

Brave Forms of Mentoring Supported by Technology in Teacher Education

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Abstract: Quality education is undoubtedly a global concern, tied closely to preoccupations with economic and social development. Increasingly, the adoption and effective use of current technology tools are being recognized as visible signs of that quality. Scholars are providing increasing evidence of the kinds of empowered teacher identities that will adopt the effective use of technology tools in teaching. Less is being discussed about how technology can support the processes needed to mediate such identities. The context of Teacher Education is a strategic place to begin to initiate such processes. Our aim in this article is twofold: 1) to describe two recent examples of innovative, technology – supported mentoring processes that were conducted in the context of an EFL Teacher Education program in Chile; 2) to revisit the findings of these studies in light of new evidence from participants who have moved on in their careers. This evidence is viewed in the framework of recent scholarship on the responsibilities that Teacher Education plays in their development. The first 16-month study examined the influences of a guided reading program involving e-readers on the identities and literacy skills of pre-service teachers. The second was a student-conceived study. That inquiry sought to determine the influence of upper year students’ peer mentoring, made available partly through a social media site (SMS), on the identities and investment in learning of 12 first-year students in the pedagogy program. The initial evidence from ethnographic tools used in both studies indicated that the participants were struggling with confidence and doubting themselves as knowledgeable, effective future teachers – not predictive of a potential for quality teaching. Positive signs at the end of both studies and more recent reports from participants suggest that the mentoring had longitudinal benefits for some, although not uniformly. The potential of apprenticeship and mentoring in a technology-supported environment requires rethinking Teacher Education mandates if we are to empower emerging teachers to be quality teachers.

Keywords: teacher education, social communication technology support for mentoring, identity and investment, TPAK, e-readers

1 Introduction

It is difficult to ignore the extent to which information and social media technologies are infiltrating almost every area in our daily lives. Along with this movement, they are supporting a calling into question of established *ways of doing* on many levels. Media reports of the new social economy, for example, such as Airbnb accommodations and Uber taxi transportation, are revealing how technology is, as Kress (2004) puts it, “unmaking social frames of power” (p. 8). Resistance by the established elite that has controlled these economies is understandable given the high stakes that are involved. In each of these examples, however, the insight of brave and creative individuals have capitalized on the capacity of information and social communication technologies to support the power of human beings collectively to mediate the infrastructure and changes that they need and want.

New emerging technologies, as semiotic resources, i.e. resources of and for constructing new meanings (Kress, 2004, p. 9) are not being used by human beings solely for breaking down power structures like transportation or accommodation institutions. Similar struggles are clearly being played out in the field of education. The advent of massive online open courseware (MOOCs), (Seiman, 2012a; Alario-Hoyos et al., 2014) and the now world-renowned mathematical tutorials of the Khan Academy (Noer, 2012) are two examples of this phenomenon. In our own field of study of language learning, Language Learning Social Network Sites (LLSNSs) where millions of learners choose to meet informally to practice a foreign language with native speakers, is yet another (Lin et al., 2016). These programs, made possible by increasingly powerful technologies, are serving connected groups of individuals to usurp the services of sacred institutions of learning and their well-

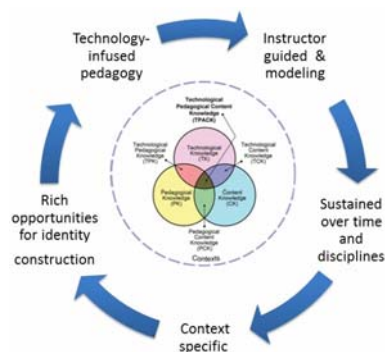
established economies and policymakers. Indeed, so powerful have these alternatives become that the institutions themselves are jumping on board (Murphy et al., 2014).

While scholars continue to debate how to break down resistance to technology in formal learning settings (Daniels et al., 2013, Husbye & Elsner, 2013, Wetzal et al. 2014, Lindstrom et al., 2015), it seems a counter movement is actually replacing the traditional offerings of these educational sites (Scott et al. 2016). Two recent studies we describe in this paper were conducted within the context of an EFL Teacher Education program and reflect a move in that direction. Our previous research (Charbonneau-Gowdy, 2012, Charbonneau-Gowdy, 2015) has been aimed at unravelling some of the complex infrastructural, pedagogical and human barriers we face in this teaching context with respect to the use of technology. Confronted by these barriers, our current work could be seen as efforts by a few maverick individuals to break away from the established system and, as stated above, *to mediate the changes we want and need*.

Much of the work that is looking into infusing technology in learning sites has led to the conclusion that identity is a major factor in whether or not learners, and more significantly teachers, adapt these emerging tools. For example, Wetzal et al. (2014) found that adopting a Technological Pedagogical Content (TPAK) model (Mishra & Koehler, 2006) as a framework for technology integration into pre-teachers' teaching practices had less encouraging results due to reported lack of confidence on the part of the teachers-in-training. Similarly, Lindstrom et al. (2015), in reviewing the work in the area of digital learning in teacher education, point to pre and in-service teachers' lack of confidence as an indication that still more work is needed before teachers uniformly will actively adopt technology-supported practices in their teaching.

Confidence, or the lack of it, is a dimension of one of our multiple identities, our sense of ourselves that we assume or that are assigned to us in various contexts. The subject of identity has been the focus of a cross section of research in education for over a decade. Indeed, in the TPAK model (See Figure 1), that we have adapted to explain more broadly the integration of technology into learning sites, we have conceptualized identity as a major determinant in the success of this process. Individuals, as well as communities, cultures and institutions, have multiple and dynamic identities (Norton, 2013). Norton has tied identity closely to the construct of investment as a commitment to change, or learn. We believe that it is in this area that drivers of change in the uptake of technology should be putting their efforts.

Figure 2: Adapted TPACK Model for Fostering ICT in Teacher Education



(Charbonneau-Gowdy 2014, adapted from Mishra & Koehler, 2006)

In the next sections, we describe the studies that we conducted based on this belief. Ostensibly these studies were aimed at providing enriched technology-supported opportunities for pre-service teachers to construct empowered identities as learners and future teachers. Yet, we were well aware that the modelling that was happening in these mentoring sessions also had the potential to impact the participants teaching and learning practices as well (Figure 1). In the findings section, we report on our analysis of more recent data that supports this prediction. Along with the scholarly work of Norton and others studying identity and investment issues, we frame this latest analysis on the adapted TPAK model as well as current literature that examines effective modelling or mentoring practices to explain these recent developments.

2 Background and rationale

Part of our preoccupation with the role of identity in e-learning or change of any kind, is based on the experiences and insights we have gained using technology for teaching/learning practices and projects in diverse settings – North America, Europe and South America. In each of these settings, we have witnessed firsthand how various material and social conditions within these learning sites that are grounded in pedagogical, political, social cultural and personal contextual factors, determine the positions/identities that learners assume in these sites. We have concluded that it is the nature of the kinds of identities that learners mediate within occasions for learning that dictates how or whether they invest, or engage, in the learning practices that take place therein (Darvin & Norton, 2015). We have also learned how these conditions have an influence on multiple and often unequal ways that learners are positioned in these settings, and how this positioning can lead to different outcomes in learning. We have observed for example how the various learning outcomes that result in these situations are often dependent on structures of power that are invisibly intertwined in such contextual conditions. Our work in these sites has focussed on how, or indeed if, technology tools can serve to break down such power structures. In doing so, we have asked ourselves whether technology could provide opportunities for a different scenario in terms of identity construction for learners - one that alters the course of learning outcomes and transform learners' visions of the future.

To understand the personal, cultural and institutional identity factors involved in these studies, it is important to understand the context. The two studies took place at a large, private university in Santiago, Chile. Chile distinguishes itself economically among other countries in South America by being the only country on the continent to be a member of the OECD. Indeed, it's economy is the strongest in Latin America at time of writing. On the other hand, within its borders, it has struggled with a socio-economic divide that is reflected all too vividly in the vast majority of citizens who receive poor quality education and limited access to tertiary education. Surprisingly in the 21st century, it has only been since 2003 that public education has gone beyond Grade 8 in Chile. The educational weaknesses that Chile faces have led to low productivity and literacy rates - among the lowest globally. In attempt to break this trajectory, emerging middle class families struggle to enrol their children in the numerous private, for-profit, higher educational institutions in the country, many of them without accreditation. The financial costs for these families are staggering. Yet the few public universities that could offer an economical alternative tend for the most part to admit only the very gifted or those whose early education, mostly private, has adequately prepared them for the entrance tests. Public outcry has spurred the government to take steps to transform the educational system (Mizala et L. 2011). For example, in an effort to tackle poor quality teaching, incentives are offered in the form of full scholarships for students who choose to enter Teacher Education university programs. Some argue that the efforts of the government are ill spent. In their arguments, they cite the following: many individuals entering Teacher Education programs are products of poor quality education systems and little can be done in 4 years to change that; the teacher education programs themselves continue to pass on outdated teaching methods; graduating teachers from these programs recognize they face the prospects of unfavourable low standard working conditions, in terms of poor salaries and heavy workloads, once they do graduate. It is little wonder that the attrition rates of new teachers is disturbingly high, 40% after 5 years, and that the existing low standards in the education cycle continue.

Along with a small group of educators in Chile, we have placed hope for change to this chicken egg scenario in education through capitalizing on the use of technology. Our efforts are being made primarily in the area of foreign language Teacher Education where a growing body of research, based on poststructuralist theories of identity and socio-cultural constructivist theories of learning, supports our work. Between 2013 and 2014, we conducted 2 separate studies. One focused on the low-literacy skills of a group of pre-service teachers in the Teacher Education program and the other on peer support for incoming students to the program by upper year students. We recognized a lack of engagement on the part of the participants in these studies and that their futures as quality teachers were at risk. Participants in both of these studies were in need of different scenarios for learning, scenarios that were not being met within the institution and this, despite a New Curriculum having recently being put in place to improve student engagement, retention and results. Our studies were aimed at responding to their needs through measures taken beyond the Program and that were supported by the affordances of information and social media technology tools.

In the first study on literacy involving the use of e-readers with a group of 3rd year student teachers (Charbonneau-Gowdy, 2015), a key question we asked related to the theme of this paper was:

How does a guided e-reader program affect the identities of a group of pre-service teachers as learners, future teachers and as individuals?

In the second study where peer mentoring supported by a private online social network was offered to incoming students in the Teacher Education Program, we asked:

What influence does offering peer mentoring supported by a private social network have on the identities of a group of incoming students and their visions of becoming future teachers?

In the next section, we explain the sociocultural theories and literature that served to frame each of those studies along with more recent data. We consider this scholarly work important to our understanding of: a) the identity and investment changes we witnessed in the pre-service teachers; b) the part that mentoring supported by technology played in this research and c) the significance of the results of our initiatives involving technology tools, on the micro and macro level.

3 Literature review

In the last two decades, the scholarship that has taken place in the field of Second Language Learning, as elsewhere, has been preoccupied with sociocultural theories of identity and its relation to learning. Whole journals, in this field of study have been dedicated solely to its study. The research of Bonny Norton (1995) originally spearheaded this interest in identity and along with it issues of investment and power, which she deemed integral to our understanding of the socio-cultural contexts of learning sites. Norton explains that all learners come to learning spaces with a sense of self that is constructed through language, both past and present. Inspired by the work of Bourdieu (1991), Norton (Darvin & Norton: 36-37) has demonstrated in her research how learning spaces, like all sites of social communication, and we would include here institutions and cultures, are bound up with relations of power. These relations determine the likelihood of individuals to invest in learning, or, in the case of institutions and cultures, in the activities that define their communities. She uses the construct of investment to reference learners' willingness to engage and be agentive in learning – the natural expectation of all effective educators. Learners will invest in learning, she argues, with the understanding that they will benefit in terms of acquiring a wider range of symbolic and materials resources and ultimately increase their social and cultural power. This cultural power is rooted in Bourdieu's concept of cultural capital wherein social stratification occurs. Cultural background knowledge, preferences and behaviours that are recognized as valuable in academic systems are passed down by educated or higher classes to their children, or not, as in less advantaged cases. While there is significant research to suggest the advantages of cultural capital within these systems, less is known about mediating factors, such as programs and technology tools that might alter the trajectory of these processes.

The ongoing negotiation of learners' positioning in learning spaces in particular illustrates the dynamic and fluid nature of identity and also that investment in learning is "complex, contradictory, and in a state of flux" (Norton, 2013:). Unlike the psychological construct of motivation (Dorneyi & Ushioda, 2009) that is considered a static characteristic tied to the individuals as learners, Norton sees investment as a socially and historically constructed relationship between learner identity and commitment to learning. As the spaces for learning and social communication supported by technology have increasingly become mobile, digitalized and moved online, micro-blogging and e-readers being just two examples that come to mind, they offer wider opportunities for certain learners to contest the social and historically-based power conditions that marginalize them in the traditional learning spaces. As we have explained above in the case of the social economy, these tools offer alternatives to human beings for constructing new spaces in response to systems that have traditionally failed to recognize or meet their needs. These spaces then can also provide a chance for learners to negotiate new more powerful identities. Turkle (1995, p.321) suggests that Internet-mediated environments are "doing more than providing an evocative object for our self-reflection...it is the basis for a fundamental reconsideration of human identity". These digitalized worlds, in other words, offer individuals a chance to envision themselves in imagined communities where their capital, both cultural and social, is recognized.

In building a framework for our inquiries, we used recent research that focuses on identity and investment issues in combination with learners involved in using technology. Thorne et al.'s reports of research in fan fiction and Warschauer's seminal research in the integration of laptop technologies into schools, both privileged and low-socio economic (SES) were instructive in our research. These studies acted as an analytical lens to frame our understandings of what was happening as we worked with per-service teachers in our own

respective mentoring settings. On the one hand, Thorne et al's report of Black's (2009) and Chen's (2013) descriptions of how adolescent fan writers mediated cosmopolitan, insider identities and collective personal identities respectively, underlined for us the empowering possibilities that social networking sites can offer. On the other hand, Warschauer's (2011:114) extensive findings revealed to us the divergent possibilities that result depending on whether technology is used as either an instrument for learner transformation or disempowerment. Warschauer offers a strong warning, based on abundant and grounded research, that e-learning programs that try to de-couple improved learning from improved teaching are destined to fail.

The close connection that Warschauer draws between teachers' practices and learning when various affordances of technology are employed, has led us to widen our theoretical lens. For example, we chose to follow-up on the participants in the literacy study to understand the long term influence of that particular study on the participants, now that they have graduated from the program. In the process, we have sought out a better understanding of the mentoring process that we undertook in our studies with pre-service teachers at risk. Importantly, our adapted model of TPAK highlights the critical role that guidance, i.e. mentoring, plays in promoting the sustained use of technology in teaching and learning. Mentoring has a long history in educational research, not surprising given that this teaching approach aligns with social constructivist theories of learning that emphasize relationship building and mediated learning in which participants play an agentive and key role. Mentoring based on Lave's (1996) classic work is "more about learning ways to participate than it is about specific techniques....Practices [of mentoring] are more than just what we do but are inclusive of the reflection and learning that accompanies that work " (Hoffman et al. 2015). Findings from studies of successful mentoring reported on by Izadinia (2015) cite characteristics of good mentoring. They list: mentors as examples of good practice, open communication, making personal connections and providing academic emotional support. Significant to our studies, the findings focused on how these characteristics had positive implications for pre-service teachers mediating strong teacher identities. Yet, in none of the cases studied was technology used as a supporting vehicle for the mentoring. Also, they contained their research to the traditional teacher mentors that typically work with pre-service teachers in practice teaching settings.

In the next sections, we describe the methodology we used to collect data that helped support some of our findings including from a more recent data set. We then conclude with the implications of these findings for teachers, stakeholders and institutions of higher learning.

4 Methodology

In both of these studies, qualitative data were collected from groups of pre-service teachers in a 4-year Pedagogy for English as a Foreign Language Teaching program. Ethnographic tools were employed in both studies in order to uncover the rich data, and often subtle, nuances that are involved in issues of identity and investment in learning. The data sets in both studies were analyzed using standard qualitative methods for themes and patterns. Participants self-selected themselves to take part in both research studies. In Study 1, we chose a Participatory Action Research (PAR) design. It was clear from the outset that the participants were motivated to join the study. They expressed that they were well aware of their weaknesses in terms of their progress in the Pedagogy Program and saw the guided reading program as an opportunity for exposure to practicing their communicative skills that would hopefully lead to academic improvement. The lead author, as a classroom teacher of the participants over the 3 semesters of the research process, shared similar aspirations for these individuals. Another advantage of PAR, besides the collaborative relationship between researcher and participant it assumes, is the emphasis it places on participant voice (Baxter & Jack, 2008). Giving voice to the participants was an important goal of the research, given the silencing from traditional teaching approaches that most participants had been subjected to in early years of their education, and in many ways still continued to be in their current learning settings.

In Study 2, a Case Study approach was conducted. In order to respond to the central research question on identity, we considered it essential to have a detailed understanding of each student's unique concerns, needs, interests, and expectations as they began their teacher-training program. We also recognized that this understanding could best be attained through the kinds of tools available to us within the Case Study approach. As incoming students, all of these individuals were in positions of instability both academically within the Pedagogy Program and socially in the larger context of the university student body as a whole. In the spirit of a qualitative research approach and mentoring practice, as researchers we were setting out to form closer bonds with the participants in order to support them. At the same time, we were seeking to

understand any changes that were taking place over the research period. These particular tools provided the necessary contact time for those social bonds to be established and evolve. The information they generated allowed us to adequately respond to our research questions in a way that would not have been possible within a more numbers-generating, point-in-time research approach.

Table 1: Participants, timeline and data collection tools

Study	Research Question	Timeline	Participants	Data Collection Tools	Examples
1. Guided e-reader program	How does a technology-supported reading program influence the identities of a group of pre-service teachers as learners, future teachers and as individuals?	Sep. 2013- Dec. 2014	10 students in 3 rd and 4 th year of English Pedagogy Students	Individual face-to-face or Skype interview notes Group interview recordings Participant weekly writing journals Documents Field Notes Observations	Weekly guided 45-60 minute interviews held with each participant (50 hours) in the first 3-months of the study, intermittently thereafter 4 group interviews held at regular intervals over the first phase of the study, then twice in the latter stages. Weekly journals written by each participant (260 pages) based on reading on Internet, as part of their course requirements. Course term test results. Pre and post results from standardized tests that form part of the course requirement Personal communication from other faculty, classmates and participants. Presentation of undergraduate theses in final year. Looking at engagement in and beyond course activities
2. First Steps Peer Mentoring Program Online	What influence, if any, does offering peer mentoring, supported by a private social network, have on the identities of a group of incoming students and their visions of becoming teachers	April to July 2014	12 first year students in the English Pedagogy Program	Individual interviews – recorded and transcribed Observations Field Notes	24 individual interviews, beginning and end of study, 200 minutes (approx.) in total Online and face-to-face participant activity 5 pages of researcher reflections

Table 1 summarizes the timeline and data collections tools of each of the studies. The guided e-reader program took place over 16 months from September 2013 to December 2014. The participants, all females, were 10, 3rd and 4th year pre-service teachers in the English Pedagogy program. Students were tasked with reading 1 hour a day and met with the researcher who acted as a mentor interested in hearing about the stories they were reading and providing guided linguistic feedback. The data sets included: notes from individual face-to-face and Skype interviews that took place weekly over the first three months and then intermittently in the last 13 months; audio recordings from 4 group interviews during the first 12-month period of the study, participant weekly written journals, various documents connected to the program administration, field notes and observations. Examples of each of these data sets are provided in Table 1.

Study 2 ran from April to July 2014 and involved 4 senior pre-service student teachers who conducted the study in fulfilment of their undergraduate thesis within the English Pedagogy Program. They mentored 12 self-selected first-year students who were new to the university and were enrolled in the same program. A Community Network, i.e. blog, was set up to provide 24/7 support, relationship building, advice and guidance to the participants between face-to-face sessions. Meetings were held and were recorded. Data were also collected from written correspondence on the blog, field notes and observations. Examples of the data sets for Study 2 are found in Table 1.

5 Findings and analysis

In revisiting the analysis and findings of the extensive data sets from these two studies in the limited space provided in this paper, we begin by focusing briefly on themes that emerged that were directly related to identity. We then present data from further recent follow-up contact with participants of Study 1 and analyse it together with earlier data sets for insight into the sustainability of those earlier results. We organize this discussion around the commonalities that the studies share and reveal in terms of the implications of the use of technology combined with the mentoring process in this particular Teacher Education context. Broader more detailed representations of the individual studies are discussed in earlier separate reports (Charbonneau-Gowdy, 2015; Capredoni et al. 2014).

5.1 Cultural capital, identity and investment

In both studies, we reported that the majority of participants showed strong motivation to succeed in learning. For example, in the context of the E-reader Literacy Study, i.e. Study 1, participants were committed to reading an hour a day on their e-readers and attending weekly guided discussion sessions, despite the considerable demands of their regular studies, practice teaching sessions and long commutes to the campus, often two hours or more. Likewise in the First Steps Peer Mentoring study, participants expressed the importance they saw in learning English to their future success in finding work opportunities in an increasingly competitive globalized market. In other words, both sets of participants revealed their acknowledgement of the potential cultural capital that would come with learning (Bourdieu, 2002), in this case another language.

Intertwined with the recognition of what success in learning could bring in terms of cultural capital, many of the participants in both studies revealed evidence of feelings of fear and anxiety. In the E-reader Literacy Study, for example, there was evidence from the participants of a fear of the following: further course failures; the high cost of their education and the burdens that this cost represented for themselves and their families; the tremendous high stakes and cultural focus on marks and grades; the pressure that accompanied the pride of family for being a first generation member to attend tertiary education. The tensions that surrounded these fears were evident in the demeanour of several of the participants at early stages of this particular study, especially in the classroom. Many demonstrated a shyness to engage, hesitancy about their accuracy when speaking, a reluctance to write and all accompanied by comments as well as physical signs of anxiety. The learner identities that most of the participants portrayed early on in the learning contexts were of being marginalized in the classroom context and that of a lower level student with borderline chances for success in the program. Some of the participants tried to mask such identities through a resistance to error correction, while others labelled themselves, as well as were labelled by some faculty, as just lazy.

Several participants in the First Step Peer Mentoring Study, i.e. Study 2, revealed a similar sense of angst. An excerpt from our Field Notes illustrates the lack of control that several mentioned to us in our conversations:

'While the interviews were developing, Miss Sandra [classroom teacher] was giving feedback to a group of students. It was their first mid-term test and the results had been very poor in general. Many students had failed. While she was waiting to be interviewed, Maria told us that she was worried because she got a low mark and that result was demotivating. She never expected to have such a poor result. When she was telling us about her disappointment, she burst into tears. She didn't want to go back to the room where the teacher was giving feedback to the group. She was very concerned about her future as a pedagogy student. Then, she asked if we had experienced something similar when we were in first year and if it was possible to improve those results. She told that, during the oral examination, her partner spoke much better than she did, and that intimidated her. Consequently, she didn't speak. (Field Notes, Fernanda, April 2014)

Fernanda's sense of disappointment in herself due to her failure on the test and her feelings of intimidation in the presence of another, seemingly more capable classmate, added to the lack of face she felt within the first weeks in the Pedagogy Program. We understood that her question to us as mentors suggested that she was entertaining thoughts of hopelessness in terms of her abilities to change her marginalized position within the Pedagogy Program.

Other participants exposed similar identities in the early stages of the mentoring in their interviews with us. Subsequent to these face-to-face conversations and in apparent response to our interest in the fears and concerns of the participants, we noted that there was much more activity on the Community Network. We had established the Network as a support between our meetings, but noted that for the most part the mentoring we did online, albeit evidently of value to those who participated, was contingent on our face-to-face contact with them in the physical space of the university.

Our analysis of the data sets that emerged later on in the E-reader Literacy Study paints a different story in terms of the evolving identities most of the participants were beginning to construct. We 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 an awareness of her increasing confidence to speak in class. Other signs of changes in Diana and many of the others were their more evolving 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 our 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. All of these changes harkened much more capable teacher identities in these individuals as they prepared for their careers in education.

We attribute these changes not only to the confidence that came with the participants' increased knowledge gained in reading on e-readers but through the individual attention they received in the weekly guided interactions with the researcher as mentor. In these interactions, at the same time that the mentor was encouraging and listening to each participant, she was also indirectly providing an example of good literacy

practice combined with teaching and technology practice as well. Oftentimes, for example conversations in these sessions would veer off to the mentor's own current reading on her Kindle and together the participant with the mentor would build strategies on exploiting the use of the technology. Additionally, in these conversations participants would regularly seek from the mentor explanations about language and/or advice about teaching strategies that they were applying in their teaching practices, including with technology. In other words, some of the participants were not only constructing stronger identities as learners in these sessions, but as present and future quality teachers. Clearly, many of the characteristics of effective mentoring developed from the findings of Hoffman et al., 2015 and Izadnia, 2015, outlined above, were evidenced in these meetings.

Similar evolving changes in identity were exposed in the data analysis of the First Step Peer Mentoring Study. Our observations of the active investment on the part of the participants to take advantage of the mentoring in the online Community Network led to encouraging incidences, or signs, of some of the individuals constructing more confident identities as newcomers to the Program. From our field notes, the following excerpt explaining our observations of the participants after a few weeks into the mentoring program, illustrates the emerging more confident subjectivities of some participants:

The kids [participant newcomer group] were very enthusiastic and willing to participate. During the round of questions, they spoke more than they were asked. Their attitude and body posture was very natural. What caught my attention was the [different] way they faced the environment where we were. In the case of Constanza, she was very shy in the classroom, where she attends supporting classes, while she was outspoken and talkative outside [with us]. (Field Notes, April 30, 2014).

This observation is especially significant as it speaks to the dynamic nature of an individual's social identity constructive process. It reflects similar changes observed in many of the participants as they built up increased confidence in their relationship with the fourth-year mentors who were conducting the study. We understand the participants' comfort and openness while sharing aspects of their personal struggles, as newcomers in the program, are indicative of their sense of self in these relationships. We take from their changes in identity, at least in the presence of their mentors, a sign of their belief that they 'matter' in this particular social context. As Butler explains (1990), the positioning of self and other in a social situation is contingent on recognition, confirmation or rejection by others (Thorne et al. 2015). It seems that the recognition that Constanza experiences in the interactions with the mentors and others in the participant group, is still absent in the classroom. The efforts and conditions that the mentors were creating in terms of connecting with these newcomers both online in the Network and face-to-face in meetings at the university were reaping benefits that were unavailable in the classroom context.

Separating features of the mentoring process in the sessions in Study 2, as we did for Study 1 above, we understand that the mentors both in the quantity and quality of their meetings were building strong and trusting relationships with these at-risk students by being available to them both on campus and off, in person and on the Community Network site. Often the sessions would involve conversations about the fears that these newcomers had about the teaching practice in schools that in which they would be involved in the upcoming semesters. Again, exchanging stories and building up strategies of how they, the experienced senior students were facing these challenges were instances of good mentoring practice. Mediating examples of good practice, open communication, making personal connections and providing academic emotional support were all evidenced in the interactions of the senior pre-service teachers with the newcomers to the program and participants in the second study.

5.2 Imagined identities

The positive changes to the social identities of participants created through the mentoring relationships and that occurred over the period of each of the respective studies are indeed encouraging. Importantly, there was further evidence of individuals in both studies developing identities that had implications not only for their present but also their future selves as teachers as well. Along with some of the characteristics of future effective teachers that some of the participants demonstrated and that we have pointed out above, a remark made by Marco, one of the participants in the First Step Peer Mentoring Study, illustrates the kinds of future identities that some of the participants began to imagine:

In fact, at [in] the beginning, I did not have faith that I would become a teacher. But now, I really want to live the experience of teaching. (Personal Communication, June 24, 2014)

From this excerpt, we understand that through enriched opportunities for support and guidance in discussions and interactions with mentors in person and online, Marco was able to move beyond the identity that was assigned to him as a newcomer in his immediate environment in the Pedagogy Program. Instead he began to imagine himself within a future community of teachers. The fear and lack of worthiness that we observed in Marco's identity at the outset and that labelled him unworthy in the program and hesitant about the profession were transformed into the excitement he felt about his imagined self as a future teacher.

Recent feedback from participants in Study 1, some who are now either in their final year of the education program or are already practicing teachers provides further evidence of the transformative value of the technology-supported mentoring sessions.

Vanessa, for example, with great pride, writes that she has gone from a non-reader to a passionate one and attests to the fact that she has consumed over 30 books in the last 2 years. In a recent communication she reports:

I would like to tell you how amazing and satisfactory the experience of reading intensively has been for me. After you bought two excellent and interesting books for me, I have not stopped reading. I have not been able to buy them online but thanks to Internet I can download pdf files of other books that have caught my attention. I was surprise[d] that after finishing my second book (doctor sleep) I had the need to read more. I had created a routine of reading an hour a day thanks to your investigation... I had never been able to read more than [a]100-page[s] book but I have read a series of 6 books in two months. These books were about 400-700 hundred pages so I felt proud of myself. Since last time we spoke, I have read more than 30 books. This has helped me to be more aware of the English language when I teach and read. I know more vocabulary but I think that I need to work on my writing skills more to be able to use and acquire all my new vocabulary. (E-mail, Nov. 27, 2015)

In her e-mail account, Vanessa reveals that her identity has been transformed through the experiences and guidance of the e-reading program, from a less than literate person to a very literate one. Language is power as Bourdieu (1991) points out. Vanessa has been able to access that power that has led to an empowered sense of self who proactively invests in finding new self-directed ways to learn and develop in her transformed identity as a learner. Her ability to critically analyse her language skills is further testimony to the academic development she has experienced and continues to pursue. It is important to remember that Vanessa was considered an at-risk student prior to the mentoring sessions due to her lack of engagement and consistency in her academic activities in the Teacher Education Program.

Vanessa's statement that the mentored e-reading project that she took part in has made her more aware as a teacher as well as a learner are indeed significant. In closing her e-mail, she adds: *"Thank you for making me part of a project that has changed my literary life. I will definitely use this method once I can teach and be able to transmit how beautiful and helpful a book can be."* From her words, we understand the implications that the e-reader project has had for Vanessa's imagined identity as a teacher. Her words reflect the passion that she sees as part of that identity. In her role as a passionate and engaged teacher in the future, we can assume that accessing "the beautiful and helpful" resources will undoubtedly imply the use of technology where Vanessa as she herself so powerfully expresses, finds the literature that she "needs".

The adapted TPAK (Figure 1) model has been developed by the lead author as a means to demonstrate visually the key conditions that need to be in place in order to effectively foster ICT in teacher education. In light of our analysis of the follow-up feedback data from Vanessa and several other participants who wrote now a year after the study, it is clear that key conditions in the outer circle of that model were present. These conditions included: opportunities for effective mentoring/guidance; context-specific solutions for using technology to resolve the tensions in the participants' realities, sustained support over time, albeit less in Study 2, enhanced occasions for participants to have an agentive role in mediating more powerful identities. Technology was key in support of each of these conditions. Our findings that reveal a sustained use of technology for continued self-directed learning over time and evidence of a growing confidence on the part of participants in the use of technology for teaching clearly provide increasing proof of the validity of our model.

6 Conclusion

We recognize that the impressive evidence of changes that were witnessed in several of the pre-service teachers' present identities, and those that some began to imagine for their future selves as teachers, might lead one to conclude that these results could have been achieved irrespective of technology. For example, a library supported reading program or face-to-face peer mentor programs could have served to respond to the tensions we saw in these pre-service teachers at risk. There may be some basis to those conclusions. The point we wish to make is that in this particular context, with its many challenges, it was the presence of the technology support tool, i.e. e-readers in Study 1 and the Online Community Network in Study 2, that offered the necessary affordances to support such changes. Indeed, we believe that there is strong evidence to suggest that it was the affordances of the technology that were crucial in providing the context for enriching opportunities for good mentoring. Together these interdependent elements, i.e. mentoring and technology tools, were key to the encouraging findings that resulted in both studies. We argue that without these tools and the efficiencies they provided, the changes in identities we reported would have been questionable. We further argue that this combination of technology with good mentoring enabled opportunities for the participants to construct knowledge and empowered identities that made the difference to their present realities as well as their imagined future ones as teachers. The importance we see in the technology with mentoring remind us of what Warschauer (2011) has pointed out - giving a child a computer does not ensure quality learning. In terms of support, the e-readers provided a wide range of *mobile* and accessible reading materials in English, either cost prohibitive or unavailable in the Chilean context. Yet it is likely that the books available to the participants would have not been accessed without the encouragement and interest of the mentor. Similarly, the Online Social Network guaranteed an opportunity to the newly enrolled pre-service teachers, access to 24-hour peer mentoring that without which, given the limited time of all individuals involved in the study, the sustained and consistent relationship building that was integral to the positive changes we witnessed would have been problematic.

We began this discussion of the two studies by suggesting that increasingly more powerful technologies are offering new ways for communities of individuals to connect globally to access the symbolic and material resources they need in their lives. Established institutions in light of these movements have been forced to stand up and take notice. In both of these studies, the institution had failed to understand the realities of these teachers-at-risk and left them marginalized in that setting. It took efforts outside the institutional offerings from a small group of concerned others armed with new generation technology tools for many of these pre-service teachers to have ways to negotiate more desirable identities – the kind of identities that reflect quality teachers and sustained users of technology both for teaching and learning. The question is: Will educational institutions and those that support them take notice?

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