Typical and atypical literacy learning and how to support learners who are in need of help

Heikki Lyytinen
Emeritus UNESCO Chair/professor
on Inclusive Literacy Learning for All
and
Professor of Developmental Neuropsychology
University of Jyväskylä, Finland
& CEO of ComprehensionGame World Learning

Senior adviser in Niilo Mäki Institute, Jyväskylä, Finland &
Haskins Laboratories, Yale, USA

For cv, publications etc, see heikki.lyytinen.info

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What my 50 years of reading research has helped me to do

This summary informs about the step taken to support children globally to learn full literacy:
1. My present understanding of the situation of literacy research at world level
after making the following main steps towards this understanding:
2. Using years for studying the basic mechanisms of learning 50 years ago
3. Concentrating on the of study learning difficulties for 20 years, 40 years ago
4. Starting to focus on research related to basic reading and its problems 30 years ago
5. Initiating the Jyväskylä Longitudinal study of Dyslexia (JLD) 25 years ago
6. Focussing on finding the developmental routes to diffent levels of reading for 20 years
7. Using JLD-results for finding easy to use method for identifying children in need of help
8. Developing digital learning game to support them to acquire the basic reading skills
9. Developing digital learning games to train at-risk children to overcome their problems
10. After showing their efficiency in Finland starting to make these working globally
11. Observing that the basic reading skills are not enough for reaching the goal of reading
12. Running R&D for developing a new learning game to support reading comprehension
13. Developing my newest game to help those (e.g. Africans) who have nothing to read
14. Finding that this might be a solution for all children in the world, starting R&D for that

- **Mistakes of the reading research (mainly due to dominance of English)**
- <u>Avoiding the to-be listed mistakes has helped me to offer effective help (listed earlier)</u>

1. The goal of reading misunderstood: should help reading schoolbooks, not sounding!
2. The basic learning theory has not been known by the developers of reading instruction
3. The changing of the world has not been observed: all believe basic reading suffices
4. The possibilities of the support digitalization has given us has not been taken into use
5. The possibilities of internet and articial intelligence have not been taken into use
6. All have continued repeating phono.. words whose appication teachers do not know

<u>Correction of these mistakes allow children globally to acquire full literary</u>

- How this can happen is now described in detail in my recent publications
- These will become available soon for free from my www.comprehensiongame.com pages
- But I will summarize some of the main facts here

1. the goal of reading=comprehension, not sounding

- We read mainly for mediating the message from the text to our minds
- Resources related to instruction go to teaching sounding of the text
- A more optimal way to instruct reading would focus on comprehension
- There are many ways to organise it,
  - The most natural being:
    - reading exciting stories to children before school – in sufficient amounts
  - My newest game meant first of African where parents are unable to read is:
    - Letting children to have a wide variety of stories which they can see+hear reading to them
    - This may be helpful to all children in the world and will be open to be distributed to everyone
  - Reading instruction should focus more on motivating to tell what the text tells
    - (wise teachers can do that)
  - Children who start reading as soon they are fluent readers learn it naturally
  - Today boys are no more reading why I have had to to develop a training game for that
  - This may be helpful also to many adults (in Finland 16% of adults do not compehend text)
- All my game require participation of teachers or other experts for the implemention of appropriate content

2. Reading can be learn following basic reading theory

- Learning the basic reading skill follows the same procedure in all languages:
  - Associating appropriate units of the spoken language to written language
  - In orthographies whose connections between spoken and written language behave consistently

    the unit depends on at what level the consistency is full:
    - In so called transparent writing it is letter (or several letters' grapheme) phoneme level
    - In less transparent writing such as English it requires larger units such as rime
      - To be sure that the connection is consistent=learnable, one has to use whole words in English
      - This happen almost everywhere where English is learned as the second language among readers of ones own
      - This must be accident (because it has not been studied) resulting the way vocabulary is instructed
      - The most clear expressions of the dominance of English language in reading research are e.g. the facts that:
        - all English experts of reading tell that this <u>whole word approach should not be followed but instead</u>
        - <u>So called phonics is the only way to go, although practically none can tell how!</u>
      - <u>The learning theory tells that one can learn associations only when these are true at least almost always</u>
      - None knows exactly which smaller than whole word size items are true always in English
      - Computationally it has shown up to be almost impossible to solve
      - the closest solution being the one we have applied in our Grapholearn technology
      - Thus learning whole words (or orthographic images) might be a possible solution to our newest tool to follow

3. Changes of the world has not been observed

- PISA-, PIRS-studies and those of the school achievements have been falling for long everywhere
- Learning in school is affected by literacy skills pointing the cause to be the falling literacy skills
- Basic reading skills are mostly sufficient for telling that basic reading skills are not the problem
- Thus, the problems accumulate between ages 7/10y and that of PISA (15 y)
- The natural way for reaching the goal of reading has been lost
- Too many is not starting to read outside school to acquire full literacy naturally
- Thus attention had to-be moved to motivating+instructing children to read outside school
- This has shown to be very difficult even in Finland, in a most literate country
- Finnish strategy has been to reward in many ways those who accept starting to read
- These ways fail to affect boys; many of them prefer e.g. computer gaming instead of reading
- Therefore the use of game format of training may motivate them to approach the goal of reading
- Using my second game – ComprehensionGame (CG) – they learn active & effective reading strategies
- Using it in the context of school, when learning lessons from schoolbooks can motivate also for boys
- Effective reading needs optimal exchanging of information between working and long-term memories
- CG trains in that and in critical reading (please, see www.comprehensiongame.com pages)
- It may help also to adults – many of whom never end naturally to the use of optimal reading strategies

4.Digitalization has not been taken into use

- Hundreds of years of training children to learn in Africa using development aids have failed to have almost no success

- Even today digital game-based support of learning had not been accepted

- No funding although e.g. our GraphoLearn (GL) technology has instructed millions

- Now when we have further games, same fate may be expecting me after the of hundreds of thousands €:s to make this all possible after showing their efficiency

- Now we can train basic reading skills using GL and reading comprehension via CG

- The final step is under validation: overcoming the unavoidable situation in Africa that they have no books to read, and can thus not acquire full literacy (FL)

- FL can possibly be acquired by letting children to have a story-generator in phone which if implemented in a correct way instruct direcly to FL via statistical learning

- Reaching the final goal of both reading and our efforts via this new game is now under validation in Africa and Finland and is open to-be-tried everywhere

5. The possibilities of internet and articial intelligence (AI) have not been taken into use

- Internet is reaching also rural Africa where we have been using it
- In rural Zambia we have trained illiterate people to FL using CG
- They have learning to get first time any information from world
- Now they can ask – using AI – whatever they wanted to learn
- Our participants naturally need info for their food security
- They can ask AI-bots to tell which they had to grow for surviving
- And this is possible already today, but better in the near future
- The next step is that this very same become possible children very early
- This can happen when our newest games have been finalized to their use

6. Why in the world we still use phono.. words?

- The dominance of the English research of reading has been making all of use to continue using phono.. words as some kind magic words!
- Why we use these although we know that the instruction of reading
  - 1 can not benefit from them if we know how it happens best (show earlier)
  - 2 none teacher nor research can tell what these mean and how they could help
  - 3 and even when inventing an appropriate definition this could not be followed
- A possible definition: phonolocigal skills which are needed for learning the basic reading skill mean an ability to manipulate speech sounds
- But how to manipulate in such a way that it could help?
- The only helpful way would be to know which letters/sequences of letters represent consistently certain spoken language units
- None knows a full answer to that (only a very partial one)
- Dyslexia=phonological disorder, yes but what it helps in correcting it?
- Dyslexia results from auditory insensitivity as we have shown
- And auditory insensitivity can be corrected by drilling using our games
- None is left behind when games we have developed have been given in optimal use

Thank you for your attention!

- Anyone interested in joining me is welcome to prepare the world where none needs to be left behind for reading schoolbooks efficiently
- I am collecting all the information needed for knowing all I have learned until now about the ways to make above to happen to the following pages:
- www.comprehensiongame
- Almost everything needed for that has now been accepted for publication.
- The most important two papers are in press but will be added as soon they are in their final printed form because I give my ms's only to open accept forums
- The very same pages can be used for research purpose after agreement with me so that I can tell everything what is needed for the optimal use of the games
- Please, content me via heikki.j.lyytinen@jyu.fi