Telling Tales: Testing a new model of literacy development using e-readers in teacher education in Chile

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Abstract

Current debates on quality standards in education often look to the levels of an increasingly diverse array of literacies as a measure of that standard. At the same time, while mobile technologies are profoundly changing the way we live, communicate and learn in our everyday lives, relatively little seems to be known about their potential to influence even basic literacy in formal education sites. Examining the use of *practical* and *affordable* emerging technologies in many countries worldwide where literacy rates are an issue, seems as yet to have been overlooked. Considering the implication of multiple literacy and communication skills to economic and cultural development and stability, finding immediate answers to such challenges appears critical. This paper reports on a longitudinal study that examined the power of e-readers to support changes to the literacy habits and ultimately the learning cultures of a group of English as a foreign language (EFL) teachers-in-training in Chile. The aim of the study was to determine if access to low-cost mobile readers and a social-learning driven, technology-supported, guided reading program, could reverse their literacy challenges. The study is based on social-cultural theory in which learner agency, access to funds of knowledge and social interaction are imperative ingredients for developing engaged, life-long learners and readers. Participatory Action Research (PAR) is used to conduct the inquiry. Working within a qualitative research paradigm, ethnographic tools and numerical data from pre- and post-test results, helped to uncover how the use of technology influenced both the long-term literacy practices and identities of the teachers-in-training. The findings have led to the proposal of a new 21st century model for literacy education for such challenging contexts. This model could have important implications for Chile as well as learners, educators and policy makers elsewhere.

Keywords: education in Chile, multi-literacies, teacher education, mobile learning, e-books, literacy in challenging contexts

"I have never considered myself as a good reader, because I hate reading my whole life." (Reflective Essay Marie Jesus, January 2014)

When I started this new step in my life [university studies] and I read the program I knew that I had to adopt new habits. At the beginning it was terrible because I had to read

books that were wrote in English. I never read something in Spanish and *now* I will have to learn to read in English." (Reflective Essay Karina, January 2014)

As the new century progresses, the volume and tone of the conversations around 21st century skills being developed in educational institutions at least in the developed world, seems to be rising to a fever pitch. Given the abounding rate at which technology has infiltrated informal as well formal learning sites, it is not surprising that a great deal of this dialogue is debating how technology will help support the development of these so-called essential skills. Paradoxically, along with the recognition that technology will be integrally tied to 21st century skill development is that individuals will need the multi-literacy skills to take advantage of that technology support. In short, taking full advantage of technology for learning and being an effective and productive global citizen in the 21st century go hand in hand.

Many evolving nations, and some developing ones, are left on the sidelines of these dialogues. Most are marginalized from such high-level debates, as they find themselves still struggling with the challenges of promoting the most basic reading and writing literacy skills among their citizens. The comments above of Karina and Marie Jesus, two individuals studying English pedagogy in Chile, reflect those literacy challenges. While it is generally known and accepted that economic and cultural development is tied *directly* to the literacy levels of a country's citizens (Mingat & Tan, 1996; Matear, 2008; Norton, 2010,), in many emerging countries, such as Chile, finding long-term effective strategies to face the enormous challenges of promoting basic reading and writing competencies, has been elusive. And yet, along with English language learning, it is commonly accepted that these basic skills are critical gateways to developing the much-acclaimed skills of the century on the micro level. On the macro level of a country, these same basic literacy skills, once acquired by the majority of its citizens, can assure a voice in the global dialogue, not to mention support responsible management of one's national resources in the global market and sustained economic growth.

Chile, as a growing economy and recently accepted member to the Organization for Economic Co-operation and Development (OECD), is proud of its economic progress over the last ten years. It is also very aware of its deficiencies, especially in education. Students and teachers regularly taking to the streets demanding solutions to educational issues is one sign of this awareness. The widely acknowledged, visible high degree of social stratification in education is another. A 2009 OECD report placed Chile in the bottom quarter of the list of thirty-one nations in terms of literacy. Reports on English language literacy skill rates project an equally dim picture (SIMCE 2012, Dowling, 2007). At the same time, heavy investments in technology in public education by government have made little dent in these statistics (FP.cl, 2014). The first ever ICT Sistema de Medición de Calidad de la Educación/Education Quality Measurement System or SIMCE, conducted in the country in 2011, revealed that 50% of secondary students in Chile have basic to intermediate *digital* literacy skills and only 3.3% use computers for their learning. Interestingly, Chile leads the rest of Latin America in the numbers of mobile devices. A surprising finding of a 2010 OECD study on the connection between technology use and educational performance revealed that the new digital divide is no longer solely about access, but rather the one existing between those *who have the right competencies to benefit from computer use and those who do not.*

These findings ring particularly true in my own work in an English teacher education university program in Chile. Most students in the program are not lacking access to technology; almost all carry smart phones, ipads, ipods and tablets. Yet their levels of literacy and English skills confine many to using these tools solely for entertainment or social networking; i.e. listening to music, watching movies and connecting with friends on Facebook. Instructors, and indeed the students, recognize these shortcomings. Under the circumstances, it would be reasonable to expect that pre-service teachers in language should be doing all that is possible to develop the advanced language proficiency and literacy skills that they will need as future teachers of language. Yet in my experience, such is often not the case. Many in this country concerned about education view these pre-service teachers' literacy skills, or lack thereof, as a litmus test of the hopelessness that pervades around the future of educational development in Chile. In an effort to come to terms with this hopelessness, fingers continue to point from within at the multiple roots of its low literacy rates - the stratified, poor quality and economically-driven education system, generally low rates of education in parents, poorly trained teachers and the high cost of reading materials, are cited most often.

And yet, while regular international standardized testing and its results continue to feed this feeling of hopelessness for reversing or even understanding the issues around literacy, little is being done it seems in terms of *in-depth* educational research within the country to re-direct this hopelessness toward well-grounded action and to seek local solutions. As one Dean of an Education Faculty in a large private university in Chile, one of the few that conducts research save for the two elite public universities here, recently reported to me: "*There is virtually no research being done in this university in education, let alone in technology and its relationship to literacy development.*" (Personal communication, January 2014). And with reportedly few educational researchers in Chile fluent in English, participation in solution-generating dialogues with others from abroad with similar interests in literacy and technology (for example, Warschauer, 2006; 2011; Thorne & Black, 2007; Godwin-Jones, 2010) is limited. It's a definite catch-22 scenario. Without this dialogue and the kind of research that it fosters, education, including finding effective solutions to the literacy issues it faces, could easily remain elusive in Chile. The research reported here, in part, was an effort to spark dialogue in Chile around seeking literacy solutions through the use of technology.

The aim of the study was to determine whether a guided program using e-readers could influence the low reading rates of a group of pre-service tertiary level teachers. Some headway into understanding the implications of the use of mobile technologies in particular for literacy are being made in the wider research community (Gee, 2003: also see Baron, 2009 for a summary of this area of research). Little grounded research in the use of e-readers, in particular, seems to be available.

The goal in conducting the study was to begin to address some of the questions surrounding the use of these e-readers through the evidence generated with individual pre-service teachers. Answers to these questions are crucial, especially given the implications that supporting the development of literacy habits of these future teachers can potentially have on others. One could speculate that over one thousand learners alone could be influenced in their first year of teaching. The answers to these questions might also inform the field of education more broadly. The results of the application of the Technology-based Literacy Development Model reported here could act as a roadmap for the practical application of changes across educational disciplines within Chile and beyond its borders.

Addressing literacy challenges with technology

The study was an attempt to respond to the literacy challenges that a group of future language teachers face as they prepared to become teachers of English as a foreign language (EFL). The connection between literacy development in English as a second/foreign language and in one's own native language has been well supported by research (Norton, 2010). The principal objective of the study was to determine whether shorter (4-month) and longer term (12-month) access to a guided reading program using technology, in this case mobile e-reading devices, would have implications for them as learners and for their literacy skills. The project that was put in place in early October, 2013 involved research on ten EFL pre-service teachers studying in the undergraduate English Pedagogy program in a large private university. The focus of the study was examining how literacy development and the participants were influenced over the 16 months, as a result of participating in this guided reading program.

The study was conducted as a means of uncovering many kinds of information about the personal literacy experiences of the individuals who chose to participate in the research project. Three questions guided the first 4-month phase of the research study:

1.   What is the nature of the previous literacy experiences of the participants and how do they perceive their competencies at the outset of the research study?

2.   How does the reading program influence, if at all, the reading habits of the participant pre-service teachers and their use of language, in this case English?

3.   What influence, if any, does the reading program have on their identities as learners, future teachers and as individuals?

The Theory: Literacy, Social Identity and Technology

Lipka and Siegal (2011) observe that "strong literacy skills are a prerequisite for success in contemporary society". (p.1874). They are not alone in their observations. Finding ways that are effective in supporting learners in developing strong literacy practices has been the topic of educational research for several decades. While there is still much conflicting debate on how to foster literacy in formal learning sites, most scholars now agree that literacy development is more than just a cognitive process of phonetic decoding.

Literacy development is being recognized as a complex, social process embedded in relationships "connected to different practices and preferences among social classes" (Myrberg and Rosen, 2009, p. 696). From early childhood, children are socialized into certain cultural practices around language and literacy that define who they are as a person - their social identities. These initial interactions in the early stages of children's lives prepare them culturally, socially and cognitively for fundamentally different life roles (Heath, 1983). The practices that they develop through these early experiences can also predict their future scholastic achievement and group membership. In the Chilean context, where the vast majority of higher education students are the first generation to attend university and where parents are generally lacking highly honed literacy skills themselves, little in the way of preparing children for the kinds of higher order thinking that is characteristic in these academic settings can be expected.

Bourdieu's concept of *cultural capital,* (2002) offers a theoretical construct to explain how this social stratification occurs. Cultural background, knowledge, preferences, attitudes and

behaviours passed down for example by educated or higher classes to their children are rewarded in the school system and thus reproduce societal inequalities. Although there is substantial evidence to support the influence that cultural capital has on students' literacy practices and scholastic achievement, there is less known about how various mediating factors, such as new programs and the emergence of new learning tools, can affect and/or alter the expected trajectory of these processes.

In order to consider mediating processes that might influence the social stratification that occurs in the development of literacy, we need to understand how literacy, in and of itself, functions. Luke and Freebody's (1999) model explains that in a postmodern world, literacy involves the reader taking on four distinct roles: *Breaker of the language codes*; *Participator in the meanings of the text; User of text functionally and a Critic, analyzer and transformer of text.*

The processes that make up Luke and Freebody's model are interesting to the present study for several reasons. First of all, they help us to understand where learners are on the continuum in terms of their literacy development – areas where they are able to assume the necessary roles and others where they need guided support. The model also reminds us of the highly contextual nature of literacy. In other words, from a sociocultural perspective, literacy is politically, economically, culturally, historically, pedagogically, linguistically and personally charged, and importantly, embedded in relations of power.

Warschauer's has conducted extensive research (2006, 2011) in the use of laptops in schools. His research has provided grounded evidence of the powerful role these personal IT tools can have on literacy development and learning, especially for learners at risk or marked by their SES (socio-economic status). The substantial findings he has uncovered in the area of multi - literacies have also allowed him to raise the alarm bell that "it takes more than handing a child [or in this case, a future teacher] a laptop [or e-reader] to transform education" (p.ix). This warning offers clear signals to educators and policy makers to consider the multiple factors affecting the success of computer technology in influencing learning, but falls short of determining whether *e-readers*, with their unique digital affordances, can be positive influences in support of literacy development.

Auer's (2014) studied mobile devices, i.e. tablets, and the extent to which these tablets could provide the cues, normally provided by teachers, to encourage higher order thinking in a group of Foreign Language (FL) learners as they read. Her findings provide insight to the inquiry in the Chilean context as well. She discovered that the participants took advantage of various features of the tablets to engage in metacognitive strategies to enhance their reading comprehension: built–in search features for checking back on what had been read, a glossary available for quick explanation of words, highlighting for identifying central information. These technological features suggest that mobile tools such as e-readers can offer potential literacy support especially for low-level readers, such as those in the Chilean study.

Drawing on the theory of *cultural capital* and previous studies in literacy and technology, I support the argument that technology, in this case e-reader technology, depending on its use, can offer encouraging signs of influencing learners' identity and literacy development. I base my support on the emerging findings from this longitudinal study of the literacy experiences of a group of pre-service EFL teachers in Chile. In the next sections, I explain the 4-month study and report on the major findings both from that initial study and those that resulted over the longer term.

Phase 1 of the Longitudinal Study: Pre-service EFL teachers as readers

Phase 1 of the study ran from late September 2013 to January 2014. The self-selected participants included a group of 10 pre-service teachers in their third year of an undergraduate English pedagogy program at a private university in Chile. Most of the participants had taken part in a course I had taught the previous semester. All of them had failed or scarcely passed previous language courses. Each participant was given an e-reader and a steady offering of e-books, of their own choice in the first 4 months. The offer was then extended to the remainder of the 12 months in the longitudinal study.

Part of the draw for the participants in agreeing to these sessions was the opportunities it afforded for guided linguistic feedback in the weekly individual and/or pair interviews. These interviews along with periodic whole group meetings were a major source of the data collected. In these meetings, the participants discussed the books they were reading at the time and often commented on their evolving literacy experiences. Written journals that these participants submitted as part of their course work, as well as reflective essays they wrote about their literacy experiences at the end of Phase 1, also accounted for a substantial amount of the data. Results of two term tests and one final test were consulted and analyzed as a means of looking for trends in the data.

From my background knowledge of the individual participants and their skill levels as well as from remarks many made to me, I understood that all of these individuals had various literacy challenges. Many were quite open about their lack of interest in reading and about their feelings of inadequacies as a result. In an initial questionnaire, all but one reported having read *less than one book in English or Spanish in the 18 months prior to the study.* I based my research questions on the assumption that they wanted to change their literacy levels and that they lacked strategies to do so. For this reason, a Participatory Action Research (PAR) design was considered particularly appropriate. Both participants and I as their teacher/researcher were seeking to make changes to their literacy levels that we saw necessary, not only in terms of their linguistic capabilities in English but also for the potential implications that these changes could have for them as individuals and teachers.

From my perspective as a teacher with over 30 years of pedagogical experience, and from my knowledge of the more recent literature on reading, I also assumed that giving readers choice and refraining from testing them could have a positive influence on their desire to read. Since the study is connected to the learning of English as well as literacy development, I adopted Spolsky's (1989) argument that practice and exposure to the target language are essential for making progress in the language and that that exposure can come from the intersection of both formal exposure in the classroom and/or the informal exposure outside, such as reading for pleasure.

Methodology

Both phases of the study were conducted within the qualitative research paradigm. I have argued elsewhere for the important advantages of qualitative research in uncovering the implications of the use of technology for learning (Charbonneau-Gowdy, 2015). The data that was generated over the first four-month phase was extensive. The data sources included: research notes from 50 hours of weekly face-to-face and/or Skype interviews which ranged from 30 to 60 minutes each; 260 pages of writing journals; evaluation results from two term tests that were offered as part of their course, as well as pre- and post- standardized tests in the various language skills; participant

generated reflective journals and field notes and observations. These data sets were analyzed using standard qualitative methods for themes and patterns. The numerical data generated by the tests was also tabulated and analyzed. In this section, I highlight some of the findings that have been most interesting in Phase 1 of the study with reference to the questions I have posed. I then summarize and reflect on the long-term findings in Phase 2 followed by some concluding remarks.

Findings and Analysis: Cultural Capital, Identity and Investment in Literacy Change

An important theme that surfaced in interacting with the participants and that apparently added to the anxiety that was so evident in their general demeanour was their early and more recent experiences in literacy in their own language. Few had access in their childhood to a parent who read to them regularly or to a wide range of books. Many agreed that literacy development in their early schooling was inconsistent and/or "*boring*". Some reported teaching approaches were didactic and consisted often of lack of choice of reading materials or old classics that had little relevance to their lives. These practices were accompanied by frequent testing that reflected an emphasis on copying and/or lifting information from text. Six of the ten participants admitted that they rarely read books in their own language for pleasure while the other four did so irregularly. Reading in English was confined only to what was required in their courses and this requirement in itself was often neglected. All of the participants expressed that they felt weak in the syntactic and morphological use of the language. Their comments seemed to be corroborated by the disparaging remarks concerning their linguistic skills from faculty colleagues who also taught some of the same individuals in other courses. In other words, the literacy identities, both in English and in Spanish, that the participants projected and that was reinforced by the impressions of others, including their teachers was one of being "*weak, poorly skilled, mark driven yet resistant to working to improve."* Their deficiencies in *cultural capital*, using Bourdieu's (1994) construct, was being reflected in the learning context in their images of themselves as deficient as well as in their anxiety as they considered their chances to succeed in the program. Bourdieu's observation that "The sense of the value of one's own linguistic products is a fundamental dimension of the sense of knowing the place which one occupies in the social space." (p. 82) seems particularly relevant in explaining why many of the participants saw themselves as marginalized in the teacher-training program.

Over the period of this first phase of the study, as I met with the participants each week for them to tell the stories of what they were reading – *to tell their tales*, I began to observe subtle and more obvious indications of change in the way many of the participants' viewed themselves and their subjectivities. As Diana remarked midway through the first four months of the study:

> I feel more confident with myself when I'm talking because I didn't used to be like that. I was always afraid of making mistakes. Now I think the book and the reading is like a support to me. (Diana, Group Interview, November 2013)

Diana, in her own words, clearly expresses these changes in her awareness of her increasing confidence to speak in class. Other signs of changes in Diana and many of the others were their increased vocal proactivity in the classroom despite the presence of more advanced others in the group, the visible exhilaration when some in the group received marks that far surpassed what they had achieved previously, increased attendance in class, more regular submission of assignments, as well as expressed enthusiasm for the books they were reading and the prospects of reading the next.

Norton's (2010) construct of *investment*, which is broader than motivation, helps explain the changes to participants and to their engagement in literacy practices. Partially due to the convenience of the e-readers and the access they provided to a whole range of books and learning features, the participants began *investing* in increased and more regular reading. These literacy opportunities as well as those that came from participating in the guided weekly discussions programs led to the learners beginning to recognize as evidenced from their testimonies and my observations that the value of their "cultural capital" was increasing in the classroom and in the context of the Pedagogy Program. With the increase in their individual cultural capital, there was a corresponding change in their learner identities, or their sense of place in that context. This change in identity was obvious in some of the participants' willingness to speak more confidently in front of others. Their change in engagement in turn served to help some of the participants view themselves as key players in the classroom and at the same time to further their literacy skills even more. Lave and Wenger's (1991) theory of a *community of practice,* in which through a process of legitimate peripheral participation (LPP) individuals move from the margins to the centre of interactive communities by being mentored or "apprenticed" by more powerful others, are further theoretical justification for the changes the participants were experiencing.

Evidence of changes in this first phase of the study was not confined solely to the participants' construction of more empowered literacy identities nor to their own testimonies. There were also encouraging linguistic changes that were revealed in the data set.

- evidence of more regular and intensive reading of English, an average of 3 books per participant over 10 weeks;

- increase in level of length and difficulty of books chosen;

- noticeable decline in the number of *major* errors in weekly journals especially syntactical, although there was a less evident decline in mechanical errors.

With regard to Luke and Freebody's (1999) model of literacy, there was also strong evidence to support that the participants moved through the first 3 stages of the model. Karina's remark: *"During the first pages in the first book that I read, I had to learn what the book was trying to say me… First I read one hour per day with some difficulties, but then I was extending the hour to two hours then three and so on…* (Reflective Essay, Karina, January 2014), is just one example. Other examples included the participants who revealed that they regularly spoke to one another in English as a means of practicing. Another participant explained that she was reading nightly to her younger sister. Yet, unsuccessful attempts to encourage a deeper discussion of topics indicated that most of these individuals had not progressed to the stage of critical analyzer – at least in the first phase of the study.

The numerical data that was collected during this phase involved the results of two term tests in their Language program, at the outset of the study and at the end of three months. Students in the program are tested in all four literacy skills – reading, writing, listening and speaking. A comparison was made of the changes to the grades of the participants as opposed to those of their classmates who did not participate in the e-reader program. The results of the tests showed little difference when comparing changes in listening and writing. On the other hand, there were interesting differences with regard to speaking and to some extent reading (See figures 1 and 2).

For example, there was a 26 % increase in in the average speaking grade of participants on Term Test 2 in relation to their average speaking grades on Term Test 1. On the other hand, the average increase for their classmates was 16%. These results are especially encouraging for two reasons. Firstly, previous to the study the participants underperformed on tests for all skills, especially speaking compared to the rest of the class. Secondly, given Vygotsky's theory that learning is dialogic, that is that cognitive change begins with verbal social interaction, the fact that the participants showed significant progress in their oral skills in just three months, suggests that changes to their other skills could follow, but in the longer term.

Similar impressive changes to speaking and reading test results were noted for the participants on pre- and post-standardized practice tests, specifically the Cambridge University based First Certificate of English practice tests. On these tests, the participants improved their average grades by 20% and 15% in speaking and reading respectively, which represented a significantly greater gain than those who had not participated in the study (Table 2).

Table 1
Comparative Grades on Term Tests

Average Grades: Study Group vs Control Group

	Test 1			Test 2			Summary		
	Speaking	Reading	Total Score	Speaking	Reading	Total Score	% Increase in Speaking Grade	% Increase in Reading Grade	% Increase in Total Score
Study Group	4.1	3.9	4.0	5.1	4.0	4.3	26.2%	4.5%	7.0%
Control Group	4.6	4.6	4.7	5.4	4.5	4.9	16.0%	-1.7%	2.8%

*Total Score calculated using a weighted average of multiple criteria in addition to Speaking & Writing

Table 2
Pre and Post Speaking Test Results on Standardized Tests
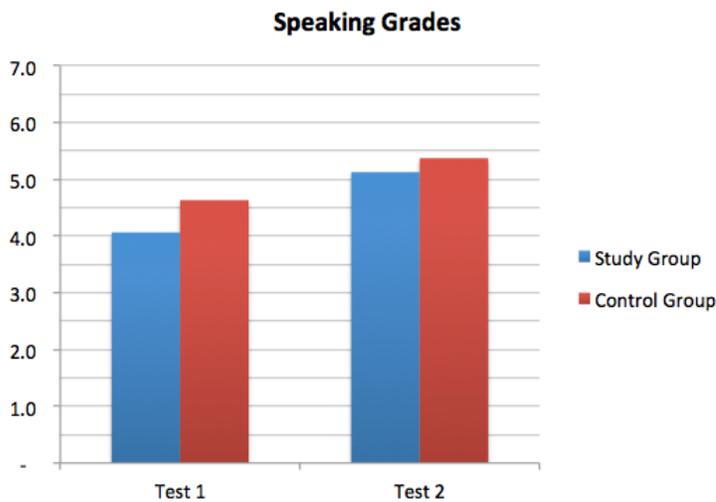
It is of course difficult to untangle cause and effect for the progress suggested by the numerical data; numbers can be so imprecise when used to understand human behaviour, regardless of the means used to gather them. Yet, if we agree with Krashen (2004) and others who argue that free reading is a major factor in the development of language, and with Vygotsky (1986) that learning is dialogic, then it is clear that the reading strategies the participants were engaged in was certainly a factor in the improvement in literacy skills that was recorded.

It is also important to point out as well that the advances that the participants made in their literacy skills could be tied to the affordances of the e-readers themselves. Many of the participants kept lists of new words, used the quick search for looking up meanings of words and were able to flip back to pages and bookmark if they wanted to remember a particular phrase or way of expressing an idea. Indeed, I observed that some would take on the role of "more experienced other" in our story telling sessions. In that role, some would explain to me how to make more use of my own e-reader. It could be argued, quite legitimately I believe, that the combined features of the particular technology used for their reading, was an added source of scaffolding in their literacy development.

Phase 2: Further Findings and Reflection

After the first 4 months of the study, participants were given the option to continue with the research process and the guided reading program. Seven of the ten chose to do so. My decision to prolong the study was to study the long-term affects of the guided e-reader program on the participants' reading habits and identity construction. It would also potentially add further grounded weight to the model for literacy development that was emerging after the first 4–month phase.

Limitations of space here prevent a detailed report of the results of the longitudinal part of the study. In summarizing those findings, while the requests for reading materials by the participants decreased, other positive changes especially in terms of empowered identity changes were evident. With new enthusiasm for learning English, one of the participants left the study and her family in Chile to pursue her English studies through work abroad. Other strong evidence that surfaced in this part of the study included: firstly, the increased responsibility and capacity of the participants to read academic materials demanding higher order thinking in preparation for their final-year theses, secondly, the degree of both critical thinking and innovation in the participants end of program theses that was uncharacteristically superior to many of the other theses I observed in the program. One thesis involved initiating a technology-based platform for upper-class students to mentor and assist incoming students to adapt to the pedagogy program. The latter was inspirational to administrators at the university in setting up a similar support system. These changes are particularly remarkable when we consider the testimonial that Karina had made at the outset of the study: "*At the beginning it was terrible because I had to read books that were wrote in English*" and to the general shy and marginalized identities that all of the participants had portrayed initially.

It is clear that Luke and Peabody's model with its emphasis primarily on the development of mental capacities falls short of considering identity markers and the role of technology in a more expanded view of literacy development. An emerging model (See Figure 1) that I have proposed takes into account learner choice, lack of testing and opportunities for sharing reading experiences with others, i.e. *telling tales*. These strategies have been shown to be effective drivers of literacy in formal learning. Importantly, the model also includes the co-construction of identity and a

supporting technological context as essential factors to consider in the literacy, or more precisely multi-literacy, development process.

Figure 1.   New Model for Literacy Development
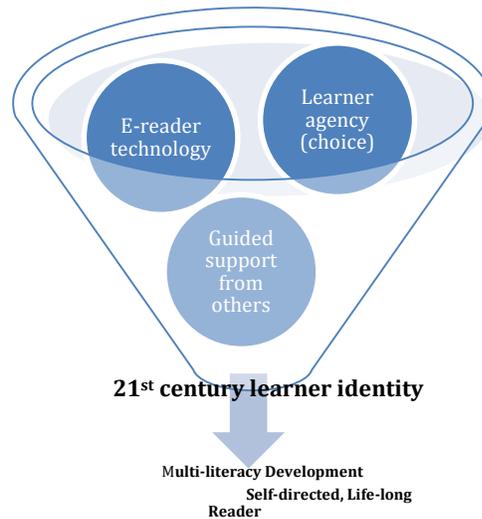
Conclusion

The findings of the initial study revealed the literacy development of the 10 pre-service teachers over the course of the 4-month first phase of the study. The latter findings provide evidence that these trajectories were maintained and indeed continued, despite an obvious decrease in the reading that had taken place in Phase 1. Perhaps one could question the connection of technology to the rather impressive results that were revealed over the course of the study. A critical reader might further suggest that an extensive library would serve the same end in supporting the literacy development of the participants. While of course there is some validity to these observations, the point is that prior to the study most of these individuals had not had such an opportunity to rich sources of literacy tools. For most of these individuals there was a lack of reading materials and occasions to use language to discuss what they were reading, if at all, both at home and at school.

The significance of this study is that it provided clear evidence that technology, in the form of e-readers, was able to offer support for reversing to some extent the shortage of culture capital that the participants in the study had and portrayed in their academic studies. The longitudinal study clearly indicated that it also set many of these individuals on a path of self-directed learning and that many of these changes continue to be sustained. While there was certainly a decrease in requests for e-books and the "*telling tales*" meetings became very sporadic, the findings reported here indicate that the influence of that initial reading program has been long term and profound. When considering the thesis results alone, there is evidence of those profound changes both in terms of identity and learning. In my view, the quality of the theses that some of the participants produced twelve months after the e-reading program is concrete evidence for this claim. Based on the reaction of other faculty members, the marks that some of the participants received and the

follow-up initiative one of the theses sparked, are further proof of a recognition of changes to their cultural capital.

The participants' accomplishments are substantiated by other research in this area. Guthrie (2004) has shown that students from low income and low education backgrounds, but who are highly engaged readers, will substantially outscore more privileged students. The higher percentage of average increase in test results compared to other classmates, many of whom had cultural backgrounds that supported their academic studies, could be one example of this phenomenon. The confident and active learner roles that the participants assumed both in the classroom and as researchers when conducting their respective thesis studies, is another. Both Guthrie and Cummins (2007) offer convincing support to arguments that the increased reading that the participants chose enthusiastically to do initially and then in the context of their thesis process, their obvious enjoyment in doing so and also in other forms of literacy such as speaking, writing and listening will result in a propensity to pursue literacy activities more actively within the context of their studies and beyond. Natalia's choice to move to the US to enhance her opportunities to develop her English and her excitement at having access to a library nearby is an example of precisely the kind of self-regulation that is so lacking generally in the Chilean education system. The fact that five of the participants have chosen to buy their e-readers and that some have requested to meet periodically for discussions outside the university despite the fact they are finished with their formal studies, is another example. A classroom-based research project that one of participants has initiated in her first-year as an assistant teacher in order to encourage the use of English both by head teacher and student, is a further example.

The model that has been built from this research study and its findings could be an important part of a pedagogical solution to the literacy woes that Chile and other countries with similar challenges may be seeking. Further in-depth studies of the application of the model for institutional pedagogical practice in teaching literacy suggested in this research are needed at all levels of the education system and in a variety of contexts and disciplines both in Chile and internationally, in order to determine its long-term effectiveness. Although technologies and their tools may change rapidly, when it comes to literacy development, the uses of a technology to support *long-term* solutions are the only ones that matter.

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