lag in reading skill in K-1 are dysfluent printers. That this lack of skill is remediable through continued dedicated practice, extended over time, appears to be of fundamental importance.

If the attainment of fluent ability to print alphabet letters in the earliest grades generally assures early success in reading, this fact challenges some current theoretical conceptions regarding the nature of reading disabilities.

Our evidence suggests both that printing fluency confers the ability to name random letters more rapidly than 40 per minute [6], and that the ability to phonetically write words fluently, possible only after the attainment of fluency in printing letters, confers phonemic awareness.

Adams wrote, "It has been shown that the act of writing newly learned words results in a significant strengthening of their perceptual integrity in recognition. This is surely a factor underlying the documented advantages of programs that emphasize writing and spelling activities."

Montessori also considered practice writing alphabet letters to be crucial, and wrote, "We shall soon see that the child, on hearing the word, or on thinking of a word he already knows, will see, in his mind's eye, all the letters, necessary to compose the word, arrange themselves. He will reproduce this vision with a facility most surprising to us." [7].

And Ken Goodman in his book, *What's Whole About Whole Language*, wrote "Children learn the alphabetic principle through writing". And without understanding the alphabetic principle, literacy isn't possible.

While such rhetorical explanations of the value of writing practice have been seen as nebulous in the past, converging advances in the fields of pattern recognition by artificial intelligence and of the

cerebral physiology involved in visual pattern recognition and categorization may render them more plausible.

In 2012, Marilyn Jager Adams, the world's leading authority on early literacy instruction, published *ABC Foundations For Young Children*, in which she presented newly published proof that most American children finishing first grade still can't write and name all of the alphabet letters [8].

This is a preventable disgrace, and Dr Adams emailed me these comments: "It's hard to learn to read if you can't tell one letter from another", and "It's strange that now, over 3,000 years after the invention of the alphabet, we still don't know the best way to teach literacy".

The best predictor of reading success in rising first-graders is the ability to rapidly name randomly presented alphabet letters, and Rand Nelson, on his blog, has shown that the best way to learn to rapidly name alphabet letters is to learn to handwrite them fluently first [9].

And importantly, psychologist Rowe Young Kaple has now published her finding that most American children diagnosed as "learning disabled" actually suffer from a hereditary condition she calls Reverse Position Sensation (RPS) in which children previously considered "clumsy" feel a counter-clockwise motion of the hand as moving in the opposite direction. This often leads to difficulty learning to write (often called "dysgraphia" by teachers) unless the temporarily adopt a "remedial grip" of the pencil, by holding it between second and third fingers, forcing the palm to turn downward. (Many senior citizens are appalled that so many younger folks hold their writing implements in bizarre, abnormal positions).

It is emphasized that these studies are limited and preliminary, but their results underscore the pressing need to either confirm or disaffirm their apparent implications.

The author wishes to acknowledge the participation of the classroom teachers who did and submitted these comparison studies on their students. They are Libby Rhoden, Pasadena, Texas; Sue Fisher, Kailua Kona, Hawaii; Ann Vasconcellos, Homewood, Illinois; Helen Wilder, Middlesboro, Kentucky; Nancy Creech, Eastpointe, Michigan; Ruby Clayton, Indianapolis, Indiana; Alice A. Pickel, Phoenix, Arizona; Lori Jackson, Mission, South Dakota; Lalia Kerr, Nova Scotia; Jennifer Runkle, Ohio [10].

Kindergarten Students Printing Level in Letters Per Minute			
LPM rate:			
>40 LPM	30-39 LPM	20-29 LPM	< 20 LPM
78**	39** 33**	27** 24*	18*
72**	39** 33**	27** 24*	18*
66**	39** 33**	27** 24*	18*
60**	39** 33*	27** 24o	18*
60*	39** 33*	27** 24o	18*
57**	39** 33*	27** 24*	18*
54**	39* 33*	27* 21*	18 o
54**	39 o 33 o	27* 21*	15*
51**	36** 30**	27* 21*	15*

51**	36** 30**	27* 21*	15 o
48**	36** 30**	27* 21*	15 o
48**	36** 30**	27o 21*	15 o
48**	36** 30**	27o 21*	12*
48*	36* 30*	24** 21*	12 o
48*	36* 30*	24* 21*	12 o
42**	36* 30*	24* 21 o	6 o
42*	36 o 30*	24* 21 o	3 o
42 o	30*		3 o
30*			
In the opinion of respective classroom teachers: KEY: o lagging in reading skill *on level **above level in reading			

**Table 1:** Kindergarten students printing level in letters per minute (LPM).

## References

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2. Jager AM (1990) Beginning to Read: Thinking and Learning About Print, MIT Press 388.
3. Vernon S, Emilia F (1999) "Writing Development: A Neglected Variable in the Consideration of Phonological Awareness." Harvard Educational Review 69: 395-415.
4. Patrick G (2001) "Teaching Phonics: Letter-to-phoneme, Phoneme-to-letter, or Both?" Reading and Writing Quarterly 17: 291-306.
5. Data provided by Marianne Morin, Watkins Glen, New York.
6. Data on kindergarten classroom correlation between letter-naming and printing fluency provided by Sue Fisher, Hawaii.
7. Adams, op. cit., pp 230-231.
8. ABC Foundations For Young Children, introduction.
9. URL for the Nelson blog is: <http://peterson-handwriting.com/Blog/>.
10. See URL: <http://adderworld.ning.com/forum/topics/abstract-university-of-az>.