UNESCO CHAIR/UNITWIN NETWORK PROGRESS REPORT FORM

**Title of the Chair/Network:** UNESCO Chair on Inclusive Literacy Learning for All

**Host Institution:** University of Jyväskylä (JYU)

**Date of establishment of Chair/Network:** January, 2015

**Period of activity under report:** June, 2016 - May, 2017

**Report established by:** Heikki Lyytinen, professor (emeritus)

To be returned by electronic mail to both: unitwin@unesco.org and i.nichanian@unesco.org

Or by mail to UNESCO, Division for Teacher Development and Higher Education,
Section for Higher Education
7, place Fontenoy – 75352 Paris 07 SP, France
Fax: 33 (0)1 45 68 56 26/27/28

1. Executive Summary:
*Major outcomes, results and impact of the Chair, including on national policies, in relation to its objectives as stated in Article 2 of the Chair Agreement (between the Institution and UNESCO)*

The goal of the Chair on Inclusive Literacy Learning for All is to provide efficient support in literacy learning for everyone globally, especially to those who have learning difficulties. This includes research on reading acquisition in different language environments and applying that knowledge in developing materials and applying tools – especially the GraphoGame technology - developed by the team of the chair for supporting learners who are struggling to read due to whatever reason (ie. biological or educational. Due to affordability and accessibility, use of e-learning and mobile technology is used for practical application of the research knowledge (Richardson&Lyytinen, 2014).

*Activities of the emeritus professor working as the chair have been directly focused on research associated with support of reading acquisition in different countries to take into account the language, writing system and cultural/educational practices related to reading instruction with heavy emphasis on Africa (e.g. Ojanen, Ronimus et al.,2015) but covering as a whole >30 countries, including. e.g., China and Chile.

*The research covers pilots needed for developing optimal set of content and how it should be introduced to typical and atypical learner all the time searching issues which have to be taken into account due to the language/writing system in question as well as the possible problems resulting from the availability of optimal school instruction. Thus e.g. in countries such as Zambia in Africa (where country’s present literacy instruction has shown not to work successfully) our most recent study (All Children Reading with the support of UsAid, World Vision and Australian Development Aid) included also teachers. It reveals that both teachers and children learned to use our GraphoGame Technology (GT) via cheap digital devices with very good results. And this was shown to be the case also when learning of children with lowest the starting points were observed.*
2) Activities:
*Overview of activities undertaken by the Chair during the reporting period*

a) Education/Training/Research
*(key education programmes and training delivered and research undertaken by the Chair during the reporting period, target group and geographical coverage)*

<table>
<thead>
<tr>
<th>I) Education (leading to certificate)</th>
<th>Supervision of Doctoral Candidates (in psychology):</th>
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<tbody>
<tr>
<td><em>Emma Ojanen (Finland, reading acquisition in Zambia), in final stage.</em></td>
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<td><em>Christopher Yalukanda (Zambia, teachers’ professional skills in Zambia)</em></td>
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<td><em>Johanna Juvonen (Finland, children with language impairments)</em></td>
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<td><em>Jonathan Munachaka (Zambia, supporting Zambian children with dyslexia)</em></td>
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<td><em>Jacob Nshimbi Chomba (Zambia, community engagement in reading support in Zambia)</em></td>
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<td><em>Jeffrey Pilgram (Finland, supporting reading of English as a pilot to learn how to support children in developing countries to learn to read L2)</em></td>
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<td><em>Anu Keski-Koukari (Finland, increasing reading fluency among high school students)</em></td>
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**Completed PhD studies:**


Francis Sampa (Zambia, Comparison of the results of literacy programmes in Zambia).

**Supervision of Master's Degree students - Completed:**

Sofia Linna (Psychology, Chile) Computer assisted learning environments helps Chilean children living in poverty

Porokuokka, Iida (Computer Science, Finland): An adaptive vocabulary learning environment for intervening with an early language delay

Laura Andersson (Psychology, Finland) Computer-aided support of working memory – analysis of the cognitive mechanisms.
II) Training  
(short term)  
Short term training activities have been given to participants of research running under our (chair’s main Finnish collaborator: professor Ulla Richardson) coordination in more than 30 countries. These have included visits to many of those countries or the participants’ visits in Finland. A more programmatic training has been run in Beijing, China at the beginning of 2017 given to students of Beijing Normal University who wanted to help China’s children using our GraphoGame Technology (GT). Related training periods have been organized also during 2017 in Zambia in our Center for the Promotion of Literacy in Sub-Saharan Africa (CAPOLSA) to guide students to make next steps of GT-related research there. Invited lectures/discussion forums have been given to very large audiences in China also during 2017. The chair has participated actively in the COST action (European Literacy Network) by also training its members in an event organized in the University of Jyväskylä at the beginning of 2017.

III) Research  
Ongoing research projects

**Project: Dyslexia: genes, brain functions, interventions**  
*Date: 09/2015 — 08/2019*  
*Funding: Academy of Finland (Personalised Health – From Genes to Society -program)*  
Reading disorder is a major challenge with a genetic background and related abnormal brain activity. The goal of this research is—by collecting the most important pieces of information from genetic, brain and behavioral observations of dyslexia—to further develop our GT-based training regimen where use of an enjoyable digital game successfully supports reading skills even in individuals with the most severe dyslexia. In that research we bring together a multidisciplinary group of experts in genetics, brain dynamics and neuropsychology of reading and dyslexia to identify the bottlenecks in learning and to learn to open even the most difficult of these, importantly strengthened by big data analysis of the empirical observations on learning of thousands Ekapeli (=the Finnish version of the GraphoGame) players.

**Project: GraphoGame™ Literacy Intervention in Zambia**  
*Date: 08/2015 — 04/2017*  
*Funding: All Children Reading: A Grand Challenge for Development partners USAID, World Vision & Australian Government*  
Early grade teachers in Zambia need information and pedagogical training in literacy instruction in local languages. GraphoGame Teacher Training Service is a mobile intervention method that allows teachers to self-study information on implementation of the new local language curriculum and practice correct literacy instruction pedagogy with our GT. We focused successfully on finding the most feasible method of providing GraphoGame Teacher Training Service for early grade teachers in rural Zambia.
COST ELN (European Literacy Network)
Date: 2015 — 12/2017
Funding: EU
ELN - The European Literacy Network COST Action is making good progress during 2017. Its scientific objectives have comprised support of reading and writing skills of European children which are anchored on the work of three established working groups and their internal teams, devoted to specific subthemes. The network’s goal to double its current size (295 members from 39 countries) is ambitious (the network’s current size is already double the size at the start of the Action), yet achievable, and a strategy is in place for this purpose.

Project: Centre for Promotion of Literacy in Sub-Saharan Africa II
Date: 04/2013 — 12/2015, and then has continued actively with small fundings from different sources
Original funding until the end of 2016: Ministry of Foreign Affairs
The CAPOLSA project aims to establish a strong literacy center with international visibility and impact, specifically in African countries facing similar challenges with Zambia. The literacy training approach is based on GraphoLearning Initiative led by the chair and the innovative and efficient digital learning environment GraphoGame that has been developed as a result of scientific studies coordinated by the chair during last tens of years.

Project: Grapho Learning International Development and Exports
Date: 04/2012 — and has continued with small fundings from different sources so that the end result - opening a unit which will be able to disseminate the GT technology to the use of children in need - will be achieved during June 2017.
Initial funding: Tekes (TUTL) University of Jyväskylä until 2015.
Literacy is vital for individuals’ quality of life, their education, career choices, and thus to the world economy and the development of democracy. Yet, globally, 744 million illiterate individuals over 15 years of age and millions of children urgently need help in learning to read due to learning disorders and other challenges. The technology we have developed is science-based mobile, digital reading support to help children around the world. Now we propose to look for a sustainable way to export the already proven Finnish delivery model everywhere.
Today a few countries (France, Norway and Sweden) are ready for the start of the dissemination.

Project: Tieteen työpaja lukemisen ja kielen kehitys
Date: 01/2011 — 01/2016 originally, has developed today network called GraphoLearn Initiative which is working actively and had its most recent meeting of its original members during May 2017 in China (Nanjing) with also new members such as professor, head of the University System of Taiwan, professor Ovid Tzeng.
Funding: Suomen Kulttuurirahasto (Finnish Cultural Foundation)
The mentioned initiative agreed between Professors Ken Pugh (on behalf
of Haskins Laboratory/Yale University), Usha Goswami (University of Cambridge) and Heikki Lyytinen, had its initial Kick-Off meeting 28.11.-1.12.2010 in Helsinki and Jyväskylä in order to create a network of collaboration to participate in the building of an International Network of Excellence (NoE) to examine the following issues at the highest possible level of existing expertise: Supporting children’s learning of first, second and written language skills among typical and atypical learners using the best possible brain and behavioral intervention research. One further special emphasis will be placed on helping children in the most urgent need, such as those in developing countries who do not have adequate instruction.- **Its most recent goal is to use newest digital technology to develop environments motivating children, who have just learned to read, to learn STEM contents in exciting virtual and extended reality environments.**
b) Conferences/Meetings
(key conferences and meetings organized by the Chair or to which its Chairholder contributed)

I) Key conferences and workshops hosted by the Chair

Meeting of the COST action European Literacy Network, Finland, 2.-4.2. 2017, organized by the University of Jyväskylä under the chair’s and ELN’s chair’s guidance. One day exclusively for illustration of GT-related research and related global activities.

II) Other conferences/organizational activities undertaken by the Chairholder

18.4.2016 ELN COST action Core group and Working Groups’ meeting, Ljubljana, Slovenia
24-25.5.2016 Healthy lifelong: Child and Adolescent Health funding program’s (Federal Ministry of Education and Research, Germany) Review Board meeting, Berlin, Germany.
17.3.2016 Opening meeting of the collaborative study between brain scientist, molecular geneticists and us (GraphoGame Technology) led by Heikki Lyytinen in Helsinki, Finland
06.-09.06.2016 EqUIP – Sustainable Prosperity, Well Being and Innovation - Helsinki, Finland
5.11.2016 Spring Forum for International Affairs in Higher Education 2016, Turku, Finland
3.-5. 8. 2016 The 23rd Congress of the IACCP 2016, Tokyo, Japan
16.08.2016 Literacy Conference in Turku, Finland
12.-14.10, 2016 VIII International Meeting of Legislators and Special Guests, Monterrey, Mexico
13.-15.10.2016 16th International Meeting on Early and Preschool Education, Monterrey, Mexico
17.10.2016 Meeting in the World Bank the Head of the Global Engagement and Knowledge team, Washington DC, USA
23.-25.10. 2016 Opening seminar of the Sino-Finnish cooperation in teaching and learning, Zuhuai, China
26.-29.10.2016 Series of lectures given in the Beijing Normal University to prepare to research based development of content for the GraphoGame for Chinese children
07.11.2016 COST ELN meeting, Nicosia, Cyprus
21.11.2016 25th JALD conference, Tokyo, Japan
18.-19.01.2017 Impact Forum (Preparing District leaders to learning support to US children)
20.-28.03. 2017 Supervision events in University of Zambia to postgraduate students running the GraphoGame -research in Zambia
29.03.2017 All Children Reading – Closing of the project meeting, Lusaka, Zambia
30.03.2017 Brain research simulating new growth and wellbeing/CEMBIO event, Helsinki
06.04.2017 Working as an opponent in the dissertation defense in Groningen, Holland
22.-24.05. 2017 International Workshop on Brain, Language and Cognition, Nanjing, China

III) A selection of conference presentations by the Chairholder and other colleagues

21.-22.1.2016 ELINET European Literacy Network’s conference, Amsterdam (invited lecture)
24.4.2016, Forum of 20. China's Children's Reading (invited keynote & chairing a discussion forum), China
09.06.2016 EqUIP symposium (see above), Keynote lecture.
3. 8. 2016 2 Invited Keynote lectures in the 23rd Congress of the IACCP 2016, Tokyo, Japan
7

16.08.2016 Invited Keynote Lecture in the Literacy Conference, Turku, Finland
13.-15.10.2016 Invited Lecture in the 16th International Meeting on Early and Preschool Education, Monterrey, Mexico
21.11.2016 Invited Keynote Lecture in the 25th JALD conference, Tokyo, Japan
29.03.2017 Keynote Lecture in the All Children Reading – Closing of the project meeting, Lusaka, Zambia
30.03.2017 Keynote Lecture in CEMBIO2017 Forum, Helsinki, Finland
22.-24.05.2017 Keynote Lecture in the International Workshop on Brain, Language and Cognition, Nanjing, China

c) Interuniversity Exchanges/Partnerships
(principal exchanges/partnerships between the Chair and other institution,s including UNESCO Chairs/UNITWIN Networks)

The Chair has initiated and established an active ongoing international GraphoWORLD Network of Excellence on Literacy and Language learning. The objective of the GraphoWORLD NoE is to provide technology enhanced support as widely as possible to all learners globally, however, with a special emphasis on countries where access to literary education is limited.

Mission: Technology enhanced support on spoken and written language development among typical and atypical learners. This includes both research and implementation of new knowledge and technology providing the support.

Vision: The vision is a network among universities with the most well informed experts of spoken and written language development to accomplish the mission.

Founding members: Heikki Lyytinen (University of Jyväskylä), Usha Goswami (Cambridge University), Kenneth Pugh (Haskins Laboratories), Daniel Brandeis (University of Zürich), Elena Grigorenko (Moscow State University/Yale), Fumiko Hoeft (Stanford University), Malt Joshi (Texas A &M University), Juha Kere (Karolinska Institutet), Teija Kujala (University of Helsinki), Beatrice Matafwali (University of Zambia), Tiina Parviainen (Oxford University), Gerd Schulte-Körne (Ludwig-Maximilians-Universität München), Jennifer Thomson (Harvard University), Finn-Egil Tonnessen (University of Stavanger), Johannes Ziegler (CNRS, Aix Marseille University)

The Chair actively participates in COST Action IS1401 European Literacy Network and in

ELINET, European Literacy Network
### d) Publications/Multimedia Materials

*Major publications and teaching/learning materials*

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<td>Multimedia Materials (Other)</td>
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Give details of major publications and materials including full citations.

### i) Theses

Completed supervised doctoral thesis:


Available online: [https://jyx.jyu.fi/dspace/handle/123456789/45762](https://jyx.jyu.fi/dspace/handle/123456789/45762)

### ii) Publications (from 2016/4 to 2017/4)


Aro, M. & Lyytinen, H. (2016) Training Reading Skills in Finnish: From Reading acquisition to Fluency and Comprehension. Reading Fluency chapter 12, of the series Literacy Studies,
pp. 125-140. http://link.springer.com/chapter/10.1007/978-3-319-30478-6_8


Multimedia materials:


- Transforming scientific discoveries into practical learning services
- Playing mobile games can support learners with reading difficulties
- Empowering education scientists in Africa builds a better future for us all
- Language and literacy are intertwined in learning to read - especially in Africa
e) Cooperation with UNESCO Headquarters, Field Offices

Opening meeting of UNITWIN UNESCO Chair on Inclusive Literacy Learning for All; 11th May 2015, UNESCO HQ Paris 13h – 16h,

Attendees:
Heikki Lyytinen, University of Jyväskylä, Finland
Fumiko Hoeft, Stanford University, USA
Kenneth Pugh, Haskins Laboratories, USA
Johannes Ziegler, CNRS, Aix-Marseille University, France
Ulla Richardson, University of Jyväskylä, Finland
Emma Ojanen, University of Jyväskylä, Finland
Linda Siegel, University of British Columbia, Canada
Liliane Sprenger-Charolles, University Paris Descartes, France
Ovid Tzeng, Academia Sinica, Taiwan
Ludo Verhoeven, University of Nijmegen, The Netherlands
Borhene Chakroun, UNESCO, Chief, Section for Youth, Literacy and Skills Development (ED/PLS/YS)
Mari Yasunaga, UNESCO, Programme specialist, Section for Youth, Literacy and Skills Development
Maki Hayashikawa, UNESCO Chief, Section of Learning and Teachers Via Adobe

Connect:
Elena Grigorenko, Yale, USA
Elinor Haddad, Bar-Ilan University, Israel
Sonali Nag, University of York, UK
Mikko Pitkänen, University of Jyväskylä, Finland
Jenny Thomson, University of Sheffield, UK

Observers:
Dyslexia International: Judith Sanson, Chair, Board of Governors, Section of Learning and Teachers, UNESCO Education Sector:
Florence Migeon, Programme Specialist
Kaga Yoshie, Programme Specialist?
Mariana Kitsiona, Assistant Programme Specialist
Adrien Alain Boucher, Assistant Programme Specialist

Heikki Lyytinen stated that the main goal of the UNESCO Chair on Inclusive Literacy Learning for All is to provide support for literacy for everyone regardless of the cause of the challenges in reading. People are struggling in literacy for both biological and environmental reasons and the main task of the UNESCO Chair is to seek ways to promote literacy learning in all language environments. Teachers around the world need open access materials for science-based literacy instruction in different language environments.

Goals to be addressed:
UNESCO representatives pointed out the need to reach key decision makers in the global education
policy and the need for advocacy materials that can be used for introducing the UNESCO Chair activities to the non-scientific audience. Importance of good quality assessment of learning outcomes was also highlighted as an important theme for the chair activities. Mobile learning week and International Literacy Day are important events where UNESCO Chair activities could be showcased. UNESCO Institute of ICT and Education would be important collaborator.

Sustainability of ICT-based literacy interventions needs to be examined carefully, especially if the plan is to reach for the rural areas and ensure continuity of the learning support beyond the limited projects.

Dissemination of the information: Khan Academy collaboration was suggested as one format of dissemination. TED talk would be important medium for advocacy. Online course materials need to be developed.

Funding solutions need to be developed and it was agreed at this point all options for funding should be kept open, including the for-profit business models. UNESCO Chair is now a new possibility to apply for funding and develop private sector partnerships so all models of funding should be considered. However, the conditions of commercial partnerships need to be discussed.

f) Other
(any other activities to report)
3. Future Plans and Development Prospects:
Outline of action plan for the next biennium and short/medium and long-term development prospects. Please do not hesitate to refer to difficulties that the Chair has experienced
(Not exceeding 300 words)

A special emphasis is given to research needed to develop GT further to make it efficient also in helping children most resistant to optimal treatment. Such learners are identified from Finland (which has a most easy to learn writing system) to be studied using four different approaches:

1. using the learning logs of thousands GG-playing children to find those most resistant to treatment
2. observing their brain activity e.g. during attempts to learn the basic reading skill in collaboration with Cold Temperature Lab’s experts of the Aalto University
3. analyzing the genetic profiles, e.g. the candidate genes of dyslexia in collaboration with the professor Kere’s group (Karolinska Institutet, Sweden).
4. via big data analyses of the thousands of learning logs of the GG to find the way bottlenecks are faced among children who need the most long training to reach the goal of acquiring the basic reading skill.

This collaborative research the chair is leading is funded by the Academy of Finland.

The next step is to coordinate R&D to support children’s reading fluency to help them to remember the beginning of the sentence at the time the reach its end.

The final step for reaching full literacy is the ability to read with full comprehension. For this purpose we use with our international collaborators the mentioned STEM learning approach. It provides a most beneficial way to go because it not only instructs the best way to approach written material but also at the same time teaches highly important and culture free content.

Attempts are made to overcome the funding problems. It is most challenging in countries owing no infrastructure for supporting research leaving us the only available cheap way: supervision of the postgraduate students to concentrate on GG-related validation research as the required research work needed for PhD thesis.