

Research into Early Reading Instruction and Luke Effects in the Development of Reading

Sebastian Suggate
Department of Psychology
University of Otago, NZ

Few doubt the importance of developing reading skills in modern society; however, tests of adult literacy suggest that many adults nationally and internationally do not read sufficiently well [1]. The often-advocated means to best address this problem is to start reading instruction early and intervene early when children fail to make satisfactory progress [e.g., 2, 3].

The argument for early reading instruction is based on a number of ideas, including that (a) child development is a quantitative process, (b) reading is skill-dependent, (b) the earlier children learn reading skills the more time they have to practice them, such that (c) when children fail to learn these skills, the result is a downward spiral of failure. This downward spiral of failure has been called the Matthew Effect [4], from the Gospel of Matthew, whereby the rich become richer and the poor become poorer such that:

“for unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken away even that which he hath” (Matthew 25:29).

To illustrate the danger of how the rich become richer, it has been estimated that a good middle school reader might read 10,000,000 words in a year, whereas a poor reader only about 100,000 [5].

There also exists two lines of evidence that are taken as near proof of the importance of learning to read early. The first—and very large—line of evidence links pre- and early-school performance on measures of reading skills (e.g., letter-knowledge, phonemic awareness, word reading) with later reading achievement. Second, reading and early-reading interventions targeting these skills exert improvement [e.g., 6]. However, as I have argued in other places [7, 8], these lines of evidence generally do not include sufficiently long-term data, and when they do, the associations between early literacy skills and later reading achievement weaken [9-11], or are superseded by language [12]. Instead of disputing the relative merits

of these lines of evidence, it is better to examine firsthand evidence comparing the reading achievement of children who began reading instruction either earlier or later.

International Studies

There appear to be two published quantitative international analyses of reading as a function of school entry age. Elley [13] analyzed data from the 1990-1991. International Association for the Evaluation of Educational Achievement (IEA) study, examining the reading performance of nine and 14-year olds across 32 countries. Using an index of social and economic development to adjust countries' reading performances, the mean school entry age of the top and bottom 10 performing countries was calculated. The countries with the highest adjusted reading performance at age nine began school nearly six months earlier on average.

However, Elley did not appear to replicate this analysis with the 14-year old children in the IEA study. Therefore, the comparison instead compared the achievement of nine year old children only—the children that started formal schooling at age seven had been reading for two years, whereas the children that started at age five had been reading for four years. To address this limitation, I re-analyzed data from the 2006 Programme for International Student Assessment (PISA), investigating 15-year olds' reading achievement across 55 countries [7]. After controlling for similar social and economic factors as Elley, it was found that there was no difference in reading achievement as a function of school entry age.

Preschool Research

Unfortunately, little published research exists specifically addressing the effect of preschool literacy instruction and long-term reading achievement. Some research has investigated academic achievement (e.g., reading and mathematics) from academically-focused preschools. Generally, long-term academic benefits are not found [14-18], particularly if the comparison is a preschool without an academic component [17]. In terms of the

effect of preschool programs (such as Head Start) for at-risk children, evidence for a long-term benefit specifically in reading skills is also inconclusive [15, 19].

Within-Language Studies

In 1970 the Northrhine-Westphalia cabinet (in Germany) commissioned a study to investigate the effect of moving forward the SEA from six to five years [20]. Data were collected from 25 typical kindergartens (preschool in US) and 25 pilot early schools (with an academic focus and earlier starting age). In the kindergartens emphasis was on play, social skills, daily-life activities, music and rhythm, and artwork. The early schools enrolled five-year-old children and provided academic instruction with reading and mathematics components. In the academic domains, the early school children out-performed the kindergarten children at school entry, but the differences were no longer evident by the second year of schooling [20].

Durkin [21] investigated the effects of a two-year pre-grade 1 explicit reading program on 37 four-year-old children in two classes, by comparing these to children beginning reading instruction in grade 1. During grades 1 and 2 the experimental group showed higher reading performance, but this advantage was no longer evident in grades 3 to 4, once intelligence quotients were controlled for.

Waldorf Schooling

Three studies have been conducted that capitalize on this contrast in experience with reading instruction for state and Waldorf students in NZ (where comparatively intensive reading instruction begins at age five). Turnbull [22] gathered data from school archives for children who had either: (a) only attended Waldorf schooling, or (b) began school in a state school but had later transferred into a Waldorf school. By the time the Waldorf-only children were aged 12-13 years, they were achieving at the mean of the national norms and by age 14, the Waldorf-only children exhibited a higher reading performance than those who initially began in the state school.

We conducted a cross-sectional study with 12-year old children attending either state ($n = 50$) or Waldorf schools ($n = 54$) [23]. Measures accounted for HLE, receptive vocabulary, parental education and income, economic status of the school community, and ethnicity. After controlling for these factors, the two samples were

performing similarly on measures of reading fluency, nonsense-word decoding, word reading, and reading comprehension.

Finally, we conducted the most psychometrically comprehensive and largest longitudinal study investigating school entry and reading in New Zealand with groups of children attending either state or Waldorf schools [24]. Participants ($n = 287$) were drawn from three cohorts in either their first, third, or fifth year of schooling and followed for two years. Measures accounted for vocabulary, the home literacy environment, reading-self concept, parental education and income, community economic status, second language proficiency, and ethnicity. Reading and pre-reading growth was followed over time and measures of comprehension, oral reading, phonemic awareness, and word reading were given. According to the analyses and computer modeling, the reading trajectories for the two groups converged around age 10, with the groups reading similarly thereafter.

Across all of the reviewed international, within-language, and preschool research, the evidence converges to suggest that, by the beginning of the teenage years, there is no advantage in long-term reading performance for an earlier beginning of formal reading instruction. Unfortunately, research regarding disadvantaged samples is lacking; however, internationally there was evidence to suggest a *lower* variance in reading performance for later starting countries [7] – indicating fewer disadvantaged readers. For specifically disadvantaged samples, Head Start research with a literacy skill focus has yet to demonstrate a *long-term* advantage in reading [15] using an appropriate comparison group.

Luke Effects in Reading

To understand and incorporate these findings, I have proposed a hexamorous (i.e., having six-parts) conception of reading development leading to a Luke Effect [8]. Specifically: (a) reading depends on the development of language, (b) reading depends on the development of neurobiology, thinking, social and learning skills (i.e., background factors), (c) reading depends on the development of text-reading skills, (d) reading is constrained by language and background factor development and reading skills, (e) reading skills develop in brief windows whereas language and background factors take longer to develop, and (f) decoding skills,

all other factors held constant, develop more quickly for older children.

These six factors combine to give rise to the Luke Effect [8], where reading develops more quickly for older than younger children. Moreover, earlier readers experience advantageous development only in *text-reading* skills which do not improve language or background factor development, because of the simple texts read at that age. Therefore, the later readers can use their superior background factor and language development to more readily acquire the text reading skills. Finally, language and background factors (such as knowledge, motivation, thinking capacity) are what drives reading for most people, because—except in the case of dyslexia—these determine ability at understanding the content of text.

Together this can be described by the *Parable of the Sower in the Gospel of Luke*:

A farmer went out to sow his seed. As he was scattering the seed, some fell along the path; it was trampled on, and the birds of the air ate it up. Some fell on rock, and when it came up, the plants withered because they had no moisture. Other seed fell among thorns, which grew up with it and choked the plants. Still other seed fell on good soil. It came up and yielded a crop, a hundred times more than was sown (Luke, 8: 5-8).

Accordingly, the early years can be seen as a time in which the 'soil' needs to be adequately prepared. This preparation is, I would argue, likely be better if it focused on language, imagination, play and physical activity, rather than skills such as alphabet knowledge and text reading¹.

References

1. Riley, R., *Improving the reading and writing skills of America's students. Learning Disability Quarterly*, 1996. 19(67-69).
2. Aram, D. and S. Biron, *Joint storybook reading*

and joint writing interventions among low SES preschoolers: differential contributions to early literacy. Early Childhood Research Quarterly, 2004. 19: p. 588-610.

3. Good, R.H., D.C. Simmons, and S.B. Smith, *Effective academic interventions in the United States: Evaluating and enhancing the acquisition of early reading skills. School Psychology Review*, 1998. 27: p. 45-56.
4. Stanovich, K.E., *Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. Reading Research Quarterly*, 1986. 21: p. 360-407.
5. Nagy, W.E. and R.C. Anderson, *How many words are there in printed school English? Reading Research Quarterly*, 1984. 19: p. 304-330.
6. National Reading Panel, ed. *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. 2000, National Institute of Child Health and Development: Bethesda, MD.
7. Suggate, S.P., *School entry age and reading achievement in the 2006 Programme for International Student Assessment (PISA). International Journal of Educational Research*, 2009, 48, p. 151-161.
8. Suggate, S.P., *Luke Effects in the Development of Reading and Why Earlier May Not Always Equal Better. Manuscript submitted for publication*. 2009.
9. Blatchford, P. and I. Plewis, *Pre-school reading-related skills and later reading achievement: further evidence. British Educational Research Journal*, 1990. 16: p. 425-428.
10. Ehri, L.C., et al., *Systematic phonics instruction helps students learn to read: Evidence from the National Reading Panel's meta-analysis. Review of Educational Research*, 2001. 71: p. 393-447.
11. Suggate, S.P., *Why "what" we teach depends on "when": Age as a moderator of reading intervention. Manuscript submitted for publication*, 2009.
12. Cunningham, A.E. and K.E. Stanovich, *Early reading acquisition and its relation to reading experience and ability 10 years later. Developmental Psychology*, 1997. 33: p. 934-945.

1 For readers who may feel that this account leaves out the anthroposophical conception of child development, I feel complete sympathy. I would like to emphasise that this account was designed for a conventional-scientific audience, thus rendering explanation of this effect in anthroposophical terms currently impossible. On closer inspection, the Luke Effect is largely consistent with such a conception, a fuller explication of which is beyond the scope of this essay.

Briefly, however, the relative ease with which older children acquire text-reading skills could be attributed to the change in consciousness around the first dentition and the liberation of the formative forces from building up the physical body. In fact, from an anthroposophical view, the preparation of the 'soil' could refer to the pedagogical practices in Waldorf kindergartens and schools.

13. Elley, W.B., *How in the World do Students Read? IEA Study of Reading Literacy*. 1992, The Hague: International Association for the Evaluation of Educational Achievement.
14. Dollase, R., *Bildung im Kindergarten und Früheinschulung: Ein Fall von Ignoranz und Forschungsamnesie [Learning in Kindergarten and preschool: A case of ignorance and forgotten results]*. Zeitschrift für Pädagogische Psychologie, 2007. 21: p. 5-10.
15. Gilliam, W.S. and E.F. Zigler, *A critical meta-analysis of all evaluations of state-funded preschool from 1977 to 1998: Implications for policy, service delivery and program evaluation*. Early Childhood Research Quarterly, 2001. 15: p. 441-473.
16. Magnusson, K.A., C. Ruhm, and J. Waldfogel, *Does kindergarten improve school preparation and performance?* Economics of Education Review, 2007. 26: p. 33-51.
17. Marcon, R.A., *Moving up the grades: relationship between preschool model and later school success*. Early Childhood Research & Practice, 2002. 4(1).
18. Nelson, G., A. Westhaus, and J. MacLeod, *A meta-analysis of longitudinal research on preschool prevention programs for children*. *Prevention & Treatment*, 2003. 6(Article 31).
19. Lazar, I. and R. Darlington, *Lasting effects of early education : A report from the consortium for longitudinal studies*. Monographs of the society of research in child development, 1982. 47(2-3).
20. Schmerkotte, H., *Ergebnisse eines Vergleichs von Modellkindergärten und Vorklassen in Nordrhein-Westfalen [Results from a comparison of typical kindergartens and preschools in Northrhine-Westphalia]*. *Bildung und Erziehung*, 1978. 31: p. 401-411.
21. Durkin, D., *A six year study of children who learned to read in school at the age of four*. *Reading Research Quarterly*, 1974-1975. 10: p. 9-61.
22. Turnbull, S., *The rate of learning to read in a Rudolf Steiner school*. *Journal for Waldorf/Rudolf Steiner teachers*, 2006. 8(2): p. 11-16.
23. Suggate, S.P., E.A. Schaughency, and E. Reese, *The later reading achievement of children entering school at age five or seven*. Manuscript submitted for publication, 2009.
24. Suggate, S., E. Schaughency, and E. Reese. *Age of beginning formal reading instruction and later literacy: evidence from longitudinal research*. In *International Congress of Psychology*. 2008. Berlin, Germany.

Phenomenological Organic Chemistry

An Introduction Based on the Inner Nature of Substance in the Plant World

Class 9 Chemistry

Main Lesson Demonstration /
Classroom Material
and
Laboratory Projects

*Included are experimental descriptions,
Discussion of Deeper Themes
and Methodology
for Carrying Out a Student Laboratory
Project
in Home-Medicine making*

Dr. Manfred von Mackensen

Freely Translated by Peter
Glasby

Mt Barker,

South Australia, 2009

and unrevised by the Author.

This book is long overdue and has had a complex history of translation which began at Mt Barker, to and fro-ed between the USA and Mt Barker, during the 1990's and now has finally come to fruition. People involved at different times, whom I sincerely thank, include, Bob Lathe and Nancy Whittaker as well as John Petering.

I have had it on my conscience all that time and am relieved that at last it is in print and has taken the form that it has, which includes the second part, a laboratory project for 9th class students which involves making wine, distilling it and then going on to use it to make simple home medicines.

Draft versions of the translation have been made available for some years to teachers for their own private use, however, not in as full a form as this completed edition.

Special thanks needs to be made to Dr Manfred von Mackensen who has been so generous in giving permission to translate his valuable work so freely. His main question has been: "Have you done the experiments?". The answer to that is: "Yes, many times". As you will read in his own Forward to the book on page 1, he never intended the book to be the final word on the subject but rather "a guideline and standard for what can be done."

I can only hope that the many other works on Chemistry, written by Dr Mackensen can also be made available to the English speaking world. They include: comprehensive descriptions as this one for the chemistry main lesson blocks for classes 7 - 12.

I would like to draw particular attention to the work on the eleventh class chemistry, where he attempts, in my opinion successfully, to lay down a basis for phenomenological chemistry based on a spiritual view of the human being within a spiritual cosmos. Chemistry is in many ways the subject which faces the greatest difficulty in being taught within the Waldorf Schools. After all in the still commonly accepted paradigm, matter is the primary phenomena of the cosmos. Life, Soul and Spirit are derivative from it. The spiritual philosophy developed by Rudolf Steiner could not have a more radical departure from this paradigm with the position that spirit is primary in the cosmos and all else is derivative of that.

The reader will need to encounter this difference in approach in this work and hopefully will experience its merit in understanding substance in life and process.

The Translation is unrevised by the Author; and all responsibility rests with the translator.

I would also like to thank the RSSA (Rudolf Steiner Schools Association of Australia) for a grant of \$2500 towards the publication of this work.

The book will be available for A \$25. Please order directly by contacting :pglasby@adam.com.au

(Those ordering from New Zealand may contact waldorf@clear.net.nz)

Peter Glasby, September, 2009: Pedagogical Section, PO Box 318, Mt Barker, S. Australia, 5251