International Conference
ICT for Language Learning

Mobile Language Learning and Teaching: A Longitudinal Study of Middle-School Children

Sonia Rocca[1]

Abstract

This article offers a reflection on how to affect the learning of a foreign language in a bilingual middle school by implementing pedagogical approaches that integrate mobile technology. The data come from a two-year long observation of a control group (without iPads) and an experimental group (with iPads). Notwithstanding the similarities between the two groups, the iPad revolutionized the classroom landscape and impacted both teaching practices and learning outcomes.

Keywords: mobile language learning, iPad, Notability, middle school, bilingual, CEFR

1. Introduction

Mobility and mobile devices are such an intrinsic and pervasive feature of modern life that language learning and teaching cannot be conceived of without integrating such technology. But, exactly how to do this, and the learning outcomes that ensue, must be carefully explored, especially when children are involved. A longitudinal study comparing iPadded and non-iPadded language learners was conducted in a middle school. Before summarizing the study and its findings, I will outline the theoretical background that inspired it.

2. Mobile language learning and teaching

Mobile language learning in its rather simple definition of 'language learning through mobile technology' resembles a two-headed creature needing to juggle language learning with its idiosyncrasies one the one hand, and mobile technology with its idiosyncrasies on the other. Instead, I prefer to think of mobile language learning as a hybrid creature within which the paradigms of language learning harmonize with the affordances of mobile technology in order to create novel learning environments that change the landscape of traditional classrooms as well as the pedagogical approaches associated with that.

As a teacher, my starting point is always the learner. My students belong to the generation of so-called 'digital natives' (Prensky, 2001). They grew up with mobile technology and, therefore, it is assumed that their brain is wired (at least slightly) differently from mine. They certainly seem very at ease with their personal devices and, what took me major effort to understand and use comfortably, for them it seemed rather straightforward and effortless.

"Immediacy and mobility are two major keywords of this generation. They are used to a multiplicity of communication modes, they are permanently connected, even overconnected, in a kind of digital hyper-activity. Multitasking makes it difficult for them to concentrate for a long time on one activity" (Cornu 2011, p.3) [2]. Although claims about digital natives might be empirically shaky and theoretically dubious (Bennett, Maton & Kervin 2008) [3], (Jones & Shao 2011) [4], the pervasiveness of mobile devices in the life of youngsters is unquestionable and unavoidable.

Interactivity, connectivity, and collaboration are the common ground where teaching and learning can meet mobile technology. Not only do learners interact with the device, but, through the device, they interact with each other and with the teacher, inside and outside the classroom. Because of the technology, everybody - teacher and learners - is connected, inside and outside the classroom. The technology builds a network that, in turn, builds a learning community.

Capabilities such as touchscreen, wireless communication, computation, sensing (including location sensing), audio and video recording, stimulate the multisensory perception of learners. "*Touchscreen and sensor-based inputs such as swipes, taps, pinches, screen rotation, and vibrations seem to increase motivation, engagement, and the authenticity of a simulated environment on mobile device*" (Haag & Berking 2015:47) [5].

New information can be processed through the sense of touch, which is embedded in human development since the embryonic stage (Nicholas 2010) [6]. Simply tapping on the touchscreen is

[1] Lycée Français de New York (USA)

mastered by children as young as two (Geist 2012) [7]. A very common gesture at that age is pointing, which is not too different from tapping. In fact, both tapping and pointing are leveraged to direct attention with the intent to interact, whether it is with an icon on the screen or with an adult close at hand. Importantly, pointing is a communicative act that fosters language learning (Goldin-Meadow 2007) [8].

When learners are so engaged and their senses so heightened, learning environments seem to shape themselves. Creating an authentic context is an ongoing objective of language educators. As much as possible, we want our students to be immersed in scenarios where they receive real-life language input and they use their communicative skills to complete a task successfully. Mobile devices afford contextualizing, and they also afford input and output enhancement. I can assign my students to take a virtual tour of the Uffizi and send me an audio or a video summary of what they saw. To complete this task, they can access *realia* in the target language on the Internet. They can play and replay aural or audiovisual material. They can enlarge, highlight and annotate written material. They can audio-record or video-record their output. They can check online dictionaries and conjugators. They can work with other students in any convenient space with wireless connection.

Enhancing and contextualizing affordances can help both teacher and learner. The teacher sets out learning objectives and draws attention to certain features of the input the learner is exposed to or to certain features of the output the learner has produced. Enhancement, whether in the input or the output, favors noticing.

Input, interaction, output and noticing are interrelated strands in second language acquisition research (Gass & Mackey 2013, *passim*) [9]. The approach is inherently constructivist, in that learners construct language by interacting with the input. A similar approach can be found in the Common European Framework of Reference for Languages (2001, henceforth CEFR) [10], where the language learner is conceived as language user acting in a context to complete a task (Fig.1). Furthermore, the CEFR emphasizes the importance of interactive language activities, which are set apart from the traditional four language activities, namely listening, speaking, reading and writing.

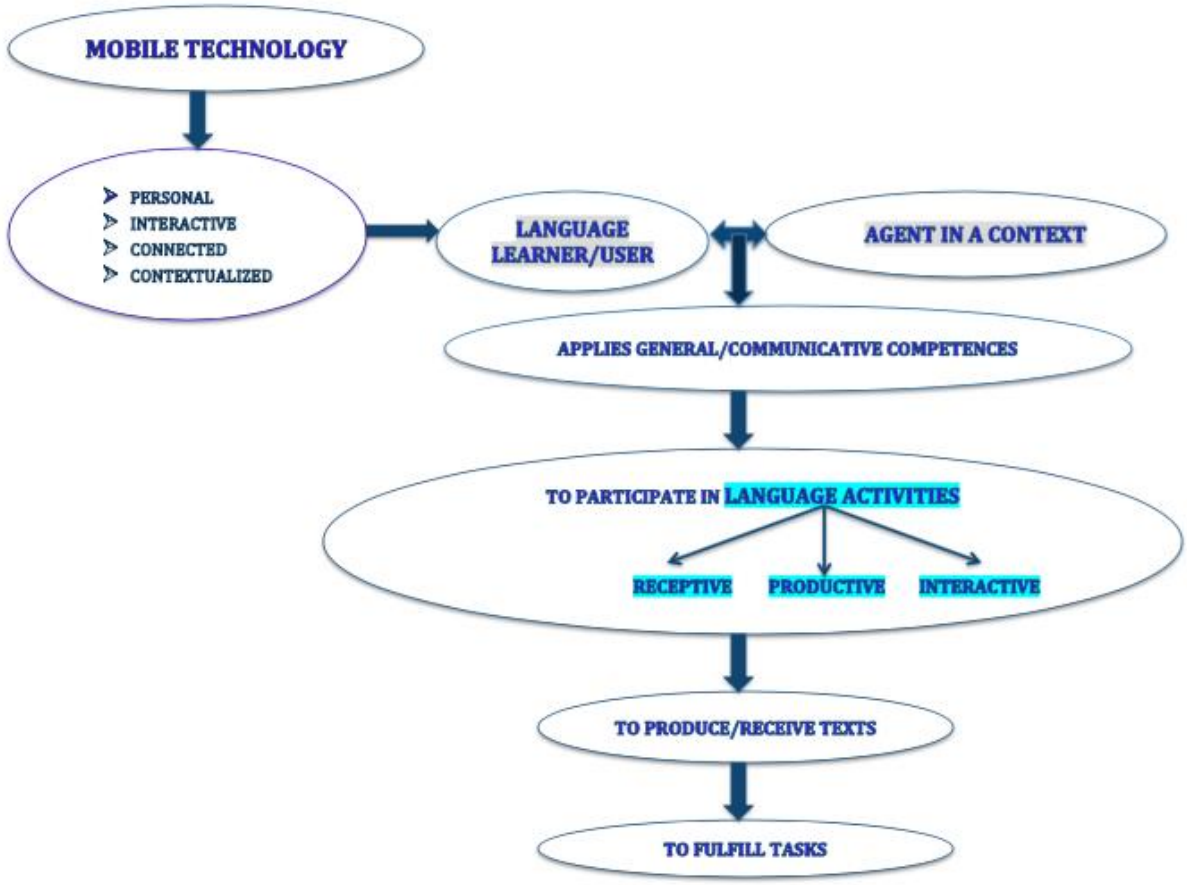

Fig.1. Mobile language learning and the Common European Framework of Reference for Languages

Contextualizing is a key concept in mobile language learning and teaching. Zervas, Ardila, Fabregat & Sampson (2011:534-535) [11] propose a context model combining both learning context and mobile context. The learning context consists of the learning design (as presented in a course of study, for example) as well as the individual learner's profile. The mobile context presents a set of interconnected variables that include: a) learner's current state of mind and willingness to engage in the learning process, (b) other people that impact on the learning process, (c) current location, (d) technological and non-technological tools, (e) current time conditions, and (f) physical conditions of the space where the learning is occurring. This model, which coordinates the learning and teaching process with its *hic et nunc* environment, ties up this section by bringing it back to the beginning: the hybrid nature of mobile language learning. An empirical study in mobile language learning is presented next.

3. The study

The study was conducted in a private bilingual French-English school in New York, as part of the iPad 1:1 program that was piloted in 2012-13. The initial study was presented in Rocca (2015a) [12] and Rocca (2015b) [13]; the follow-up study was presented in Rocca (2017) [14]. Readers are referred to these articles for details.

The participants started learning Italian a foreign language in sixth grade. They were divided into two groups: an experimental/iPadded group (14 students) and a control/non-iPadded group (8 students.

Both groups shared the same teacher and the same curriculum. The control group followed a more traditional pedagogical approach, whereas the teaching in the experimental group was influenced by the affordances of the iPad that each student was allowed to take home.

The utilization of the iPad revolved mostly around 'Notability', a productivity application that creates multimodal 'notes' with the integration of handwriting, typing, graphic and audio. The teacher would share 'notes' with a lesson's learning objectives and the students would work in pairs on tasks in line with CEFR language activities. For oral tasks, the students would record their output on a 'note' that would be later shared with the teacher for feedback.

At the end of the sixth and seventh grades, the experimental group as well as the control group took a CEFR standardized test, whose results are summarized in Fig.2.

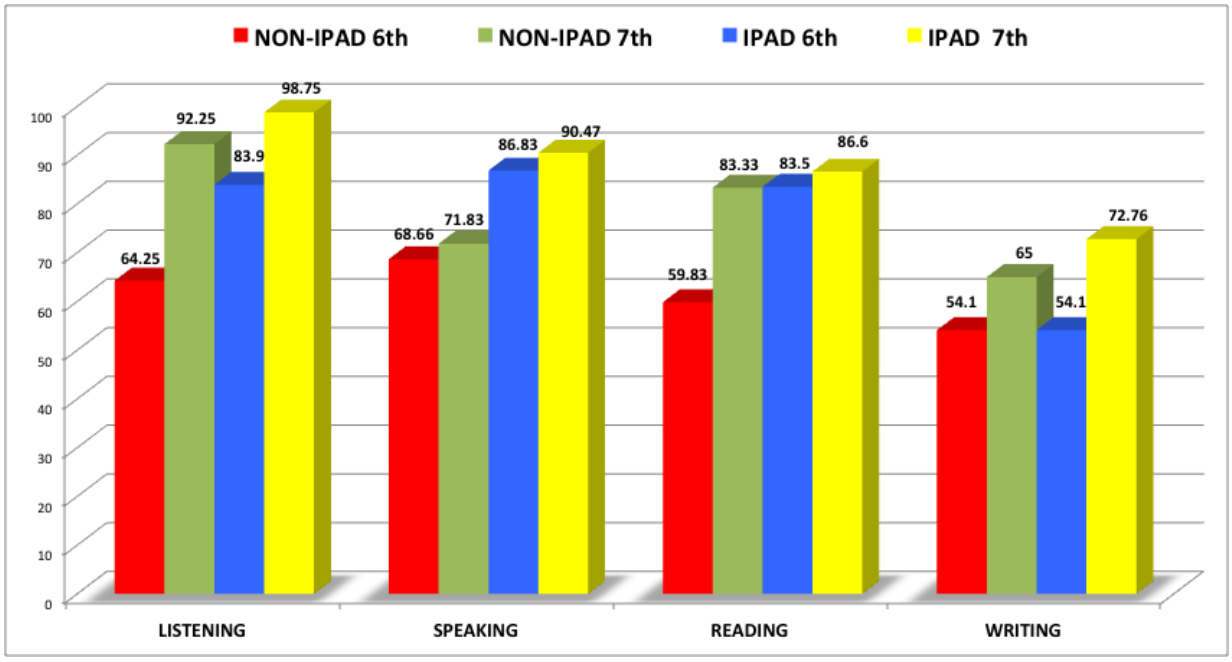

Fig.2. 6th & 7th grade control group (NON-IPAD) vs. 6th & 7th grade experimental group (IPAD)

Results show progress in both groups from sixth to seventh grade. The progress of the experimental group mimics the progress of the control group. Listening is the skill that yielded the highest score in seventh grade whereas writing is the skill that yielded the lowest score in seventh grade. Speaking is the skill with the narrowest margin of progress that is basically the same for the two groups. The

results in speaking are particularly compelling because the experimental sixth grade group outstripped the control seventh grade group. Compelling also is the score for writing, where both groups tied in sixth grade, but in seventh grade the experimental group scored better. In sum, the experimental group consistently performed at a higher level across the four skills.

4. Conclusion

The introduction of the iPad revolutionized the teaching and learning process for the experimental group, creating a paperless wall-less classroom. This study is original because it unfolded over a period of two years utilizing a productivity application such as Notability that is not specific to language learning. This shows the crucial role of the teacher/researcher who devised the study and reconfigured the curriculum, making it more interactive and contextualized so as to harmonize iPad affordances and language learning paradigms. Mobile technology keeps getting better and better and the tools offered to the language educator are more consistent with a constructivist pedagogy that embraces interactivity and learner's autonomy. Mobility does not only entail 'anytime-anywhere' learning but also untethering learners from their teacher.

References

[1] Prensky, M. "Digital natives, digital immigrants part 1." *On the Horizon* 9.5 (2001): 1-6.
[2] Cornu, B. "Digital natives: How do they learn? How to teach them." *UNESCO Institute for Information Technology in Education* 52.2 (2011): 2-11.
[3] Bennett, S., Maton, K., & Kervin, L. "The 'digital natives' debate: A critical review of the evidence." *British Journal of Educational Technology* 39.5 (2008): 775-786.
[4] Jones, C. and Shao, B. *The net generation and digital natives: Implications for higher education*. York, UK: Higher Education Academy (2011).
[5] Haag, J., & Berking, P. "Design Considerations for Mobile Learning". *Handbook of Mobile Teaching and Learning* (2015): 41-60.
[6] Nicholas, J. *From Active Touch to Tactile Communication: What's Tactile Cognition Got to Do with It?* Aalborg, Danish Resource Centre on Congenital Deafblindness (2010).
[7] Geist, E. A. "A qualitative examination of two year-olds interaction with tablet based interactive technology". *Journal of Instructional Psychology* 39.1 (2012): 26-35.
[8] Goldin-Meadow, S. "Pointing sets the stage for learning language – and creating language". *Child Development* 78.3 (2007): 741-745.
[9] Gass, S. M., & Mackey, A. (Eds.). *The Routledge Handbook of Second Language Acquisition*. London and New York, Routledge (2013).
[10] Council of Europe. *The Common European Framework of Reference for Languages: Learning, Teaching, Assessment.* Cambridge, UK: Cambridge University Press.
[11] Zervas, P., Ardila, S. E. G., Fabregat, R., & Sampson, D. G. "Tools for context-aware learning design and mobile delivery". In *Advanced Learning Technologies (ICALT), 2011 11th IEEE International Conference on* (pp. 534-535). IEEE (2011).
[12] Rocca, S. "iPadding sixth graders to impact language learners: An empirical mobile study". *The IALLT Journal* 45.1 (2015a), 23-43.
[13] Rocca, S. "Mobile Language Learning: The LFNY 1:1 iPad Program". In Pixel (Ed), *Conference Proceedings: ICT for Language Learning*. Padova, libreriauniversitaria.it (2015b): 187-192.
[14] Rocca, S. "To iPad or not to iPad: Mobile language learning with middle-school children". *The IALLT Journal* 47.1 (2017): 1-26.