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Digital media as language and literacy learning spaces in multilingual families – survey results from Luxembourg

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ABSTRACT

Recent research shows that transnational families draw on digital media in their language learning. However, little systematic knowledge exists on the nature of these practices, the tools used, and the families' views regarding digital media use for language learning. This article addresses this knowledge gap, presenting the results of an online survey conducted among 209 parents of transnational, multilingual families from Luxembourg. The questionnaire, which included closed- and open-ended questions, investigated the use of digital media among family members, the tools and activities employed and parental views towards the use of digital media for language learning. Parental reports suggest that children and adults may engage in different practices when learning languages with digital media. Digital tools most frequently used by the families in our studies include educational apps, videos, and online games. Further, our results indicate that parents assess digital media use for language learning positively, emphasising their accessibility and usefulness for the development of language skills. At the same time, the open comments indicate concerns related to the children's age and the appropriateness of the available materials. The ensuing discussion and conclusions place the survey results in the context of existing literature and outline areas for future research.

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Introduction

Considered 'mobile learning communities' (Lanza & Lexander, 2019), transnational families offer their members unique safe spaces for language and literacy learning (Curd-Christiansen & La Morgia, 2018; Song, 2016). With the growing availability and accessibility of digital technologies, many transnational families draw on digital media in their daily communication practices (Lexander & Androutsopoulos, 2021; Palviainen, 2018). Several studies also point to the potential of digital media for language and literacy learning among transnational families (Al-Salmi & Smith, 2015; Marsh et al., 2017; Szecsi & Szilagy, 2012). Yet, apart from preliminary findings, there is little systematic knowledge

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on how digital media are used by transnational families to facilitate language and literacy learning in the context of migration. Focused on multilingual transnational families in Luxembourg, this article addresses this knowledge gap drawing on data obtained through a survey conducted among 209 parents from transnational families living in Luxembourg.

The aim of the present study is to explore language and literacy learning practices with digital media in multilingual transnational families in Luxembourg. For that purpose, we engage with the following research questions (RQs):

1. What digital practices do parents and children engage in for language and literacy learning in multilingual families in Luxembourg?
2. How often are digital media used for language and literacy learning by the children and parents?
3. What views do the parents hold regarding language and literacy learning with digital media?

In this article we use the term ‘transnational’ to stress the importance of interconnectivity across and beyond national boundaries in the participants’ experiences (cf. Hua & Wei, 2016). Learning is understood as ‘a process that leads to change, which occurs as a result of experience (Ambrose et al., 2010, p. 3). We acknowledge that learning can be formal and informal, purposeful but also incidental. Further, in this exploratory study we do not aim to measure the learning outcomes of our participants but rather focus on their perspectives and on their understanding of what constitutes language learning with digital media.

Luxembourg has been chosen as the research location for several reasons. Firstly, it is one of the countries with the highest number of internet users in Europe. In 2018, more than 9 out of 10 households had internet access and 4 out of 5 individuals aged 16 to 74 regularly used internet on their mobile phones (Eurostat, 2019). Secondly, 47% of the population were non-nationals on 1st January 2020 (STATEC, 2020), thus many residents have transnational contacts abroad.

In addition, Luxembourg is a multilingual country with three administrative languages, and more than 40 immigrant languages used on a daily basis. During their school years, children attend a trilingual educational system. German and French are used as languages of instruction while Luxembourgish is the language of communication among teachers and students. Recently, in recognition of the challenges posed by the trilingual educational system to children and parents of non-Luxembourgish origin, several state-run international schools have been created, offering French, German or English as languages of instruction. In addition, numerous private schools throughout the country offer primary education with various languages of instruction.

This complex and superdiverse environment makes Luxembourg a particularly suitable site for the exploration of digital media use for language and literacy learning among multilingual transnational families. Also, and in view of our study, this provides context for the participants’ choices of new languages to learn during the past three years (detailed description in the results section).

In the following sections, we first provide a comprehensive review of the current literature on digital media as a medium for language and literature learning in transnational families. Secondly, we present a detailed description of the methodology implemented.

Thereafter, we introduce a synthesis of the findings based on the closed and open-ended questions of the survey. Finally, we conclude with a critical discussion of the findings in relation to current research work on the topic, methodological and conceptual limitations, and future research directions at the end of the article.

Digital media as language and literacy learning spaces in transnational families

Recent research suggests that transnational families make use of digital media to create spaces and opportunities for language and literacy learning, be it in home languages, societal languages or foreign languages. For this purpose, they may creatively draw on various monomodal and multimodal digital media, ranging from email and text communicators (Al-Salmi & Smith, 2015), through video calling apps such as FaceTime or Skype (Palviainen, 2020; Said, 2021), communicators like WhatsApp or Viber (Androutsopoulos & Lexander, 2018) or games and apps (Little, 2019).

Several studies point to the benefits of using digital media for the development of various language skills. For example, engagement with videos, calls and voice messaging were found to be vital for the development and maintenance of speaking and listening skills in both heritage languages and foreign languages. In Said's (2021) study, Arabic-speaking families in the UK provided children with exposure to different spoken and literary varieties of Arabic with the help of YouTube and Skype. Lexander (2020) and Androutsopoulos and Lexander (2018), researching digital communication in Senegalese families in Norway, found that online communicators offered their participants opportunities for speaking their heritage languages. Similarly, Szecsi and Szilagyi (2012) and King-O'Riain (2014, 2015) show that video calls with grandparents abroad can be vital for the maintenance of listening and speaking skills in heritage languages. In Palviainen's (2020) study Skype conversations with a parent living abroad offered not only space for the development of a heritage language but also exposure to English.

Other studies note benefits of digital media use for developing literacy skills. In a qualitative case study, Al-Salmi and Smith (2015) found that google translate and writing emails helped mothers in Arab immigrant families in the US expand their English vocabulary, as well as improve reading and spelling skills. De la Piedra (2010) reported that joint intergenerational engagement in reading and writing e-mails supported Spanish literacy skills among teenagers in Mexican families in the USA. Eisenclas et al. (2016) showed in their pilot study with German-speaking children in Australia that the use of targeted language and literacy learning games can be effective in young children's heritage language literacy development. In addition, the study results indicate that language and literacy learning games can increase children's motivation and autonomy in the learning process. Somewhat similar results were reported in Little's (2019) study, where the use of game and app technologies not only helped children develop literacy skills in heritage languages but also had a positive impact on their relationship with the heritage languages.

As the research described above suggests, the different affordances of digital media are used for a variety of language and literacy learning practices across different modalities and different languages in transnational families. For example, video calls (e.g. through Skype, FaceTime, WhatsApp) may be used for developing speaking and listening

skills in various languages. Written communication via Messenger, WhatsApp or Facebook walls, has been used by some families to foster reading and writing skills in both societal and home languages (Al-Salmi & Smith, 2015; Lexander, 2020).

While the studies described in this section lay an important foundation for research on digital media use for language and literacy learning in transnational families, many are isolated case studies, relying solely on qualitative methods. Furthermore, the use of digital media for developing language and literacy is not their focus, neither do they discuss in great detail parental views on digital media use for language and literacy learning. Finally, with a few exceptions, the existing research projects tended to focus on bilingual rather than multilingual settings. The present study addresses these limitations by assessing a large sample of multilingual transnational children and their caregivers living in Luxembourg, focusing on the digital media and their frequency of use among parents and children, as well as parental views on the use of digital media for language learning.

Methodology

In order to explore families' practices and views on language and literacy learning practices with digital media, survey methodology was implemented. The survey included quantitative and qualitative parts (i.e. closed-ended and open-ended questions), suited to the aims of the current research project. This section presents the measuring instrument, introduces the participants of the study and provides information on data analysis.

Measuring instrument

The survey was conducted online over a period of three months (December 2021 to February 2022). It was hosted on various online platforms, including Facebook groups for parents in Luxembourg, websites of international clubs and organisations in Luxembourg, and social media outlets of communes in Luxembourg. An invitation email containing a link to the online survey was sent to international schools and organisations in Luxembourg, as well as to all the communes. As the survey targeted members of transnational families, it was available in the four languages most commonly spoken by foreign-born population of Luxembourg: French, German, English, and Portuguese. The survey completion time was approximately fifteen minutes (available at the Supplementary Materials section).

The survey included sixteen closed questions and four open-ended questions, and it was divided into four sections. The first section (eight questions) aimed at establishing general information about the family demographics and their linguistic background (open-ended question). The second part consisted of four Likert-type and multiple-choice questions that focused on the caregivers, their language learning and digital practices. Following, the third section was structured around the same topics (that is language learning and digital practices) with the focus on the child. Five questions gathered information on the languages that children used during daily routines and the various digital activities, which the children engaged in when learning languages. Further, one open-ended question invited parents to reflect on language learning activities with digital media that they engage in together with their children. Finally, the fourth section included a combination of three Likert-type and open-ended questions to explore digital media used by parents and their children for language learning and their insights on these practices.

Participants

Participants for the survey were multilingual transnational families in Luxembourg and their children. The inclusion criteria for families to participate in this survey were therefore: (1) Family members use more than one language in their daily lives (i.e. they are multilingual), (2) At least one of the caregivers moved to Luxembourg from abroad (i.e. the family qualifies as a transnational family), and (3) At least one of the children in the family is six to eleven years old (the age brackets corresponding to compulsory primary education in Luxembourg, i.e. the time when language and literacy learning likely becomes an important topic at home). Participants could only complete the survey after they had consented to participate and confirmed they met the inclusion criteria (first three questions of the survey designed for that purpose). Participants could withdraw from the survey at any time without penalty.

A total of 299 participants responded to the survey. 88 participants (29%) attempted to complete the survey but were discontinued because they did not meet the inclusion criteria. Two additional questionnaires were excluded from the analysis because more than 70% of the responses were missing. As a result, a total of 209 viable responses were included in the analysis (more information on the participants at the Result section and Table 1). The survey was completed by the parents of the children (66.4% females) with mean age 41–45 years old (39.3%), and 89.6% of them holding a university degree. The number of children in the 209 responding families varied in the sample from one to five children in each household. Almost half of the participants had two children (53.6%).

Responding families came from diverse backgrounds with 52 different nationalities reported in the survey (Table 2) and 38 different languages reportedly acquired from birth (Table 3), among the 209 participating families. There was a spread of languages

Table 1. Demographic characteristics of the sample $N = 209\%$.

	$N = 209$	%
Gender		
Female	140	66.4%
Male	59	28.0%
Age		
31–35	16	7.6%
36–40	39	18.5%
41–45	83	39.3%
46–50	56	26.5%
51+	15	8.1%
Education		
Primary school	2	0.9%
Secondary school	16	7.6%
University degree (Bachelor to PhD)	189	89.6%
Other	4	1.9%
No of Children in the household		
one	49	23.2%
two	113	53.6%
three	39	18.5%
four	7	3.3%
five	3	1.4%
Languages acquired at birth for parents		
One	165	79%
Two	38	18%
Three	6	3%

Table 2. Nationalities of the participating parents.

Nationality	# Parents	Nationality	# Parents
Angola	1	Latvia	1
Australia	1	Lithuania	5
Austria	1	Luxembourg	4
Belarus	1	Madagascar	1
Belgium	7	Malta	2
Brazil	1	Montenegro	1
Bulgaria	15	Netherlands	1
Canada	3	Peru	2
Colombia	1	Poland	25
Costa Rika	1	Portugal	19
Croatia	1	Romania	10
Cyprus	1	Russian federation	4
Czechia	3	Serbia	1
Estonia	3	Slovakia	4
Finland	6	Slovenia	1
France	15	South Africa	1
Germany	16	South Korea	1
Greece	4	Spain	9
Hungary	3	Sweden	1
Iceland	1	Syrian Arab Republic	1
India	5	Tunisia	1
Iran	1	Turkey	1
Ireland	1	UK of GB and NI	4
Italy	7	USA	5
Japan	2	Uruguay	1
Kazakhstan	1	Zambia	1
Kuwait	1		

Table 3. Languages of parents acquired at birth.

Language	# Families	Language	# Families
Afrikaans	1	Maltese	2
Arabic	3	Persian	1
Bulgarian	15	Polish	25
Chinese	1	Portuguese	22
Croatian	2	Romanian	10
Czech	3	Russian	7
Dutch	5	Serbo-Croatian	2
English	15	Slovak	4
Estonian	3	Slovenian	1
Finnish	5	Spanish	15
French	19	Swedish	2
German	18	Tamil	1
Greek	4	Turkish	1
Hindi	1	Maltese	2
Hungarian	3	Persian	1
Icelandic	1		
Italian	7		
Japanese	2		
Kurdish	1		
Latvian	1		
Lithuanian	5		
Luxembourgish	1		
Malayalam	1		

including those with many native speakers and available digital media resources (e.g. English, French, German), as well as some lesser-spoken languages (e.g. Catalan, Malay, Telugu) for which digital media resources may be scarcer. Also, among the 209

families, 38 (18%) of the participating parents reported having two languages acquired at birth and six (3%) reported having three languages acquired at birth (Figure 2).

In different domains of their lives, parents and their children reported using more than one language, ranging from one to seven different languages (Figure 1). The majority of the parents reported speaking predominantly two to four languages at home (67%), at work (70%), during their free time (80%) and outside (75%). The results are similar and even higher for their children, with 68% speaking two-to four languages at home, 88% at school, 83% during their free time and 61% outside. The most frequently used language at home was English both for parents (16.3%) and their children (22.2%), followed by French, German, and Italian.

All parents reported learning additional languages (other than the ones acquired from birth) during the past three years. Among them, 27% reported learning French, 31% reported learning Luxembourgish, and 19.4% reported taking German courses. Similarly, parents reported that their children were learning additional languages during the last three years. Among them, 64.9% of the children were reported to learn French, 38.9% were reported to learn Luxembourgish, and 59.2% of the children were reported to learn English (Figure 2).

Both the children and the parents use and learn multiple languages in their daily lives.

Data analysis

Quantitative data were analysed using SPSS v27. Taking into account the categorical (nominal) type of most of the variables in the study, descriptive statistics and Pearson's *r* correlations were performed to explore relationships on variables of interest to this study. A qualitative content analysis inspired by Dörnyei's approach (2007) was applied to open-ended questions to determine meaning units in the data set. Data from the open-ended questions in the survey were coded into units and were summarised based on sub-themes and themes that emerged. Then, the findings were synthesised

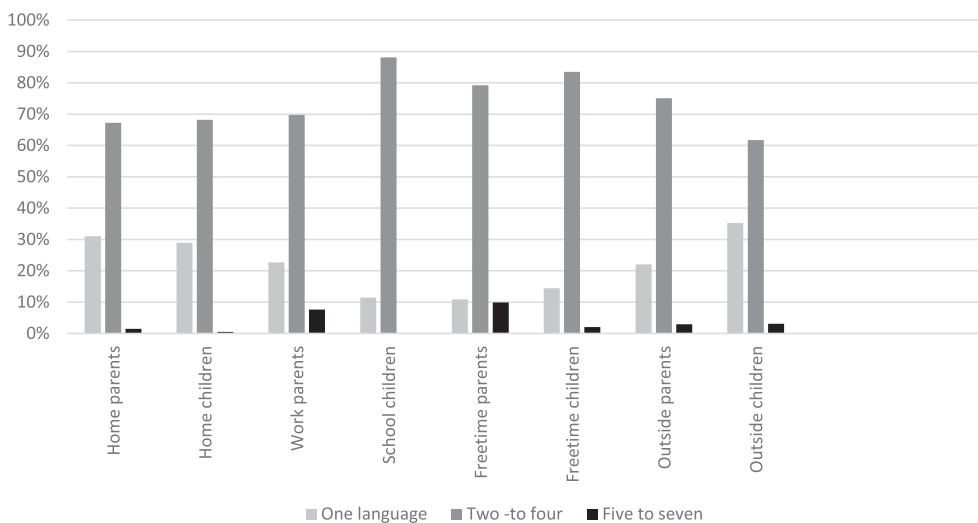


Figure 1. Languages that parents and their children speak at different domains of everyday life.

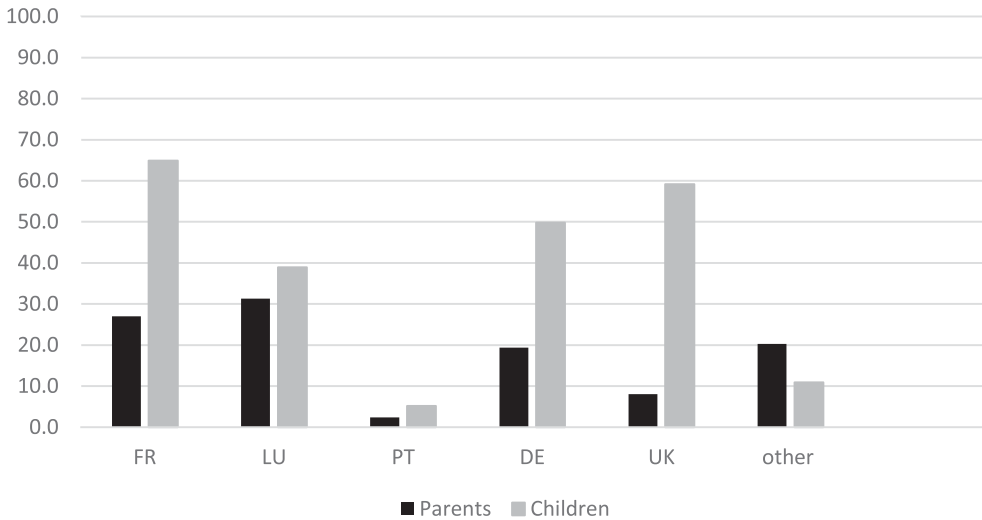


Figure 2. New languages that parents and their children learn (over the past three years).

into broader categories corresponding to the most common themes for each question. Qualitative and quantitative findings were synthesised and summarised, and they are presented in detail in the results section.

Results

In this section, we present the findings of the survey linking them to the research questions. First, we present the results from the closed-ended questions, reporting in particular on: the digital media used for language and literacy learning by parents and children (thereby addressing RQ1), the frequency of these learning activities (addressing RQ2) and parental views regarding the usefulness of digital media for language and literacy learning (addressing RQ3). Thereafter, we delve into the findings from the open-ended questions reporting in more detail on parental views regarding language learning with digital media, and thereby fully answering RQ 3.

Learning practices with digital media, their frequency and parental views – quantitative results

This subsection provides answers to RQ1 and 2 by reporting on the types and frequency of digital media activities the parents and children engage in for language learning. Some answers to RQ3 are also provided by presenting parental views on the usefulness of digital media for language and literacy learning.

To understand the use of digital media in daily language learning practices of the participating families, parents were asked to rate how often they engage in various digital activities, such as taking online classes, using online resources, and watching video content (the scale ranged from 1 never, to 5 daily). Because of the rather small sample in this study and the relatively big number of different available options for the participants to choose from on this question (ten different social media activities), the analysis is not reported on the

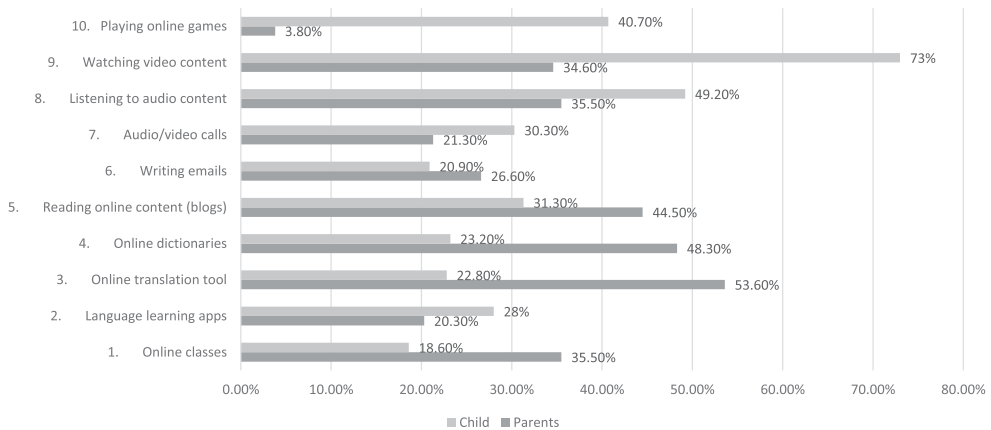


Figure 3. Digital activities parents and children use more than once a week for language learning (for themselves and their children).

level of the 1–5 scale that was investigated. The researchers grouped as minimum *engagement* the responses ‘1 = never’ and ‘2 = less than once a week’ of the Likert scale. Responses 3–5 (which described frequency of engagement with a range of ‘3 = once a week, 4 = 2–6 times a week, and 5 = daily engagement in social media’) were grouped as ‘more than once a week’. The same process was followed to present children’s frequency of engaging with social media during the week. The most frequently used digital activities both for parents and their children are visually depicted in [Figure 3](#).

As shown in [Figure 3](#), parents reported using predominantly (more than once a week) online translational tools (53.6%) and online dictionaries (48.3%). Among other frequently identified activities were listed: listening to audio content (35.5%) and watching video contents (34.6%).

Children were reported to engage frequently (more than once a week) with different online activities than those of their parents. For example, among children, translational tools were reported to be less frequently used (22.8%) and similar results were found for the use of online dictionaries (23.20% reported engagement for more than once a week). The highest identified digital practices for children were found to be watching video content (70%). Playing online games (40.7%) was also rated high in the children’s preferences. Similar to the parental reports, children were also reported to listen to audio content at a high rate (49.2%).

The analysis from the open-ended questions added more insights as to the digital media practices of the children. In addition to the choices offered in the survey, the parents mentioned a plethora of digital media, mainly related to schools and educational practices, including education platforms often recommended by schools, and school and educational apps (duolingo, Edshed, Lusoinfo). Overall, the two most commonly occurring digital media categories mentioned by the parents in the open-ended questions were videos and educational tools (such as school apps, dedicated language apps, online dictionaries and translation tools).

Further, and relevant to the third research question, participants reflected on different types of digital media and specifically rated how useful they find them to be for language learning. As seen in [Figure 4](#), parents consider YouTube videos (76.3%) and video on

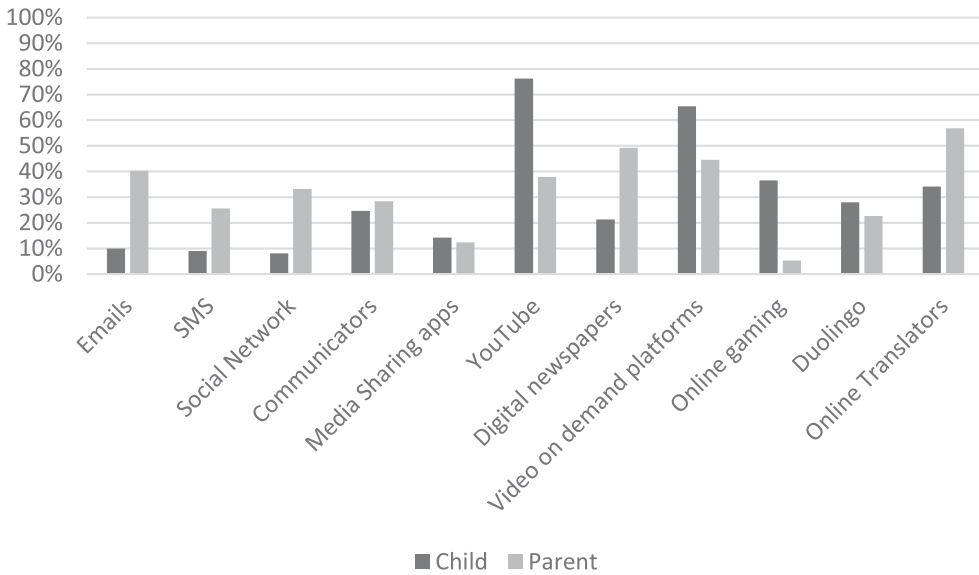


Figure 4. Perspectives on usefulness of different types of digital media.

demand platforms (65.4%) to be most useful for their children. They identified the use of online translators, digital newspapers, and the use of emails as more useful to themselves.

Finally, parents were asked to report whether digital media can be an effective tool that may support them in different domains of language learning. As shown in Figure 5, the majority of the parents reported that they find digital media useful in different domains of language learning, such as in improving their language skills (83.9%), in helping themselves (77.8%) and their children (81.5%) to learn a new language (77.8%), in exposing themselves and their children to languages, and in providing learning opportunities (46.5%).

Pearson’s r correlations showed that parental reports on how useful they find digital media for language learning had positive and significant associations with the frequency that parents and their children reportedly use different digital media in their daily routines (Table 4). Of interest to this study, positive parental views on the use of digital media to

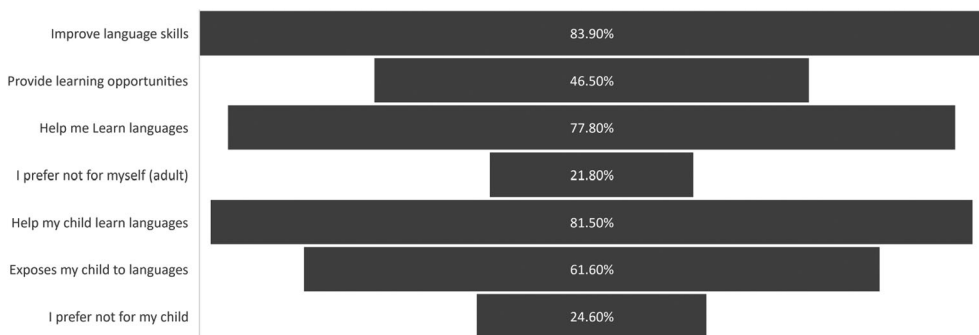


Figure 5. Parental perceptions on the use of digital media for language learning.

Table 4. Correlations between reported usefulness and frequency of use for digital media.

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Improve LS	4.12	.93																	
LL opport.	3.36	1.14	.47**																
Help with LL	3.98	.98	.69**	.54**															
Prefer without DM	2.43	1.29	-.38**	-.22*	-.47**														
Help children with LL	4.03	1.02	.64**	.37**	.55**	-.42**													
Expos children to LL	3.55	1.19	-.12	-.03	-.14*	.33**	-.11												
Prefer children without DM	2.62	1.23	-.37**	-.19**	-.32**	.72**	-.42**	.47**											
Online classes	.83	2.25	-.02	.10	.12	-.09	-.05	-.04	-.03										
Apps	.62	2.28	-.01	.12	.16*	-.10	-.07	-.05	-.03	.71*									
Translation tools	1.73	2.85	-.01	.14*	.17*	-.11	.01	-.04	-.03	.84**	.80**								
Online dictionaries	1.63	2.76	-.01	.07	.16*	-.09	.01	.01	-.02	.84**	.75**	.91**							
Online content	1.42	2.70	0.04	.14*	.18**	-.09	0.05	-.03	-.04	.79**	.74**	.88**	.89**						
Emails etc.	0.92	2.44	-.04	.13	.16*	-.03	-.03	-.01	-.01	.75**	.75**	.86**	.86**	.85**					
Audio/Video class	.73	2.26	.05	.15*	.175*	-.02	.01	-.01	-.01	.77**	.75**	.84**	.83**	.85**	.91**				
Audio content	1.18	2.57	.04	.07	.16*	-.07	.02	-.02	-.06	.78**	.72**	.85**	.86**	.87**	.83**	.84**			
Video content	1.12	2.49	.03	.09	.16*	-.06	.01	-.04	-.04	.81**	.74**	.88**	.88**	.89**	.88**	.87**	.89**		
Online games	.06	1.61	.01	.01	.11	.15*	-.11	-.02	-.03	-.04	.80**	.79**	.85**	.84**	.82**	.83**	.85**	.86**	.85**

Note: LL: Language learning; LS: Language skills; DM: Digital Media.

support learning languages had significant correlations with the frequency of engaging in different digital media activities, including the use of apps ($r(211) = .17, p < .001$) and reading online content ($r(211) = .18, p < .001$) for adults (parents) and playing online games ($r(211) = .16, p < .001$) for their children.

Parental views regarding the use of digital media as a tool for language learning

The below three sections tackle RQ 3 and present the participants' views regarding digital media as tools for language learning. The Qualitative Content Analysis of parental answers to open-ended questions resulted in the emergence of three main categories of parental views: 1. views on the affordances of digital media, 2. views on the enhancement of particular language skills and 3. views on the limitation of digital media for language learning. In the following text, we discuss the findings in this order.

Views on the affordances of digital media

Complementary to the survey results, in the open-ended section parents expressed strong views on learning and the importance of digital media as a form of play. In their comments, they noted how online games, listening to music, and other activities related to leisure time and the use of digital media created opportunities for incidental learning. Some comments highlighting the idea of learning through play while using digital media include:

Through playing the children can learn more easily and one doesn't have the impression that one has to do 'exercises'. Learning that way is fun for kids. Also, it is easier for kids to learn through films/series in children program and they hear the language in a 'normal' environment.

Similarly, another parent noted: 'C'est une façon d'apprendre et de s'améliorer de manière ludique en s'amusant sans avoir l'impression réelle de travailler' ('this is a way to learn and get better in a playful way while having fun and not get the impression that they are really working').

Many parents were also of the opinion that learning with digital media is accessible, easy and flexible. They noted, for example: 'Sprachen werden heutzutage eher am Smartphone gelernt. Man hat es immer bei sich. Brauch man ein Wort, da is direkt Google oder Übersetzer zur Hand' ('Nowadays, languages are more likely to be learned on smartphones. You always have it with you. If you need a word, Google or translator is right at hand') or 'there is a lot of free easily accessible content for everyone no matter the level and language they want to learn. youtube – interesting vlogs netflix – light content paired with learning the language'. The flexibility to suit their schedule was one of the main factors mentioned by the parents: 'the idea of digital media is great as it gives flexibility in learning a new language everywhere and anytime'.

Views on the enhancement of particular language skills

Another prominent positive point that emerged from the open-ended questions was that parents found digital media useful for development of particular language skills (this applied both to their own skills, as well as the skills of their children). In particular, the parents found the use of digital media beneficial for the development of vocabulary,

listening comprehension, as well as, to some extent, language, and cultural awareness (particularly through exposure to different media discourses). One parent summarised these points as follows:

- Moi:* Les sites d'actualité en ligne permettent de s'entraîner à comprendre la langue et d'acquérir du vocabulaire (et des perspectives culturelles) sur des sujets d'actualité dans mon domaine. Les SMS et les courriels permettent de mettre en pratique les apprentissages dans un contexte concret. À défaut de dictionnaire, les sites de traduction en ligne permettent de se faire une idée rapide sur la signification d'un mot (selon le contexte). Mes enfants: Le visionnage de vidéos permet de s'imprégner de la langue et de s'habituer à l'entendre et à la comprendre. En outre, les vidéos sur l'actualité donnent des perspectives étrangères sur l'actualité.
- Me:* *Online news sites provide practice in language comprehension and vocabulary (and cultural perspectives) on current topics in my field. Text messages and emails make it possible to put learning into practice in a concrete context. In the absence of a dictionary, online translation sites allow you to get a quick idea of the meaning of a word (depending on the context). My children: Watching videos allows you to soak up the language and get used to hearing and understanding it. Also, news videos give foreign perspectives on current affairs.*

Views on the limitations of digital media for language learning

Although parents were generally positive about the use of digital media for language and literacy learning, in the open questions they also mentioned certain limitations when it comes to using digital media for language learning as opposed to other ways of learning. For example, some parents identified digital media as an extra resource for practice and repetition but not for learning new content. When it came to learning new content, one parent noted: 'Language apps are helpful for practice but not retention' and another comment was: '(...) to support language learning as an extra resource but I do not think it is effective in learning a language from scratch'. Regarding intentional teaching and learning, they said: 'Media is not very useful as they don't give a structural approach to grammar and vocabulary', and another parent noted: 'I would say that digital media are a great support in learning languages, but we mostly learn languages in real life and face to face interactions'. On a similar note, although most participants found digital media to increase motivation to learn, in particular among children, some parents were worried that using digital media may discourage learners from engaging in other types of learning activities: 'it makes students lazy, not willing to make the effort to reach for a book and profit from the pleasure in reading, in a relaxed way'.

A common concern raised by the parents in the open-ended questions related to the age of their children and the appropriateness of the available materials. Parents were clear in differentiating digital media practices according to the age of their children and their learning abilities: 'I permit to watch cartoon online/ YouTube but no games', 'My kid is too young to use social media platforms like FB, Insta, etc. Most appropriate for his age are songs/cartoons on YouTube and age-related movies on Netflix/etc. We also use educational online games such as Epic for reading', and

My son is 7 y.o and we still prefer to limit his time spending online. He doesn't have access to social media or online games. (...) But he has unlimited access to audiobooks, online translators and online dictionaries. He can also google answers to his questions or doubts. He has an online English course.

These comments also show the participants' perceived need for parental mediation in their children's digital media activity. Related to this, several parents also expressed concerns related to too much screen-exposure of their kids: 'Je préfère que nous tous ne soyons pas trop exposé aux écrans pendant toute la journée. Il faut trouver et savoir utiliser d'autres moyens au-delà des médias numériques pour apprendre et travailler au quotidien' ('I prefer that we all are not too much exposed to screens during the whole day. One has to find and know how to use other means beyond digital media to learn and work on a daily basis').

In general, in the open comments there was a consensus on the need for more age-appropriate and school-related applications and programmes for language learning. This should also include languages that are used less frequently, for which there are few learning resources online. Collaboration between the school and the Luxembourgish authorities for that goal was one suggestion coming from the open comments. Also, parents wished that schools prepared a structured list of digital tools to help them choose the most appropriate applications and programmes that have the potential to enhance language learning for their children.

Discussion

In the ensuing discussion, we go back to the research questions (RQ) that guided this study and put our findings in the context of the existing literature on digital media use for language and literacy learning. First, we revert to RQ1 and RQ2 by summarising the findings related to the types of learning activities with digital media and their frequency for parents and children in our sample. Secondly, coming back to RQ3, we discuss the parental views on learning languages with digital media.

First, this exploratory study shows that the reported practices of using digital media for language and literacy learning and the participants' views regarding these practices are complex and diverse. Most of the parents in our study saw digital media as tools providing learning opportunities and support for language learning. In line with this, the participants reported on a variety of language and literacy learning activities with digital media engaged in by their children and themselves on a regular basis. The frequency and type of engagement differed between parents and their children. When it comes to the types of digital practices the parents engage in, using text-based tools such as online translators and online dictionaries are the most frequent ones. The children, on the other hand, seem to engage more frequently in multi-modal practices in their learning – e.g. watching videos and playing computer games. As this is the first study aiming at a systematic examination of the language and literacy learning practices with digital media among parents and children in transnational families, it is difficult to put the findings on the frequency and types of learning activities in the context of existing knowledge. Still, the findings are congruent with the research on general adult and children digital media use which shows children's preference for video-sharing platforms and gaming over other types of media (e.g. Ofcom, 2022).

When it comes to parental views regarding the use of digital media for language and literacy learning, our survey shows that parents have diverse opinions on the matter. The findings of the survey suggest that parents are aware of both the affordances and limitations of digital media when it comes to language and literacy learning. The positive

views on digital media for language learning circulated around the topics of increased enjoyment, as well as the beneficial influence of digital media on particular language skills. In particular, parents in our survey seemed to share the perception that learning through digital media makes the process more enjoyable, motivating and seemingly effortless. This finding resonates also with the observations made by Little (2019) in her study on heritage language learning with apps and games, in which the parents found apps to be an incentive for their children to learn heritage languages. Similarly, Eisenclas et al. (2016) reported on the children's increased enjoyment of heritage language literacy learning when using German literacy learning games. These findings are also in line with the developing body of research on learning in digital play, in which gameplay is a medium to motivate and engage learners through self-directed and peer-to-peer learning experiences (see Beavis et al., 2015; Toh & Lim, 2022).

The parents in our survey also noted that in their and their children's experience, using digital media for language learning can be particularly beneficial for developing one's vocabulary, listening skills, and also raising language and cultural awareness. These results should be approached with a certain degree of caution, as they rely on self-reports of the participants. Nevertheless, our findings correspond to the results of several previous studies. For example, positive effects of digital media use on the development of vocabulary skills were previously noted by Al-Salmi and Smith (2015) in their study with Arabic-speaking mothers using digital media to develop English literacy skills. King-O'Riain (2014), on the other hand, reported on the positive effects of digital media use for developing listening comprehension in heritage languages. Androutsopoulos and Lexander (2021) drew attention to the digital media's potential as spaces for Senegalese cultural socialisation and exposure to Senegalese media discourses among transnational Senegalese families in Norway. Similarly, in Said's (2021) digital media, and in particular YouTube, were found to provide the children with 'cultural immersion experience' through familiarising them e.g. with vlogs and cooking shows from their home countries, often also presented in different varieties of spoken Arabic. Future studies could explore the topic further and investigate systematically the kinds of skills and knowledge gained while learning languages with digital media.

Our participants were equally aware of certain limitations of digital media when it comes to language learning. The negative views expressed by the parents related to the feasibility of learning new content with digital media, potential adverse effects of too much screen time, as well as the appropriateness of digital media use for younger age groups. Some similar points were made by parents in Little's (2019) study, who worried about their children potentially getting addicted to digital media content if screen time was not managed appropriately to the children's age. Some of Little's participants also tended to appreciate the role of books rather than digital media, when it comes to their children's heritage language learning.

In our study, the parents' concerns often went hand in hand with the perceived need for parental mediation in the digital media activities of their children. This finding is very much in line with current research on digital media practices of transnational families. For example, parents in studies by Szecsi and Szilagyi (2012), King-O'Riain (2014) and Palviainen (2020) were actively involved in choosing the media, types of activities their children did, setting up the environment and, at times, also providing translations and corrections if needed during their children's digital media engagement. Also Said (2021) notes that

Arabic-speaking families in her study took a number of measures to make sure their children's online-learning of Arabic is 'safe'. These included choosing appropriate media and content (e.g. certain YouTube channels, setting up Skype calls with family members) but also setting up a 'safe' common space for media consumption, where parents could supervise the children and intervene if need arose.

Overall, this study explored the learning potential that exists at the intersection between languages, literacy and the use of digital media for multilingual learners. The relationship between digital media and learning is reciprocal as children and their parents construct new learning resources with the use of digital media. At the same time, our study indicated that learners need to be skilled for selecting accurate information and resources and they may need new skills and strategies for identifying the availability of reliable resources. Digital media provide opportunities for access to new knowledge (e.g. the use of dictionaries), collaborative learning (e.g. learning platforms and the use of social apps), and access to socially co-constructed processes for language learning (e.g. online games). Capitalising on the affordances of the use of digital media, we may see the use of technology as an opportunity to provide powerful learning experiences, which unfold in collaborative environments that go beyond classroom interactions. Rather, they reflect the broader sociocultural contexts in which multilingual transnational families acquire necessary language skills and engage with each other and with the community.

Conclusions

Our study shows that both parents and children from multilingual transnational families in Luxembourg draw on various digital media in their daily language and literacy learning endeavours. Our data show that there are differences between parents and children as to the frequency and types of media they tend to use, with the parents being more likely to draw on online translators, dictionaries and audio materials in their learning endeavours, and the children more often using video materials and online games. Our results also show that the parents are highly aware of both the affordances and limitations of digital media when it comes to language learning. Moreover, the parents in our survey identified certain issues with using digital media for language learning, which they would gladly have addressed in cooperation with their children's schools and/or Luxembourgish authorities (e.g. list of recommended, age-appropriate apps and media for language learning, enhancing the offer of digital media for learning less popular languages, etc.).

The results of our study suggest that digital media have a great potential for supporting multilingual, transnational families in their language learning endeavours. This potential could also be effectively tapped into by educational institutions to facilitate the families' language learning efforts thus promoting school success of minority-background children, on the one hand, and, on the other hand, building bridges between school and home language learning practices. As Little (2019) notes, closer collaboration between parents and schools in this area could encourage the exchange of funds of knowledge (González et al., 2005) and sharing good practices when it comes to learning languages with digital media. The schools could help families choose appropriate infrastructures, while the experiences of the families could inform school practices and contribute to

digitalisation of language and literacy learning in classrooms. Further studies are needed to investigate the nexus of home and school practices when it comes to language and literacy learning with digital media among transnational, multilingual families.

Limitations

This work is not without limitations. Although the survey was extensively distributed to various online platforms, aiming to reach a large number of respondents, almost one third (28%) of the respondents were discontinued because they did not meet the inclusion criteria. Our sample, although diverse in terms of their linguistic background, included mostly females, and to a high extent highly educated respondents. This may have contributed to the thoroughness of the answers provided as well as to their familiarity with using educational apps and digital activities for language learning.

Also, inevitable differences among families in the way of socialisation, the use of digital media for recreational and educational purposes, parental levels of confidence and competence when using different languages, and the different developmental needs of children between 5 and 11 years old make it challenging to reach generalised conclusions on the use of digital media for language and literacy learning. It is possible that the age of their children affected the respondents' attitudes on the use of digital media and mediated the practices embedded in their daily routines. Future studies may consider to include specific questions relating to these variables to capture how digitally mediated practices create opportunities for language and literacy learning.

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References

- Al-Salmi, L., & Smith, P. (2015). Arab immigrant mothers parenting their way into digital biliteracy. *Literacy in Composition Studies*, 3(3), 48–66. <https://doi.org/10.21623/1.3.3.4>
- Ambrose, S., Bridges, M., DiPietro, M., Lovett, M., & Norman, M. (2010). *How learning works: Seven research-based principles for smart teaching*. Jossey-Bass.
- Androutsopoulos, J., & Lexander, K. V. (2018, February 2). *Modalities of language and media choice: Transnational communicative repertoires of Senegalese families in Norway* [Paper presentation]. TLANG Seminar, University of Birmingham.

- Androutsopoulos, J., & Lexander, K. V. (2021). Digital polycentricity and diasporic connectivity: A Norwegian-Senegalese case study. *Journal of Sociolinguistics*, 25(5), 720–736. <https://doi.org/10.1111/josl.12518>
- Beavis, C., Walsh, C., Bradford, C., O'Mara, J., Apperley, T., & Gutierrez, A. (2015). 'Turning around' to the affordances of digital games: English curriculum and students' lifeworlds. *English in Australia*, 50(2), 30–40.
- Curdt-Christiansen, X. L., & La Morgia, F. (2018). Managing heritage language development: Opportunities and challenges for Chinese, Italian and Urdu speaking families in the UK. *Multilingua*, 37(2), 177–200. <https://doi.org/10.1515/multi-2017-0019>
- De la Piedra, M. (2010). Adolescent worlds and literacy practices on the United States–Mexico border. *Journal of Adolescent & Adult Literacy*, 53(7), 575–584. <https://doi.org/10.1598/JAAL.53.7.5>
- Dörnyei, Z. (2007). *Research methods in applied linguistics: Quantitative, qualitative, and mixed methodologies*. Oxford University Press.
- Eisenchlas, S. A., Schalley, A. C., & Moyes, G. (2016). Play to learn: Self-directed home language literacy acquisition through online games. *International Journal of Bilingual Education and Bilingualism*, 19(2), 136–152. <https://doi.org/10.1080/13670050.2015.1037715>
- EUROSTAT. (2019). Digital economy and society statistics – households and individuals. Retrieved April 2, 2020, from https://ec.europa.eu/eurostat/statistics-explained/index.php/Digital_economy_and_society_statistics_-_households_and_individuals#Internet_access
- González, N., Moll, L., & Amanti, C. (2005). *Funds of knowledge: Theorizing practices in households, communities, and classrooms*. Lawrence Erlbaum Associates.
- Hua, Z., & Wei, L. (2016). Transnational experience, aspiration and family language policy. *Journal of Multilingual and Multicultural Development*, 37(7), 655–666. <https://doi.org/10.1080/01434632.2015.1127928>
- King-O'Riain, R. C. (2014). Transconnective space, emotions and skype: The transnational emotional practices of mixed international couples in the Republic of Ireland. In E. Fisher & T. Benski (Eds.), *Internet and emotions* (pp. 131–143). Routledge.
- King-O'Riain, R. C. (2015). Emotional streaming and transconnectivity: Skype and emotion practices in transnational families in Ireland. *Global Networks*, 15(2), 256–273. <https://doi.org/10.1111/glob.12072>
- Lanza, E., & Lexander, K. V. (2019). Family language practices in multilingual transcultural families. In S. Montanari & S. Quay (Eds.), *Multidisciplinary perspectives on multilingualism. The fundamentals* (pp. 229–251). Mouton de Gruyter.
- Lexander, K., & Androutsopoulos, J. (2021). Working with mediagrams: A methodology for collaborative research on mediational repertoires in multilingual families. *Journal of Multilingual and Multicultural Development*, 42(1), 1–18. <https://doi.org/10.1080/01434632.2019.1667363>
- Lexander, K. V. (2020). Norsk som digitalt samhandlingspråk i fire familier med innvandrerbakgrunn – identitet og investering. *Nordand - Nordisk tidsskrift for andrespråksforskning*.
- Little, S. (2019). 'Is there an app for that?' Exploring games and apps among heritage language families. *Journal of Multilingual and Multicultural Development*, 40(3), 218–229. <https://doi.org/10.1080/01434632.2018.1502776>
- Marsh, J., Hannon, P., Lewis, M., & Ritchie, L. (2017). Young children's initiation into family literacy practices in the digital age. *Journal of Early Childhood Research*, 15(1), 47–60. <https://doi.org/10.1177/1476718X15582095>
- Ofcom. (2022). *Children and Parents: Media use and attitude reports 2022*. Retrieved March 21, 2023, from https://www.ofcom.org.uk/__data/assets/pdf_file/0024/234609/childrens-media-use-and-attitudes-report-2022.pdf
- Palviainen, Å. (2018, March 23–27). *Family language policy among single-parent families in the digital age* [Paper presentation]. Conference of the American Association for Applied Linguistics (AAAL), Chicago.
- Palviainen, Å. (2020). Video calls as a nexus of practice in multilingual translocal families. *Zeitschrift für Interkulturellen Fremdsprachenunterricht*, 25(1), 86–108.

- Said, F. F. (2021). 'Ba-SKY-a P with her each day at dinner': Technology as supporter in the learning and management of home languages. *Journal of Multilingual and Multicultural Development*, 42(8), 747–762.
- Song, K. (2016). "Okay, I will say in Korean and then in American": Translanguaging practices in bilingual homes. *Journal of Early Childhood Literacy*, 16(1), 84–106. <https://doi.org/10.1177/1468798414566705>
- STATEC. (2020). *Evolution of total, Luxembourgish and foreign population 1961–2020*. Retrieved April 2, 2020, from https://statistiques.public.lu/stat/TableViewer/tableViewHTML.aspx?ReportId=12858&IF_Language=eng&MainTheme=2&FldrName=1
- Szecs, T., & Szilagy, J. (2012). Immigrant Hungarian families' perceptions of new media technologies in the transmission of heritage language and culture. *Language, Culture and Curriculum*, 25(3), 265–281. <https://doi.org/10.1080/07908318.2012.722105>
- Toh, W., & Lim, F. V. (2022). Learning in digital play: A dual case study of video gamers' independent play. *Research and Practice in Technology Enhanced Learning*, 17(6), <https://doi.org/10.1186/s41039-022-00182-2>