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How Covid-19 Intruded and Improved My Applied LESLLA Research in Progress: Reflections on Research-Design and Research Ethics of an Empirical Serious Game Study on L2 Literacy Support of Adult Migrants in Finland

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Abstract

In this paper, I am reporting on the impact the Covid-19 pandemic had on my ongoing doctoral study. Due to the disruptive effects of the pandemic in 2020, it was not possible to carry out planned field-testing with adult literacy learners in Finland. This paper intends to illuminate the pandemic-related research implications for this study, by highlighting how the pandemic circumstances challenged and crystallized this study's initial focus and feasibility, consequently, changing and, therefore unexpectedly, enhancing this study's research design. This paper reflects on the evolution of a specific study design, its process and progress to encourage reflection and discussion on current and future LESLLA study design, feasibility, and ethical considerations in exceptional conditions.

Keywords: migrant education, adult second language literacy, digital literacy, mobile-assisted language learning, serious games, research ethics

Multiliterate, Digital Learners - Educational Objectives and Expectations in Finland

The growing research interest in the field of technology-supported second language (L2) learning of LESLLA students in Finland (see Eilola & Lilja, 2021; Tammelin-Laine et al., 2020; Törmänen, 2021) is captivating and crucial to supplement international LESLLA research. In my current research, I am examining the role of mobile-assisted language learning (MALL) in adult late second language and literacy education, by focusing on gamified digital literacy support of adult migrants with emerging Finnish literacy and language skills (see Malessa, 2021). In my local research context Finland (see Malessa, 2018), the three main educational paths migrant learners can take to gain and train literacy skills are either 1) basic adult education, 2) liberal adult education or 3) integration training, see Figure 1 below. New and flexible forms of more learner-specific late L2 literacy training, including non-formal training at liberal adult education institutions, were introduced in early 2018 (Finnish National Agency for Education, 2019, p. 2). Formal training is provided by basic adult education and integration training.

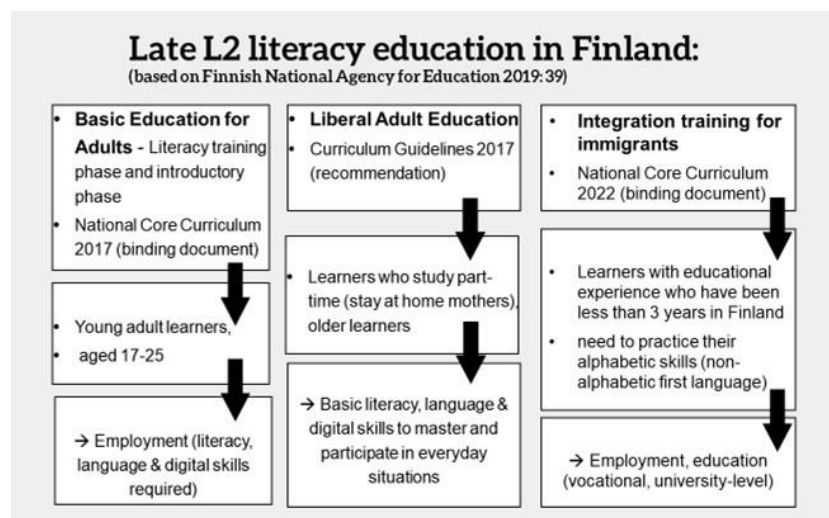


Figure 1. The main educational paths for adult L2 late literacy training

Suitability of different training modes depends on the learners' individual circumstances and professional objectives. Functional basic literacy, language, and digital skills necessary for daily life are at the core of adult liberal education targeted at learners who need flexible and/or part-time studying opportunities such as stay-at-home parents, elderly learners, and learners with sensory or other disabilities who need special support. These learners are seen to benefit especially from activity-oriented learning (Finnish National Agency for Education, 2017b, p. 9, 15). While literacy training in liberal adult education is guided by non-binding curriculum guidelines (see Finnish National Agency for Education, 2017b), there are binding curricula in place for the formal educational training in basic adult education¹ and immigration training². The

¹ Basic adult education follows the National Core Curriculum for Basic Education for Adults 2017 (see Finnish National Agency for Education, 2017a), a regulation issued by the Finnish National Agency for Education, providing the foundation for the creation of local curricula.

² The former curriculum for the integration training of adult immigrants (see Finnish National Board of Education, 2012) was reviewed, and a new version ratified in early 2022 (Finnish National Agency for Education, 2022). For

joint objective of adult basic education and integration training is to provide the required skills and knowledge for further education and future employment; thus, educational demands are higher compared to learning objectives in liberal adult education.

Multiliteracy, “the competence to interpret, produce and evaluate different text types, which helps students understand diverse cultural modes of communication and build their own identity” is a key content and integral competence area in both basic and liberal adult education (Finnish National Agency for Education, 2017a, p. 28; 2017b, p. 28). Its definition is based on a comprehensive view of text including verbal, visual, auditive, numeric and kinesthetic symbols which can be “interpreted and produced in speech or writing as well as in print, audiovisual or digital format” (Finnish National Agency for Education, 2017a, p. 8; 2017b, p. 14). While multiliteracy was not mentioned in the 2012 Core Curriculum for adult immigration training, the newly ratified curriculum lists both multiliteracy and digital skills as vital everyday study and life skills (Finnish National Agency for Education, 2022, p. 29). In the 2022 Core Curriculum for immigration training, multiliteracy skills are seen to cover in addition to reading and writing skills, also visual literacy, media literacy, and mathematical literacy skills, and to enhance the critical reading of texts and cultural understanding of references.

Digital skill expectations in integration training are high, as the curriculum’s objective postulates that students can use computers, smartphones, and other mobile devices as interactional tools to study, retrieve information, translate texts, and search for professional as well as educational opportunities. In addition, students are expected to know how to act responsibly on social media and in digital environments. Furthermore, the curriculum proposes that students securely use public authorities’ and other electronic service providers’ digital services (Finnish National Agency for Education, 2022, p. 29). Similarly, the ability to use digital technology is seen as an essential study skill and main objective in both basic and liberal adult education (Finnish National Agency for Education, 2017a, p. 28; 2017b, p. 33). Regarding the different literacy skills encompassed in multiliteracy, it is therefore crucial that adult basic and liberal education enables students to practice skills “in both traditional learning environments and in multimedia learning environments that make diverse use of technology” (Finnish National Agency for Education, 2017a, p. 28; 2017b, p. 15).

The current inquiry is motivated by these educational objectives and requirements and aims to support both LESLLA teachers and learners by considering present teaching practice and planning future research. Using a qualitative content analysis approach, this study’s first re-designed sub-study examined in-service teachers’ views and experiences regarding the role of technology in late literacy and L2 education of adult migrants in Finland (Malessa, 2022). The unprecedented Covid-19 health crisis has illuminated the importance of digital device and tool access and accessibility in education, particularly in adult education. Moreover, teachers reported a lack of adequate digital learning material targeted at their learner population. This study’s investigation of technology-enhanced literacy training in LESLLA classrooms in Finland is underpinned by this dual approach, satisfying practical needs and necessities as well as scientific investigation.

an overview of adult migrant integration and language education policies in Finland see Pöyhönen and Tarnanen (2015); Pöyhönen et al. (2018).

Initial Research Design

The initial study design focused on the following three aspects of technology-enhanced language and literacy training, especially serious game literacy support, in LESLLA classrooms in Finland:

1. the effect of a specific digital literacy support tool, originally designed for children, on adult learners' (technical) literacy skill development (see A in Figure 2),
2. the beliefs and reactions of LESLLA teachers and students related to the use of educational technology, particularly serious games in teaching (see B in Figure 2) and
3. the potential impact of digital literacy learning and teaching from multiple objective and subjective views (see C in Figure 2).

A	B	C
- Examining the potential (in)efficiency of a specific digital literacy support tool for adult emergent readers of Finnish (efficacy study) - What is the effect of the new GraphoLearn version on a. adult learners' (technical) literacy skill progress (vrs. control group)? b. adult learners' literacy learning process (shown by the detailed log-file information)?	- Exploring beliefs and reactions of teachers and learners related to the use of educational technology, in particular gamification, in adult literacy education in Finland - What do teachers and learners involved in the field-testing think about a. the use of educational technology/ mobile learning, serious games? b. their use of the GraphoLearn game?	- Investigating the potential impact of digital literacy learning and teaching from multiple perspectives (digital device, teacher, learner, researcher) - What is the potential impact of technology-enhanced literacy learning and teaching a. as shown by computer-user interactions (GraphoLearn log-files)? b. as observed by the researcher during the field-testing? b. as expressed by teachers and learners in adult L2 literacy education?

Figure 2. Research objectives and questions in the initial study design

To produce empirical evidence, this study was originally designed as a mixed methods study³ including respectively:

- quantitative research questions (see A in Figure 2) and perspectives focusing on digital devices (see C in Figure 2, and D in Figure 3)
- qualitative research questions (see B in Figure 2) and perspectives focusing on the human perspective (see C in Figure 2, and E in Figure 3)
- as well as mixed methods research questions (see C in Figure 2) and a mixed data set, see Figure 3.

To address the proposed research questions examining the aspects A, B & C presented in Figure 2, a mixed method approach was adopted. Following Calfee and Sperling (2010), multiple methods were chosen to gain a more rounded understanding of how and why learners develop effectively as emerging readers. Accordingly, a mixed data production, including classroom intervention, observation, and teacher/learner interviews, was designed. Human behaviour was

³ For methodological references, see, for example, Creswell and Plano Clark (2011); Plano Clark and Ivankova (2016); Teddlie and Tashakkori (2009).

seen to be best tracked and recorded by digital devices, producing quantitative log file data. Qualitative data production was planned to capture beliefs and reactions observed and reported by different agents (teachers, learners, and the researcher). This integration of quantitative and qualitative methods was considered to serve best the inclusive research purpose of investigating the multi-faceted role of technology-enhanced literacy learning in Finnish classrooms, see Figure 3.

D • What humans do with digital tools/ in a game environment • Quantitative, experimental (log files): Objective documentation • Efficiency of a digital learning tool, Impact of digital literacy learning and teaching	E • What humans think of digital tool use/ serious game use • Qualitative, explorative (questionnaire, interviews, classroom notes/ recordings): Subjective information • Human beliefs & reactions, Impact of digital literacy learning and teaching
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Figure 3. Mixed method and data approach of the initial study design

Ethical Research Issues and Considerations Regarding the Initial Intervention Design

The planned efficacy study included field-testing of an existing research-only literacy game app with adult literacy learners in adult basic education institutions in Finland (see Figure 1). This formal setting, opposed to non-formal settings in liberal adult education, was chosen to ensure a regular and long-lasting attendance of students, a factor crucial for testing purposes. The preparations for field-testing and classroom observation entailed materializing informed consent. The standard material at my home university in Finland includes *research notification*, *privacy notice* and *consent form* (see University of Jyväskylä, 2021a, 2021b). Starting with a traditional approach to informed consent documentation (see Thomas & Pettitt, 2017), a research notification letter informing game testers and their teachers about the ongoing doctoral research and the planned intervention was created. The letter included a photograph of the researcher to make the letter with its official letter head and university logo more welcoming and was devised in both Finnish and English (see Figure 4).

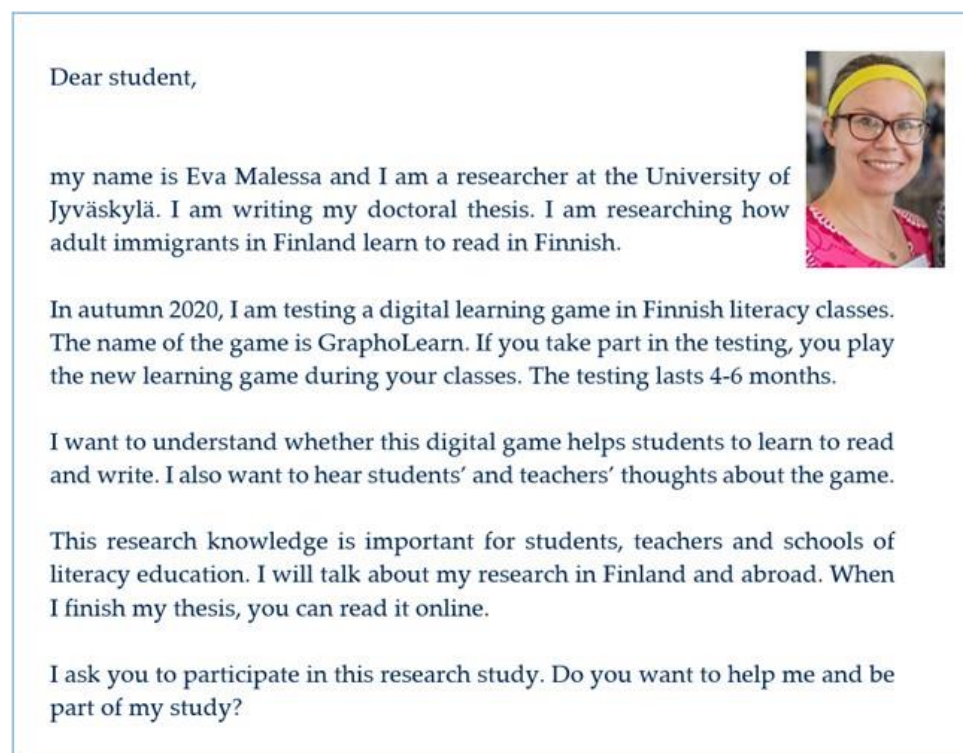


Figure 4. Screenshot of an excerpt from the created research notification letter

Multiple versions benefitting collegial feedback were created to obtain simple language versions. In addition to the research notification, a privacy notice was required.

A privacy notice is a description of the processing of personal data required by the EU General Data Protection Regulation (GDPR), which was implemented in May 2018 (see Proton Technologies AG 2021a)⁴. The data subjects, i.e., the study participants, must be informed about the processing of their personal data for scientific research purposes and provided with a privacy notice (see <https://tietosuoja.fi/en/what-is-personal-data>). Two versions were created, an official one (see University of Jyväskylä, 2021a) and a simplified participant version, renamed information package. To ensure that informed consent was truly informed (see Thomas & Pettitt, 2017), the so-called information package included visual illustrations (see Figure 5) and a list of questions to enhance participants' comprehension of informed consent by providing "just the right amounts and kinds of information" (Thomas & Pettitt, 2017, p. 279).

⁴ For scientific research purposes, Articles 13, 14 and 30 of Regulation (EU) 2016/679 are of particular importance (see Proton Technologies AG 2021b).

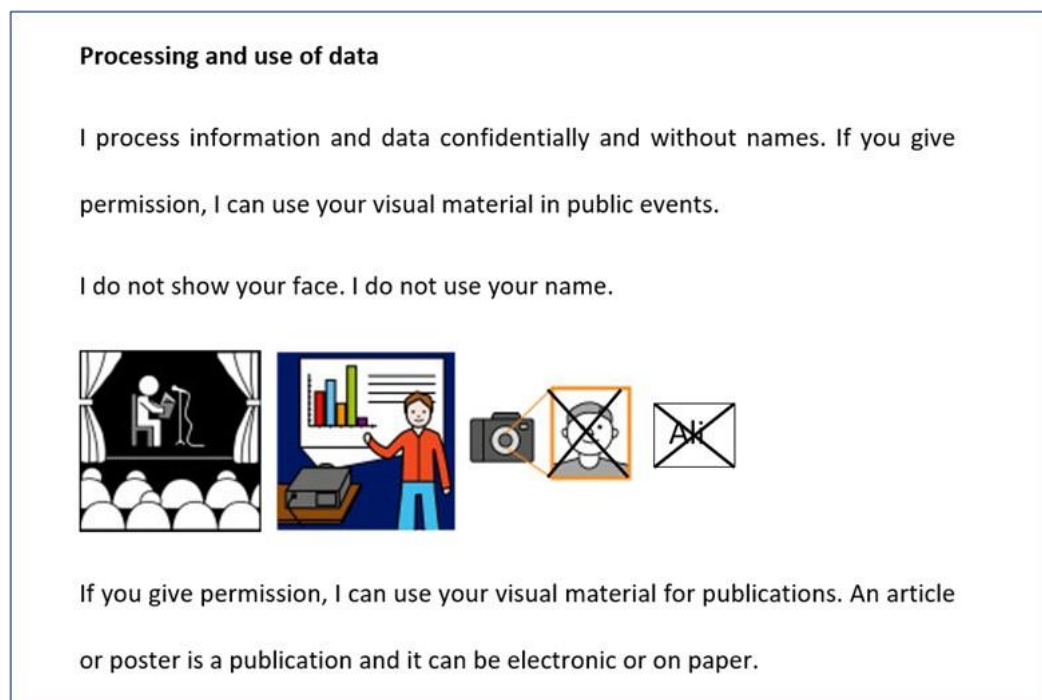


Figure 5. Screenshot of an excerpt from the created privacy notice

The creation of the privacy notice turned out to be very laborious. The official template (see University of Jyväskylä, 2021a) had to be scrutinized and essential information re-disseminated in a LESLLA-proof manner as participants with no/interrupted educational backgrounds have been found to have significantly lower levels of comprehension of informed consent (Breese et al., 2007). Diligence, careful attention to detail, including language use, font size and type, was needed and the early design benefitted tremendously from collegial advice.

Finally, consent forms were drawn up. Even though consent no longer is the primary legal basis for scientific research, due to ethical reasons, consent is normally still required for study participation even if the basis of processing is in the public interest (University of Jyväskylä, 2021a). Several ways for participants to express their consent including written and oral documentation, as well as a combination of both were considered. My reflections became very meticulous, obsessed with details. I considered for example whether the researcher or teacher could write the participants' names and the date on the form with the participants putting marks (ticks or crosses) themselves or whether first name signature would be satisfactory to indicate consent. Even participants' fingerprints were considered as a sign of consent.

I sought advice from my university's ethical committee and was, subsequently, instructed that the subject's consent to participate shall be documented orally, in writing, electronically, or otherwise (R. Oikari, personal email conversation, June 30, 2020). 'Otherwise' was not specified further and thus left open to interpretation. If consent is sought orally, it must be documented. The presence of more than one researcher was deemed acceptable in addition to a reliable documentation of the notification process as well as the requesting and obtaining of consent. The situation could also be videotaped or recorded, if possible (R. Oikari, personal email conversation, June 30, 2020). Likewise, Ortega (2017, p. xiii) reminds us of the contextual and situated nature of ethical decision making and accordingly, a combined flexible approach was chosen, providing various alternatives to demonstrate and record consent, in traditional written form (see Figure 6) or in oral form by answering questions asked by the researcher/interpreter.

This individualized approach was seen to enhance truly consensual consent, allowing “participants to freely express their desire to be involved or not” (Thomas & Pettitt, 2017, p. 280).

	YES 	NO 
I have understood the information about the study and the processing of my data.		
I could ask enough questions about the study and I got enough information about the study.		
I want to participate in the study.		

Figure 6. Screenshot of an excerpt from the created participants' consent form

Originally it was planned to have translators produce videoclips of themselves reading their translations of the various documents (research notification, privacy notice, and consent forms) while simultaneously showing written documents of their translations to visually demonstrate the connection between written and oral text. These audio-visual video clips were created in English and Finnish and further planned to be produced in the learners' main languages to be send via WhatsApp to the language-users. Another promising alternative could be the visualization of the research process and procedure with animated videos, e.g., the online animation software *Vyond*, as reported by Grinden (2021). The translators were also expected to be available for a Q&A session with potential participants before learners would have been given written consent or produced oral consent files. This procedure was seen to further enhance mutual understanding and ensure informed consent, acknowledging that “participants may need additional information as they go along” (Thomas & Pettitt, 2017, p. 279).

In hindsight, starting a field-testing intervention amidst a global pandemic was clearly going to be a complicated endeavour. However, while I carefully considered the resources needed for a successful conclusion of the planned data production, I did not sufficiently consider the resources available to support my research during the global pandemic age. Patton (2015, p. 21) mentions financial and people resources, time, and access as potentially available resources. The feasibility of the initial study and the re-design of its original design turned out to be significantly determined by the lack and the constraints of the resources listed by Patton (2015, p. 21) regarding people resources and access, which the next section will illustrate.

Pandemic-Related Challenges

In mid-March 2020, working on campus was only allowed in exceptional circumstances. However, research requiring physical contact with test subjects was allowed throughout the pandemic time, even though it required a separate decision of the vice rector responsible for research (University of Jyväskylä, 2020). Despite the prevailing restrictions, I was quite hopeful,

even overly optimistic that I would be able to start the planned experiment in six months' time. Amidst recruitment for potential teacher participants and translators in late September/early October I started to realise how unrealistic my initial plans were against the backdrop of the pandemic (see Figure 7). The unprecedented nature of the pandemic clearly contributed to my overly optimistic outlook.

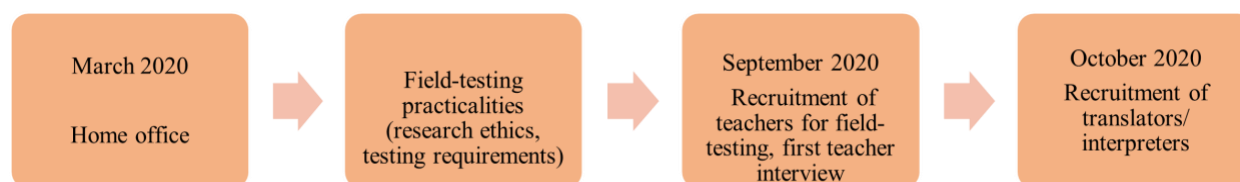


Figure 7. Timeline (spring 2020-autumn 2020)

Finally, after processing my first teacher interview in late September 2020, I realized that it was not feasible to pursue my initial study plan due to the amounting practical challenges in the age of this pandemic. The main challenge that presented itself was the restricted access. Teachers and learners had to adapt on a truly short notice to new teaching arrangements, most moved to hybrid or remote teaching models, only some classes were able to remain in contact teaching. Hybrid or remote teaching suffered from a lack of digitally available materials, unstable internet connections and a lack of suitable technological devices for remote teaching. Figure 8 below presents a visual overview of the various components at the heart of this study's research focus. Components marked in yellow (the stakeholders, learning materials/tools and context as well as technology) were seen to be directly affected by the pandemic, to various degrees regarding access and availability. At the core of this research project is the human factor of LESLLA training in Finland: the adult learners and their teachers who have been surrounded by challenges, some intensified by the Covid-19 pandemic, while many having pre-existed (see Malessa, 2022).

Resuming contact teaching was only possible with protective equipment including face masks and visors, which understandably made communication and comprehension more difficult. Similarly, contact research required researchers to use protective equipment when working in a close distance of less than two meters. Participant recruitment was further complicated by the fact that members of risk groups could not be taken as test subjects (University of Jyväskylä, 2020). The recruitment of participants would thus have possibly entailed handling sensitive health information and the exclusion of potentially vulnerable participants. Access to learner participants and face-to-face interaction in classes that were still conducted in contact teaching mode was moreover complicated by travel restrictions and recommendations to avoid work-related travel (University of Jyväskylä, 2020).



Figure 8. Components in L2 literacy education affected by the pandemic and exemplary visual illustration

Furthermore, teachers also denied access themselves, for the very practical reason that despite their initial interest they had to decline study participation due to their increased and intensified workload and other pandemic-related burdens. It became clear that the limited resources available to this scientific inquiry necessitated immediate design trade-offs and decisions (see Patton, 2015, p. 258). Consequently, my initial mixed methods study came to a halt before its experimental stage. Once I accepted the impossible execution of field-testing under the prevailing conditions, I was able to redirect my focus from the perceived failed intervention to my research purpose and vision.

Pandemic-adapted Solutions

Whereas the realization of the initial study design's non-feasibility was a slow process, gradually emerging during the teacher and translator recruitment in late autumn 2020, the re-design and re-calibration process was rather the opposite, taking place in a speedy manner. Firstly, I turned to available resources, in this case, findings of an online LESLLA teacher survey (N=32) I conducted in 2019. Most teachers (n=23) stated that they use the *Ekapeli* serious game

app⁵ for initial literacy training with their adult learners. The original research design plan intended to test a new digital literacy support game, similar to the Ekapeli game and also originally developed for children (see Malessa, 2021). Examining the teachers' survey responses with regard to my study design's imminent re-design, a call for a more appropriate and suitable, adult-focused and LESLLA-friendly game design, started to echo and thus, the recurring statement by the LESLLA teachers: "The students want to play something that is primarily designed for them" (teacher response in survey) served as final impetus for the re-calibration process. I realised that in order to avoid exhausting potential participants by feeding into possible biases towards a game targeted at children, flattening motivation and willingness to genuinely engage with this mode of learning, I needed to change my research design. A design change was targeted towards a future re-design of the existing literacy support app to be able to genuinely test efficiency and enjoyment of the new literacy support app. Consequently, to being truly able to study the potential impact of digital literacy learning of LESLLA learners, the appropriateness and suitability of the testing device, in this case the game app, used in the research process had to be scrutinized and secured.

According to Smyser (2019, p. 136) "the question is not so much whether or not these technologies will prove helpful, but rather what the limiting factors are for employing these technologies with a different population and how best to implement". The revised research design turned towards exploring the limitations (according to the teachers) and envisioning solutions and modifications to create the best possible testing version. For this purpose, it was decided to field-test and evaluate the existing app with LESLLA experts, i.e., practitioners. Methodologically this study's re-design meant the abandonment of the quantitative inquiry while pursuing and concentrating on the qualitative inquiry of the original research plan (see E in Figure 3).

In the transformed study, teachers provided their feedback on the gaming experience reflected on with their LESLLA expertise via personal gaming diaries and online interviews with the researcher. The focus of this study has thus shifted to evaluating and redesigning a specific literacy game app with adult literacy educators to:

1. Re-design the existing game creating a prototype suitable for adults to be tested with learners in class
2. Devise non-language specific design guidelines for literacy support games enhancing LESLLA learning and teaching

In this newly designed user study, game design is explored to find answers to the crucial question: What makes a suitable literacy support app for adult L2 learners? It is expected that a future prototype of the tested literacy support app, once modified based on participating educators' expertise and experience-based observations, expressed in the conducted teacher interviews and their observational gaming diaries, will better correspond to the characteristics, and needs of LESLLA learners.

By enhancing the literacy support testing device with a more unbiased, participant-centered game design, not only the conditions for successful testing are improved, but furthermore also the testing experience of LESLLA learners, hopefully engaging them in an enjoyable and

⁵ Different versions can be downloaded at Google Play and Apple Store for free: the Finnish *Ekapeli Alku* (targeted at L1 preschool and primary school children) and *Ekapeli Maahanmuuttaja* (targeted at L2 children), as well as the Swedish *Spel-Ett* (targeted at L1 children).

effective learning experience. This reciprocal benefit for both LESLLA research and education is seen to enhance scientific value and validity as well as technology-enhanced learning and teaching of adult emerging L2 Finnish readers in the various educational settings of L2 literacy learning in Finland (see Figure 1).

Discussion and Implications

In this article, I presented my study's pandemic-related challenges and pandemic-adapted solutions as well as the evolution of a specific research design, its process and progress. Retrospectively, this study's research design was unpredictably enhanced by the challenges faced as they demanded a thorough reflection of this study's fundamental purpose, its available resources and viability/feasibility issues. Recalling Patton's (2015, p. 243) statement: "always be suspicious of data collection that goes according to plan", the perceived failure of not adhering to the initial research plan provided the opportunity for professional development as a researcher. As applied researchers serve real-life problems they cannot escape prevailing and future challenges, extreme conditions, global developments, but need to learn to face "failure" and be flexible and adaptable in order to serve the fundamental purpose of their trade.

I encourage more open discussion on research "failure" and feasibility, as joint reflection and deliberation of obstacles and complications can often be beneficial for the whole research community and not only lead to successful re-design on an individual level but promote re-thinking of common practices and problems. Moreover, I encourage reflection on and discussion of current and future LESLLA study design and feasibility in exceptional conditions. This paper intends to contribute to the necessary discussion of practicalities, ethical issues, and implications of LESLLA research. I agree wholeheartedly with Ortega (2017, p. xvii) that "the very nature of being a researcher and doing research in today's complex, contradictory world means that applied linguists will need to be able to garner human and adaptive responses to the many challenges of ethical research"; for current reflections and suggestions regarding potential ethical challenges in LESLLA research, see Bigelow and Pettitt (2016), Fox et al. (2020), Kubanyiova (2008), Ngo et al. (2014), Ortega (2005, 2012), Pettitt (2019), Shepperd (2022), Warriner and Bigelow (2019).

Following Thomas and Pettitt (2017, p. 282), I would like to add to the on-going debate on problematic issues accompanying more systematic incorporation of informed consent into research practices. Ensuring and documenting LESLLA learners' informed consent is a complicated issue and raises the question, whether, to what degree or at what point, we as researchers can be assured of the truly informed nature of consent. How can we ensure the best possible research resilience to produce valuable data on, with and for LESLLA learners and teachers? One potential solution could be a LESLLA research community-driven creation of a database of LESLLA-specific guidelines focusing on research ethics and practicalities. The existence of such guidelines could even lead to an increase in experimental research in LESLLA settings.

LESLLA practitioners are only too aware of the daily challenges, which in turn mean that LESLLA research, even pre-pandemic, has often been conducted under extreme conditions, regarding practicalities and available resources, limited means and access that were described in Section 2. Most pedagogical decisions and choices are necessitated by various resource limitations (time constraints, access and availability issues, people resources). Empirically grounded applied research can potentially provide solutions to ease limitations and support

teachers in adult late literacy teaching and training. Indeed, Smyser (2019, p. 136) calls for more empirical LESLLA research that is also applicable in praxis and Piccinin and Dal Maso (2021, p. 20) highlight the role of experimental efficacy studies in providing research knowledge that has the potential to inform LESLLA curriculum design work. However, many practitioners conducting research, lack access to academic publications that are locked away behind publishers' paywalls, hence researchers should strive to enable teachers' access to research by favouring open-access publications.

To make sure that learners and teachers are benefitting from present, existing interdisciplinary research, it is of utmost importance to reflect on the role of research facilities including universities, publishers and other stakeholders involved in the academic publish-or-perish race to initiate open debate about availability and accessibility of different publication channels. Furthermore, as teachers might not view research articles as the most relevant way to inform practice (Rosen & Vanek, 2017, p. 56), there is a need for scientific findings to be disseminated in applied and accessible ways, for example in professional development courses with LESLLA experts (see e.g. the EU-Speak project, <https://research.ncl.ac.uk/eu-speak/>, Young-Scholten et al., 2018).

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