Children’s digital literacy practices

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Learning, Culture and Interventions (LECI)

- **Learning, Culture and Interventions** (LECI) is a research community devoted to advancing high-quality research, and research-based teaching and societal interaction at the Faculty of Educational Sciences, University of Helsinki.
- It offers a conceptual home to all those academics at the faculty whose research rests on sociocultural and /or activity theoretical perspectives, with a specific interest on reciprocal interaction between theory and practice.
- The expert group builds on multidisciplinarity and in addition to education it draws on other relevant disciplines including anthropology, applied linguistics, cultural studies, media studies, organization studies, philosophy, and sociology. We embrace history and are, at the same time, particularly interested in future-oriented research designs, which aim at community building and co-design of future activities in different institutional and non-institutional settings.
- Via its research activities such as regular seminars and workshops, the research community also offers an academic base to national and international visitors of the faculty.

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Playful Learning Center (PLC)

Playful Learning Center is about….

- Generating cutting-edge, multi-disciplinary research knowledge on play and learning in childhood
- Enhancing young children's learning through play via co-designed educational experiences that inspire imagination and ignite every child's love of learning.
- A network of academic scholars, early childhood education and care centres, schools, libraries, museums and science centers as well as entrepreneurs across Finland who are helping to pioneer innovation in the early years and translate research into practice.
- A purpose-built facility that operates as an international hub for multidisciplinary research, tackling issues around children's holistic learning and development and social inclusion.
- Offers early childhood education courses at undergraduate and postgraduate levels as well as professional development of early years educators.

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Principles of practice

- The research and development work of the Playful Learning Center involves close collaboration between the academics, teachers and community members in the field.
- The methodology is based on co-designing pedagogical models, learning activities and materials for early years education (children aged 0-8 years old)
- The core focus is on a child sensitive, playful pedagogy facilitated by an operational cross-sectoral working culture.

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Insights to research projects

Project 1: **Nordic Research Network on Digitalising Childhoods** Funded by the Nordic Council of Ministers 2019-2020

Project 2: iMake, **Learning by making: The educational potential of school-based makerspaces for young learners' digital competencies** Funded by the Academy of Finland 2017-2020

Project 3: **The Joy of Learning Multiliteracies research and development program** Funded by the Finnish Ministry of Education and Culture 2016-2020

Project 4: **Digital mediation of children's interactions with the more than human world** Funded by the Australian Research Council 2019-2023

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Livingstone, S., Lemish, D., Lim, S.S., Bulger, M., Cabello, P., Claro, M., Cabello-Hutt, T., Khalil, J., Kumpulainen, K., Nayar, U.S., Nayar, J., Tan, M.M., Prinsloo, J., & Wei, B. (2017). **Global perspectives on children's digital opportunities: an emerging research and policy agenda.** *Pediatrics, 140,* 137-141.

Abstract. Diverse international perspectives show that children can benefit greatly from digital opportunities. Despite widespread optimism about the potential of digital technologies, especially for information and education, the research reveals an insufficient evidence base to guide policy and practice across all continents of the world, especially in middle- and low-income countries. Beyond revealing pressing and sizeable gaps in knowledge, this crossnational review also reveals the importance of understanding local values and practices regarding the use of technologies. This leads us to stress that future researchers must take into account local contexts and existing inequalities and must share best practices internationally so that children can navigate the balance between risks and opportunities. This article documents the particular irony that while the world's poorer countries look to research to find ways to increase access and accelerate the fair distribution of digital educational resources, the world's wealthier countries look to research for guidance in managing excessive screen time, heavily commercial content, and technologies that intrude on autonomy and privacy. We conclude by recommending that digital divides should be carefully bridged with contextual sensitivity to avoid exacerbating existing disparities; that the provision of technological resources is complemented by a focus on skills enhancement, for teachers as well as students; that a keen eye is needed to ensure the balance of children's protection and participation rights, with protection now including data abuses as well as safety considerations; and that we forge collaborations among all stakeholders in seeking to enhance children's digital opportunities worldwide.

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Fido LTE 14.28

Ei turvallinen — digilitey.eu

The digital literacy and multimodal practices of young children (DigiLitEY)

Young children are growing up in highly technologised societies across Europe. The aim of this COST Action is to develop an interdisciplinary network that enables researchers to synthesise existing research and identify gaps in knowledge in this area. This will help to avoid duplication, foster innovative avenues for future research and effectively advance knowledge in this area. The Action focuses on children aged from 0-8.

Fido LTE 14.31

makeyproject.eu — Yksityinen

Makerspaces in the early years: Enhancing digital literacy and creativity (MakEY)

This project explores the place of the rising 'maker' culture in the development of children's digital literacy and creative design skills. Research projects will be undertaken in seven EU countries (Denmark, Germany, Finland, Iceland, Norway Romania, UK) and the USA in which staff working in makerspaces (including Fab Labs) will collaborate with academics to identify the benefits and challenges of running makerspace workshops in both formal (nurseries and schools) and informal (museums and libraries) educational settings. The research team will work in partnership with academics in Australia, Canada, Colombia, South Africa and the USA, creating a global network of scholars who will work together to further understanding of the role of makerspaces in developing young children's digital literacy and creativity.

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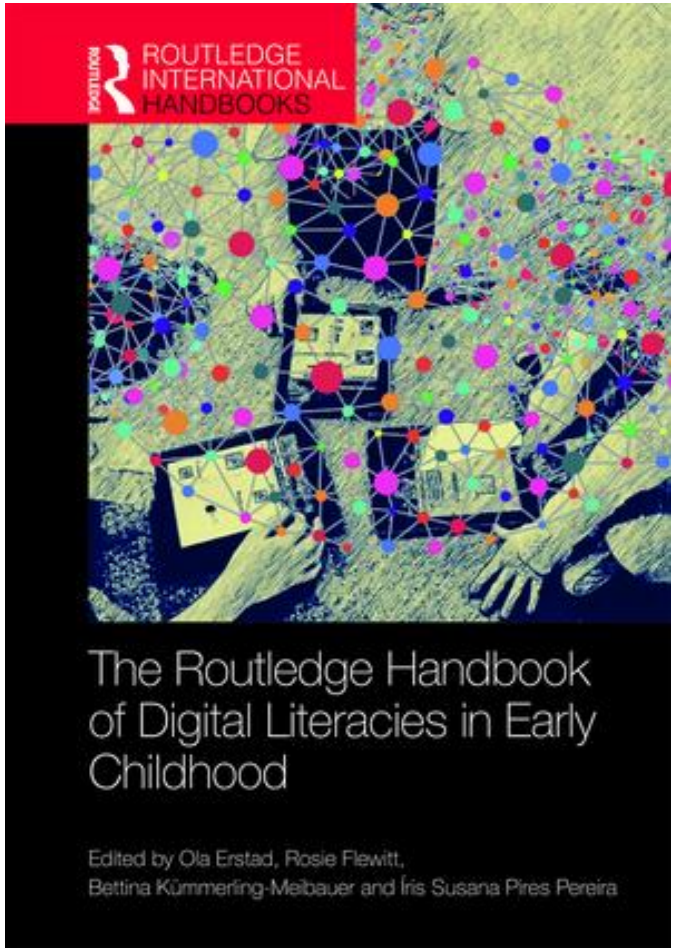

Kumpulainen, P. K., & Gillen, J. (2019). Young children's digital literacy practices in homes: Past, present and future research directions. In O. Erstad, R. Flewitt, B., Kuemmerling-Melbauer, & I. Pereira (Eds.), *Routledge Handbook of Digital Literacies in Early Childhood.* London: Routledge.

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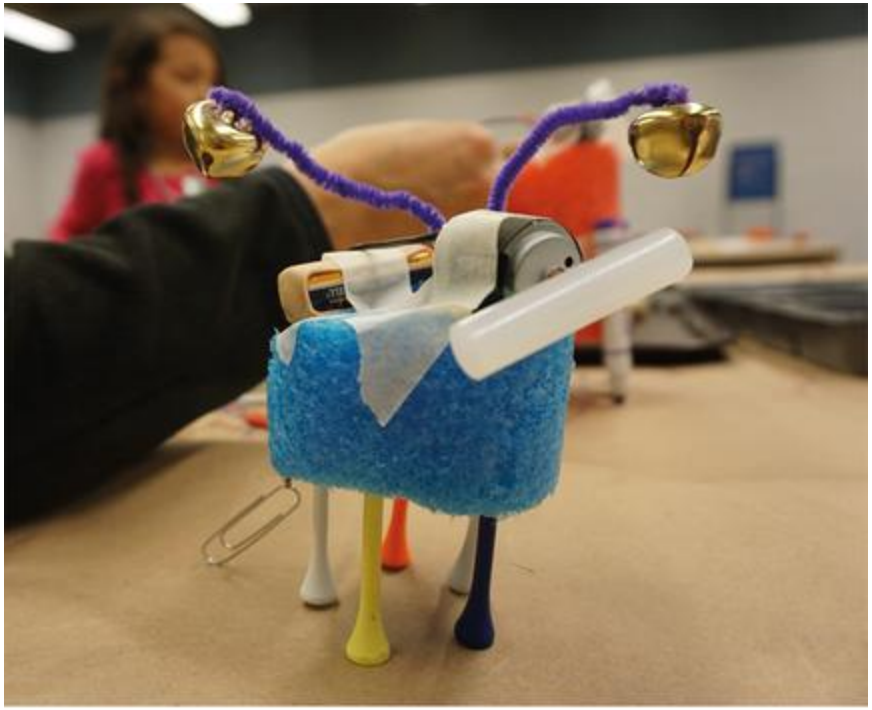

ENHANCING DIGITAL LITERACY AND CREATIVITY

Makerspaces in the Early Years

Edited by Alicia Blum-Ross, Kristiina Kumpulainen and Jackie Marsh

ROUTLEDGE

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Marsh, J., Arnseth, H. C., & Kumpulainen, K. (2018). Maker Literacies and Maker Citizenship in the MakEY (Makerspaces in the Early Years) Project. *Multimodal Technologies and Interaction*, *2*(3), [50]. DOI: https://doi.org/10.3390/mti2030050

Abstract. In this paper, the potential relationship between creative citizenship and what may be termed 'maker literacies' is examined in the light of emergent findings from an international project on the use of makerspaces in early childhood, "MakEY" (see http://makeyproject.eu). The paper outlines the concept of creative citizenship and considers the notion of maker literacies before moving on to examine how maker literacies might be developed in early-years curricula in ways that foster civic engagement. Three vignettes are offered of makerspaces in early-years settings and a museum in Finland, Norway, and the UK. The activities outlined in the vignettes might be conceived of as 'maker citizenship', a concept which draws together understandings of making, digital literacies, and citizenship. The paper considers the implications of this analysis for future research and practice.

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MIND, CULTURE, AND ACTIVITY
2019, VOL. 26, NO. 3, 201–206
https://doi.org/10.1080/10749039.2019.1652653

Routledge
Taylor & Francis Group

EDITORIAL

Young people, digital mediation, and transformative agency, special issue (part 1)

Introduction

This international double special issue representing researchers from Australia, Finland, Norway, Portugal, Spain, the Netherlands, the United Kingdom, and the USA revisits and extends prior research on young people's engagement, learning and development with digital technologies and media in their lifeworlds. Framed by sociocultural theorizing and cultural-historical activity theory (CHAT) the articles in this issue advance scholarly knowledge about the ways in which young people engage with and use digital technologies and media in and across settings, with a specific focus on the transformative potential of these encounters. In doing so, this special issue unpacks conditions and mechanisms that position young people as active, creative, agentive and critical investigators and users of digital technologies for personal and social change across formal and everyday settings, online and off.

The expansion of digital technologies and media, including the Internet, has resulted in major changes in the lives of many young people. New technologies and media have an impact on how young people spend their free time, how they interact and socialize with others, as well as how they make meaning, learn and develop their own identities (e.g. Chaudron, 2015; Erstad & Sefton-Green, 2013; Ito et al., 2013; Li, Hietajärvi, Palonen, Salmela-Aro, & Hakkarainen, 2017). Digital devices and technologically enhanced learning environments are increasingly introduced in formal educational settings to further students' learning in and for the digital age. Digital technologies and media are regarded as having potential in promoting children's and young people's learning in a variety of contexts and shaping their learning trajectories. The rapid technological developments have also created new mobilities (Leander, Phillips, & Taylor, 2010) and the transformation of learning environments and practices (OECD, 2017).

Instead of focusing on the threats and concerns related to young people's uncritical, passive, or consumerist engagement with the digital world and its effect on their values, habits, and identities – rhetoric often emphasized in the current research and in discussions held in public media (e.g. Kirschner & De Bruyckere, 2017; Livingstone & Gorzig, 2012) – this issue focuses on the transformative potential of young people's engagement with digital technologies and media within and across settings. Namely, this issue presents empirical studies framed by sociocultural theorizing and CHAT that investigate how young people engage with and use digital technologies and media as agentive actors to coauthor themselves and their worlds (Stetsenko, 2008). In doing so, this issue demonstrates how digital technologies and media can mediate young people's agency in their lifeworlds, also bringing youth closer to civic engagement and decision-making processes.

By transformative agency, in this issue, we refer to young people's tool-mediated activity that breaks away from the given or expected frame of action. The transformative agency is characterized by young people's initiative and commitment to transform the context(s) of their activity for personal, academic, life in the workforce and/or civic ends (e.g. Ito et al., 2013; Rajala, Hilppö, Lipponen, & Kumpulainen, 2013). The transformative agency also holds the potential for expansive learning, including the generation of new concepts, motives, and practices (e.g. Engeström, 2006; Haapasaari, Engeström, & Kerosuo, 2016; Sannino, 2015). In this regard, this issue examines how young people historicize their everyday lives, and how digital tools can support the development of new forms of agency. The focus on transformative agency taken in this issue responds to the

Kajamaa, A. & Kumpulainen, K. (2019). Agency in the Making: Analyzing students' transformative agency. *Mind, Culture, and Activity*. DOI: 10.1080/10749039.2019.1647547

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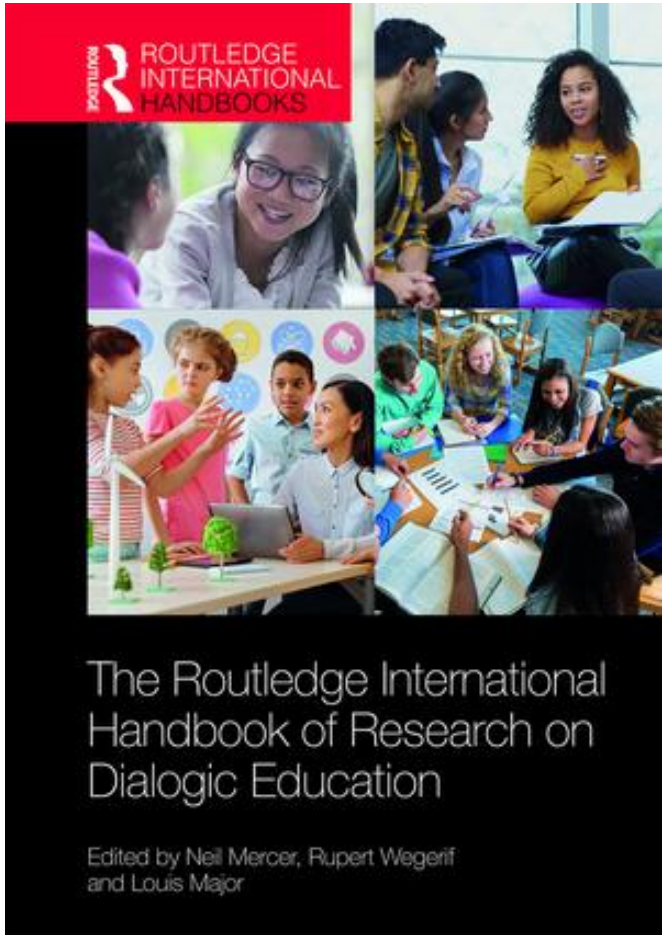
BJET | British Journal of Educational Technology
BERA
BRITISH EDUCATIONAL RESEARCH ASSOCIATION

Kajamaa, A., Kumpulainen, K., & Olkinuora, H-R. (2019). Teacher interventions in students' collaborative work in a technology-rich educational makerspace. *British Journal of Educational Technology*. DOI: 10.1111/bjet.12837

Abstract. This study reports on an investigation of teacher interventions in students' collaborative work in an educational makerspace. We draw on a qualitative analysis of video data on teacher–student interaction derived from 94 students (aged 9–12) and their teachers in a Finnish school. The results show that the teacher interventions were both student- and teacher-initiated. Three leading teacher intervention strategies were identified, namely authoritative, orchestrating and unleashing which emerged in teacher–student interactions dealing with conceptual, procedural, technological, behavioural and motivational issues. The study demonstrates the demands makerspaces pose for teacher–student interaction, and how moving from authoritative to collaborative interaction requires collective efforts and cultural change.



Kumpulainen, K., Rajala, A., & Kajamaa, A. (2019). Researching the materiality of communication in an educational makerspace: The meaning of social objects. In N. Mercer, R. Wegerif, & L. Major (Eds.), *The Routledge International Handbook of Research on Dialogic Education*. London: Routledge.

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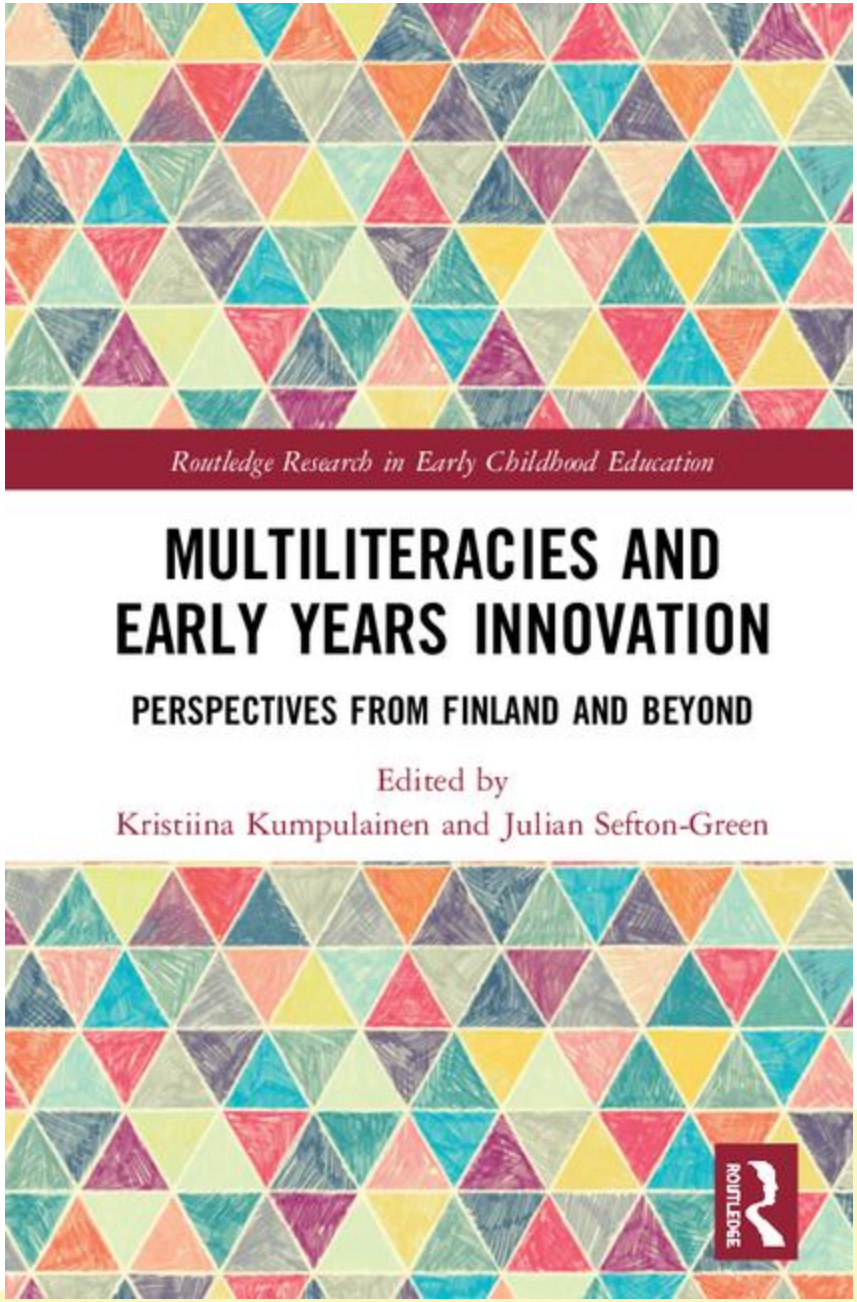

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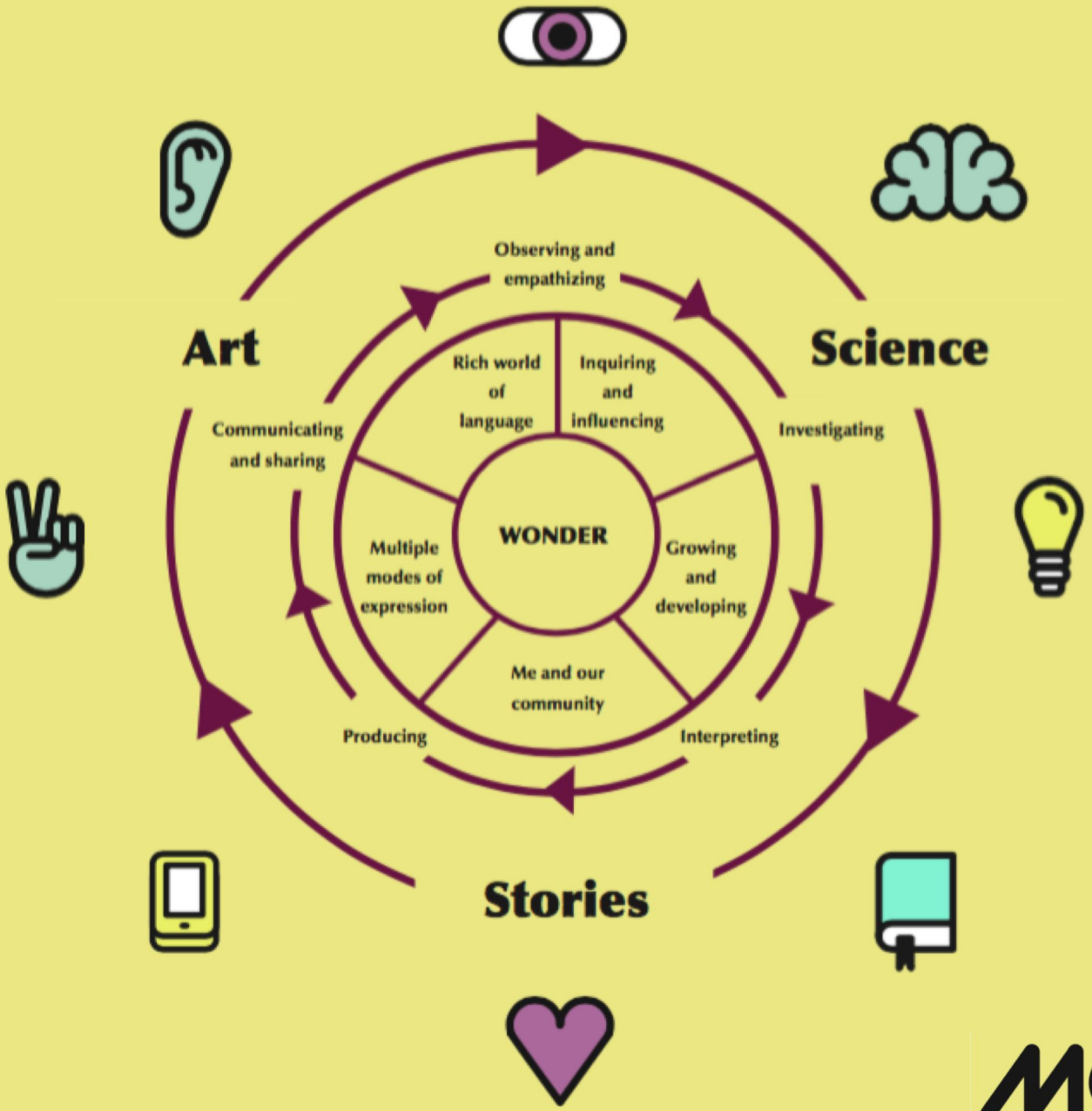

MOI
The Joy of Learning Multiliteracies

CHILDREN’S STORYBOOK

MONILUKUTAITO

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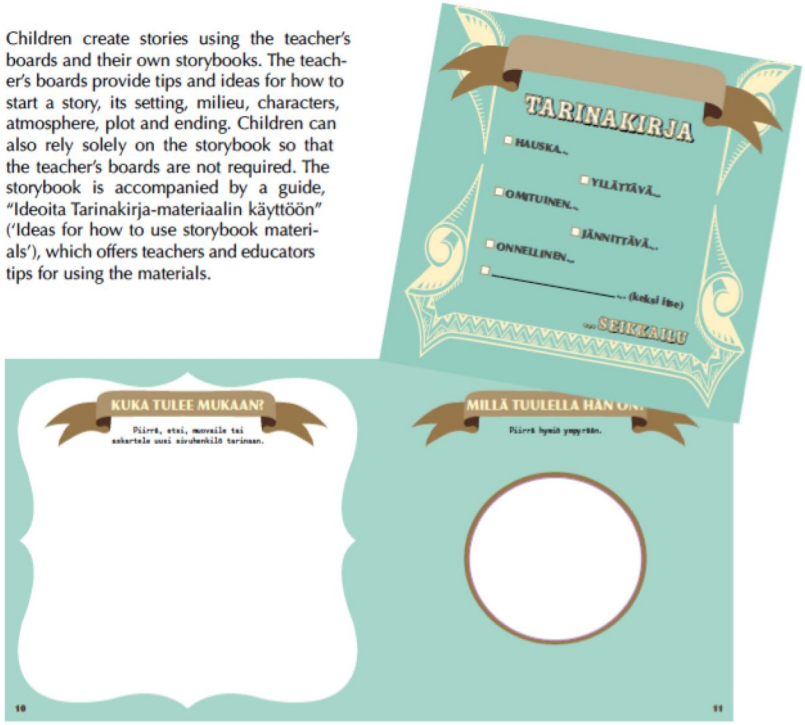
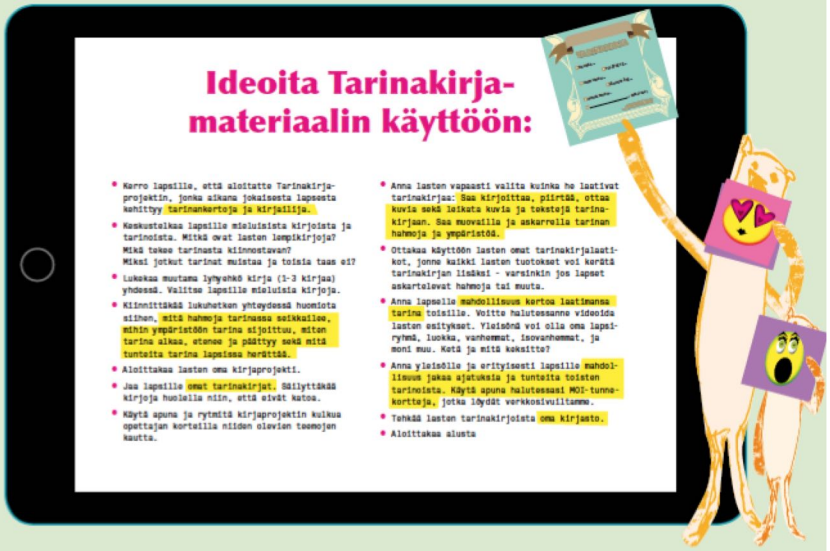
Children create stories using the teacher's boards and their own storybooks. The teacher's boards provide tips and ideas for how to start a story, its setting, milieu, characters, atmosphere, plot and ending. Children can also rely solely on the storybook so that the teacher's boards are not required. The storybook is accompanied by a guide, "Ideoita Tarinakirja-materiaalin käyttöön" ('Ideas for how to use storybook materials'), which offers teachers and educators tips for using the materials.





Ideoita Tarinakirja-materiaalin käyttöön:

- Kerro lapsille, että aloitatte Tarinakirja-projektin, jonka aikana jokaisesta lapsesta kehittyy tarinankerto ja kirjailija.
- Keskustelkaa lapsille mieluisista kirjoista ja tarinoista. Mitkä ovat lasten lempikirjoja? Mikä tekee tarinasta kiinnostavan? Miksi jotkut tarinat muistaa ja toisia taas ei?
- Lukekaa muutama lyhyehkö kirja (1-3 kirjaa) yhdessä. Valitse lapsille mieluisia kirjoja.
- Kiinnittäkää lukuhetken yhteydessä huomiota siihen, mitä hahmoja tarinassa seikkailee, mihin ympäristöön tarina sijoittuu, miten tarina alkaa, etenee ja päättyy sekä mitä tunteita tarina lapseissa herättää.
- Aloittakaa lasten oma kirjaprojekti.
- Jaa lapsille omat tarinakirjat. Säilyttäkää kirjoja huolella niin, että eivät katoa.
- Käytä apuna ja rytmitä kirjaprojektin kulkua opettajan korteilla niiden olevien teemojen kautta.
- Anna lasten vapaasti valita kuinka he laativat tarinakirjaa: Saa kirjoittaa, piirtää, ottaa kuvia sekä leikata kuvia ja tekstejä tarinakirjaan. Saa muovailla ja askarrella tarinan hahmoja ja ympäristöä.
- Ottakaa käyttöön lasten omat tarinakirjalautikot, jonne kaikki lasten tuotokset voi kerätä tarinakirjan lisäksi - varsinkin jos lapset askartelevat hahmoja tai muuta.
- Anna lapsella mahdollisuus kertoa laatimansa tarina toisille. Voitte halutessanne videoida lasten esitykset. Yleisönä voi olla oma lapsiryhmä, luokka, vanhemmat, isovanhemmat, ja moni muu. Ketä ja mitä haksitte?
- Anna yleisöllä ja erityisesti lapsilla mahdollisuus jakaa ajatuksia ja tunteita toisten tarinoista. Käytä apuna halutessasi MOI-tunnekortteja, jotka löydät verkkosivuiltamme.
- Tehkää lasten tarinakirjoista oma kirjasto.
- Aloittakaa alusta

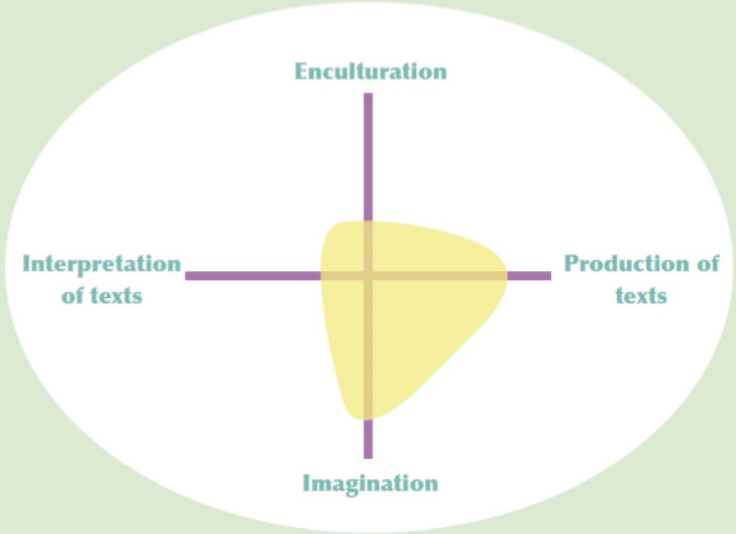


Figure 4. The storybook emphasises the production of information and use of imagination.

POETRY SCIENCE

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POETRY SCIENCE CARDS

FLYING FISH

There once were two little fish,
who still had a lot to learn;
they decided to fly to the moon and see,
if they could build a nest in a giant tree.
Time to go! They swam onto land
and dug their launchpads in the sand.
But – dear oh dear – they got nowhere near!
And we all know why –
fish can't fly.

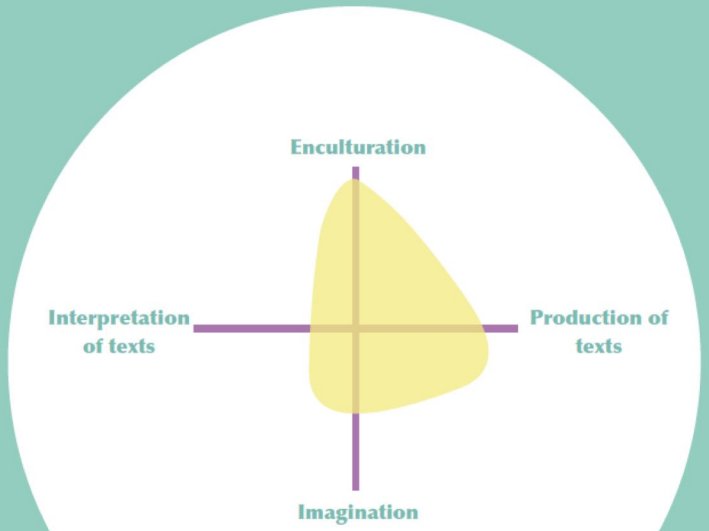

Figure 5. Poetry Science cards emphasise knowledge creation and growing into the culture of science

DigiChild
Nordic Research Network
on Digitalizing Childhoods
I
Meeting in Helsinki 2019
4. - 5.11.2019

Storyhacking: Young children's boundary crossing across material and digital worlds

Jenni Vartiainen, Heidi Sairanen, Alexandra Nordström
University of Helsinki

OBJECTIVES

This study introduces a novel pedagogical method called Storyhacking invented by the authors. Storyhacking consists of playful and creative activities and it aims to foster children's playful exploration, meaning-making and creation in story (re)telling contexts. This study unfolds the pedagogical principles of Storyhacking by examining the links that allow children to cross boundaries between material and digital worlds.

PERSPECTIVES

This sociocultural study examines dynamic links that make young children's boundary-crossing possible in and across story (re)telling contexts of digital and analogue stories through a novel pedagogical approach called Storyhacking (Vygotsky, 1978; Kumpulainen & Sefton-Green, 2014). Although researchers have recently paid attention to children's digital play and literacy practices, (e.g. Marsh, 2010; Kervin, 2016; Kumpulainen, Sairanen & Nordström, 2018) there is a need for research that contributes to pedagogy which enables young children to cross boundaries and navigate between digital and material worlds. This study asks what sort of links enable children to cross boundaries between material and digital worlds in young children's literacy practices.

METHODOLOGICAL CONSIDERATIONS

The data were collected during two Storyhacking workshops (totalling 12 hours) at the Playful Learning Center at the University of Helsinki. Ten children aged 3-6 years participated in the study. The primary data consist of observational data, visual data, and children's digital and material artefacts. Video observations and multimodal interaction analysis are applied in exploring the children's boundary-crossings during Storyhacking activities (Norris, 2004).

FINDINGS

From the data of children's Storyhacking activities, we identified five dynamic links that made possible for children to cross boundaries between material and digital worlds. These links describe the pedagogical principles that Storyhacking holds.

Link 1 (material - digital): From story-reading to story-watching
The chosen children's story was read aloud from the book. Next, the same story was watched from the screen as an illustrated e-book.

Link 2 (digital - material): From story-watching to using the play to reinvent the story
Children elaborated on the meanings of the story by playing the story as a role play. They changed some characteristics of the story eg. the main character and they played out the reinvented story.

Link 3 (material - material): From using the play to reinvent the story to building the scenery of the new story with crafting materials
Children created the sceneries and characters of the reinvented story by utilizing different crafting materials.

Link 4 (material - digital): From building the scenery of the new story with crafting materials to digital storytelling
Children used digital tools as taking photographs from crafted sceneries, recording audio, and utilizing digital storybook apps to tell the new story.

Link 5 (digital - material): From digital storytelling to sharing the story
Children shared their own digital stories with peers and other people present.

SCIENTIFIC SIGNIFICANCE

This study presents the pedagogical model of the Storyhacking method that is based on the dynamic links that enable children's boundary-crossing in the context of Storyhacking. The model pays attention to the boundary-crossing surfaces where meanings are reproduced. It aims to generate the dynamic links that trigger children's meaning-making that tangles analog and digital worlds. These links can offer a view on children's different literacy practices to take new viewpoints on existing narratives and their practices to interpret, produce and de- and reconstruct meanings with material and digital tools.

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ECO-LITERACY AND CLIMATE CHANGE

MONILUKUTAITO

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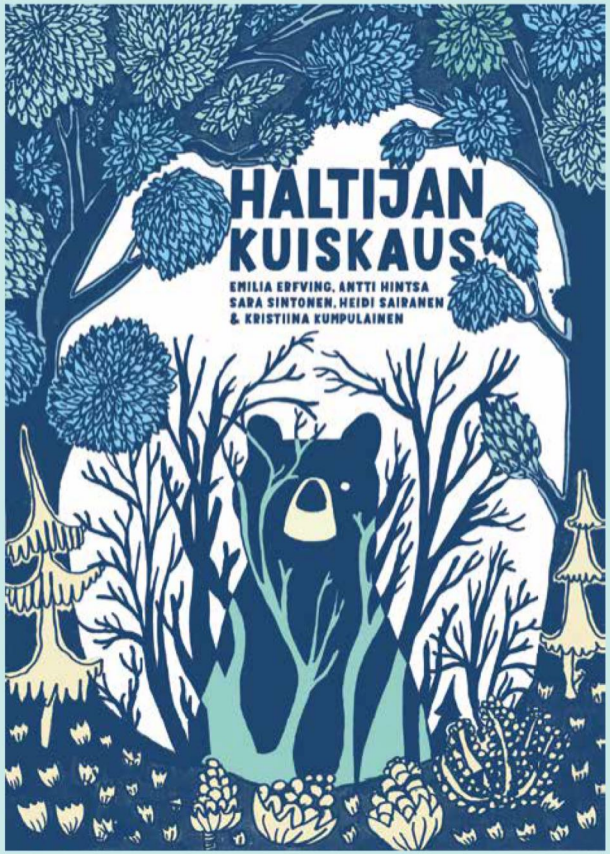
WHISPER OF THE SPIRIT



"Trees shouldn't be felled because they feel bad about it. And you shouldn't pull out leaves from trees."
(Liisa, 6 years old)

The Whisper of the Spirit in the framework of multiliteracy pedagogy

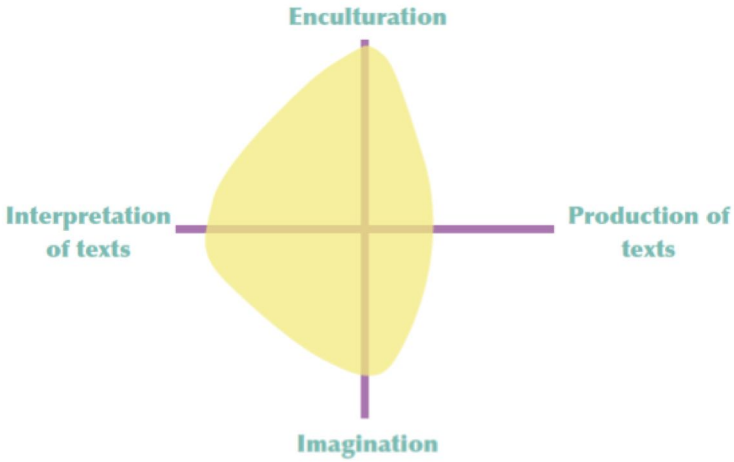


Figure 6. In Whisper of the Spirit the child makes meanings, grows into culture and imagines.

Picture 4. A child using Whisper of the Spirit material.

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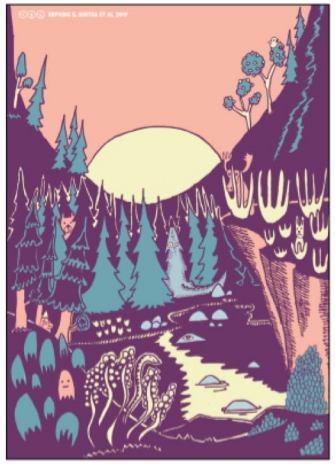
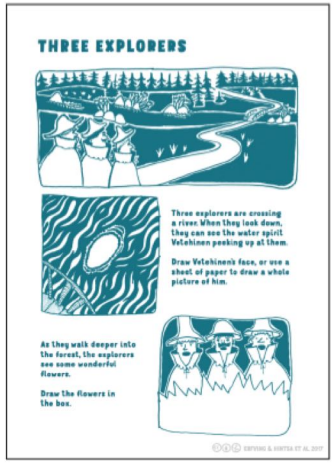
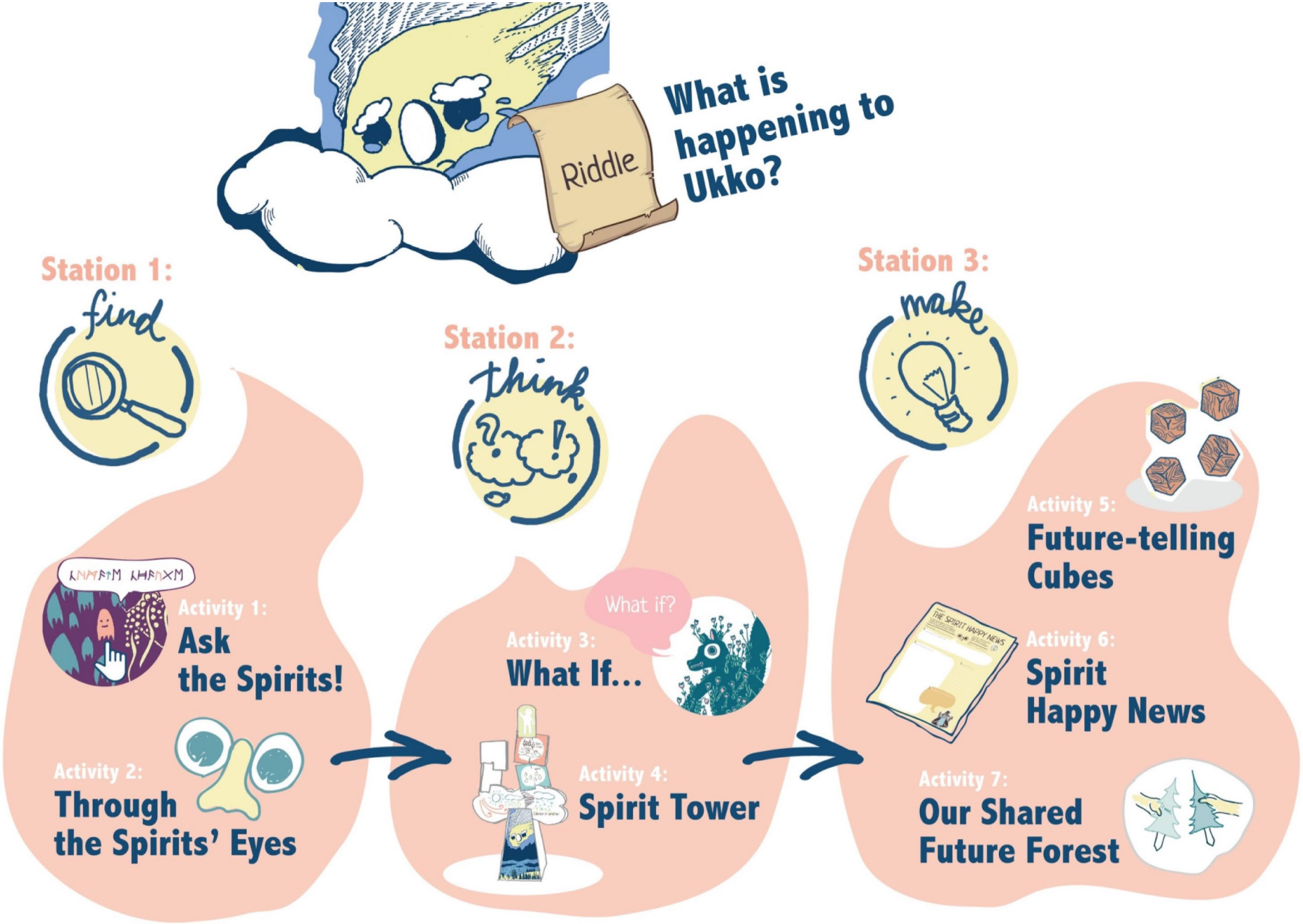


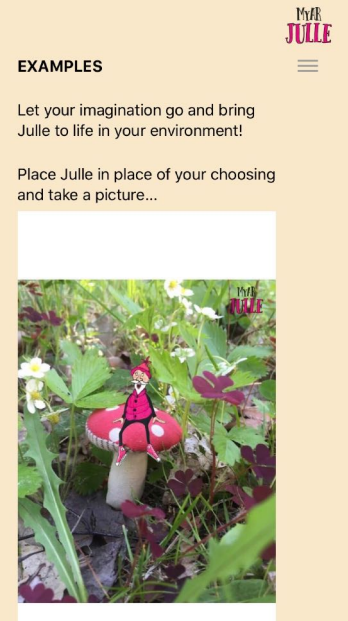



Kyoy haltijoilta
Ask the Spirits!
Find the spirits
Translate the ancient language
Search what it means
Earth is...
And tell the others what you find out
Haltija-torni
Me
Päivittäinen toiminta
Voimavarat
Haltija
Yhteinen tulevaisuuden metsä
Mitä toiveita sinulla on tulevaisuudestasi?
Kyoy haltijoilta
Mitä tämä ihmisuteen tarkoittaa?
Entä jos...
onkin
?
Kerro tulevaisuudesta-kuutiot
Eritos paljon!



(Wong & Kumpulainen, 2020)

An example – Riddle of the Spirit



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DigiChild
Nordic Research Network
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Meeting in Helsinki 2019
4. - 5.11.2019

Children's digital storying of their nature relationships

Jenny Byman, Jenny Renlund, Chin-Chin Wong & Kristiina Kumpulainen
University of Helsinki

OBJECTIVES

The global sustainability crisis makes it necessary to rethink human's relationships with the natural environment and the 'more-than-human' world. Meanwhile, the rise of mobile digital technologies in contemporary societies not only challenges but creates new pedagogical opportunities to transform children's engagement and interaction with the natural environment. Responding to this context, this study investigates children's relationships with nature through digital storying with a specific interest on children's storying on climate change and nature conservation.

PERSPECTIVES

The study is framed by sociocultural (e.g. Ramos & Renshaw, 2017; Vygotsky, 1994) and post-human (e.g. Braidotti, 2013; Taylor & Pacini-Ketchabaw, 2015; Verlie, 2017) theories to explain how children's relationship(s) with nature emerge through a sociomaterial dynamic between affect and cognition across contextual and temporal sensitivities.

DATA SOURCES

In the process of digital storying, a novel digital application, MyAR Julle*, was utilized as the main tool for children to construct their stories around nature. The digital application is framed by a story of a forest elf called Julle. It invites children to imagine and 'capture' Julle in the natural environment through a photo and a short narrative. Afterwards, the digital stories of children were discussed in group interviews addressing also children's own thoughts and feelings about nature.

- Participants: 62 children aged 8-9 years old in a Finnish primary school
- Interview data with children
- Video data and observational field notes
- Children's digital stories

METHODS

- Case study
- Abductive content analysis of multimodal data (Dey, 2003; Kumpulainen, 2017)

*Free download: search 'MyAR Julle' in App Store

FINDINGS

- The digital application encouraged children to explore nature playfully and imaginatively
- The children´s digital stories evoked engaged discussions between the child and adults
- Digital storying revealed diverse qualities in children's relationships with nature: affective, nurturing, aesthetic, imaginative, functional, scientific
- Some children expressed a strong emotional connection to trees, plants and animals(/the natural world)
- The children expressed concerns about protecting nature and about climate change

SCIENTIFIC SIGNIFICANCE

The study addresses the need to develop pedagogical tools and methods for children to engage, reason and reflect upon the natural environment. It makes visible how digital storying offers a potential tool for children to engage with and explore nature, and to make their experiences and thoughts visible for joint reflection and future action. The study also shows how digital storying created a space for children to express and negotiate their thoughts and feelings, including so-called eco-anxiety, about environmental issues.

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