

# Teaching reading through writing

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This article discusses a teaching method called reading through writing (RtW), based on the use of computers rather than handwriting. The pupils use the computers in pairs and decide themselves what they will write about. The use of this method is studied via a questionnaire to 22 teachers and via seven Master's and two Bachelor's theses, observing and interviewing all together 21 teachers and 68 pupils. The results show that the method is a good teaching tool; it inspires pupils to write, develops social and communication skills and is in itself creative. It seems to be well suited to pupils with individual needs. However, the information gathered does not clearly demonstrate its effectiveness for teaching pupils to read and write. Hence, more research is required.

**Key words:** reading, writing, ICT, curriculum access.

## Introduction

Reading is an essential skill, usually gained at school. In Finland most children learn to read during the first school year, which starts when children are seven years old. Several methods are available for teaching a child to read and write. These methods are often divided into two main groups, analytic (or orthographic) and synthetic (or phonological), the main difference between them being that whole words are used as starting points in the former but phonemes in the latter. The optimal choice depends partly on the language, particularly the depth of its orthography (Aro, 2004), the phonological complexity of the spoken language and the spelling consistency of the written language (Goswami, 2005). The method chosen can affect children's phonological development (Comaskey *et al.*, 2009). However, different learners benefit most from different methods, so it is important for teachers to be familiar with several ways to promote reading skills. The majority of teachers in Finland use a mainly synthetic approach, starting with isolated phonemes, progressing to diphthongs and easy syllables, then short words, longer words and finally short sentences (see Takala, 2008), but many teachers combine analytic and synthetic methods.

## *The reading through writing method*

One combination of analytic and synthetic ways of teaching reading is a method developed by Arne Trageton called 'reading through writing' (RtW), or 'playful computer writing' (Trageton, 2002). It is based on writing with the computer so that children are taught to write before being taught to read. Trageton claims that through this playful approach children can teach themselves most of the letters and learn to read and write before formal reading teaching begins. He also claims that the fine motor skills of many first graders are not sufficiently developed for writing to be easy or pleasurable for them, so teaching to write is started using computers rather than handwriting, thus avoiding the possible motor problems associated with handwriting. The computers are used by pairs of pupils, who stand in front of the computer and do the tasks together. Hence, everything is produced interactively. The children start by writing isolated letters that they already know, ultimately progressing to stories when their skills have developed. The written products are not initially corrected, but they can be illustrated and the children's own 'books' can be produced from them. When pupils choose the subjects they want to write about, the themes interest them, which raises motivation and makes the method extremely child-centred (see also Turja *et al.*, 2009). Pupils can also choose the size and style of the font, so playing with writing is possible from the very beginning (see also Trageton, 2002, 2007). However, the effectiveness of the method relative to traditional methods and some of its other effects on children's development have not been evaluated. In addition, as described in more detail below, both the effectiveness of available software and teachers' use of computers vary. Teachers can be classified into four types (see more below) in these respects by Donnelly *et al.* (2011), who have also presented a model illustrating potential barriers to optimal application of computers as teaching tools.

## *Aims of the study*

Since the effects and effectiveness of the method are not well understood, the objectives of the presented analyses were to assess: (1) teachers' use of the method; and (2) teachers' and pupils' experiences of the method. An additional objective is to look at whether the use of the method can be linked to the model constructed by Donnelly *et al.* (2011, presented later in this article).

## Reading and the computer

Use of computers at schools has increased sharply during the 21st century. They are used in diverse ways, often to rehearse certain skills, and as tolerant partners they can powerfully assist children's learning. One example is Graphogame or Literate game as it is also called (Eka-peli in Finnish), developed in Finland (Lyytinen *et al.*, 2007, 2009). This computer game has been shown to promote phonological processing and improve reading skills (e.g. Uusitalo-Malmivaara, 2009; Saine *et al.*, 2010). Non-literal programs, such as Audilex, developed by Professor Kai Karma, have also been used to promote reading and writing skills, and have been found to raise both attention and motivation to tackle school work (Törmänen, 2010). Furthermore, computers are widely and increasingly used later in schools, at work and for social networking, involving the production and consumption of text (Dowdall, 2009). All of these applications require reading and writing skills, so promoting their development is extremely important. Interestingly, many pupils who have problems in learning to read and write seem to benefit substantially from using computers (Loo *et al.*, 2010). In addition, computers are endlessly patient and the programs are often highly motivating. The effect of the possibility of using computers was studied in 11 at-risk schools with 18 first-grade teachers when teaching literacy. The use of technology caused enthusiasm, teaching became more flexible, students were able to develop independent work habits and some pupils who had problems in attention could focus much better when using computers. Significant gains in literacy skills were achieved (Blachowicz *et al.*, 2009).

In another notable study with an AB-BA counterbalanced intervention design, the effectiveness of two five-week reading interventions, based on use of ORT for Clicker software or traditional books (ORT Big Books), was tested with 17 children aged between 71 and 80 months (Karemaker *et al.*, 2010). Both interventions proved to be beneficial, but Clicker proved to be more effective than traditional printed texts for supporting early literacy skills. There are several possible reasons for this, one of them being that Clicker kept children on task better because they found working with the software enjoyable. This seems to be especially valuable for struggling readers, who get more practice when using software than a teacher can provide (Karemaker *et al.*, 2010).

However, unsurprisingly, the effectiveness of computer-based approaches varies. For example, Gustafsson *et al.* (2011) divided 130 Grade 2 pupils into five groups, who received phonological training, comprehension training, a combination of phonological and comprehension training, ordinary special instruction and typical instruction. Computerised programs were used in each case and all groups improved their reading skills, but the combined training was most effective. Furthermore, there are potential obstacles to integrating computer-based systems into school work,

which have been divided into first- and second-order barriers (Ermer, 1999; Donnelly *et al.*, 2011). The former (extrinsic to teachers) include lack of access to computers, insufficient time to plan instruction and inadequate support. The latter (intrinsic to teachers) consist of beliefs about teaching and computers, and some unwillingness to change. For instance, some teachers see information and communications technology (ICT) as an opportunity to do something new, while others feel it is beyond their control. Changes to school culture and teacher beliefs, which are challenging to implement, are required to remove second-order barriers (Ermer, 1999).

Donnelly *et al.* (2011) identified four types of teacher, with respect to the integration of ICT into their teaching: (1) contented traditionalist; (2) selective adopter; (3) inadvertent user (IU); and (4) creative adapter. Further, they constructed a model, based on research on the use of ICT by these four types, positioning them in two dimensions that could affect the effectiveness of their ICT application: empowerment versus fatalism and learning focus versus assessment focus. The latter is here termed a *learning-focus* versus *teaching-focus* dimension, because in Finland and in some other countries national tests are not used and the role of assessment is minimal (see Figure 1).

Distinguishing features of the four types identified by Donnelly *et al.* (2011) are as follows. Creative adapters have a strong student-centred focus, maintaining a focus on learning rather than assessment. They also have a strong sense of empowerment in their teaching. Contented traditionalists lack intrinsic motivation and are most incentivised by students achieving good exam results. They see no need to use computers when traditional systems work, and lack ownership of their classroom activities. Selective adopters will only use ICT when it helps their students to do well in final exams. They have a sense of ownership and empowerment in striving to be successful in the system. Inadvertent users apply ICT in a more haphazard or accidental and not very competent manner; they are curious but hesitant (Donnelly *et al.*, 2011).

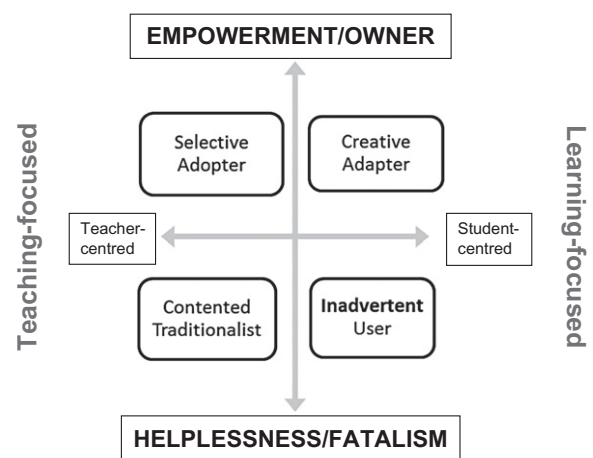


Figure 1. Teacher ICT integration model (Donnelly *et al.*, 2011, p. 1477, modelled by Author)

Assuming, based on the available evidence, that creative adapters apply ICT most effectively, it is clearly desirable to shift teachers' attitudes and practices towards the upper and right parts of the model, where possible. Transitions from the lower to the upper part require a greater focus on teacher ownership, which can only be fostered through professional development, while transitions to the right, towards a more learning-focused approach, demand environmental changes in many countries (Donnelly *et al.*, 2011). They also require teachers to play a more child-centred role, incorporating pupils' initiatives to a greater degree (e.g. Sriprakash, 2010; Martlew *et al.*, 2011).

## Methodology

### Research design

In the presented research both qualitative and quantitative approaches were applied. The following analyses are based partly on responses to a questionnaire I sent to all (30) teachers using the reading through writing method in the schools of Espoo city, in southern Finland, and partly on information obtained by seven Master's and two Bachelor's students during the course of a project on the method during 2008–2010.

In total, 22 (73%) of the teachers responded to the questionnaire, which had four closed questions, 23 Likert-type statements (five-point Likert) and one open-ended question: '*Comment on the suitability of the method according to your experiences, and if it is worth teaching to teacher students*'. In addition, I participated in two meetings in which the teachers from Espoo talked about their experiences, and had opportunities to discuss them with the teachers. The results from the questionnaire are evaluated using frequencies, correlation analysis (Pearson) and *t*-tests as well as content analysis. The teachers are numbered randomly. These data are used to describe the use of the RtW method and teachers' experiences of it.

The students studied to become class teachers at the Institute of Teacher Education, University of Helsinki, and either their Master's theses (seven students) or Bachelor's theses (two students) focused on the RtW method. The data they obtained concerned the experiences of 21 teachers and 68 pupils of schools in Espoo. These data are used to describe the use of the method and, where possible, in considering the effectiveness of the RtW method.

### Participants

The respondents to the questionnaire were seven special teachers, five class teachers, five kindergarten teachers, one English teacher and four preschool teachers. Eleven of them were 41–50 years old, five were older and four younger. All of these teachers had used the RtW method in various classes, mainly with preschoolers (six years old) and

children in first and second grades (seven–eight years old) at primary school. However, they used it in diverse ways: six had also used it with third graders and five with fourth to fifth graders. The teachers had used the method for two, three or one years (11, seven and four teachers, respectively). Eighteen of the 22 teachers had read Arne Trageton's book about the method and attended his course, while the others had only read the book.

## Results

### Using the method

The use of the RtW method was quite regular. However, it was not considered sufficient for teaching reading, and other methods were also needed according to the teachers. None of the teachers said they used the method on its own. It was used equally with other methods by 13 teachers, and nine used it as an additional method now and then, which is in accordance with previous observations that teachers usually use diverse methods (e.g. Zeece, 2010).

The frequency of its use varied. Only one teacher used the method every day, 14 used it a few times a week, and the rest one to three times a month. A common approach was to use it for a short period during a lesson. According to Donnelly *et al.*'s (2011) model, these teachers could mostly be called inadvertent users or selective adopters. Few were creative adapters, developing the method further, using it with older pupils or for integrating subjects. However, none of them could be regarded as a contented traditionalist, because they had all chosen to use the method.

### Teachers' and pupils' experiences of using RtW

In this section the teachers' and pupils' experiences of using the RtW method are considered, based on responses of the teachers to the questionnaire.

#### Teachers' experiences

Teachers had generally positive views of the method and they wanted to use it in the future. However, their responses showed some doubt about the effectiveness of using it alone, rather than in conjunction with regular handwriting, and hence perhaps symptoms of the contented traditionalist (Donnelly *et al.*, 2011). The maximum score for responses to the Likert-type questions was five and responses with mean scores exceeding four were elicited for statements that the method is beneficial in terms of being: an interesting way to teach, easy to learn and useable (Table 1).

Although generally seen positively, the RtW method was not sufficient by itself according to the teachers. They also used traditional handwriting although RtW was considered better. However, since the method motivates pupils it also

Statement regarding RtW	Mean/SD	Min-Max (1-5)	Level of agreement (N/%) (SA = strongly agree, A = agree, N = neutral)
Other methods are also needed	4.6/.67	3-5	SA 14/64%, A 6/27%
I will use RtW a lot in the future	4.4/.58	3-5	SA 9/41%, A 12/56%
It is a very interesting way to teach	4.3/1.3	1-5	SA 14/64%, A 5/23%
It is easy to learn	4.3/.78	2-5	AS 10/46%, A 10/46%
It is better than handwriting	4.1/.92	3-5	SA 9/41%, A 7/32%, N 5/21%

**Table 1.** Statements regarding RtW with which the teachers (N = 22) most strongly agreed

releases teachers' time ( $r = .50$ ,  $N = 22$ ,  $p = .018$ , Pearson correlation). There was a strong correlation between considering the method interesting and teachers' computer skills ( $r = .71$ ,  $N = 22$ ,  $p = .016$ ). This is not surprising, as basic computer skills are needed in order to like and use the method. The use of ICT is influenced by its perceived usefulness and ease of use (e.g. Teo and Noyes, 2011; see also Davis *et al.*, 1989). However, the method was considered laborious only by 5% of the teachers. Illustrative comments regarding its use, with numbers indicating the anonymised respondent, include the following:

*'I consider it [RtW] a very suitable method for teaching reading'. (9)*

*'Children take turns speaking-writing and reading. They choose the word they will write, they say it aloud (whole word), they analyze the parts when listening (from whole word to pieces), they write it letter by letter (from pieces to whole word). A very natural process, pupils using their interest as the learning content. The method individualizes in a natural way'. (6)*

*'It motivates and raises interest to study words'. (12)*

*'I did not dare to refrain from correcting the mistakes at the beginning'. (9)*

Interestingly the method also had systemic effects; it promoted co-operation between teachers:

*'The method structures co-operation between special and regular teachers, e.g. when co-teaching'. (6)*

### Pupils' experiences

The teachers said that the main positive aspects of RtW, from the pupils' perspective, are that it motivates them and both increases and challenges their social skills (Table 2). The method is seen as child-centred because pupils can

write at their own level, which increases equality and self-reliance since the pupils can decide the level on which they operate. This is especially beneficial for children with special needs and children with low language skills such as immigrants. Accordingly, scores for responses to statements that the method motivates pupils correlated positively with those for statements that it suits pupils with dyslexia ( $r = .587$ ,  $N = 22$ ,  $p = .004$ ) and immigrants ( $r = .571$ ,  $N = 22$ ,  $p = .006$ ).

Teachers commented that the social skills of pupils get a lot of practice when using the method, because all exercises are done in pairs. In addition, teachers ensure that pupils work in different pairs, so they receive diverse practice. Furthermore, RtW is especially suitable for pupils with learning difficulties, low language skills and high levels of restlessness:

*'Pair work promotes social skills, making compromises and discussion skills without deliberate effort by the teacher'. (7)*

*'It teaches pupils to wait for their turn'. (21)*

*'Children with special needs get a chance to express themselves and to practice thinking skills'. (15)*

*'This method especially motivates lively boys'. (17)*

*'The method minimizes differences between pupils'. (2)*

*'It gives joy and feelings of success to pupils with different skill levels'. (5)*

*'It suits well children with special needs who do not have the patience to study letters from a book'. (11)*

According to the open-ended questions all respondents thought that the RtW method is worth teaching to teacher students. The most common comment in this respect was that the method is inspiring. It was also considered playful

Statement regarding RtW	Mean/SD	Min-Max (1-5)	Level of agreement N/%) (SA = strongly agree, A = agree, N = neutral)
It motivates pupils	4.8/.53	3-5	SA 18/82%, A 3/14%
It increases pupils' social skills	4.4/.96	1-5	SA 13/59%, A 7/32%
It is suitable for pupils with dyslexia	4.2/.91	2-5	SA 9/41%, A/46%
It is suitable for immigrants	4.1/1.0	2-5	SA 10/46%, A 6/27%, N 4/18%

**Table 2.** The best aspects of RtW from pupils' perspective according to the teachers (N = 22)

and artistic. The restless pupils benefited from the possibility of moving around, rather than just sitting in one place, and being able to discuss what they were writing with their partner. Social skills increased in pair work, although making compromises and waiting for their turn was not always easy for all pupils.

The teachers had reservations regarding the correction of spelling mistakes. The RtW method includes refraining from correcting mistakes, at least at the beginning. This was a problem for many teachers. Technical problems (like flat tables, lack of easy access to a printer and insufficient computers) also sometimes posed challenges. It has been claimed that RtW unnecessarily increases children's use of computers, but the teachers totally disagreed with this. The method was seen positively:

*'It is inspiring and arouses the motivation to read and write'. (15)*

### Students' results

In the Bachelor's and Master's projects (Table 3), teacher students studied the use of the method through interviews, observations and literacy tasks.

#### Effectiveness of the RtW method

Summarising the results obtained from the students' projects, there was evidence that the method enabled first- and second-grade pupils to concentrate on their work, and the atmosphere was peaceful when it was used. Teachers said that the pupils wrote longer texts than in other kinds of lessons. Sometimes playful competition appeared about the length of products. The good level of the products surprised teachers and they thought that the computer allowed the pupils to show their potential (Annala, 2009). In addition, children could easily correct mistakes (Verho, 2010).

Teachers in second grade (Annala, 2009) said that RtW suits pupils who have problems using pens (due to fine motor

problems). First-grade teachers also said that it increases motivation: notably for instance children wanted to write poems (Verho, 2010).

The method did not increase teachers' workload; on the contrary, since they did not need to plan individual tasks for everyone in need, the method fostered individualisation because pupils could choose what they wrote. As a by-product many pupils learned the ten-finger system (Annala, 2009).

When analysing the pupils' discussions during RtW lessons, it was noted that the pupils helped each other mostly by giving direct advice, while teachers helped the children mainly by making suggestions, giving hints or asking leading questions. Interestingly, however, no significant difference was detected between measured writing skills of pupils (first, second and third grade) who had and had not used the method (Koskela, 2010; Luukkonen, 2010; Verho, 2010).

The method promoted harmonious teaching, and it allowed various subjects to be taught and various issues to be addressed (Pouttu, 2010). Further, when teaching small children, its use permitted integration of various subjects and topics, such as colours and numbers (Luukkonen, 2009; Halme, 2010, a, b). Pupils were highly motivated, their written products were of high quality, their social skills were enhanced by the pair work when using the method, and it was well suited to children with special needs; for example, the possibility of magnifying the text helped level the field for a visually impaired child (Mäkinen, 2009; Halme, 2010, a, b; Pouttu, 2010). Further, the opportunities to move around and discuss what they were doing improved the pupils' concentration (Pouttu, 2010).

### Challenges

Despite the noted benefits of the methods, some challenging aspects were observed, including the following. When starting to use the method classes are generally somewhat restless, because pupils have to move to the computers and

**Table 3.** Teachers and pupils involved between 2009 and 2010

<i>Student/work status</i>	<i>Teachers and pupils involved</i>	<i>Method</i>
Annala, Suvi, Master's	2nd grade: three students, one special teacher, one class teacher	Observations, interviews
Mäkinen, Anne, Master's	In total, 12 preschoolers + 1st graders; one class teacher, one preschool teacher	Recording pupils' conversations, interviews
Koskela, Pauliina, Master's	2nd graders: 19 pupils + 12 pupils as a comparison group; two class teachers	Observations of story writing
Verho, Tessa, Master's	1st graders: 8 pupils + 11 pupils as a comparison group	Writing tests
Pouttu, Maija, Master's	Four class teachers, class Grades 1–3	Interviews
Luukkonen, Anni, Master's	4th graders: 26 pupils, 23 as a comparison group	Writing tests
Halme, Anna, Master's	4 teachers	Interviews
Halme, Anna, Bachelor's	3 preschool teachers	Interviews
Luukkonen, Anni, Bachelor's	4 teachers	Interviews
<i>Total</i>	21 teachers and 68 pupils	

they need to discuss their products. A further observed problem was that the method did not promote learning to divide a word into syllables (Halme, 2010, a, b). In addition, when using RtW, teachers have to be systematic and follow each individual more carefully because every pupil is doing something slightly different. Furthermore, some technical problems occurred and guidance for parents was required, to avoid them starting to correct the products (Pouttu, 2010). Finally, as noted in the teachers' responses to the questionnaire, they did not rely solely on the RtW method for teaching pupils to read (Luukkonen, 2009).

## Discussion

The most experienced user of the RtW method had a highly positive opinion of the method. She commented that almost all her pupils learned to read during the first school term, before Christmas, with the method and had a high motivation to read and write. This teacher was a creative adopter; she used the method in diverse contexts several times a week:

*'The method makes pupils equal'. (20)*

In terms of Donnelly's model, many teachers were approaching the creative adopter style. All the teachers who responded to the questionnaire were learning-focused and felt empowered, so only selective and creative adapter types were observed. One reason for this is that assessment is not important in Finnish primary schools (Jakku-Sihvonen, 2006). Some traditionalism was present in the use of handwriting and correcting mistakes. However, our data do not provide indications of the significance or utility of these actions, or whether mistakes should ideally be corrected.

This study has limitations. The presented investigations focused, in detail, on the use of RtW by 22 Finnish teachers. Furthermore, the time frames of the Master's and Bachelor's projects were short (one to three months), so it was not possible to discern any long-term effects. In addition, the teachers had not used the method over a long period, just one to three years. Thus, further research is required to assess the generality of the results, and longitudinal follow-ups are needed to assess the effectiveness of the method thoroughly. However, the observed results are clearly promising, and the surveyed teachers were sufficiently motivated to respond and to meet the researcher, so those who participated took it seriously.

## Conclusion

Using the RtW method when teaching children to read seems to be inspiring and creative. The information acquired in the presented investigations does not conclusively show that it is either more or less effective for promoting literacy skills than traditional methods. However, mainly positive effects were reported by the surveyed teachers and observed

in the classroom. Thus, the method seems to be (at least) an inspiring supplement for teaching pupils to read and write. In addition, it seems to have other positive side-effects, notably improving social skills and encouraging diverse children to read and write, although it seems to be insufficient as a sole method. Further studies are needed for thorough evaluation of the method's long-term effects and effectiveness. However, a method that particularly inspires those in most need of a reading and writing exercise is always welcome. A further notable aspect is that although teachers have more experience of traditional ways of teaching to read and write than of teaching these skills using the computer, many of them were on the way towards becoming creative adapters (Donnelly *et al.*, 2011).

RtW can be called an inclusive method which can be used, and can foster individualisation, in a classroom, since pupils do not need to leave the class (Jordan *et al.*, 2009; Takala *et al.*, 2009). It also provides opportunities for new, flexible ways of teaching and learning, for example co-teaching by two teachers in the classroom (Saloviita and Takala, 2010). Further, familiarising children with writing collective stories and using computers by methods such as RtW may facilitate later use of educational and working tools, such as hypermedia, that promote collaborative storytelling more than linear approaches (Liu *et al.*, 2011). Overall, our results indicate that RtW seems to be a good addition to the various methods teachers need to teach diverse children to read and write.

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## Master's and Bachelor's theses

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