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International students' smartphone usage during the first Covid-19 lockdown

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Abstract

Smartphones accompany international students as they adapt to different contexts during their stay abroad. In this empirical study, we examined how a group of international students (n=10) in France used their smartphones during the 8-week lockdown that imposed on everyone a stay-at-home order and allowed minimal physical contact (April and May 2020). We collected data about students' use thanks to a self-tracking app and interviews. Drawing on literature from the fields of language education, communication and psychology, we considered advantages and limitations of smartphone use by international students pertaining to three aspects of their lives: (1) emotional management, (2) language and culture learning, and (3) sociocultural adaptation. Since international students were in the host country, but without the social life on campus that usually makes immersion abroad so special, this study led us to reflections about immersion and inclusion in education abroad.

Keywords: international students, transition, study abroad, smartphone use

1. Introduction

Now that “mobile technologies have become integrated into the fabric of people’s everyday lives” (Kukulka-Hulme et al., 2017), smartphones accompany international students as they adapt to different contexts during their stay abroad. Often used as “personal pocket archives” (Boussaid & Boom, 2016), these tools can be used to document the processes of discovery and adjustment (Godwin-Jones, 2016) that international students face when they settle and study in a new academic setting. Consequently, understanding what international students do with their smartphones both informs language educators about the functions these tools might fulfil in and beyond classroom settings (Yaman et al., 2015) and also eventually, help us design applications or activities tailored to their specific needs (Pegrum, 2019).

Our research is based on an empirical study in which we examined how a group of international students (n=10) used their smartphones during their stay abroad in France. Originally, the study aimed at understanding international students’ smartphone use in a normal time but it happened that data gathering occurred during the coronavirus crisis from mid-March to mid-May 2020 when the entire population of France had to stay indoors for more than eight weeks, at a time when the use of smartphones took on a unique role in everybody’s lives. During this dramatic and historical period, a lot of messages shared online ended by the formula, *Prenez bien soin de vous* – (“take good care of yourselves”) indicating that online communication was also a way of maintaining crucial bonds between people. Thus, the researchers involved in the project decided to pursue the study but expanded the original focus on language learning to take also into account an emotional dimension that became central for these students who were suddenly stuck in an unfamiliar country far from their friends and relatives for an unknown length of time.

Participants, who were learners of French in a language centre in France, agreed to have an application (Screen Time) installed on their smartphones that would automatically collect

information about their smartphone use (frequency, duration, type of apps) and produced visualisations that were subsequently used as prompts for interviews. Researchers then coded and analysed these data (visualisations, participants' discourses and screen captures) in order to understand how international students used their smartphones and what roles those played during their stay abroad.

2. Theoretical framework

2.1. Smartphones and their functions in international students' lives abroad

Although international students use their smartphones during their experience abroad, language educators and researchers know and understand little about what they do with these devices on an emotional and experiential level (Chan, Walker & Gleaves, 2014; Godwin-Jones, 2016; Grassin & Guichon, 2019). Smartphone devices are light, portable and accessible (Schrock, 2015) and are capable of multiple functions, such as social networking, navigating, entertainment, and information seeking (Deng et al., 2019). These functions were largely distinct until the advent of smartphones with wireless connectivity (since 2000) and the emergence and multiplication of applications (since 2008) transformed them into “miniaturized mobilities” (Elliott & Urry, 2010). Madianou and Miller (2012) have coined the concept of *polymedia* to refer to “the constant availability of a range of mediational tools for interpersonal communication, each with specific semiotic affordances, participation formats, and symbolic meanings” (Androutsopoulos & Stæhr, 2018, p. 119). Deumert (2014) has underlined that smartphones are now integrated “into the very texture of our lives, making them an extension of our physical bodies” (p.18).

As noted by anthropologist Nova (2020), beyond its obvious communication functions (phone, text and voice messages, and social networks), the smartphone is also a cognitive tool, (providing access to the web, calendar, address book, notebook, reminder) and an interface with the world (facilitating hotel reservations, restaurant selection, etc.). By combining a connected phone terminal and applications, the smartphone has become *a sociotechnical ensemble* that deeply modifies how individuals communicate, travel, and study, to pinpoint just three aspects central to studying abroad.

Drawing on literature from the fields of language education, communication and psychology, we will now examine advantages and limitations of smartphone use by international students pertaining to three aspects of their lives: (1) emotional management, (2) language and culture learning, and (3) sociocultural adaptation.

2.1.1. Emotional management

Research (Kinging, 2013 ; Jiang, Li & Shypenka, 2018) has shown that students studying abroad may experience a variety of negative feelings, among which Götz, Stieger and Reips (2019) have identified “homesickness, self-doubt, disappointment, loneliness, rejection, alienation, conflict, anxiety, depression, loss of connections to friends and family, hopelessness, and low self-esteem” (p. 690). Peng (2016), who studied the use of digital devices among Chinese students studying in Hong Kong, has shown that students’ mediated communication with parents and their precollege social ties provided them with crucial emotional support and facilitated their adjustments to their new cultural and academic environment. It can safely be hypothesized that the health crisis that occurred during the study’s data-gathering may have enhanced students’ feelings of isolation and homesickness and may have had an impact on their well-being. For example, it may be that international students developed certain coping

strategies in order to alleviate loneliness and homesickness by finding activities that provided “a sense of social integration and opportunities for emotional intimacy” (Jiang et al., 2018, p. 712).

Nonetheless, if smartphone use by international students can alleviate feelings of loneliness and homesickness, it can also lead to compulsive behaviours. For instance, Bian and Leung (2014) explored smartphone use by 414 university Chinese students and showed that smartphones could not only compensate for loneliness and shyness but also that fun-seeking apps (e.g., online gaming) could help reduce anxiety or feelings of despair. In the same vein, a study conducted in Sweden demonstrated that abuse of smartphones could lead to sleep disturbances and signs of depression (Thomé, Härenstam and Hagberg, 2011).

2.1.2. Language and culture learning

Smartphones – undoubtedly even more evidently than laptops before them – provide opportunities for ‘untethered language learning’ (Palalas, 2016, p. i). Indeed, as Gikas and Grant (2013) noted, smartphones allow “for learning to be situated and context-aware” and to take place “in meaningful surroundings” (p. 19). These learning opportunities, especially during study abroad, are more likely to occur outside the classroom e.g., in the students’ personal environments and at times that are appropriate for them. Combining study abroad with smartphone use may thus augment students’ opportunity to engage in ‘experiential language use’ (Thorne, 2013, p. 2), whether online, to understand how local people interact from a pragmatic point of view and engage in meaningful interactions (Sauro & Zourou, 2019), or offline to record their discoveries through photo-taking and story-telling. For instance, Godwin-Jones (2016) suggested engaging international students in “ethnographic fieldwork” and listed a certain number of tasks that can be facilitated by the use of smartphones to engage students

with local people and places (e.g., creating a video clip signs and billboards). Several studies have indeed shown how smartphone media enable individuals to take pictures and videos and share them on social networks, thus creating “self-images and documentary histories of their lives, which in turn contribute to the formation of multiple identities” (Chan et al., 2014, p. 102). In addition, students’ use their own devices may lead them to personalize their own learning paths (Pegrum, 2019) and, at the same time, facilitate the blending of formal and informal learning (Guichon, 2019). Yet, some authors have warned against a hasty glorification of smartphones for learning, as what happens usually remains an unacknowledged part of students’ formal learning process (Kjærgaard & Sorensen, 2014).

2.1.3. Sociocultural adaptation

Ward and Kennedy (1999), who devoted their research to international students’ sociocultural adaptation during stay abroad, identified two facilitative factors. One pertains to the well-being or satisfaction that students experience abroad while the second relates to “the ability to ‘fit in’, i.e., to acquire culturally appropriate skills and to negotiate interactive aspects of the host environment” (p. 660). No doubt smartphones can contribute to both aspects, not only by providing international students with a hub of mediational tools to develop and maintain their network of acquaintances (both in their country of origin and among domestic people), but also to solve everyday problems in their new cultural environments. Obviously, smartphone use cannot be the sole vector of adaptation. Greischel, Noack & Neyer (2019) identified a number of factors that facilitate adaptation during the stay abroad, such as the quantity and quality of contact with host nationals, particular living arrangements (living either alone or with a family, sharing with a host family or co-nationals), and some student personality traits that make adaptation more or less easy to negotiate.

2.2. Time of use, self-quantification and awareness

The amount of time spent using smartphones everyday by international students can provide insights about the place the devices hold in their lives while abroad and what they do with them. Although not focused on the international student population, Deng et al. (2019)'s research provided useful indicators. These researchers studied a sample of 50 adult smartphone users in the USA, whose mean age was 30 years. Participants were asked to install an app (App Usage Tracker) on their smartphones, which enabled them to record, for one week, all applications that were running in the foreground when the screen was on. Results showed that participants used their smartphones for 2 hours 39 minutes per day on average. The different apps were categorized according to their functions, and the study indicated that social networking apps were the most frequently used (53 minutes), followed by media apps (28 minutes), web browser apps (25 minutes) and, finally, communication apps (24 minutes). Deng et al. also showed that participants switched among apps more than 100 times a day, which points to the "fragmented nature of smartphone use" (p. 17). Consistent with Deng et al.'s research, a study conducted with 79 Taiwanese students (Lin et al., 2015) required participants to install an app on their smartphones that recorded their smartphone use for one month with the goal of identifying possible addiction. The study viewed excessive smartphone use as encompassing both excessive frequency and excessive duration. Research results indicated that the cut-off point (*point de rupture*) of smartphone addiction was reached when individuals used their smartphones more than 4.62 hours daily. Deng et al. (2019) and Lin et al. (2015)'s studies provide both a methodology and indicators for assessing international students' smartphone use while taking into account that it was necessarily enhanced during lockdown.

Although there are few studies to date about self-tracking in the field of language education (Guichon, 2019, Pegrum, 2019), this “new behavioural trend” (Lutz & Ranzini, 2018, p. 102) needs to be investigated closely as it has become more and more common for students to use self-tracking apps in order to monitor their health, performance and activities. Lutz and Ranzini (2018) defined self-tracking as “the activity of recording, capturing, indexing, and analysing personal data using experiential computing devices” (p. 103). Several authors (see Kaye, Monk & Hamlin, 2018 for a review) have shown that self-quantification enhances awareness about certain habits (e.g., diet, sleep, water drinking), measures performance (especially in sports) and provides new insights about personal routines (e.g., amount of time spent on smartphones, as in Deng et al.’s study). In many ways, self-tracking is reminiscent of diary recording that has been used in the field of second language acquisition to monitor one’s progress in the target language or in discovery of a target culture (see Lenahan, 2015 for a review). Many authors have emphasized the fatigue inherent in diary keeping. Although data generated by self-tracking apps are far less rich than those in real learning diaries, they nevertheless have the benefit of requiring little effort from users, especially when what is tracked pertains to frequency of use and not more complex self-data.

In the field of language education, Guichon (2019) asked international students to collect all traces (photos, images, texts) of moments in their lives outside the classroom for 5 weeks. Every time participants had “the feeling of experiencing something that [was] linked to the learning of French, of French culture, or socialising with French people”, they recorded it with digital diaries apps (Journey for Android mobile operating system and Day One for iOS). Guichon concluded that “providing international students with such apps and instructions (...) may help them become more acutely aware of the potential of their new context for informal learning and of the opportunities digital tools may offer in the process” (p. 289).

Although self-tracking devices allow instant collection of data with little effort and also provide information that is neutral and unbiased, the positive effects of self-tracking on self-knowledge can only be achieved if people are able to read and understand the visualisations that are produced (Marcengo & Rapp, 2014). The endgame of self-tracking is for people to adjust their behaviour when they become aware of patterns, progress, or lack thereof. In our study, a self-tracking app was used to provide students with some information about their smartphone use in the form of visualisations (see below) with the goal of getting participants to explain how, why and how often they used the applications that were listed by the tracking programme.

3. Methodology

In order to bring to light noteworthy ways international students' use their smartphones during stays abroad, we collected biographical data and carried out online interviews that were prompted by visualisations produced with Screen Time, a self-tracking system, that had been installed on the participants' smartphones one week prior to the interviews (see below).

3.1. Participants

Participants were 10 international students (9 females and 1 male) enrolled in one of France's major city universities. They came from 8 different countries (Austria, Brazil, Bulgaria, China, Colombia, Japan, Mexico and Syria) and ranged in age from 22 to 42 years. Six of them were already familiar with the interviewer whom they had met during in-class sessions.

In order to ensure that exchanges in French were rich during interviews, selected participants were required to have at least a B2 (upper-intermediate) level in French.

All agreed to install the tracking system on their smartphones, provided biographical information, and took part in interviews. Participants signed a consent form that provided

information about how the data would be processed and ensured their anonymity (all names have been changed).

	Ahmed	Inaya	Gloria	Victoria	Elena	Akiko	Johanna	Li	Helene	Vasilka
age	26	35	42	22	29	31	36	29	26	23
Gender	M	F	F	F	F	F	F	F	F	F
Length of stay in France (in months, before the interview)	18	25	19	44	32	29	8	20	20	20
First stay in France (yes / no)	Y	Y	N	Y	N	N	N	Y	Y	N
Living arrangements	Host family	With partner	On her own	sharing	sharing	sharing	sharing	sharing	On her own	On her own

3.2. Data collection

Data were gathered over a period of two weeks in April and May 2020 during the 8-week lockdown that imposed on everyone a stay-at-home order and allowed minimal physical contact. As was the case for the rest of the student population, international students were abruptly confronted with the constraints brought on by the health crisis (isolation) and online teaching provision that was improvised by universities. Data collection occurred in two phases. During the first phase, each participant agreed to 1) fill out a questionnaire aimed at gathering biographical information (please see Appendix) and 2) install a self-tracking app on their smartphone. After benchmarking several free self-tracking applications, we selected Screen Time because it could gather information over at least seven days and was both easy to use and inobtrusive (no ads or pop-ups). As shown in Figure 1, Screen Time provides information on the current day (A) with a visualisation of the amount of time spent all day long (one bar per hour) according to pre-set categories that can be changed (B) and a list of applications (C)

ordered according to the amount of time spent (D). Users can have the same information about the last seven days (E).

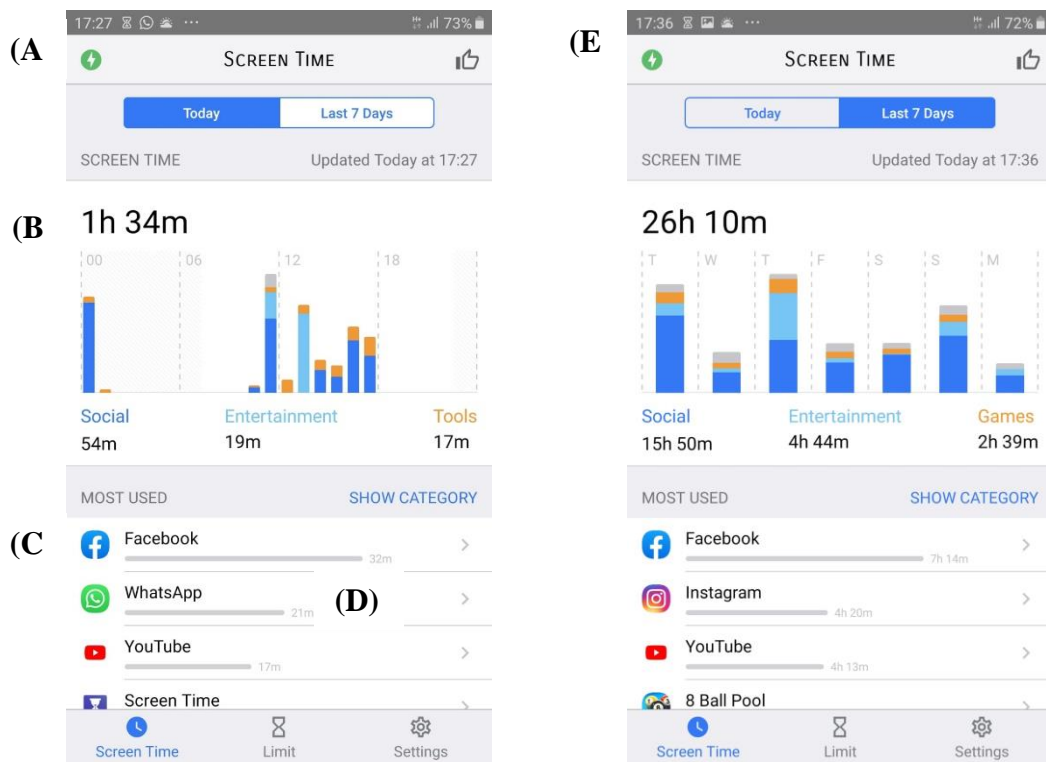


Figure 1 : Screen captures of  Screen Time (*Iridium Dust Limited*).

Screen Time keeps track of how much time users spend on any given app when the latter is not only open, but also used. For instance, when Youtube is running, Screen Time only records the amount of time users spend changing music or having a digital interaction and not all the time spent listening to music or watching a video. Hence, it does not record different apps that are running simultaneously.

Because the interviews occurred on the seventh day at different times, there are small variations among the users for that day. Yet, it was deemed acceptable as we did not carry out statistical analyses but simply used some of the provided information as prompts for the interviews.

The second phase of data collection relied on interviews conducted at least 7 days after Screen Time was installed. Our initial research protocol involved face-to-face audio-recorded

interviews. However, the lockdown situation forced us to carry out the interviews via Skype, which most participants were already familiar with. The length of the interviews ranged from 1 hour 13 minutes to 2 hours and were conducted in French in a relaxed fashion by a trained research assistant, a Master's student who was the same age as most of the participants. During their interviews, participants shared only Screen Time's visualisations, consisting of screen captures displaying textual and/or visual content relevant to the conversation.

During the first part of the interviews, participants were asked to share screen captures of Screen Time's "Last 7 days" (see figure 1 above) via an instant messaging tool (WhatsApp) and to reflect upon their use. The interviewer then asked questions about each app Screen Time ordered according to the amount of time spent. Questions (see Appendix 1) aimed at understanding how and why participants used these particular apps and whether and to what extent use of those apps contributed to learning French. The second part of the interview focused on the role of the smartphone for social integration, language learning, and how the lockdown situation influenced smartphone usage.

All interviews were transcribed and coded and screen captures that had been discussed during the interview were inserted into the transcription. A first series of codes were devised by reading several transcripts. Then, in order to achieve inter-code reliability and make sure the coding categories were coherent and not overlapping, the same transcripts were examined by two researchers separately before comparing their results. They agreed on more than 95% of coding, a rate that was deemed acceptable to code the rest of the transcripts. The categories are as follows:

1	Work on French (learning strategies, tools, research on the language)
2	Day-to-day integration in France and cultural development
3	Role played by the smartphone (work, entertainment, etc.)
4	Emotional dimension
5	Changes due to the pandemic lockdown

6	Statements related to smartphone time use and awareness
7	Social integration (family, friends, etc.)
8	Particular details about an app

Table 1: coding categories

Data thus consist of automatically generated information about participants' smartphone use, examples of smartphone usage, and discourses.

The rest of the article addresses the two following questions: 1) What are international student's attitudes towards the lockdown?; 2) What does smartphone use during the lockdown indicate about international students' time management, emotional management, language and culture learning, and sociocultural adaptation?

4. Findings

4.1. International students' emotional context during the lockdown

As international students' smartphone usage was examined during the first lockdown in France (end of April and beginning of May 2020), this section is devoted to the description of sample participants' feelings after they had experienced 6 to 7 weeks of forced isolation. Although all participants felt their stay in France had initially provided them with a great opportunity, they expressed how much the pandemic crisis and the lockdown had deeply affected their experience abroad. They struggled with being stuck in another country far from their families and coping with the stress their forced isolation caused. As could be expected, students' interviews revealed a range of negative emotions, especially loss of control, loneliness, anxiety, panic and even sadness. Gloria, for instance, easily cried when looking at her friends' messages and pictures online. Elena explained: "What's nerve-racking for us who are not sick is that we are deprived of our freedom, is that we feel we are losing control and are confronted with uncertainty." As a foreigner, Helene felt even more duty-bound to comply with the rules of the strict French

lockdown imposed during this period and ventured outside only to do grocery shopping. She claimed that she felt nervous having to talk with the police deployed to enforce the lockdown: “Maybe I would not be able to communicate with the police and clearly explain why I am out.” she explained. Clearly, limited ability to express themselves in French increased international students’ feeling of oppression and caused further anxiety.

Living in shared accommodations or being on their own in a student residence hall did not seem to make any difference about how international students felt about their forced isolation. Some declared that they were losing track of time (Victoria) or suffered sleeping disorders (Li and Gloria). Gloria explained that, during the first three weeks of the lockdown, she maintained a routine that required her to get up early and carry out her activities, just as she had done before. Then, when she realised the lockdown would continue, she started to have mood swings and felt really sad at times: “I become more sensitive. Time would elapse very slowly and days seemed endless”.

In the early stages of the lockdown, the French university improvised a pedagogical response, converting the traditional curriculum to a makeshift online version. As the teaching staff had little or no experience with online teaching, they initially demanded too much work from students who were not yet organized to deal with the new learning modality. Consequently, all 10 international students who participated in our study felt overwhelmed by academic workload, which created pressure for them but, at the same time, provided a welcome way to keep busy. Time management was mentioned as a critical issue by some students like Gloria, who devised for herself a schedule with precise time windows devoted to academic tasks.

In sum, during this period, international students were immersed in a deeply negative emotional context that caused various changes in habits. In the next section, we endeavour to determine the role smartphones played during that period.

4.2. Smartphone use and time management

At the beginning of interviews, each international student saw the information provided by Screen Time (see above for description) and were made aware of the amount of time they had actually spent using their smartphones over the preceding 7 days.

	Ahmed	Inaya	Gloria	Victoria	Elena	Akiko	Johanna	Li	Helene	Vasilka	<i>mean</i>
Estimated time of smartphone use per week	28h	14h	21h	35h	28h	28h	35h	21h	21h	35h	23,8h per week, 3,4 h per day
Time actually spent (information provided by Screen Time)	26h10	25h40	47h14	31h45	42h47	34h19	47h04	66h02	22h29	56h20	40h per week 5,7h/day
Difference	-1h50	+11h40	+26h14	-3h15	+14h47	+6h19	+12h04	+45h02	+1h29	+21h20	

Table 2: time spent using the smartphone

As seen in Table 1, length of usage, as provided by ScreenTime, varied between approximately 4 hours per day (Inaya) to almost 10 hours per day (Li), with an average of 5.7 hours per day. Eight students out of 10 underestimated the length of time spent using their smartphones, but only 3 of them (Gloria, Li and Vasilka) provided estimates that were well below their actual usage (from roughly 3 hours to almost 7 hours per day).

Half of them (Li, Helene, Ahmed, Elena, Inaya) expressed their surprise at the gap between estimated and actual usage, especially when they converted the difference to hours instead of days. Hence, Screen Time appeared instrumental in making participants aware of the amount of time they really spent using their smartphones. This realisation made some participants wish they could reduce this amount of time as they viewed it as a “waste of time” (Victoria, Inaya,

Akiko). Two students declared they would continue using this app in order to use their smartphones more reasonably, even though they thought that it was the lockdown that caused such heavy usage and that it might be different under normal circumstances. Thus, when asked about her usage, Inaya said: “I think it’s because of the lockdown, I don’t know, I think, I hope,” which interestingly indicated both uncertainty and awareness of the need for change.

Some participants claimed that they experienced screen fatigue and had therefore decided to decrease their use of digital tools by playing puzzles (Ahmed) or drawing and reading printed books (Akiko) or doing housework (Helene). Yet, all students made it clear that usage reduction was not conceivable in a lockdown situation as smartphone use seemed somehow “compulsory” in order to cope with their isolation.

Clearly, participants experienced a wide range of emotions related to smartphone use during lockdown. In the following sections, we explore further how participants examined different functions, including emotional management, sociocultural adaptation and language learning.

4.3. Emotional management

Because students constantly use their smartphones at home, even when in bed, according to one student, (Gloria), those devices became a “kind of companion” during lockdown. By keeping her smartphone close by during the day, she felt that the people she loved, even though physically distant, nevertheless remained close. Most participants expressed the same attachment to their smartphones and claimed that they took on a crucial role during the lockdown of providing emotional well-being (verbs like *share*, *reassure*, *express* were frequently used). Moreover, interactions through several social media (WeChat, WhatsApp, Messenger, Facebook, Facetime) represented obvious means for remaining in touch with family and friends at home and thus a way of seeking solace.

It is interesting to note that participants gave priority to their academic work and to conversation with family; consequently, they reduced the number of live discussions they had with friends (phone calls, videoconferencing). With family members, students tended not to speak too much about the health situation, so as not to worry them. Instead, they preferred sharing their experience and focused on details concerning food, sleep, and well-being in the interactions. Victoria insisted on the importance of using videoconferencing as “the only way to really feel we are together.” Conversations, which could take place at any time of the day were more frequent. Making oneself constantly available to parents became acceptable for some students (Johanna, Gloria, Vasilka). For instance, Johanna said that she felt she had to remain connected with her family back in Colombia despite the time difference.

The nature of online conversations with friends was altered by the lockdown. Feeling less driven by the need to reassure their relatives, students shared their actual feelings with their friends and frequently talked about the health situation. New routines were established: Vasilka, for instance, started a weekly videoconference-based aperitif while Akiko posted pictures of herself with neighbours sharing a moment on her balcony, accompanied by captions like “Even in lockdown, don’t lose heart!” Interestingly, students claimed that they spent less time posting messages online and more time scrolling social networks to browse new posts, and occasionally liking some of them. Such scrolling behaviour was considered an idle way to while away the time, avidly get information about friends, and escape the four walls of their lodgings.

Thus, the smartphone was also a key tool in the fight against boredom during the lockdown period. Students spent time using apps such as Instagram (photos), Youtube (video clips, music), Spotify (music), TikTok (an app used for sharing short humorous clips that became very popular during the lockdown) as well as Netflix (movies). To feel better, students avidly checked social networks because they felt it was essential to know what was going on in France

and in their countries. They also wanted to be able to reply appropriately when people asked about how their country dealt with the situation.

There was no novelty in the use of these apps; but, there was an intensification in their use because the lockdown provided students with long stretches of time to be filled up.

4.4. Language and culture learning

In addition to being used for entertainment and emotion-management, the smartphone was used for academic work. Interviewed students reported that they continued to use their smartphones to read what teachers put online, send emails to teachers and save documents on a cloud computer service like Google Drive (Inaya), as they had done before lockdown. However, because tasks that were commonly done in face-to-face class were moved online, students had to install new apps in order to, among the most cited activities, make audio recordings, communicate via videoconferencing, scan documents, and share files with other students. Elena explained that teachers, in order to make up for the loss of in-class oral interactions, asked students to record themselves and send them their oral production. For Inaya, such a working modality allowed students to record themselves as many times as they wanted, with the result that they could submit speech samples that were better than what they would be able to produce spontaneously in a live class. However, such tasks that typically lasted 5 or 10 minutes in class, took several hours to complete at home and were very demanding. Interestingly, when students ran out of space on their smartphones, they uninstalled apps that seemed less of a priority (Duolingo or Facebook, then used through internet browsers). All academic communication between peers and teachers also moved online and instant messaging was used massively, which proved to be disquieting for some students. For instance, Akiko saw this application being colonized by people out of her intimate social circle and was annoyed when reading the

informal conversations that some students had with the teacher. Inaya for her part explained how surprised she was when her teacher called her by phone to give her feedback on her work. When asked about how they used their smartphones to learn French, selected participants pointed out the relevance of well-known apps for explicit work. They frequently cited LeLa (an online tool to check a noun's gender), online dictionaries (Word Reference), concordancers (Linguee), and Google Translate (a machine translation service). Several students also explained how they used their smartphones as notepads to write and memorize sentences and expressions, but also to save ideas for their academic work and to keep track of things to do (mainly written in French). On the one hand, strategies related to explicit language work remained the same during the lockdown. However, one of the most disappointing findings of the study revealed that participants were ill equipped when it came to acquiring new strategies to support their own language and cultural skills development, and thus they did not venture beyond obvious and well-trodden options. We had expected to find a variety of strategies supported by social networking apps but the interviews revealed that participants used very few language learning routines, relying mainly on immersion. As a result, they were at a loss to devise digitally supported ways to compensate for the lack of direct contact with French language and culture. The claim, made by Gikas and Grant (2013), that the use of smartphones during stay abroad allows "for learning to be situated and context aware" was obviously challenged by the spatial immobilisation students endured during lockdown. When learning happened, it was mostly disconnected from situated experience, as the health situation suspended the possibility of exploring the host culture and its social life beyond online surrogates.

4.5. Sociocultural adaptation

As for sociocultural exploration, two apps were frequently mentioned as being really helpful before the lockdown: MeetUp and “On va sortir” [let’s go out]. Both social apps allow people to suggest activities (picnics, concerts, etc.) and others can join. Thus, Inaya met her boyfriend during one of the activities proposed on MeetUp. Because social face-to-face interactions were prohibited during the lockdown, some students said they had started to use (or were using more intensely) dating apps like Tinder or Happn. Some claimed they used these apps in order to practise French although they were not really interested in meeting new French people. Others said that they ended exchanges once potential partners wanted real encounters. Two participants, (Helene and Elena), admitted having met a French person using social apps and that they kept in touch afterwards. Interestingly, dating apps were used as a kind of conversational agent to develop routines in writing and explore courting rules, although it was mentioned that conversations were somewhat limited in content. Some participants realized that they had to make progress in their writing in French in order to be taken seriously online and get a reply from potential partners. Apart from the use of dating apps, sociocultural adaptation came to a halt as it became impossible for participants to explore their surroundings, meet new people, and learn about their host country.

These results point to the need to develop creative solutions for using smartphone apps for sociocultural adaptation and to encourage national and international students to develop relationships that can be maintained beyond their stay abroad.

5. Discussion and conclusion

5.1. A punctual study

Our research has provided information about how a small number of international students dealt with the Covid-19 crisis as they were prompted by visualisations concerning their smartphone use during the first lockdown in France. Since this study was punctual, it is impossible to say

whether the awareness of length of smartphone use brought about by the visualisations would modify students' behaviours in the long run. Besides, due to the limited amount of participants, our findings cannot be generalized. In order to identify changes, smartphone use would have to be studied for longer periods of time and compared in different situations (at home, abroad, under normal circumstances, and during periods of crises). This study is anecdotal. Yet, it provided us with useful indicators for approaching this unusual period based on analyses of objective and subjective data from international students' stay abroad with respect to information about how they occupied their time.

5.2. Smartphones as digital cuddly toy during the lockdown

While sample students initially estimated the daily time of use under the cut-off point (4.62h) identified by Lin et al. (2015), this amount of time was unsurprisingly higher during the lockdown. In this very stressful situation, our results show that the smartphone was used as an omnipresent digital cuddly toy that helped international students seek solace with relatives and friends, fight boredom, and keep informed about the unravelling crisis. Although smartphones were of paramount importance for alleviating loneliness, the lockdown prevented the social activities that are so crucial during stays abroad (Jiang et al., 2018) and the smartphone turned out to be a necessary but limited "companion". Our study did not uncover original or new ways of learning language but, its results remind us as educators that we often are our international students' main resource both for language exposition and for strategies they need to make the most of the digital tools that enhance language learning. Finally, if, during lockdown, smartphones allowed a digital bubble that was welcome due to circumstance, they also proved to be inefficient for facilitating sociocultural adaptation. Besides international students' use of

dating applications for creating new bonds and for developing communications skills is certainly an area that calls for more research (Guichon, 2021).

5.3. Towards a relevant experience abroad

Our study showed that, despite all its characteristics and affordances, smartphones and their many applications could not compensate for the lack of face-to-face sociability and *in situ* exploration international students need when studying abroad. While physically in the host country, international students were stuck at home and confronted with the absence of social life on campus that usually makes immersion abroad so special. This leads us to wonder what it means “to be international educators at a time when people can’t leave their homes?” (Dietrich, 2020, p. 6). Moreover, as the private sphere became disconnected from the proximate social sphere, renewed bonds were created with the country of origin while very few new bonds were made in the host country. This underscores that, even in this digital age, immersing oneself in a country requires social capital that digital communication tools are at a loss to address adequately. Obviously, the international exposure that international students are looking for cannot easily be replaced by remote learning. From the Covid-19 crisis, we now know that we should wonder how we can provide relevant experience that goes beyond the university walls and would be in line with the top three reasons cited by students participating in the EU Erasmus programme, that is to say: “to live abroad, learn or improve a foreign language, and meet new people” (Schleicher, 2020, p. 10).

5.4. Maintaining crucial bonds with isolated students

We also noted that, with the aim of providing the best communication environment, which is a laudable effort in the time of Covid-19 (Dhawan, 2020, p. 8), teachers looked for commonly-known and easy-to-use tools for staying in touch with students and therefore used apps that were not initially designed for teaching-learning situations. Nonetheless, this was generally felt

as some intrusion and created “context collapse” (Boyd, 2011), “a flattening of the spatial, temporal, and social boundaries that otherwise separate audiences on social networking services” (Duguay, 2016, p. 892). This highlights the difficulty universities face in seeking solutions for maintaining crucial bonds with isolated students. Now that this issue has been identified and now that the health crisis has deterred some from studying abroad, it is clearly time to implement or improve university services that facilitate international students’ ability to socialise with individuals in the host country. If universities do not want to see the flow of international students dry up, then it is urgent that we immediately address and act upon issues of inclusion (Dietrich, 2020). This certainly requires reinventing “learning environments so that digitalisation expands and complements, but does not replace, student-teacher and student-student relationships” (Schleicher, 2020, p. 10). More personalised student services should go beyond what teachers can provide: tutelage and tandem learning are worth developing, not just for academic purposes, but also for social integration.

Conclusion

Our study, which initially intended to examine the role of smartphones in the lives of international students studying abroad, actually led to reflections about immersion and inclusion in education abroad. The Covid-19 crisis revealed that all measures implemented to help international students make the most of their stay in a host country centered around the university as a physical institution. The need for truly including international students in study abroad programs must be addressed in light of what we have learnt as a result of the crisis and in order to honestly transcend the confines of traditional higher education.

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Application « Screen Time - Temps passé devant l'écran – Contrôle parental » (Iridium Dust Limited).

<https://play.google.com/store/apps/details?id=master.app.screentime&hl=fr&gl=US>

Appendix 1: Interview questions

Type of interview: semi-directive

Duration: approx. 1h15-30

Material: Computer, Skype, camera/microphone

I. Introduction

Is your phone set in French?

→ *If yes*: Since when? For what reason? Do you have any examples?

→ *If not*: in which language? Is this your mother tongue? Why this language?

We will now look together at the applications you use. Can you send me a screenshot of Screen Time's homepage via WhatsApp by going to "today"?

Can you click on "show more", take a screenshot and send it to me, please?

II. Questions about data coming from Screen Time

General questions:

Have you observed the use of your smartphone since the installation / activation of Screen Time?

What surprises you about the results? Which of these results is the most surprising to you?

Are you surprised by the amount of time you spend using your smartphone?

Do you use it more or less since the lockdown? Can you explain this to me?

Can you go to "the last 7 days" and send me a screenshot, please?

Questions from the Screen Time homepage "the last 7 days". (Questions to be repeated for each application (the first five) in the order given by Screen Time)

1. What is this application for? In which language(s) do you use it? Why do you use it a lot? Can you explain how you use it?

→ *If the application is related to communication (social networks, emails...):*

Who do you communicate with on this application? In which language(s)?

a. *If the student answers "in French" (at least in part):* Why? With whom? Do you think it helps you to improve your French? What language skills are you working on with this application (reading, writing, speaking, listening)?

b. *If the student answers "in another language":* Why this language? Only this language? (feedback to be adapted)

→ *If the application does not involve language interaction:*

Can you tell me more / Can you explain? For radio apps: What information are you looking for?

2. Is the use of this application more important than before the lockdown? Why is this?
3. Is it an application that allows you to manage this situation? Does it reassure you? Why do you think so?
4. What do you think of the duration of use of this application over the last 7 days? Does this time represent your usual use of this application? Before the lockdown, did you use this application as much? What do you mean? Can you explain in more detail?

Repeat the 5 steps for each 5 top applications (duration about 30 min).

Take time to look carefully at the other applications that are not in the first 5.

Can you describe how you use this application? When do you use French? Can you show me the screen? Can you try?

We have finished looking at the results given by the Screen Time application! Now we are going to talk about the general use of your phone.

III. General use issues (no link with Screen Time)

Social dimension

Which applications did you install as soon as you arrived in France or in Lyon? Why did you install these applications? *Possible follow-up:* Can you tell me more?

Since your arrival in France or in Lyon, have you met new people thanks to your applications? *Follow-up:* Thanks to an application, have you discovered an event or a place that allowed you to meet people?

Which application? Which event/place? AND/OR Is there a bar, a nightclub or an exhibition, for example, that you discovered... and through which application did you get the information?

Do you use any apps specifically for dating?

→ *If yes:* Do you agree to tell me which apps you use? Did you install them as soon as you arrived in Lyon or did you already have them installed before you arrived?

→ *If not:* Do you want to install them later?

Do you think that your phone is a tool that helps you to integrate in France? To meet new people? To be happy (have fun) in your daily life?

About Learning

Do you engage in discussions in French yourself to practice or improve your level?

Do you have any applications specifically for improving your French? Which ones do you use?

Can you tell me more precisely what you can work on or learn from them?

Are there any applications that you have installed to improve your French and that you don't use or don't use much? Which ones? What did you expect from these applications? Did you use them a lot? Why don't you use them anymore? Why do you keep them on your phone? Which applications do you use French in? Are there any other applications in which you use French?

Do you think that your phone is a tool that helps you practice French? Why or why not? Can you tell me more? What do you mean?

Do you think that the applications installed on your phone help you progress in French (give me examples)?

Which application would you recommend to other international students? Why or why not? Is it good? What can you do with it? How did you find out about it? (A teacher, the university, friends, social networks, the Internet, etc.)

IV. Final questions

Since the COVID 19 lockdown, has your phone usage changed? Can you tell me more about it? How do you feel since the beginning of the lockdown? How do you feel now that the lockdown is about to end?

Do you use a laptop? Do you use your laptop differently? What do you use it for? Do you use it as much as before the lockdown?

How important is your smartphone in your life? And more specifically during your stay in Lyon?