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TO iPAD OR NOT TO iPAD: MOBILE LANGUAGE LEARNING WITH MIDDLE-SCHOOL CHILDREN

Sonia Rocca
Lycée Français de New York

ABSTRACT

This paper follows up on Rocca (2015a), providing additional new data from the experimental group in seventh grade. This is a small-scale study that comes under the purview of participant observation research. The continuation of the study for another year evened out the comparison between the two groups and dispelled concerns about vitiating variables affecting participant behavior, such as Hawthorne effect and novelty effect.

The control group in sixth and seventh grade was compared to the experimental group in the same two grades. Both groups shared the same curriculum, the same teacher and the same amount of teaching periods. However, they differed in class size, with the experimental group being almost double the size of the control group, and most importantly, the equipment of iPads for the experimental group, which belonged to the school-sponsored 1:1 program.

Results show that the iPadded group, generally using 'Notability', performed at a higher level for two consecutive years across the four language skills, especially in aural-oral skills where a ceiling effect was also observed. In general, the utilization of the mobile technology transformed classroom practices, enhancing the input the students were exposed to as well as the output they produced, empowering them with tools to control and monitor their work.

The conclusion argues that technology plays a role in making both teaching and learning more mobile and therefore more sustainable.

INTRODUCTION

The question implicit in the title appears either unimportant or easily answerable. To a true believer, the question does not even pose itself. But, while the web swarms with blogs dissecting the pros and cons of mobile technology, this underlying question lingers in the minds of teachers, students, and of course, parents. It is far from a simple question. To do or not to do something also entails other questions such as 'how does it work?' and 'is it worth it?'. And when there are children involved, such questions take on a new dimension as the responsibility for their education and wellbeing weighs in heavily on any course of action.

This is the context behind the rationale for the study presented here, an exploratory small-scale study conducted with the sole goal of observing the role of mobile technology on the language learning experience of middle school children. This study is a continuation of the research presented in Rocca (2015a, b) with the addition of subsequent data from the experimental group a year later. With two years of data from the control group and two years of data from the experimental group, the comparison becomes more solid and balanced. To set the background for this comparison, I will first outline two defining traits of mobile technology and how they contribute to language learning. I will then illustrate the study, and explain how the utilization of the app 'Notability' alongside other iPad features affected the learning outcomes of my students.

MOBILITY AND INTERACTIVITY IN LANGUAGE LEARNING

Learning a language is intrinsically mobile, changing over time and across space. Developing proficiency can take a number of years and level scales are generally measured in relation to length of exposure: other things being equal, a beginner student has normally spent less time learning a language than a more advanced student. But the 'how long for' is not the only variable in this dynamic process; in fact, the 'where' is also crucial. Learning a language in a class is different from learning it in a naturalistic setting. Students are often encouraged to immerse themselves in situations where the language they are learning is used in regular everyday communication, e.g. a country where such language is native

or a community where it is a lingua franca. The mobility of language learning is thus defined along a temporal and spatial dimension. Language learning is most mobile when it can be experienced in variety of contexts at a given point in time.

Mobile technology espouses the inherent mobility of language learning. Mobile devices are portable, lightweight, handheld and, like language learning, interactive. Interaction is key to language learning: that is to say, being able to communicate successfully is the basic reason why we learn a language. The Common European Framework of Reference for Languages (2001), recognizes interaction as a combination of comprehension and production, and hence as distinct from both of them, but equally crucial for communication. This view is in accordance with second language acquisition research where the interactionist approach (Gass and Mackey 2006, 2007; Mackey et al. 2012) posits that learning arises from a meaningful interaction between a learner and a more proficient speaker.

In an effort to keep the conversation going, interlocutors may need to repair communication when it breaks down. The more advanced speaker could simplify the message to make it accessible. The learner thus receives comprehensible input, which could also take the form of more or less explicit corrective feedback. The learner's endeavors to understand and be understood develop learning. Specifically, through interaction, learners may be induced to notice the gap (Schmidt 1990) between the language they produce and the language they are exposed to. Noticing the gap may push learners to improve the quality of their output. (Swain and Lapkin 1995; Schmidt 2012; Bergsleithner et al. 2013). The interactionist approach developed from the *Interaction Hypothesis* (Long 1981, 1996) that contained aspects of the *Input Hypothesis* (Krashen 1982, 1985) and, later, the *Output Hypothesis* (Swain 1985, 1995) as well.

The type of interaction performed by the participants in my study did not strictly adhere to the makeup of the interactionist approach because the proficiency level was altogether homogenous and, within the constraints of the tasks assigned, there were few communication breakdowns. Instead, the interaction that my students engaged in could be defined as 'collaborative dialogue' (Swain 2000; Swain and Lappin 2002), in that they joined forces to complete a production task, oral or written. Students would work together in twos or threes, discuss task requirements and figure out what they needed to do to fulfill them. While doing so they would apply problem-solving strategies and they would hone their language skills. The iPad, through the utilization of 'Notability and other features, contributed significantly to this collaboration

because it allowed the students to control the process and to check their resources independently, with little or no assistance from the teacher. In sum, three types of interaction marked the classroom routines of these students:

- teacher-student interaction,
- student-student interaction,
- student-tablet interaction.

All three sets of variables contributed to the creation of a highly interactive learning environment, the quality of these interactions being what matters in determining learning outcomes. Interaction, whether it is human or human-computer, presupposes interrelationship. Just like students working together on a task discuss options and make choices, similarly a student using a tablet to complete a task moves their fingers on the touchscreen and makes choices based on options offered by the device.

Interactive learning is inherently constructivist, underscoring the belief that knowledge building is a creative process where the learner is actively engaged. Interactivity is dynamic and contextualized. But it is bidirectional and multifaceted as well, as indicated by Domagk et al. (2010) in their six-part model of multimedia interactivity. This model depicts a learning scenario hinging on the learner as an individual making decisions within a learning environment. Such decisions are implemented by behavioral gestures on the affordances of the device. But behind these actions, there is a complex set of cognitive, metacognitive and affective variables that affect and are affected by the system.

Interactive gestures on the touchscreen represent observable behavior that is conducive to successful learning outcomes (Dubé and McEwen 2015). There is research showing that four-year-old children can utilize a range of iPad applications through finger movements such as tapping, dragging-and-dropping, sliding, pinching, spreading, rotating and flicking (Aziz 2013). Tapping is the most common and the most basic interactive gesture mastered by children as young as two (Geist 2012; Aziz 2013; Aziz et al. 2013; Hourcade et al. 2015). Interestingly, children of that age rely heavily on pointing as a communicative act that paves the way to language learning (Goldin-Meadow 2007). Pointing is akin to tapping in being a gesture that shows a purposeful interaction with the environment. Children regularly extend their index finger to direct adults' attention towards an entity and consequently elicit information; similarly users could extend their index finger and direct their attention towards an icon on the touchscreen that they intend to tap. This could have many different purposes: like a pointing gesture by a child, tapping could be aimed at eliciting information, e.g.

tapping the icon of a weather app to check the weather forecast. But it could also fulfill a totally unrelated task, e.g. tapping the bin icon would not typically elicit any information but rather execute the command 'delete file'. The table below lists the interactive gestures associated with the features of 'Notability', the only app utilized in my study.

Table 1: Interactive gestures for Notability

FEATURES	TAP	DRAG	SWIPE	PINCH	SPREAD	ROTATE	SCROLL
HANDWRITE	X	X					
TYPE	X	X					
HIGHLIGHT	X	X					
SCISSORS	X	X		X	X	X	
ZOOM		X		X	X		
NAVIGATION	X	X					X
SEARCH	X						
RECORD	X						
PLAYBACK	X	X					
ORGANIZE	X	X					
UNDO/REDO	X						
BOOKMARK	X						
DELETE	X		X				
MEDIA	X	X					
UTILITIES	X						
SHARE	X						
IMPORT	X						
DUPLICATE	X						

Tapping and dragging are the most frequent gestures, and what they share with other interactive gestures is that their use results in focusing a user's attention, thus providing more opportunities for noticing and hopefully for learning improvement. Another result of touchscreen interaction bound to affect noticing is input enhancement, which aims at making input more salient through simple strategies, e.g. repetition or highlighting, or more complex ones, e.g. simplification, translation, and visualization (Sharwood Smith 1993). Mobile devices allow input in its multidimensionality to be enhanced interactively. Using 'Notability' for example, aural input is presented as a recorded 'note' to the learner, who can play it and replay it ad lib, varying the speed and pinpointing the most difficult segments needing more attention. On the other hand, written input can be highlighted, enlarged or annotated and images can be inserted. Most importantly, the learner is able to control the input at an individual pace, thus enhancing the chances of noticing. Not only does 'Notability' allow for input enhancement, it also allows for output enhancement of both the oral and written language learners produce. For oral tasks, learners are able to control their output by recording it and replaying it, self-correcting when needed. For written tasks, self-monitoring and, hence, self-correcting are even more predictable given the

reflective nature of writing. Furthermore, 'Notability' functions as a virtual notebook with features that can be personalized.

To sum up, this section outlines two defining traits connecting the language learning that my students experienced to the the features of the device that accompanied each one of them in this experience, namely mobility and interactivity. Language learning is mobile because it develops over the course of time and across various settings, inside and outside the classroom. This developmental and situational changeability so intrinsic to language learning naturally espouses the mobility of handheld devices, since these can be easily carried and utilized in various settings, at different points in time and for an indefinite amount of time. This fluidity along the space-time continuum is representative of both mobile technology and language learning.

In addition to mobility, the device and the experience also share interactivity. Interaction is at the heart of the foreign language curriculum as well as second language acquisition research. The participants encountered a highly interactive environment where they would be able to interact with the teacher, with each other and with their device. Through interactive gestures on the touchscreen, learners could enhance the input they were exposed to as well the output they produced, thus maximizing their ability to control the learning process and its outcomes.

THE STUDY

Participants

The sixth and seventh graders who took part in this study are bilingual French-English children who, since the age of three, have been attending a private French bilingual school in New York. There are 14 learners in the experimental group (8 females and 6 males) and 8 learners in the control group (4 females and 4 males). The size of the respective groups is smaller than the actual size of the corresponding classes, given the exclusion of learners with prior exposure to Italian.

Both groups started learning Italian as *Langue Vivante 2* (Second Foreign Language) in sixth grade. They share the same curriculum, which follows the French National Curriculum and therefore the Common European Framework of Reference for Languages (2001, henceforth CEF). They also share the same

teacher, the same number of teaching periods, the same material, and in principle the same assignments. I emphasize 'in principle' because, even if the tasks assigned to both groups were basically the same, the fact that the experimental group utilized the iPad to carry them out made all the difference, as this paper intends to show.

Research Questions

The basic research question has not changed from Rocca (2015a, b):

- Does the experimental group perform better than the control group?

This supplement of data a year later will provide a more substantial picture of the learning outcomes achieved by the experimental group as well a more exhaustive comparison between the control group and the experimental group. More specifically, this paper will try to answer the following sub-questions:

- Does the 7th grade experimental group perform better than the 6th grade experimental group in all language skills?
- Does the 7th grade experimental group perform better than the 7th grade control group in all language skills?

In other words, data from the seventh grade experimental group will be compared to data from the same group a year earlier, in sixth grade, as well as to data from the seventh grade control group. Furthermore, the two-year data from the control group will be compared to the two-year data from the experimental group so as to provide a developmental overview of learning outcomes in both groups.

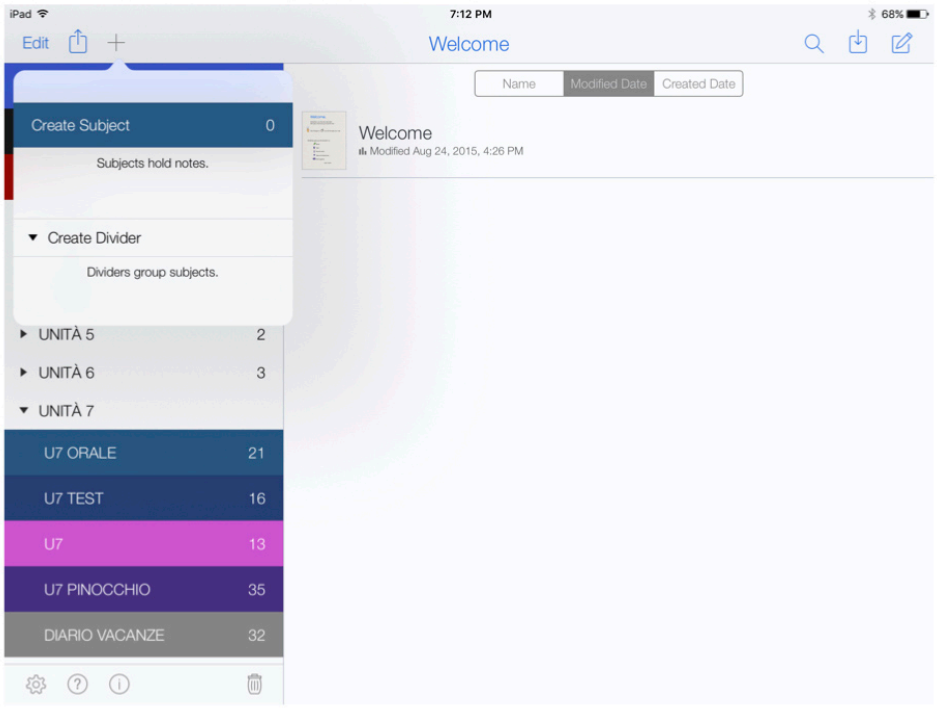
Method

The experimental group belonged to a larger class of Italian-learning students that the school selected for piloting their 1:1 iPad program. In the spirit of true mobile learning, these students were individually assigned an iPad that they were allowed to take home instead of returning it at the end of each class. The introduction of the iPad transformed regular classroom practices, 'giving rise to specific iPadded lesson features' (Rocca 2015a, p.35). First and foremost, textbook and notebook disappeared. Both the control group and the experimental group covered the same teaching units, one per trimester, from the same

textbook. The presentation of such units, however, was crucially different for the experimental group.

Teaching units generally comprise a variety of topics and tasks under a thematic umbrella. Textbook pages tend to be crowded, packed with information that could distract learners' attention from the actual lesson. The teacher preempted this by segmenting the teaching units into smaller sections and labeling them in the target language according to the task or topic they contained, e.g. *U1 ASCOLTO* (listening); *U2 LESSICO* (vocabulary). This segmentation allowed for the unity of the lesson to be preserved through the unity of the topic/task. The goal was to enhance target language input as well as avoid cognitive overload by focusing learners' attention on only one or two tasks of the same kind, thus optimizing their learning experience. Files containing the lesson were emailed to the students who opened them as 'notes' utilizing the application 'Notability'. Students were instructed to group individual 'notes' into 'subject' folders, which, in turn would be grouped together using a 'divider'. This feature helped students to develop hierarchical organization (Fig. 1).

Figure 1: Organizing 'notes' in Notability



'Notability' offers interactive multimodal features (Rocca 2015b). A 'note' sent by the teacher generally consisted of written/graphic text, containing either an assignment for students to work on or an evaluation of a previous assignment. If the assignment involved writing, students could typewrite (Fig. 2) or handwrite (Fig. 3).

Figure 2: Typewriting in Notability

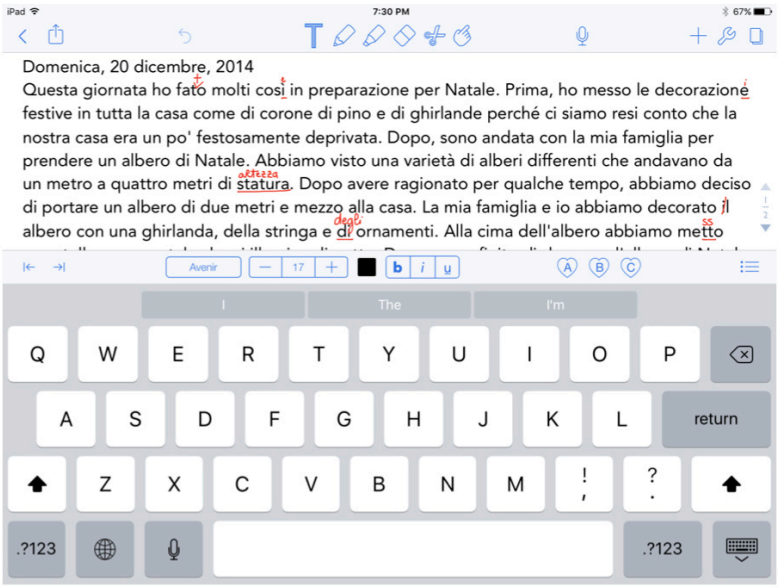
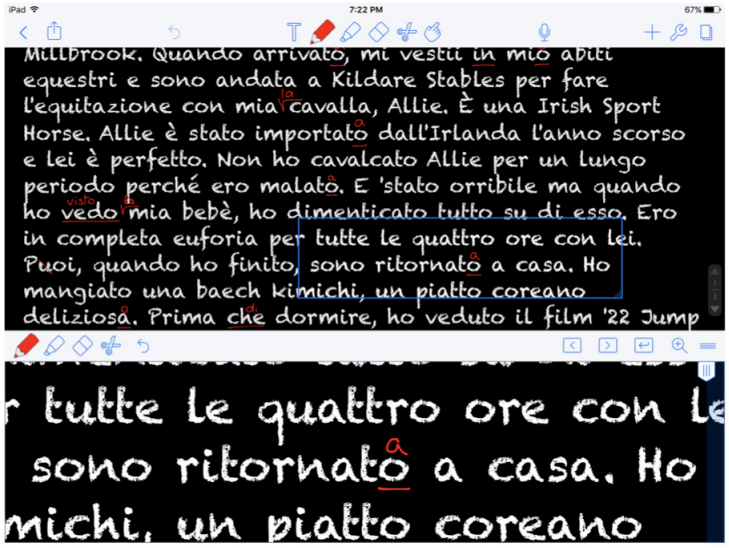


Figure 3: Handwriting in Notability



When typewriting, students would use a pop-up customizable keyboard (Fig. 2), and when handwriting, they could resort to a zoom window at the bottom of the page. This feature was also employed by the teacher to evaluate assignments. Whatever was written in the zoom window was also reflected above in a target box, which could be moved and resized (Fig. 3).

Figure 4: Utilities in Notability

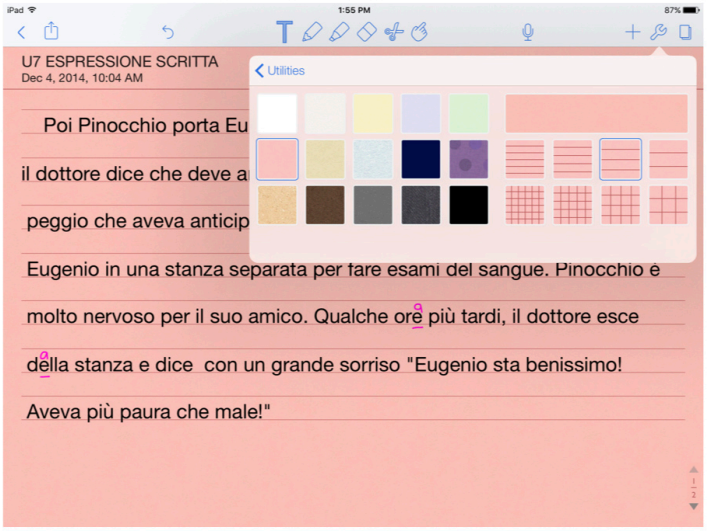
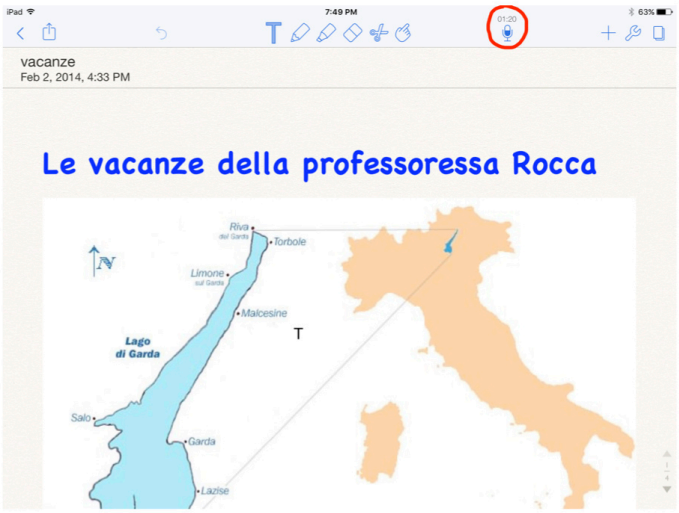


Figure 5: Inserting images in Notability

Rocca

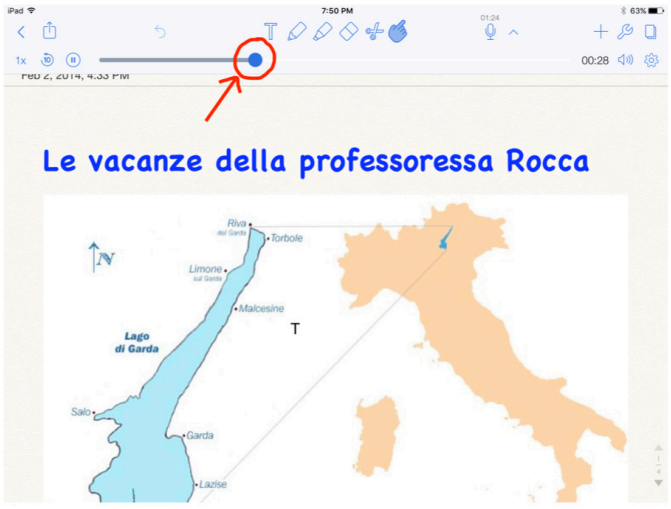
Students could personalize their notes by tapping the 'utilities' wrench and selecting a paper style, squared or lined, with a combination of colors and patterns (Fig.4). They could also insert illustrations such as figures and photos (Fig. 5).

Figure 6: Audio-recording in Notability



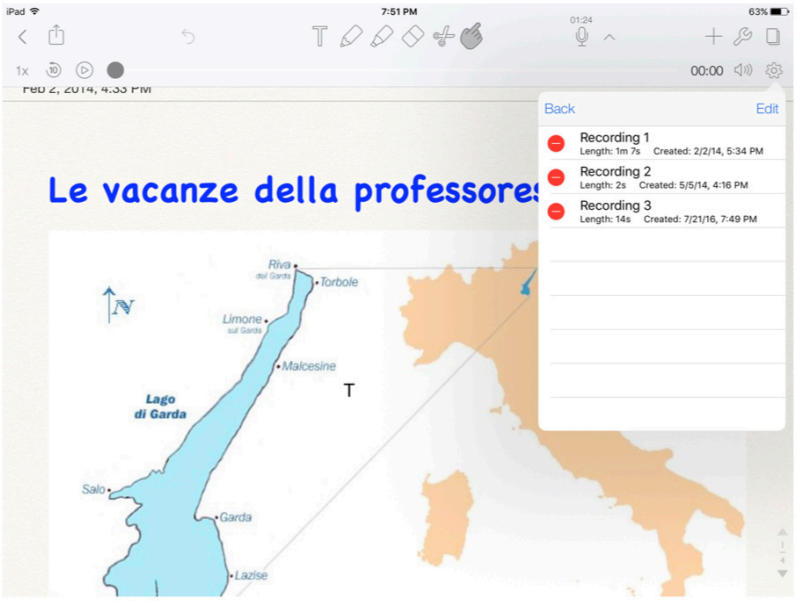
If the assignment involved listening, in addition to a written/graphic text, the 'note' would also contain an aural text with the voice of the teacher or other authentic material compiled by the teacher. Thus, a 'note' could come to life thanks to the features 'recording' (Fig. 6) and 'playback' (Fig. 7).

Figure 7: Audio playback in Notability



The audio component of a note would be inserted either by the teacher or, alternatively, by the students recording the teacher in the classroom upon her instruction to do so. Students could replay the note at various speeds and navigate it by dragging the play-head through the meter (Fig. 7). They could replay it as often as they wanted within the time constraint of the assignment.

Figure 8: Managing recording in Notability



If the assignment involved speaking, the note would include a written/graphic text, and, often, the voice of the teacher as well, to help the students model the task. In addition to 'recording' and 'playback', the feature 'managing recording' allowed output monitoring by listing all the various recordings for a specific note and giving the option of deletion (Fig. 8). Students would be required to record themselves, if working alone, or each other, if working in pairs (Fig. 9).

Figure 9: Recording spoken interaction tasks in Notability

They would also be required to listen to their recording, individual or joint, and redo it until satisfied before sending it to the teacher for evaluation. For certain oral assignments, instead of using the audio-recording feature of 'Notability', students would video-record themselves or each other with the iPad camera. For tasks involving productive skills such as speaking and writing, students were also allowed to use online dictionaries (but not instant translators) and conjugators.

At the end of sixth and seventh grades, all the students took a comprehensive CEF level A1 test that included four components of the CILS examination (*Certificazione di Italiano come Lingua Straniera* – Certification of Italian as a Foreign Language) offered by the Foreigners University of Siena. These four components corresponded to four CEF language skills – or 'activities' in CEF terms, i.e. listening comprehension (LISTENING), spoken interaction (SPEAKING), reading comprehension (READING), and written production (WRITING). Sixth graders took the level A1 test for children (*bambini*), whereas seventh graders took the level A1 test for adolescents (*adolescenti*). Both groups were expected to attain CEF level A2 at the end of ninth grade. Neither the experimental group nor the control group ever received prior ad-hoc test training.

RESULTS

Test scoring followed the guidelines of the examining body. Raw scores were averaged and transformed into percentages for clarity's sake. The four figures below display the results. Figure 10 presents the results of the sixth and seventh grade control group whereas figure 11 presents the results of the sixth and seventh grade experimental group; figure 12 compares the results of the two sixth graders' groups, whereas figure 13 compares the results of the two seventh graders' groups. The results of the control group as well as those of the sixth grade experimental group were previously illustrated in Rocca (2015a).

Figure 10: Results of control group in 6th and 7th grade (Rocca 2015a:35)

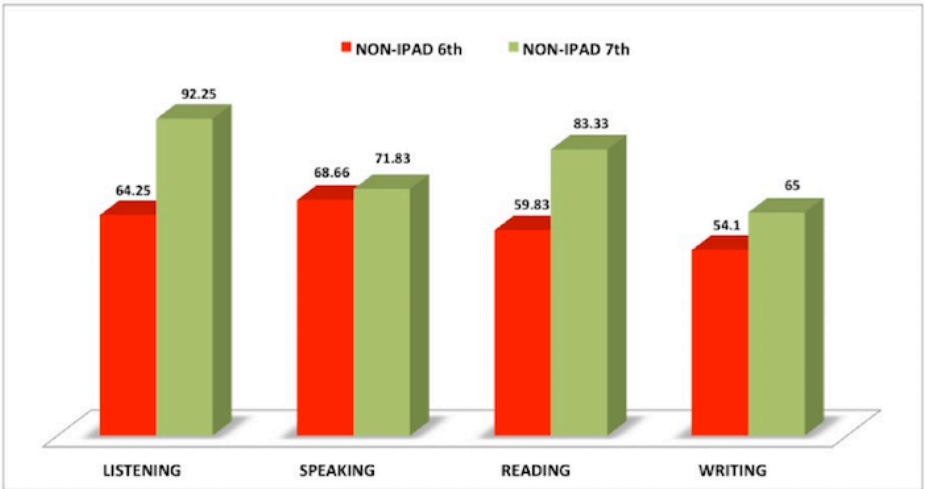
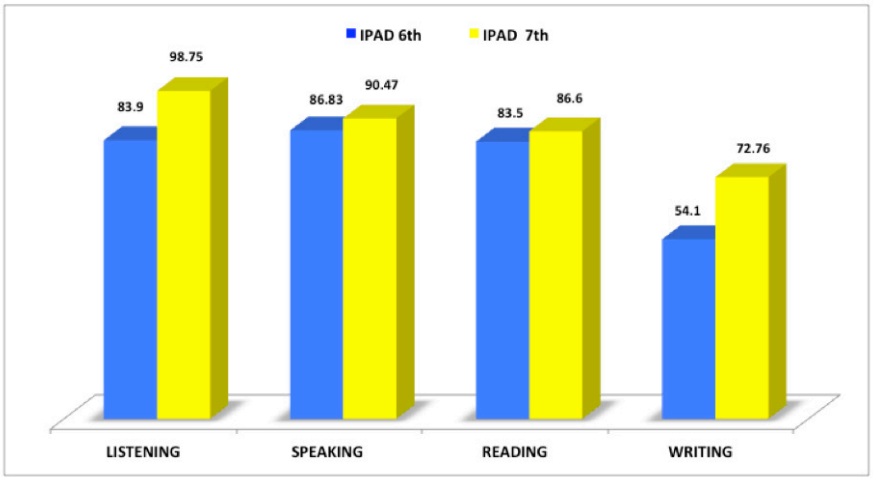


Figure 10 depicts the performance of the control group for the two years in question. From sixth to seventh grade, the results show progress in all four skills. Nonetheless, the sixth graders scored higher in oral skills (listening and speaking) whereas the seventh graders scored higher in receptive skills (listening and reading). Listening is the skill with the best score and the best progress, with a 28% increase a year later. Writing is the skill with the worst score in both sixth and seventh grade, despite a 10.9% growth a year later. The skill that showed the slimmest growth was speaking, which yielded the highest score in sixth grade but, surprisingly, only increased 3.17% in seventh grade.

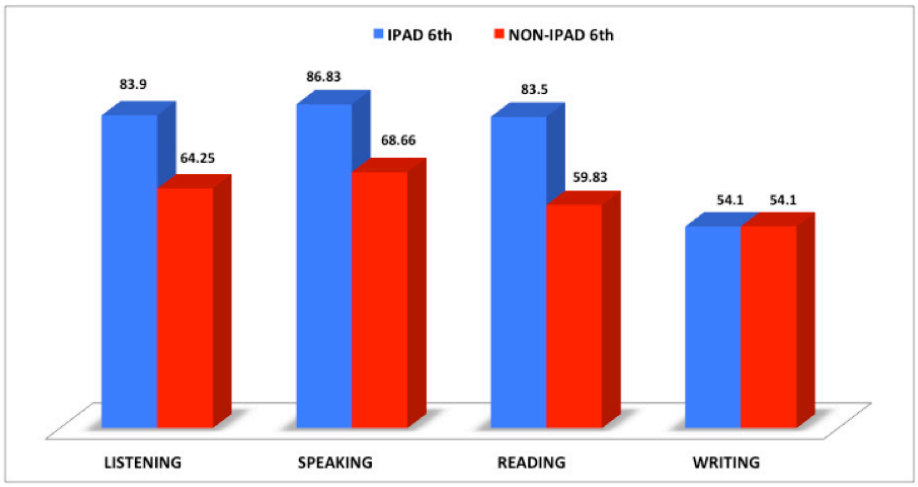
Figure 11: Results of experimental group in 6th and 7th grade



The results of the experimental group, like those of the control group, show progress in all four skills over two years. Just as with the control group, listening is the skill with the highest score and the most progress, whereas writing is the skill with the lowest score in both sixth and seventh grade. However, the 18.66% advancement in writing by the experimental group is more compelling than the 10.9% advancement in the same skill by the control group.

A further comparison seems to indicate that the two-year development of the experimental group mirrors the two-year development of the control group, but the scores of the former are at a higher level than the ones of the latter. With the exception of writing, the scores of the other three skills range from 83.5% for reading in sixth grade, to 98.75% for listening in seventh grade, whereas the scores of the control group range from 59.83% for reading in sixth grade, to 92.25% for listening in seventh grade. Even if speaking has an approximate growth of 3% in both groups, the scores of the experimental group for this skills range from 86.43% to 90.47% whereas those of the control group range from 68.66% to 71.83%. Overall, the experimental group performs at a higher level, especially in aural-oral skills.

Figure 12: Results of experimental group vs. control group in 6th grade



Results indicate that the iPadded sixth graders outperformed the non-iPadded sixth graders, in all skills but writing, where the score was a tie. The experimental group performed better in listening (+19.65%), speaking (+18.17%) and reading (+23.67%). Rocca (2015a) also showed that the iPadded sixth graders outranked the non-iPadded seventh graders by 15% in spoken interaction. Productive skills yielded the most opposite scores, in that speaking achieved the highest score whereas writing obtained the lowest one. In both groups, speaking produced the highest score, followed by listening, then reading, and finally, writing.

Notwithstanding the same ranking across skills, each group garnered a different score level across such skills. With the exception of writing, the score for the other three skills ranged from 59.83% to 64.25% within the control group, and 83.5% to 86.83% within the experimental group. The control group performed more uniformly across the four skills, with a margin of 10.15%. The experimental group performed even more uniformly across the three skills of listening, speaking and reading, with only a margin of 3.33%.

Figure 13: Results of experimental group vs. control group in 7th grade

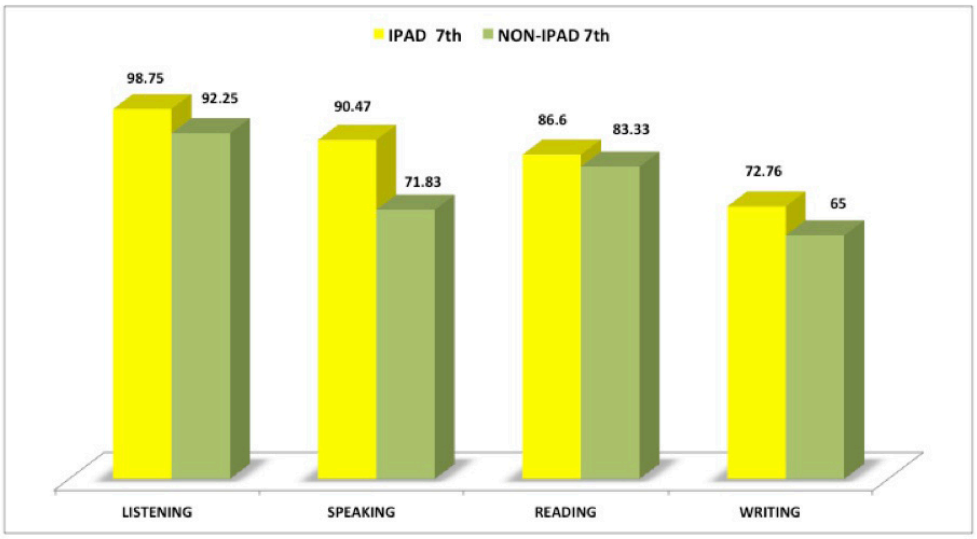


Figure 13 shows that the iPadded seventh graders surpassed the non-iPadded seventh graders in all four skills. This margin is at its widest in speaking (+18.64%), followed by writing (+7.76%), then listening (+6.5%) and finally reading (+3.27%). Compared to speaking, these three skills exhibit a narrower margin of growth within each one of them and across each other. While the results obtained in speaking further support what was corroborated in Rocca (2015a), the results obtained in writing and listening are indicative. These two skills are at the opposite end of the performance spectrum for both groups, with listening yielding the highest scores and writing the lowest. As to writing, the two groups of sixth graders scored the same, but the experimental group performed better in seventh grade. As to listening, both groups achieved scores above 90%, with the experimental group virtually achieving the perfect score (-1.25%). However, the control group showed a 28% growth from the previous year, which is almost double the growth of the experimental group (+14.85%).

If listening ranks first and writing ranks last in both groups of seventh graders, the opposite ranking of the two remaining skills tells a different story as to the development of language skills in these two groups. In the seventh grade control group, reading ranks second and speaking third, thus showing the primacy of receptive skills over productive skills; conversely, in the seventh grade experimental group, speaking ranks second and reading ranks third, thus showing the primacy of aural-oral skills over written skills.

In sum, results indicate that the experimental group performed better and at a higher level than the control group across skills over a two-year period.

LIMITATIONS OF THE STUDY

This is essentially the same research as the one presented in Rocca (2015a, b), and therefore subjected to the same limitations. As Rocca (2015a) explained, this is a classroom-based study, brought about as a pilot project for the school 1:1 iPad program. Given the rationale for the project, I decided that the best way to proceed was to compare a control group and an experimental group, trying to control as many variables as feasible, i.e. teacher, curriculum, material, number of teaching periods, learners' prior exposure to the target language. Adding data from the experimental group a year later fortified the results, but the sample is still too small for inferential statistics and, hence, for wider generalizations.

This research falls within the parameters of participant observation, where the researcher partakes in the environment that is being studied. Such research scores low on the reliability scale because it is technically impossible to replicate. On the one hand, its contextual validity is very high because the researcher displays deep sophisticated knowledge of her domain and no external factors disturbed the classroom ecosystem. On the other hand, the fact that the teacher and the researcher are one and the same could be considered as another limitation of the study. The teacher's beliefs and her willingness to conduct a successful experiment could have biased the results, especially when data analysis required a more subjective interpretation. However, this would have been a self-defeating endeavor.

The ultimate goal of this research was a wash-back effect for the teaching, i.e. finding out whether or not the iPad positively impacted the language learning of these children, and therefore, adapting teaching practices accordingly. Biasing the results, whether intentionally or not, would have nullified not only this research but also the pedagogy that ensued. Instead of being a limitation, I believe that the teacher/researcher sameness should be encouraged. Well-structured classroom-based studies could provide the teachers who conduct them meaningful insights in the progress of their students. Furthermore, this type of research would contribute a more empirical understanding to a new evolving field such as mobile language learning.

DISCUSSION

The fundamental motivation spurring this study into its second year was the eagerness to ascertain whether the results of the first year were just a stroke of luck or a more solid finding. Those results seemed too promising to endure the test of time. After all, how can sixth graders outperform seventh graders, when any student with prior exposure to the target language had been excluded from test scoring? With all controllable variables under as much control as feasible, the only plausible explanation rested with the utilization of the iPad. This was the conclusion in Rocca (2015a), i.e. the iPad made all the difference, impacting successfully on the learning outcomes of these sixth graders. However, did the iPad also have an impact on the behavior of these students?

I considered the possibility of a Hawthorne effect. The students belonging to the experimental group were provided with an individual iPad that they were allowed to take home during the school year. Obviously they felt privileged, but I fail to see how the simple fact of being a participant in this experiment would have biased the results. The utilization of the iPad was confined primarily to the study of Italian, which is not a core curricular subject, and, furthermore, there were no rewards for taking part in the experiment. I cannot deny a 'novelty effect' when the iPad was first introduced, but this wore off after a few months and certainly the results at the end of the second year cannot be attributed to a 'novelty effect'. On the other hand, a behavioral effect that can be attributed to the iPad is an increased student motivation.

Numerous studies have attested to the motivation and engagement of students utilizing mobile devices. Hwang and Wu (2014) reviewed 214 studies published between 2008 and 2012 in seven leading journals that have been included in Social Science Citation Index for ten years or more. These publications were related to the utilization of mobile technology in pedagogical settings. The researchers found that 'mobile learning is promising in improving students' learning achievements, motivations and interests' (p.83).

If this motivation can be partly explained by the metaphor of the excited child playing with new toy, in the long run such an explanation would not hold and would have to leave room to other metaphors pertaining to the sense of ownership and control that mobile technology provides to an individual learner. I am inclined to think that the motivation experienced by my students matured from viewing the iPad as a fun new toy to considering it as an empowering tool that, through its many features, allowed them to stay connected, work with peers,

check resources and monitor their work. Ultimately, what I believed kept my students motivated was the sense that the iPad promoted their language learning progress, which is borne out by the results of the two-year study they participated in.

Both the 'Hawthorne effect' and the 'novelty effect' are linked to behavioral variables within the experimental group. Although a priori undeniable, both effects cannot adequately explain these results after two years. However, there is one effect that, being inherent to testing measurements, can offer a more cogent explanation. It is the 'ceiling effect' and it indicates the difficulty of achieving the highest levels of performance when the test is not calibrated to show such levels. In other words, the test ceiling is too low to measure improvement and accurately show the level attained. With the exception of writing, the experimental group performed highly at the end of sixth grade; therefore the growth shown at the end of seventh grade was limited because the test was too simple. Such little margin of development in close proximity of the target is more significant than the same little margin further down the scale. The students could have been tested at the next CEF level, but the comparability with the control group would have been less straightforward and more confusing. Nonetheless, most importantly, the greatest 'absence is presence' in these results is the absence of regress. Even when the iPad stopped being the metaphorical new toy, there was no backsliding in the experimental group.

Indeed their results outstripped those of the control group. The former performed at a higher level than the latter, especially in aural-oral and productive skills. Thanks to iPad, the experimental group became less teacher-dependent. Whether students needed to clarify a grammar rule, translate a word or paraphrase an expression, iPad features helped them find their answers. The teacher not only recommended online resources, but instead of just feeding the students with the information they needed, she provided them with strategies to effectively locate it, if said information was readily available, or construct it, if it needed to be put together from various sources. Regardless of the assignment or the language skill being practiced, the iPad represented a paramount all-embracing source of information that was easily accessible at the click of a button, or more appropriately, at the tap of an icon.

Tapping, dragging, pinching and spreading are among the most frequent interactive gestures on the touchscreen of a mobile device. With body and cognition intertwined, these physical actions promote learning by mapping onto basic cognitive processes. Tapping would direct attention, dragging would

require longer attention, spreading would focus attention. Teachers know how crucial it is to catch and hold students' attention - and what a real challenge this can be. The learning experience of the experimental group benefitted from the interactive features of 'Notability'. By interacting with this app, students maintain their attention on what the teacher wants them to pay attention to: in this specific case, target language input. Most importantly, this interaction not only engages attention but also enhances input, thus stimulating noticing.

Among the four skills, listening comprehension yielded the highest score in both groups of seventh graders. In the control group, the teacher managed the listening material, deciding how many times it would be played for the whole class to hear collectively. Per contra, in the experimental group, each student would listen to the recording on 'Notability' and individually decide how many times to play it within a time constraint. Students could also make their listening more effective by pinpointing the exact part of the recording they wanted to listen to and focus only on that.

It is however in oral skills that the experimental group showed its excellence. Unlike their counterpart, they routinely recorded themselves and listened to their recorded output, monitoring it and evaluating it, redoing it until they were satisfied with their performance. This practice of 'enhanced output' boosted their oral skills as well as their aural ones, because it pushed each student to listen for a specific purpose, i.e. self-correction. An additional boost to noticing came from teacher's feedback. After the students had shared their recording with the teacher, the teacher would sit with each one of them to go through their work and point out strengths and weaknesses, stopping the recording to talk it over. The routine practice with Notability and the type of corrective feedback that the experimental group received promoted their superior aural-oral results.

The experimental group showed superior productive skills. A case in point is their writing score at the seventh grade, better than the score of their counterparts, after both groups tied at the end of sixth grade. The practice of speaking and writing was generally interconnected for both groups. If the task involved an oral presentation, the students would create a written/graphic support that after the presentation would help them to put it in writing. If the task involved interaction, such as a role-play or an interview, the students would engage in a 'collaborative dialogue'. Working in pairs, they would work out what to say and how say it, thus practicing problem solving as well sentence structuring. They would write the task first and then perform it as a sketch in front of the class. Again, the crucial difference between the two groups was that

the experimental group, in addition to student-student interaction, benefitted from the student-device interaction by utilizing those iPad features that would sharpen their noticing and self-monitoring, i.e. accessing online resources, recording, editing, sharing.

To sum up this discussion, the supplemental data from the second year provided a more solid picture of the experimental group's achievements. As the students settled down in their iPad routines with 'Notability', the thrill induced by the novelty of the device faded, as did their awareness of being part of an observational study. Their scores in a standardized test showed a higher-level performance for two consecutive years. These scores also showed a ceiling effect as if the bar set by the test was too low for these high-achieving students. Altogether, the superior results of the experimental group underscore the advantages of utilizing certain iPad features to enhance learning and teaching practices in the foreign language classroom.

CONCLUSION

The high-level results of the experimental group over two years' time invite some final thoughts on the role of mobile technology in shaping the present and future landscape of foreign language education. Mobile learning's most convincing mantra is the 'anytime-anywhere' tenet that empowers the learner beyond classroom boundaries. The image evoked is that of an individual on the move, in different locations at different times of the day, interacting purposefully with a handheld device. However, even within classroom walls, mobile technology allows the creation of virtual spaces where learners are able to manage their learning independently. This is not to say that teachers become redundant as a consequence: quite the opposite, in fact. Teachers are still very much needed.

The teacher who conducted this present study played a key role not just as a researcher but primarily as an educator who reconfigured the curriculum to optimize the learning of her students. Interestingly, in order to achieve her pedagogical goals, she avoided language learning apps and opted instead for a general use app that she utilized in unique ways. 'Notability' functioned as a blueprint for the teacher to present multimodal language input and for the students to interact with it as well as to monitor their output. Furthermore, the general classification principles underlying the labeling and filing of every 'note' promoted the hierarchical organization of knowledge, and hence the

implementation of a strategy that is fundamental not only to language learning but to learning tout court.

If, thanks to technological affordances, learners become mobile, so do teachers, who record and share their lessons, move around the classroom to assist students in completing a task on their mobile device and, last but not least, provide calibrated personalized feedback on work produced with such device. Thus, mobile technology holds much untapped potential for both language learning and language teaching, which are successful as long as they are sustainable. Finally, to answer the question in the title: to iPad, "definitely", but with a grain of salt and more than a grain of sense.

ABOUT THE AUTHOR

Sonia Rocca obtained a PhD in Applied Linguistics from the University of Edinburgh. She is currently teaching Italian at the Lycée Français de New York. She has taught French and English at secondary level in Italy, and Italian at primary, secondary and college levels in Britain. She is author of *Child Second Language Acquisition* (Amsterdam: Benjamins, 2007). Her research interests include: child and adolescent second language acquisition, foreign language education, differentiated instruction, mobile language learning, K-12 linguistics.

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