PÁGINAS DE EDUCACIÓN

DOSSIER
1st EdTech Winter School

Universidad
Católica del
Uruguay

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Dossier

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PRESENTATION: IT'S TIME TO ASK BETTER QUESTIONS

Presentación: Es tiempo de hacer mejores preguntas

CRISTÓBAL COBO

Improving the quality of education and favoring innovation in education systems are among the most pressing challenges and priorities worldwide, especially in developing regions such as Latin America. Their relevance is underlined by the work of the international community through two main policy frameworks; the Millennium Development Goals (MDG) and the Sustainable Development Goals. Until 2015, international efforts in education responded to the need to increase enrolment rates and achieve universal primary education, as highlighted by MDG. Access to education is the first step towards introducing other improvements in the education system and despite the fact that there remain challenges in this field, innovation in the education system requires a more comprehensive approach capable of addressing the needs of a 21st century society.

When thinking of large-scale opportunities to bring innovation into education, digital technologies are usually one of the main items on the policy agenda. For instance, in most Latin American countries, digital education policies have mainly focused on the deployment and adoption of digital technologies and, where possible, on connectivity and other educational resources. Although digital education also has the potential to enhance innovation in education systems, as international evidence suggests, the mere introduction of digital technologies does not ensure nor guarantee innovation in education (Santillana, 2016). For instance, by 2015 nearly 30 million students in Latin America had personal computers or smartphones in their classrooms to support their learning (Severin y Capota, 2011).

Evidence suggests that One Laptop per Child (OLPC) and similar programs implemented in Latin America and the Caribbean as stand-alone actions have limited effects on the performance on traditional standardized tests; it should be noted that

governments have spent more than $2 billion on personal laptops in the past few years. (Busso et al [Eds.] (2017).

According to the World Bank, the region has seen a relatively great amount of public investment in digital education through 1-to-1 or similar models (see public programs such as Enlaces in Chile, Plan Integral de Educación Digital in Argentina, Computadores para Educar in Colombia, AprendeMx in México or Plan Ceibal in Uruguay).

As indicated in the Global Compilation of the National Educational Technology Agencies, in the Latin American region there are relevant cases to be considered (usually Plan Ceibal in Uruguay is mentioned as a positive example), but broadly speaking, the focus has been much more on infrastructure than on transforming the role of education in the 21st century (Trucano & Dykes, 2017).

In most Latin American countries innovation in education has focused, at best, on the deployment and adoption of digital technologies and where possible on connectivity or educational resources. Based on the results of different studies, the deployment of digital platforms and the like is not enough to ensure innovation in education (not to mention better performance on standardized tests). There are still several gaps in the implementation of large-scale transformation (national or regional innovations) in the curriculum and teacher training.

When analyzing international experiences, in terms of educational technologies, evidence suggests that the focus should shift from short-term policies that simply hand out computers, laptops and tablets to students, to policies that link access to equipment with strategies for guided use, with suitable contents according to level and subject matter, and with clear goals based on measurable learning indicators.

The OECD (PISA results) also suggests that limited use of computers in school may be better than not using computers at all, however, more intensive use tends to be associated with poorer student performance (2015). ICT is linked to better student performance only in certain contexts. In Latin America, the limited learning effects of computer-based interventions should be emphasized because,

often, introducing technology in schools is considered an easy fix to tackle difficult educational problems. However, the evidence suggests a different perspective (Busso, 2017).

Innovation in the region needs to be supported by cutting-edge scientific research in order to develop evidence-based guidelines. However, the development of research areas that are fundamental to innovation in education is still very incipient in Latin America.

The lack of assessment of digital education policies should be a source of concern. A region that spends about $ 80 billion a year on primary education should be able to make policy decisions based on a substantial body of data obtained from evaluations conducted in its own context.

There is a need to raise the professional standards of those who promote, implement and monitor innovation in public digital education. That means to increase (both nationally and regionally) technical capacities as well as to diversify the opportunities for collaboration and exchange within those communities that can generate better learning conditions (Caprile, Palmén, Sanz, Dente, 2015).

These are some of the main concerns that led to the creation of the Center for Research Fundación Ceibal, which in partnership with the National Research and Innovation Agency (Agencia Nacional de Investigación e Innovación [ANII]) and with the support of all the universities in the country, organized a global summit between academics and policymakers in Uruguay (also known as Winter School). The goal of this international meeting, which took place in Punta del Este in 2017, was to analyze and discuss cross-cutting topics at the intersection of educational, ICT research and policy with leading international experts in the field.

One of the outcomes of this multi-national collaboration was the publication of this special edition, which addresses some of the critical topics to be considered when designing, implementing and evaluating the quality and cost-effectiveness of different education and technology programs.

This research was conducted by academics and experts from universities and partner institutions from Australia, Mexico, Argentina, Chile, Spain, Israel, and

Uruguay. Adopting different perspectives and approaches, the authors successfully explored how these digital education policies can have a positive impact on the learning processes. Other questions they posed were: how can technological interventions with a real positive impact be designed and implemented? How can the region learn from failures? What lessons can we learn from successful experiences and good practices from other countries? What role does the social and cultural context play in the technology and education equation? Which new languages and pedagogies are worth considering? What are the opportunities and challenges to be considered?

As Megan Erikson argues, 'education is not a design problem with a technical solution', so the fundamental questions of what works, and under what circumstances are more relevant than ever. These, among others, are critical questions to better understand the affordances and constraints of technology in the world of education.

Highly grateful for the global collaboration which supported the elaboration of all these articles you shall find here, we invite you to enjoy a good read and pose new questions that help us rethink learning and equity in a society that is changing and becoming globalized at an unprecedented (and sometimes disturbing) speed.

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WHAT'S NEW ABOUT 'FAKE NEWS'? CRITICAL DIGITAL LITERACIES IN AN ERA OF FAKE NEWS, POST-TRUTH AND CLICKBAIT

¿Qué hay de nuevo en las noticias falsas? Alfabetizaciones digitales críticas en la era de las noticias falsas, la posverdad y el cebo de clics

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Abstract: The 2016 Facebook fake news scandal has highlighted the difficulty in determining the credibility and reliability of news. As a result, there have been calls for individuals to adopt a more informed and critical stance toward the sources of their news. This paper considers what might be involved in cultivating critical digital literacies in an era of post-truth, fake news and clickbait. Using the platform as the framework for study, the paper examines how the architecture, algorithms and network effects of the platform have changed the way news is created and disseminated, and how audiences are positioned to engage with it. This theoretical critique provides insight into the technical, political and social issues surrounding how individuals engage with online news.

Keywords: critical digital literacies; fake news; digital platforms; social media.

Resumen: El escándalo de noticias falsas de Facebook de 2016 puso de relieve la dificultad para determinar la credibilidad y la confiabilidad de las noticias. Como resultado, se instó a individuos a que adoptaran una posición más informada y crítica frente de la fuente de sus noticias. El presente trabajo considera qué podría estar relacionado con el cultivo de alfabetizaciones digitales críticas en la era de la posverdad, las noticias falsas y el cebo de clics. A través de la utilización de la plataforma como marco para el estudio, el trabajo examina cómo la arquitectura, los algoritmos y los efectos de red de la plataforma han cambiado la manera en que las noticias se crean y se diseminan, y cómo las audiencias se posicionan frente a ellas. La presente crítica teórica arroja luz sobre los aspectos técnicos, políticos y sociales alrededor de la manera en que los individuos se involucran con las noticias en línea.

Palabras clave: alfabetismos digitales esenciales; noticias falsas; plataformas digitales; redes sociales.

INTRODUCTION

In the Republic of Macedonia on the banks of the river Varda, lies the city of Veles, population 43,716. The 19th century wooden houses that line the steep streets are reminders of a time when the city was at its peak, forming part of the trade route that connected the Balkan Peninsula and Aegean sea via the river. While globalisation might be responsible for the deindustrialisation of the city, it is the unexpected consequences of globalisation that have made Veles famous in more recent months. Veles is a city that now hosts over 100 US politics websites; the city has started trading in a new industry - fake news. And it is the digitally savvy teenagers of the city who are reaping the rewards.

While most of the news websites that are based in Veles are pro-Trump, the teenagers responsible for them are reported as caring little about US politics or the outcome of the election. Their goal is to create controversial content, to be shared 'virally' across social media platforms, in order to make money through the advertising that can be embedded alongside these news articles. While the average wage in the city is approximately 4200 Euro a year, some teenagers are earning up to 20 times that through their Google AdSense accounts. It is perhaps not surprising that the Mayor of Veles, Slavco Chediev, describes the monetisation of fake news sites as a success story for the city. The teenagers behind the websites are paying their taxes, which, as one teenager quipped, would keep two of his teachers employed for a year.

While bias in the news is not new, the opportunities brought about by the democratization, monetisation and circulation of 'news' via digital platforms has brought this issue to a critical point, highlighted by Trump's surprising election victory. The goal for the teenagers of Veles however is simply to attract clicks in whichever way they can, whether through clickbait, polls or sensational news stories. As one teenager explained: "Polls work best because you don't need to write much and people always click through" (Byrne, 2016). While the sites appear legitimate with domain names designed to imitate genuine news sites, like ABCnews.com.co and Bloomberg.ma, the news articles are cobbled together from other false news articles and online content. However, once shared by 'friends' on social media platforms these fake news stories acquire a legitimacy that exploits the affective relations between users and their predetermined political bias. In light of this, rather than being social nuisances, the teenagers of Veles' ability to manipulate the technical affordances of digital platforms and the affective reasoning of social media users, make them models *par excellence* for what it means to be digitally literate in an era of platform politics.

This essay is about the most recent instantiation of news bias - namely fake news - and the critical questions it raises for digital literacies education. Using digital platforms as a framework for analysis, the purpose of this essay is to focus explicitly on what is *new* about this moment of fake news. As such, I consider the social, technical and political

milieu that has led to what has been called the 'post-truth' era – an era in which emotion and personal belief are more influential in shaping opinions than objective facts. While this issue has implications for all individuals, I am particularly interested in what this moment signifies for digital literacies education of young people. As such the paper concludes by considering the critical digital literacies necessary for everyday lived experiences of social media use and the implications for digital literacies educators.

WHAT IS FAKE NEWS?

Fake news emerged as an issue after the 2016 US election, in which the most widely circulated stories in the last three months of the campaign came from false websites and hyperpartisan blogs. These stories were shared with much greater frequency than any of the top news articles from major news media, generating over 8.7 million shares, comments and likes (Silverman, 2016). While much has been made of this being a critical moment in media manipulation, it could be argued that this was more likely the point at which we *became critically aware* of these issues. Indeed, various forms of media bias have long existed (see for example Darnton, 2017). In addition, fake news has emerged against a backdrop of ongoing societal changes, such as an increasing distrust of public institutions and news media (Nicolaou & Giles, 2017) as well as a decline in professional news journalists (Clark & Marchi, 2017). This essay however is focused on the role played by digital platforms in this current moment of media manipulation.

With the emergence of the 'participatory web' (Jenkins, 2006) user generated content has become an increasingly important part of digital culture (Grossman, 2006; Mitchem, 2008). This has brought significant changes to the news media industry. Specifically, the ways in which news is reported and shared across populations are expanded through connective media platforms, which has had a positive influence on engaging young people with news and current affairs (Greenhow & Reifman, 2009). At the same time, it is the monetisation and rapid circulation of 'news' through digital platforms that have led to such widespread and effective forms of media manipulation. Digital platforms might democratise the creation and circulation of news, however, in doing so questions around what news is, how it gets made, shared and read in online contexts are also raised.

One of the challenges to this issue is defining what is meant by the term fake news. This term is not only misleading, but also generalizes the different ways in which news can be manipulated. Wardle (2017) has come up with seven types of mis- and disinformation in an attempt to distinguish the different types of 'problematic content' (n.p.) that exist within the current news media ecosystem. This includes categories such as false connection; false context; manipulated content; satire or parody; misleading content; imposter content and fabricated content. The type of 'problematic content' used depends on the creator and their motivation. While heuristics like this are helpful, the more recent instantiation of fake news not only raises questions about the content, but also the way

in which digital texts are disseminated through digital platforms. Through social media platforms, digital texts become a conduit for relational work between users. These relations affect the interpretive processes of individuals, positioning them to engage with the news article or headline in particular ways.

So far there have been a range of responses to the supposed fake news crisis. News outlets and universities have been quick to respond to the most recent moment of fake news by launching online 'fact checking' apps and digital tools that check the 'truth' and validity of particular facts and ideas presented in articles. In some instances, this approach might be helpful, however, it only addresses a small part of a much broader and more complicated challenge. The fact-checking app might have a detrimental effect as not only is critique 'outsourced' to a digital tool, but the fact that these are arbitrated by traditional 'authorities' undermines individual agency and the role of critical digital literacies in everyday life. Facebook and Google on the other hand have introduced different tools to their platforms to help *users* identify and report fake news. Facebook has avoided outright censorship of news and information and instead circulated a series of tips to help users spot fake news, as well as adding the option to report content that users believe to be fake (Pogue, 2017). Ironically, Google have *introduced* human editors to evaluate the content of their search results in an attempt to train algorithms to detect low quality content (Leong, 2017). While Google appear to be doing more to correct the situation, both companies still develop algorithms that are designed to deliver information that they believe users want to read, regardless of its truthfulness.

I see the issue of fake news as having particular significance to researchers and educators working in the field of digital literacies. My aim in this essay is not to replicate the writing and research already taking place on fake news in other disciplines, such as media and communication (Mihailidis & Viotty 2017; Balmas, 2012), information technology (Dale, 2017), journalism (Marchi, 2012; Khaldarova & Pantii, 2016) and even science (Spinney, 2017). Instead, this essay will focus on what the most recent moment of news media bias means for digital literacies educators. Using the platform as a framework for study, this essay will explore the features that lay the foundation for the current moment in fake news, with a particular focus on the digital literacies required to navigate these challenges.

A PLATFORM APPROACH TO FAKE NEWS

Research into the dominance of the platform structure (Srnicek, 2017; Bratton, 2015) and the platformization of the web (Helmond, 2015) explains how platforms provide both the technical and economic infrastructure *and* the discursive framing for social and communicative practices. In line with this more critical approach, this paper uses the platform as an analytical framework to offer a more technical *and* reflexive account of the role that platforms play in the fake news phenomena. While I argue that the digital literacies required to critique fake news require an understanding of the computational,

cultural and social layers of digital platforms, which facilitate the widespread and rapid dissemination of such digital texts. To identify exactly what these literacies might be, I analyse seven features of platforms that have contributed to the current moment of news bias.

1. Platforms produce and rely upon network effects

The theory of network effects or network externalities comes from economics, and claims that the value of a platform depends on the number of users it has (Katz & Shapiro, 1986; Rohn, 2013). In the context of social media platforms, the more users a platform has the more valuable it becomes as a communication service to its members. Facebook, for example, has become the default social networking service in many parts of the world because the sheer number of users means that it is the most logical place for individuals to connect with friends online. However, institutions, companies and other community groups, are also drawn to using the platform because it connects them to the public in useful ways. As participation increases, so too does the amount of data generated, which improves the reliability of the platform algorithms to suggest, recommend and match information between all parties. As Belleflamme and Peitz (2016, p.5) explain this 'enhances the quality of the platform service and, thereby, the utility of all users'. For this reason there is a natural tendency toward platform monopolization.

However, Facebook's monopolization of communicative media has had the residual effect of changing the way people find and read news. Most notably it has limited the number of news sources individuals consult to remain informed about what is going on in the world. According to the Pew Research Centre, 62% of American adults now get their news through social media. Of this 62%, 64% report that they *only* get their news from Facebook (Gottfried & Shearer, 2016). In Australia, 52.2% of adults receive their news through social media, however, only 18.5% of these people use only social networking sites or blogs (Park, 2016). While these data only represent two countries they indicate a broader trend toward engagement with news on social media platforms, most notably Facebook. On Facebook, users are more likely to stumble upon news shared by friends, rather than actively seek it out (Oeldorf-Hirsch & Sundar 2015). While this might increase young people's engagement with news and information, it also introduces different news reading practices *and* encourages different processes of interpretation in individuals.

2. Platforms work as a framing device

There are two ways in which platforms frame information for users – through the architecture of the platform and the social networks that mediate the content that is shared. The 'architecture' of a platform can be taken to mean the 'system's overall structure and function', including the interface specifications, as well as the algorithms

and processes that 'govern relationships among components and allow them to interoperate' (Baldwin & Woodard, 2008, p.7). While platforms might appear decentralized, in reality it is only content creation that is decentralized. The platform position is one of an intermediary, managing or governing the terms of the relationships between parties through the manner and volume of interactions. This means that the platform is essentially a 'drawing and framing machine' (Bratton, 2015, p.85), accentuating particular aspects and modes of communication and relegating others. On Facebook, for example, links to the outside web are deprioritized in the Newsfeed, as operators aim to keep users on the platform for as long as possible (Tufekci 2016). Official news organisations therefore have a difficult time connecting individuals to their content on Facebook, as the architecture of the platform mediates the distribution of information. In mid-2016 Facebook changed its algorithms to preference posts from friends and family and de-emphasise those from mainstream news media. As a result of Facebook's decision, traffic to these news media sites fell by numbers as significant as 25% (Ingram, 2016), making it less likely for users to read news from traditional news media sources.

When a news article, or digital resource is shared on a social media platform, it is done so via some kind of social relationship, be it a strong or weak tie. Unlike other media, such as the newspaper or television news, the platform and the relationships it sustains, also act as a framing device for digital content. It matters that we are familiar with the individual who shared the article, as this can abate critical faculties and position the reader to engage with the text in particular ways. On social media the underlying relationship or impression one has of the person sharing becomes particularly significant in how that information is interpreted. As Apperley and Parikka (2015, p.5) explain, platforms 'are not just technologies but techniques that sustain interactions as well as offer an epistemological framework'. When disseminated via a social media platform, a news article becomes more than just information; it becomes a conduit for affective relations between individuals. Specifically, social networks tend to be made up of like-minded people, meaning the phenomenon of confirmation bias, in which we seek out or more readily believe information that confirms what we know or value (Braucher, 2016), is enhanced.

3. Users can modify and manipulate the structure of the platform to suit their needs

While overall governance of the platform belongs with the platform operators, the user can manipulate the structure to suit their needs. Indeed, the utility and adaptability of digital platforms have helped secure their dominance on the internet. As Srnicek (2017) explains, platforms come with tools that enable users and developers to build their own services, products and marketplaces. The Macedonian teenagers, for example, were able to create Facebook identities that enabled them to reach American audiences and

purportedly influence US politics. While these individuals were not recognized as political 'citizens' of the US, as Bratton (2015, p.87) points out, they are 'nevertheless included in communication by platforms that are agnostic to the legal status of its users' (p.87). Despite this, the credibility of the users disseminating these news articles was increased if their profiles were based in the US. Not surprisingly US based Facebook profiles can now be bought on the black market (Subramanian, 2017). Despite enabling and promoting the participation of other parties, the platform operators hold little responsibility for what takes place on the service. Indeed, no news organization has ever had as much power to influence public opinion as Facebook. Despite this, current CEO Mark Zuckerberg remains adamant that it is a 'tech company' and not a 'media company' because such a label would mean greater responsibility to regulate the users and content on the platform (Roberts, 2016).

4. Platforms ensure every user's experience of the platform is different

One of the most significant features of the internet is the large amount of news and information that users have access to. While this has obvious benefits, the constant stream of information can be difficult for users to navigate. This 'infoglut', as Andrejevic (2013) terms it, has led to the creation of an array of digital tools, data mining strategies and algorithms that filter information in order to establish a more personalised, streamlined experience of the web for users (Mobasher, Cooley & Srivastava, 2000). Many digital platforms aim for increased levels of personalisation. Google, for example, provides personalised results for search queries based on browsing histories and social connections (Google, 2009). On social media platforms such as Facebook, information is not only filtered through user curated social networks, but also interface design and the News Feed algorithm.

While humans have always tended towards homophily (i.e. selectively interacting with like-minded people) the architecture of digital platforms and their focus on personalising user experience, only enhances this tendency. Research by Del Vicario et al. (2016) showed that the Facebook platform helps users find, follow and focus on certain people while excluding others, encouraging the emergence of polarized communities. Their findings on two hyperpartisan community pages suggest that whether a news item is accepted as true is strongly affected by the social norms of the group or how much 'it coheres with the community's shared belief system and values' (Del Vicario et al., 2016, p.9). However, the News Feed algorithm also makes assumptions about the future content that users will be interested in based on which content they have engaged with in the past and which users they have most connections with (Bucher, 2012). In a similar way, Google search will start to include and prioritise particular content that matches the users social networks and browsing history. As such the goal of many platforms to 'personalize', 'customize' and 'tailor' user experience, means individuals become aligned with social groups that can lead to a kind of 'group think' approach to news and

information. This also means factually incorrect information, or fake news, can be rapidly spread through social groups and networks which share the same or similar beliefs and values.

5. Platform architecture facilitates frictionless sharing of digital content

In 2011 Facebook introduced an external like button - a plugin that can be included on any website. With the advent of this social button all pages on the web became potentially 'likeable'. As Gerlitz and Helmond (2013) explain, this means that Facebook and the external web are increasingly interconnected, as the practices in one space affect another, 'rendering both more open and relational' (p.1358). Indeed, the architecture of the Facebook platform – including the interface design and the proliferation of social buttons across the internet – mean news and information are easily shared both with an array of social and commercial actors. This 'alternative fabric' (Gerlitz & Helmond, 2013, p.1361) of social media platforms is dependent on data flows generated through users sharing, recommending, commenting and liking posts and pages across various social media platforms.

Despite the control afforded to platform operators through the Facebook architecture users have, in the main, embraced its design, values and practices. In 2012, there was an estimated 3.2 billion likes and comments on Facebook everyday (McGee, 2012), creating a culture of participation based around sharing and liking. As Sumner et al. (2017) explain one of the main benefits of the like button is its ambiguity, meaning its interpretation is highly dependent on the context and audience. While the like is often used to share content, it is the relational work that it performs which is most significant. As various studies report (Sumner et al, 2017; Eranki & Lonkila, 2015), the like has become an integral part of facilitating relationships and self-representation. However, its pervasiveness has led to expectations around use. Indeed, sharing has become the 'fundamental and constitutive activity' of social media (John, 2012, p.167). Research by Egebark and Ekstrom (2011) suggests that the Facebook platform is an environment that constitutes conformity because it is highly visual and it is based around expression of beliefs and attitudes symbolised by the like button.

6. Platforms depend on data extraction and monetisation

While many of these platforms are ostensibly 'free' to users, the business model relies on data extraction and monetization. The platforms that have most significance to fake news are Facebook and Google – platforms that Srnicek (2017) categorises as 'advertising platforms' or platforms that 'extract information on users, undertake a labour of analysis, and then use the products of that process to sell ad space' (p.49). The Google platform, for example, enables any website to be connected to a Google Ad sense account, regardless of the content that website disseminates. The teenagers of Veles were able to

tap into the data assemblage and yield a profit through their Google AdSense accounts, which monetise the clicks on the ads that are embedded alongside the false and misleading articles. The content itself matters little. In some cases manipulating the headline is enough for an article to be shared widely on social media and attract attention and clicks to the external website. In the lead up to the US election the articles that were circulated the most often had an outrageous or exaggerated headline, however, the actual content of the article was sometimes contradictory or even true (Silverman, 2016).

7. User input on platforms results in an increase in value
of that information to the user

On social media, individuals are encouraged to like, share and comment on digital texts. In the process these texts accrue credibility as well as value for those who circulate them, such as increased social connections and personal morale. The practice of sharing texts not only disseminates information across social networks, but also helps to distil and project a sense of self to the world. Adami (2012) argues that the culture of sharing often requires greater effort on the part of the viewer to retrieve and interpret the implied and intertextual meaning bound up in shared texts. As such, interpretation leads to a sense of reward in that the viewer becomes an insider or 'part of an elite' (Adami, 2012, p.132). While those who create fake news articles might be motivated by the need to make money, the user who shares the article through their social network is mostly seeking to maintain or perhaps expand their socialities, or associations with other individuals in society. Sharing the article becomes part of their 'identity work', which demonstrates their understanding of the implied and intertextual meanings of the article, as well as their belonging to a particular political group. These digital texts gather credibility as they are shared across social networks acquiring likes, shares and comments from users. As these links and shares have value for the author and viewer, the motivation to prevent the spread of misinformation is diminished. Through the platform, people's sociality becomes imbricated with the creation and sharing of digital texts in ways that can be difficult to identify and unpack.

In considering the complex features of digital platforms the sophisticated nature of the Macedonian teenager's digital literacies is evident. Not only did they create news articles that would gather the attention of audiences across the United States and the world, but they were able to exploit the network effects of digital platforms to disseminate the news widely, and subsequently generate a personal income. While their success relied upon identity theft and willfully creating factually inaccurate news articles, it also required a complex understanding of the potentialities of digital texts and their affective 'work' *across* digital platforms. Many of the fake news websites coming out of Macedonia have now been shut down, however, the broader concern of how digital platforms can be manipulated to spread misinformation still remains an issue. Given that social media are

playing an increasingly important role in how people encounter news and information, there are important implications for digital literacies and digital literacies education.

IMPLICATIONS FOR DIGITAL LITERACIES AND
DIGITAL LITERACIES EDUCATION

Digital platforms have not only introduced new reading practices, but they have also changed the interpretive processes individuals typically bring to reading news and information articles. Many of these changes have taken place in a subtle way as readers have adjusted to the news context without considering the specific challenges it raises. In light of this, there is clearly a need to identify the digital literacies required to address the challenges brought about by the most recent moment of fake news. The features of digital platforms identified in the previous section highlight some of the literacies required to understand the technical, political and social layers implicit in the creation and dissemination of fake news. Indeed, to critique fake news in the context of social media, one needs an intertextual, affective and networked reading of the content in question. But first, digital literacies educators need to acknowledge that it is not just the content on digital platforms that is significant, but the platform itself needs to be approached as an object of study. Schools and educational institutions have been afraid to focus on digital platforms, perhaps because they are often associated with recreational or social uses. However, as social media platforms and their infrastructure are increasingly a part of news and information practices it is essential they are critically evaluated.

1. Identify the changing nature of news reading practices

In analysing the role of platforms in the fake news phenomena there are at least two significant changes to reading practices that are important for digital literacies educators to be aware of. First, in relation to sourcing news and information individuals are less likely to seek news directly from news sources and instead come across information through their social networks. According to Matsa and Mitchell (2014), 78% of users see news when they are using Facebook for *other* reasons. While only 34% of users subscribe to a news media source on social media. Encountering news articles via the social sphere rather than the sphere of news and information means the article is not read in context, giving people less opportunity to compare the structure, style and voice to other news articles. Related to this is that discovering news and information is no longer an individual pursuit but instead a social endeavour (Nikolov et al., 2015). This not only changes how people find out about news and information, but also their fundamental disposition towards engaging with these articles. Typically, users do not feel the need to be critical in this space, as a social media platform like Facebook is a site for sharing news and information with friends. However, the most recent instantiation of fake news has shown that the more relaxed and open disposition of users can be exploited, not only by the

platform operators, but other parties as well. Making educators aware of these changes will encourage them to find ways to support young people to develop critical news reading practices as part of their everyday lived experience of social media use.

2. Knowledge of platform architecture

Also required is an understanding of the platform architecture, including its structure and function, as well as the algorithms and processes that govern relationships allowing the various components to interoperate. Young people need to be discouraged from seeing platforms as neutral conduits of news and information and instead analyse the structure and function of the architecture. While this might seem an obvious point, many people fail to intuit the fact that the architecture of the platform is designed to encourage participation from users that will benefit the platform – the production of an individual with agency is not necessarily an ambition. Introducing a more critical disposition toward the presentation of information at the interface is an important first step toward developing critical digital literacies. Analysing Facebook's Newsfeed algorithm (Bucher, 2012) and Google's PageRank algorithm (Rieder, 2012) would help young people think about what is not prioritized or even shown on the interface, which is a powerful way to critique the motivations of platform operators. Being aware of these specific design issues is useful to understanding the way in which fake news articles are presented and circulated across the platform. For example, with regard to fake news it might also be helpful to think about the function of the like button and the role that it has played in opening connections between Facebook and the wider web. Specifically, the fact that the like button now mediates connections and interactions for users is a key point to consider. Rather than accepting the ambiguity implicit to the like button, being more conscious and aware of its function on the platform would also be a useful step toward more conscious and thoughtful sharing.

3. Understand digital platforms as part of broader social and technical networks

It is also important to build an understanding of how digital platforms fit into a broader network of technological and semantic systems. Elsewhere this has been called 'network literacy' (NetSciEd, 2017), which can be thought of as 'basic knowledge about how networks can be used as a tool for discovery and decision making', including an understanding of the 'potential benefits and pitfalls' of networks (p.2). Importantly this definition acknowledges that networks can be both beneficial *and* problematic, and that even the same feature of a platform can be seen in different ways depending on the situation. For example, in the case of a natural disaster, network effects are obviously advantageous because alerts and warnings can be quickly shared across populations. However, in the case of misinformation the same feature of networks is problematic.

Visualisations of the underlying network can be a helpful way to understand how platforms connect people, institutions and information (NetSciEd, 2017). Helping young people to visualize how news articles enter and spread out across networks, as well as the various points of incentivisation, would develop a more critical approach to the role played by social media platforms in the fake news phenomena. In doing so, they may discover that the network is not as equally or well distributed as first thought. Indeed, Galloway (2011) reminds us mapping information in this way cannot visualise or represent the 'social totality' of the information age. Bearing this in mind, when visualizing networks and the role of digital platforms within these, a consideration of which aspects of the network are difficult to capture and why is important. Identifying and exploring the 'blindspots' within networks would help individuals to critically evaluate structures and functions that are typically beyond perspicuity.

4. Identify and critique the ideologies implicit to digital platforms

Critical digital literacies encourage young people to analyse the ideologies implicit to a text. However, it is not just the ideology of the text that requires scrutiny, but the digital platforms that disseminate this content. These require sophisticated digital literacies due to the opacity of the architecture behind digital platforms. Indeed, being opaque means 'control, ownership and ideological uses of these new [information] flows' remain 'volatile and dynamic' (Luke 2013, p. 137), which no doubt has benefits to platform operators. One way to develop literacies of digital platforms is through an understanding of their political economy. While this might sound difficult, particularly in relation to cultivating the digital literacies of young people, it could be something as simple as unpacking the role that metrics play on the platform and understanding the role between metrics and commodification. As Beer (2016, p.24) explains understanding the role of metrics helps to reveal the ideology upon which these systems are built:

> Metrics then play a central role in the formations of neoliberalism and its limits. Systems of measurement are the means by which the shift can be made towards calculation and away from judgment and critique. But, it is important that we see these metrics as cultural and political objects as well as being infrastructural by-products.

Digital literacies for fake news also need to consider the way data are extracted and monetized, as well as the way in which online advertising attracts revenue for website operators. While many young people claim to be unfazed by online advertising, the fact that revenue is generated through advertising clicks has material implications for website operators that users should know about. Identifying these opportunities for revenue generation means individuals can understand why particular practices and behaviours are encouraged.

5. Explore how affect circulates and condenses across digital platforms

Finally, individuals should be encouraged to think about how the sharing of news and information relates to their socialities through affect. Affect can be thought of as the more subliminal forces that drive behaviours, but which defy categorization into typical emotions, such as happiness and sadness. It explains 'how individual, collective, discursive, and networked bodies, both human and machine, affect and are modified by one another' (Paasonen, Hillis & Petit 2015, p.3). In this way, technology 'mediates desires' and creates a series of 'travelling affects' (Kofoed & Ringrose, 2012, p.16), or emotional responses that circulate through people and digital media. In light of this, consideration needs to be given to how the information presented on platforms develops an affective response in individuals, shaping their digital identities and online relationships. Economic historian Philip Mirowski (2014), for example, argues that the interface is 'continuously destabilizing identity', distilling an individual's identity 'to a jumble of unexplained tastes and alliances', in such a way that requires 'constant care and management' (p.113). This creates a kind of perpetual lack, which can only be quelled through visiting and maintaining the digital identities presented on the platform. Cultivating an awareness of the way affect condenses through metrics and notifications might help to create a critical distance from the platform that is necessary to evaluate fake news articles.

CRITICAL DIGITAL LITERACIES FOR NEWS AND INFORMATION
ON SOCIAL MEDIA PLATFORMS – TOWARDS A RESEARCH AGENDA

Given the features of digital platforms and their role in disseminating news and information that have been outlined in this paper there is clearly a need for future research in this area. However, with recent initiatives directed toward 'fact checking' tools and platform based governance in the form of check lists and flags, there is the possibility that research and education developing social and political understandings of digital platforms in individuals will be de-prioritised. This article has outlined the specific digital literacies required to help individuals to be responsive to the changing nature of news and information as it appears on digital platforms. This is not to replace the literacies needed to critically engage with the *content* that is presented in these articles, but to draw attention to the infrastructure that enables the creation and dissemination of misinformation. From this perspective the following questions point to some areas that require further in-depth research and investigation:

- How do digital platforms reconfigure news and information practices? ⌞SEP⌟
- What kinds of critical digital literacies are necessary to understand infrastructure of digital platforms and how might these be practiced?

- What sort of critical understandings do young people have of digital platforms and their role in disseminating news and information? In what ways are these applied in daily digital practices? ⌷sep⌷

- What sorts of practices and techniques have successfully developed critical approaches to news and information in the past? Can these lessons be translated to the challenges initiated by digital platforms?

- What are the short- and long-term consequences for society and democracy as news and information are increasingly disseminated through social networks?

This paper has analysed the features of digital platforms that are pertinent to the fake news phenomena. In doing so, I have raised epistemological and ontological concerns that are difficult to address. However, in identifying these features and the literacies required to critically evaluate the way in which content is created, disseminated and circulated it is hoped that an evidence-based framework for critical studies of digital platforms will soon follow.

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WIKIPEDIA EDUCATION PROGRAM IN HIGHER EDUCATION SETTINGS: ACTIONS AND LESSONS LEARNED FROM FOUR SPECIFIC CASES IN MEXICO AND ARGENTINA

Programa de Educación Wikipedia en contextos de educación superior: Acciones y lecciones aprendidas de cuatro casos específicos en México y Argentina

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Abstract: This article presents a comparative view of efforts and results that have been accomplished by the Wikipedia Education Program working with higher education institutions. Following the idea that "Wikipedia belongs to education", teachers from all over the world have become interested in including Wikipedia in their courses. This paper analyses experiences and lessons from Wikimedia Argentina and Wikimedia Mexico, both chapters working with higher education institutions, in order to found similar challenges and solutions in the implementation of Wikipedia projects in academic spaces, also in the context of the Initiative for Regional Cooperation for Ibero-America (Iberocoop) that has proposed the creation of a chapter in the region, fostering collaboration and exchange of experiences.
Keywords: Wikipedia; education; assessment innovation; higher education.

Resumen: Este artículo presenta una visión comparativa de los esfuerzos y resultados del Programa de Educación de Wikipedia en el trabajo con instituciones de educación superior. Siguiendo la idea de que "Wikipedia pertenece a la educación", profesores de todo el mundo se han interesado en incluir Wikipedia en sus cursos. Este documento analiza experiencias y lecciones de Wikimedia Argentina y Wikimedia México, en el trabajo con instituciones de educación superior, para encontrar desafíos y soluciones similares en la implementación de proyectos de Wikipedia en espacios académicos, esto también en el contexto de la Iniciativa de Cooperación Regional para Iberoamérica (Iberocoop) que ha propuesto la creación de un capítulo en la región, fomentando la colaboración y el intercambio de experiencias.
Palabras clave: Wikipedia; educación; innovación en la evaluación; educación superior.

INTRODUCTION

This article focuses on specific actions and lessons learned from four Latin American experiences working with the Wikipedia Education Program (WEP) in higher education settings: the Wikimedia Mexico (WMMX) Education Program working with the National Autonomous University of Mexico (UNAM), and the project for universities implemented by Wikimedia Argentina (WMAR) Education Program.

Following the idea that 'Wikipedia belongs in education', teachers have become interested in including Wikipedia in their courses. This work will review some lessons learned from the higher education context in both countries, and also in the scope of the Initiative for Regional Cooperation for Ibero-America (Iberocoop), aimed at fostering collaboration and experience sharing in the region.

Two members of the team working on this article took part in the gathering organized by Ceibal Foundation in July 2017, called 'EdTech Winter School: Emerging trends and new horizons in the study of education and technology', which gave rise to an intensive week of in-depth interaction and discussion between all 37 selected participants. The work we present here falls within two of the lines of research proposed for this event:

"New Ways of Knowing, Learning, Teaching and Evaluating", initiated to "rethink curricular and pedagogical strategies that recognize different ways to learn and to share the knowledge learned, and also to explore to what extent multi-contextual learning (formal, non-formal and informal) supported by technology can influence learning styles and processes", and "Educators in the Digital Age", created to "identify and systematize those practices that allow teachers to be brought up-to-date in the development of new ways to access, process, generate and share knowledge" (Ceibal Foundation, 2017).

As Wikipedia is by all means a central part in the two lines of investigation, this article aims to identify the lessons learned and challenges of some specific initiatives of the Wikipedia education programs in both contexts.

WIKIPEDIA IN HIGHER EDUCATION SETTINGS: THE RESEARCH

Beyond encyclopedic consultation, there are several ways in which Wikipedia can be used as a learning strategy in the classroom. In the research discussed below we explore some evidence of the benefits of getting students actively involved in the tasks of editing and improving Wikipedia articles.

In the field of economics, Freire and Li report a positive impact due to the open nature of improving or creating Wikipedia articles, because the feedback was received not only from the teacher but also from the Wikipedia community, and this led to "a large increase in the number of students who checked assignment feedback and made modifications to their assignments based on this feedback" (2014; p. 1179). Regarding

the formal use of Wikipedia with groups of final-year medical students, Azzam and his colleagues have found meaningful improvements, not only in the articles they edited, but also in the sense of agency as medical volunteer editors "providing accurate information to communities that do not have access to other resources" (2017; p. 197). The research also shows aspects to be improved, as Azer has concluded after reporting that Wikipedia articles on the topic of the "nervous system" have "deficiencies and scientific errors in most Wikipedia articles evaluated", but this is precisely where the opportunity lies because: "Wikipedia articles could be a resource for critical evaluation and content improvement" (2016; p. 134).

Regarding improvement in writing abilities, Di Lauro and Johinke have worked both with undergraduate and postgraduate academic writing, and have found that "students are more motivated to participate in formative assessment activities when their contributions (both individual and collective) receive measurable exposure" (2017; p. 479), that is to say that being aware of a real and quantifiable audience plays an important role in motivation. Meseguer-Artola and his colleagues have worked on a model "to understand what the main factors are that influence the teaching uses of Wikipedia among university faculty" (2016; p. 1224). They have found that factors such as the opinion of the colleagues (sharing attitude and image), as well as the institutional recognition and support are relevant: "it will be useful to explicitly acknowledge these kinds of practices as an important element in assessing teaching skills and innovation" (p. 1231).

In the same direction, Konieczny finds that "we need to encourage institutional support for contributions to Wikipedia by researchers and students, through popularizing 'Wikipedia initiatives', and recognizing participation in them through awards, career evaluations, and simple peer acceptance" (2016; p. 1532), and goes further presenting two main reasons he found for the rejection of Wikipedia: one of them is the misperception about Wikipedia being a profit organization and the second one is "the negative attitude toward knowledge produced outside academia" (p. 1527).

Blikstad-Balashas explored student's perception of Wikipedia and concludes that "the question is not about saying 'yes' or 'no' to Wikipedia, but a question of how schools should address the fact that students' literacy practices rely heavily on this one particular site". Also, she has found that: "Wikipedia's credibility problems among teachers become the only *de facto* problem for many students. This discrepancy between student and teacher attitudes towards Wikipedia suggests that there is a need to actually discuss Wikipedia in the classroom to a larger extent" (2016; p. 603). In other words, students ask themselves why the teacher disapproves Wikipedia, but this topic is never on the table in the classroom.

Aside this negative perception, the construction of successful educational experiences with Wikipedia requires multiple previous decisions, such as the tools, goals, assessment strategies of the projects, et cetera. Those who start such a project often struggle with doubts about how to design, implement and evaluate activities. The

Wikipedia Education Program (WEP) was created on the basis that educators and students around the world can contribute to Wikipedia and other Wikimedia projects in academic settings, and in its origins had "a strong focus on higher education, supporting professors to incorporate Wikipedia writing assignments into their lessons" (Wikipedia Education Program, 2018: p. 8).

Our intention here is to share some of the lessons learned which we have gathered through four specific cases that have integrated Wikipedia into academic settings. These cases were selected based on the following criteria: they are recent, successful and represent milestones in the work with higher education institutions.

ABOUT WIKIMEDIA ARGENTINA (WMAR)

Wikimedia Argentina is a nonprofit organization founded in 2007. It is comprised of three programs: Education, Promotion of Cultural Institutions and Community Support. The Education Program carries out activities and training courses at high school and university level (educators and students) on the use of Wikipedia as an educational tool. The focus of the activities with academic institutions is to highlight the importance of addressing social conflicts that appeal to the realities of the people who participate in our projects. Within the frame of free and digital culture, WMAR projects promote collaborative teaching and learning practices, intellectual authorship, multiplicity of voices and the construction of consensus through dialogue. WMAR's Education program focuses on promoting activities led by teachers using Wikipedia in the classroom, making sure these activities get students actively involved as editors, and getting new counterparts involved to make the program grow both at local and regional levels.

As universities formed a strategic alliance to strengthen the Wikimedia education experience in academic spaces, during 2016-2017, WMAR released a proposal called *Wikipedia in the University.* The goal of this project was twofold: having students and academic researchers as quality content editors, and also legitimizing the Education program in high-schools, universities at the national level.

An open call was launched for universities in Argentina. Initially, *Wikipedia in the University* was implemented in five national universities: The University of Salta, the University of Rio Negro, the University of Buenos Aires, the San Bartolome Institute of Higher Education (Rosario) and the Social Services College (Chivilcoy). Educators teaching their classes during the first part of the year, subjects that were largely absent from Wikipedia, were selected and encouraged to incorporate editing Wikipedia as an assignment. For this reason, we have worked with classes on paleontology, nutrition, medicine, local heritage and economy with a gender perspective.

Educators were trained both online and in-person and they could choose whether to work on the improvement, creation or translation of content. At first, students edited their articles in sandbox mode and then their work was published under the supervision

of the WMAR team and volunteers. This semester 86 articles were created at university level in this project.

Case 1: Project at the School of Architecture (UBA)

In the subject of History of Architecture, in the University of Buenos Aires, WMAR developed a photography project for the documentation of emblematic buildings and neighborhoods in Buenos Aires City and the province of Buenos Aires; students uploaded their photos to Wikimedia Commons and enriched articles in Wikipedia with such images.

This first experience took place during 2016, and involved onsite training for 100 students on how to edit Wikipedia and how to create new free content in Wikimedia Projects. In this first activity, students were divided into small groups and, in a collaborative way, resolved their doubts and did their exercises. They uploaded 58 new images to Wikimedia Commons under free licenses. Students also enriched the Wikipedia articles related with Argentinian architecture, adding pertinent images to articles that did not have any, as in the following Wikipedia pages: Palacio Raggio (Monserrat), Iglesia de San Ignacio (Buenos Aires), Convento de Santo Domingo (Buenos Aires), San Telmo (Buenos Aires), El Viejo Almacén, Librería de Ávila, La casa mínima, Parroquia Inmaculada Concepción (Belgrano), Museo Histórico Sarmiento.

Case 2: Wikilesa project at University Level

During 2015-2017 WMAR carried out four activities called "Wikilesa", designed to edit existing information on Wikipedia about the Human Rights Violations that took place in Argentina during the last Military Dictatorship (1976-1983). In partnership with Cosecha Roja, a specialized news portal about justice and human rights, WMAR trained teachers, university students, activists and researchers to learn how to use Wikipedia and how to edit existing information, improve and create new content. In only two years, Wikilesa became one of WMAR's main education activities at university level. WMAR designed specific training with students from different Universities to promote, through Wikipedia, social condemnation and to contribute to the processes of memory, truth and justice in our country. WMAR also took Wikilesa to new institutions that were interested in working on the subject, and worked with them to replicate it in different educational and cultural spaces. This strategy gave it more visibility and promoted the Wikilesa project as a reliable activity when it comes to talking about Human Rights in the educational and research community. The audience is used to writing about this specific subject, so they are well prepared to create quality content. The five-hour long editing day, goes on using an edit-a-thon format that includes a main presentation of the subject and then the participant's work on Wikipedia. During these experiences, we realized that involving the educational community in sensitive issues such as the military dictatorship in Argentina

posed an emotional challenge to those who participated, but also allowed them to discover Wikipedia as a space for social demand (cfr. Ferrante y Ludueña, 2017).

Key findings

In terms of learning outcomes, in the first case at the School of Architecture, we found that teachers want to use something different than their traditional way of teaching in university classrooms. There were some concerns about the viability of using Wikipedia in academic environments, such as if it was a reliable source or not. But, the importance of doing workshops related to their disciplinary areas was the key to understand Wikipedia in a new way, as creators of knowledge and also as a different way of sharing their productions (images in this case). Working in an open platform that receives 31 million visits per day is also a challenge for teachers and students. Through this project a new way of doing and being in the classroom was created by both teachers and students. Beyond the edited articles the most impressive result came afterwards: most of the educators remained active editors of Wikipedia. This is undoubtedly one of our main objectives for this new kind of training courses at university: to make educators feel comfortable with their role as editors, helping them to understand how Wikipedia works and encouraging them to incorporate Wikipedia into classroom activities.

In the second case, #Wikilesa, students and university teachers became aware of the need to write and to value the recovery of the historical memory. Argentinian students and teachers improved their knowledge and skills in relation to Wikimedia projects. In Wikilesa, 82 new users participated in the experience and 21 are still active in Wikipedia, proposing future activities to further extend the experience into the provinces, 130 articles were improved and 30 articles were created. New quality content was uploaded to Wikipedia and Wikimedia Commons and it is hoped that a long-term engagement with cultural and educational partners is developed.

ABOUT WIKIMEDIA MEXICO (WMMX)

Wikimedia Mexico was founded as a Wikimedia chapter in 2011 and since then has been working as a non-profit organization with the mission of disseminating and promoting Wikipedia Foundation projects in Mexico. Currently, the chapter has accomplished strategic alliances with several cultural institutions and is also working to consolidate de Wikipedia Education Program with higher education institutions in the country such as: School of Higher Studies Aragón (UNAM), Faculty of Philosophy and Letters (UNAM), Autonomous Metropolitan University (Iztapalapa campus), University of the Americas in Puebla, Veracruzana University and El Colegio de Mexico. Wikimedia Mexico and the National Autonomous University of Mexico (UNAM) started collaboration in March 2011 with the Faculty of Philosophy and Literature, where WMMX supported the foundation of

the student club. Later on, a social service accreditation program was created: students fulfill this academic obligation by writing or improving articles in the Spanish Wikipedia. In 2012, the UNAM virtual High School (B@UNAM) started a close collaboration with Wikimedia Mexico when the chapter gave Wikipedia talks and workshops to around 300 B@UNAM teachers.   In 2015, the Open University and Distance Education Coordination Office (CUAED) in collaboration with the Coordination of Technologies for Education (DGTIC-UNAM) and WMMX organized the first edit-a-thon in the context of "Scenarios 2020", a one-year-long seminar. Under the hashtag #WikiUNAM, this first edit-a-thon marked the beginning of a more formal and broader approach in the relationship between Wikimedia Mexico and UNAM. There were around 413 participants, 139 of them worked very actively. At the time, the CUAED authorities expressed their intention to keep working in this kind of event (cfr. Gutiérrez, 2015).

A second edit-a-ton was held in 2016, also organized by CUAED (now under a different administration than the previous one), again in collaboration with DGTIC. This time, 250 academics and students created 139 new articles, two translations and 526 edited entries. Also, the participation included representatives of other universities such as the National Polytechnic Institute, the Cuajimalpa campus of the Metropolitan Autonomous University, the Monterrey Institute of Technology and Higher Education, the National Pedagogical University, the International University of La Rioja and the University of Valencia (cfr. López, 2016). Both edit-a-thons, eight hours long each, were extensively covered by national media. Each of them started with the presentation of a successful academic experience within the Wikipedia Education Program, and those are the cases described below.

Case 3: Wikipedia in Language and Hispanic Literature Studies

Since 2010, Dr. Mónica Quijano Velasco has been integrating Wikipedia into her Spanish Language and Hispanic Literatures undergraduate class, in entries such as: Roland Barthes, *El grado cero de la escritura*, Zombi, Minificción, Horror (género), Transtextualidad, Écfrasis.

Dr. Quijano has stated that she privileges the academic quality of the entries, rather than the quantity (Quijano, 2015). She seeks to contribute with information strictly corroborated and always following the five pillars of Wikipedia. As a result, 10-12 articles were created every semester.

She started this project by herself and later on she requested WMMX support in order to get proper Wikipedia training for her class. She conceives this work as an effort to encourage a collaborative dimension of knowledge, where the concept of authorship needs to be challenged.

Case 4: Chemistry and molecular biology with the use of Wikipedia

Professor Georgina Nieto Castañeda, teacher at the National Autonomous University of Mexico (UNAM), opened the second edit-a-thon with the presentation of a project with Wikibooks to improve the curricular contents of her Chemistry and Molecular Biology class. During the first week of the semester, each student chooses one or two subjects from the program, and once the topics are chosen, each student carries out an in-depth investigation using at least five primary sources. The research is reviewed by the teacher and each student receives feedback to improve or correct their work, only then the content is added to Wikibooks.

Students in this educational project learned that they could improve contents in Wikipedia, and that there are several other projects they can collaborate with. Currently the project involves around 50 students, and around the same number of articles have been created. Nieto Castañeda ended up writing her master's thesis about this experience with Wikipedia (cfr. Nieto Castañeda, 2016). The more freedom is provided to students to collaborate with Wikipedia, create content or edit it, the better the results obtained, since they enjoy the task and conduct research of much better quality.

Key findings

The main line of work in the two Edit-a-thons at UNAM was the creation of entries about different departments, areas or offices at the university, but this kind of institutional articles are often rejected by Wikipedia librarians under the argument of "non-encyclopedic relevance". This is a very frustrating experience for the participants and discourages further editing or creation of entries. Finding the right approach or theme is a challenge for future events, as much as finding a better unit of measurement of success, beyond the number of modifications or entries created. The main goal must be deep and meaningful editing work.

The dissemination of successful academic experiences done at the beginning of each edit-a-thon raised interest in the community, and several teachers ask for more information or future workshops. This shows the need of a more structured Wikipedia Education Program with far more Wikipedia ambassadors, residents or volunteers working in talks, workshops (in person or online) and also in the creation of educational Wikipedia materials.

DISCUSSION

The image below shows, with very simple elements, the contrast between consulting Wikipedia and editing it. The main difference is the kind of learning than occurs:
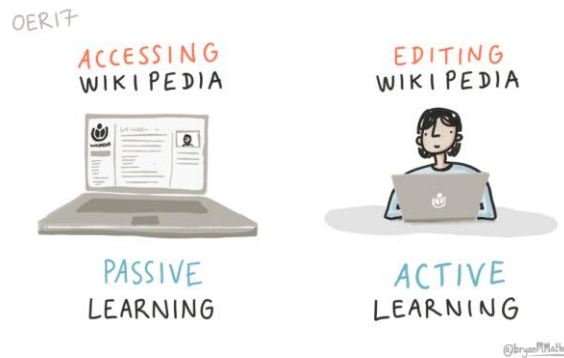
Sketch made by visual artist Bryan Mathers of a thought from Lucy Compton-Reid, Wikimedia UK, when she gave her keynote at the conference #OER17 on April 6, 2017. "The greatest open learning project"

The four cases described are milestones in the relationship between the local Wikimedia chapters and higher education institutions. It would be very convenient to focus only on the positive outcomes, nevertheless we follow here Konieczny's observation (2016, p. 1532): "we need information about when the 'teaching with Wikipedia' assignment fails, so that we can refine it based on constructive feedback". The following table shows aspects we consider successful in these four cases (left side) and the challenges we face in the same area (right side):

Successful actions	Lessons and challenges
Initiatives carried out by higher education professors during a complete semester, give students the opportunity to improve the research and editing of entries session by session.	One semester is a good start. A major challenge is to establish more long-term programs working with Wikipedia Education. Wikimedia chapters need to develop mechanisms to sustain onsite and online support, when the project so demands.
Edit-a-thons work very well in terms of: Gathering people interested in Wikipedia Dissemination of successful experiences. Statistical numbers of the edits or entries created by the participants Visibility in the media for both, the universities and the local Wikimedia chapters.	Thematic editing works very well, especially when the subject touches major national issues as in the Wikilesa case. Finding productive themes is a very important aspect in the planning of an edit-a-thon. The work of faculty members already using Wikipedia must be publicly acknowledged. Meseguer-Artola and his colleagues found that: "documenting these practices (in academic papers, reports, or presentations) is also another laudable strategy that would serve the same purpose" (Meseguer-Artola et al. p. 1231-1232). This is very well done through the Wikimedia blog (https://blog.wikimedia.org) but each university should find a suitable disseminating method or strategy.

Successful actions	Lessons and challenges
The support of the Wikimedia local chapter has been constant, at no charge and enthusiastic.	Every chapter needs to grow strategically in order to be present in new projects but it should also empower academic members to lead the way in the creation of new clubs, edit-a-thons and events.
There have been important changes in the assessment process, in the cases presented herein, in order to consider Wikipedia entries as final term papers or as accreditation products, as is the case of the compulsory social service at UNAM.	In both contexts (Argentina and Mexico) in the university culture the educator is the leader of the classroom. It is very difficult to change this paradigm, so the projects have to respect this hierarchy as much as possible. Eventually, teachers and students, become active actors in the process of creating and improving information but education at higher university levels tends to be cautious when faced with new ways of assessment, so a good amount of bravery, guidance and support are needed. Work to develop a support methodology and the follow-up of activities will be relevant.
The follow-up of the work of participating student was carried out, in some cases, using the Wikipedia platform tool. https://outreachdashboard.wmflabs.org	The challenge will improve the use of this tool to facilitate the documentation of the project results, to help the teacher monitor groups and also to allow Wikipedia to keep track of the initiatives around the world. The use of this tool may require additional training with the teachers but is a worthwhile action.
University authorities recognized the need to build a strategic alliance with Wikipedia.	Consolidating these alliances will require better communication with the university authorities and in this matter the Iberocoop initiative may play a key role: the exchange of experiences in the region will provide a better scope for successful approaches and strategies.
Providing and constantly updating training courses for teachers and support materials in multimedia formats. For example, WMAR have run seven editions of #Wikipuentes, an online course designed for middle school and university teachers. What worked best was to offer a course not longer than 5 weeks, focused on practicing Wikipedia entry editing. Beyond the numbers of edited articles and people involved, this MOOC has been a successful proposal for providing constant virtual training, which makes educators feel comfortable with using Wikipedia as a learning tool. Redefining the quality criteria in each new edit, it requires more supervision but is helpful in maintaining good results and a good relationship with the community of editors. Wikipuentes MOOC (WMAR) (http://wikimedia.org.ar/wikipuentes)	Projects have a gradual process, at first teacher training is proposed, and eventually, when the teacher feels confident, the editing process is taken into the classrooms. Many times, the editing meetings are held in person, but online tutorials and support materials are also needed. As internet access is not evenly distributed (neither in Mexico nor Argentina), offline activities become important in order to make the most when Internet access occurs. The WMAR expertise with MOOC could be one future line with WMMX in collaboration with UNAM-CUAED. This could be a fruitful experience between chapters and also in the context of the Iberocoop initiative.

These lessons are very closely aligned with three recommendations recently published by the Wikipedia Education Program, based on a 2017 survey:

1. Improve communication both internally and externally about how using Wikimedia projects in education benefits the Wikimedia movement and contributes to global goals for education:
   • Seek out and create opportunities to share impact and collaborate with internal stakeholders
   • Develop communications materials and resources that make it easier for educators to become contributors

2. Revise the scope and workflows of the Education Team in order to better align with the new movement strategy and support the diverse needs of stakeholders at scale:
   • Define the relationship between the Wikimedia movement and the education sector
   • Align the goals of the education team to the new movement strategy
   • Improve communications to potential partners who can help achieve shared goals

3. Develop communications materials that are accurate, up to date, and user friendly for non-Wikimedians:
   • Redesign the logo and other branding materials
   • Develop a portal for Wikimedia and education that is welcoming, inspiring, and informative. It should also be user friendly for non-Wikimedians
   • Develop systems and workflows in partnership with other stakeholders that ensure the information we present is accurate and up-to-date
   (Wikipedia Education Program, 2018).

We acknowledge this work is limited to a few experiences and further research is needed to measure accurately the impact of Wikipedia Programs in higher education settings and also in other educational contexts. Nevertheless, the lessons and challenges we summarized, allow us to better understand our respective contexts and also show us viable lines of collaboration.

CONCLUSION

Wikimedia education projects encourage the practice of collaborative editing, research and knowledge construction, or "communities of knowledge" (Latorre, 2015), and these characteristics make evident the relationship between Wikipedia and higher education settings. In October 2017, Stephen Downes, one of the initiators of to connectivist learning approach, presented the following scheme, showing important differences between learning in "groups" and learning in "networks". "Groups" are closely related with

the actual education system, while "networks" learn very much like we see in the Wikipedia community:

Downs (2017). The semantic condition
http://www.downes.ca/presentation/477
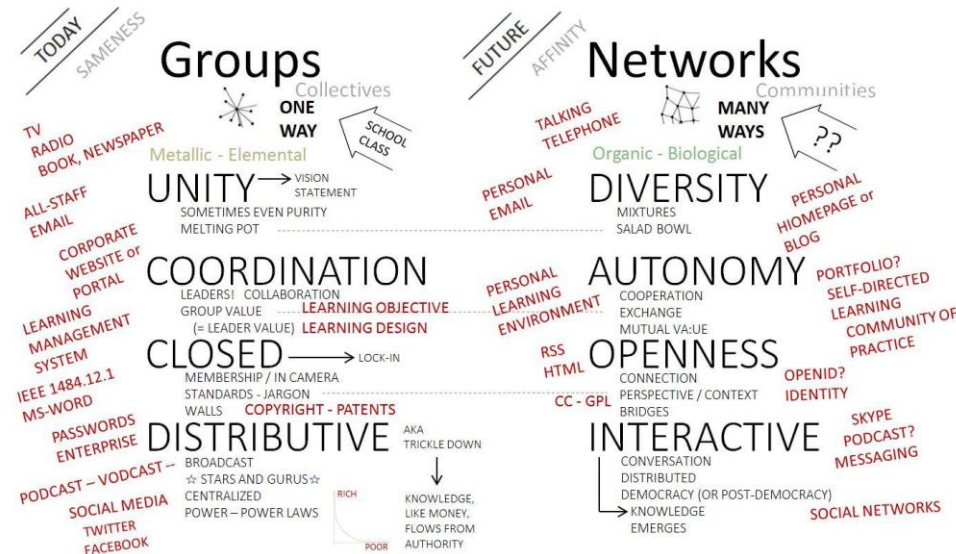
Taking the class beyond the 'group mode' and making it work as a "Network" is a major challenge for education in general, and this is closely related to the difference between people using Wikipedia only as a consultation tool and the active editors.

For some teachers, it might be hard to believe their students are capable of making meaningful contributions to Wikipedia. There seems to be a gap between the actual knowledge we have about the digital literacy of higher education students and what they actually have learned and acquired through their contact with the Internet, and the academic practices they perform outside the classroom. New approaches to digital literacy propose the exploration of "the practices of university students in open learning spaces" in order to observe "the linkages and groupings between the student practices in these spaces" (Figaredo, 2017; p. 105). Learning about these practices may allow us to be more confident with the integration of network-centered learning activities and this is an interesting topic for future investigation.

Wikipedia, is also a space where anyone can argue about meanings and biases. The dynamics of editing in Wikipedia allow us to see the processes in which social discourses are constructed and, being aware of that, the most important thing is how to build consensus. Wikipedia is a space for generating constructive criticism and collaboration based on reliable sources. For all these reasons Wikipedia is a new way of knowing, learning, teaching and evaluating, where educators in the digital age have the opportunity to lead new generations of networked, active and life-long learners.

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THE STUDENT-TEACHER RELATIONSHIP
IN THE ONE-TO-ONE COMPUTING CLASSROOM

La relación docente-estudiante en el aula de computación uno a uno

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Abstract: The student-teacher relationship is an important component of both students' and teachers' development. Today, technology-rich learning environments offer opportunities that might change these relationships. This paper presents findings from six studies of teacher-student relationships in the one-to-one computing classroom (and another study that refers to distance teaching). Taken together, those studies—that were carried out in Israel between 2014–2016 using both qualitative and quantitative methodologies, with a combined N=238 teachers—highlight various improvements in student-teacher relationships. Overall, it is argued that one-to-one computing programs drive some important changes in teaching/learning strategies, and that these changes affect student-teacher relationships positively.

Keywords: one-to-one computing; student-teacher relationship; student-teacher interactions; classroom climate.

Resumen: *La relación entre docente y estudiante es un componente importante tanto para el desarrollo de uno como del otro. Los ambientes de aprendizaje actuales, ricos en tecnología, ofrecen oportunidades que podrían cambiar dichas relaciones. El presente trabajo presenta conclusiones de seis estudios de relaciones docente-estudiante en aulas de computación uno a uno (y otro estudio que refiere a la docencia a distancia). Juntos, ambos estudios —llevados a cabo en Israel, entre 2014 y 2016, con metodologías tanto cualitativas como cuantitativas, con una muestra combinada de 238 docentes— resaltan mejoras varias en las relaciones docente-estudiante. En general, se mantiene que los programas de computación uno a uno generan cambios importantes en las estrategias de enseñanza y de aprendizaje, y que dichos cambios afectan las relaciones docente-estudiante de manera positiva.*

Palabras clave: *modelo 1 a 1; relación docente-estudiante; interacciones docente-estudiante; ambiente en el aula.*

INTRODUCTION

Student-teacher interpersonal relationships are key to students' academic, social and emotional development, and consequently may affect the social and learning environments of classrooms and schools (Birch & Ladd, 1998; Cornelius-White, 2007; Gregory & Weinstein, 2004; Hamre & Pianta, 2001, 2006a; Sabol & Pianta, 2012). Strong, supporting student-teacher relationships might promote students' feelings of safety, security and belongingness, and may eventually lead to higher academic achievements. In contrast, conflictual relationships might place students in situations where they do not feel connected to their school's academic and emotional resources, and may lead them to failure (Hamre & Pianta, 2006b; Roorda, Koomen, Spilt, & Oort, 2011). Importantly, positive or negative teacher-student relationships might also influence teachers' well-being and professional development (Hamre, Pianta, Downer, & Mashburn, 2008; O'Connor, 2008; Roorda et al., 2011; Spilt, Koomen, & Thijs, 2011; Yoon, 2002). As such, teacher-student relationships are considered an integral part of classroom research (Pianta & Hamre, 2009).

Teacher-student relationships are defined by a few dimensions, which indicate the complex nature of this construct. Usually, these relationships have positive and negative dimensions, often termed "conflict" and "closeness"/"satisfaction", respectively. Additionally, there is a dimension that refers to the actual assistance students get from their teachers (not necessarily academic, might also be personal, emotional, etc.), often termed "dependency" or "instrumental help" (Ang, 2005; Pianta, 1992).

Like any other interpersonal relationship, the teacher-student relationship is affected by a plethora of factors, including personal (of both the student and the teacher) and contextual. As new technologies become an integral part of schools, overall classroom dynamics might change dramatically, potentially affecting teaching styles at large (Dipietro, 2010; Ertmer, 2005; Hartley, 2007; Tucker, 2014; Webb & Cox, 2004); consequently, teacher-student relationship might be affected. Conceptualizing student-teacher relationships, Hamre & Pianta (2006b) noted that in addition to individual features, three components shape the relationships between students and teachers: perceptions and beliefs, information exchange processes, and external influence. These components are highly relevant to the technology-enriched classroom. Using digital devices for teaching and learning serves as an external influence on the classroom, specifically impacting information exchange; importantly, it is also accompanied—that is, affected—by perceptions and beliefs (Celik & Yesilyurt, 2013; Dündar & Akçayir, 2014; Kale & Goh, 2014; Liaw, Huang, & Chen, 2007; Wang, 2002). Therefore, it is important to analyze teacher-student relationships in the context of using computers in the classroom.

One-to-one (1:1) computing programs—in which each student (and the teacher) has an Internet-connected digital device—have become very popular world-wide, with millions of computers in use under these initiatives (Richardson et al., 2013; Severin &

Capota, 2011). The two most common models to the implementation of such program are: a) School-owned computers (usually laptops or tablets), which are bought in a limited number and can serve teachers based on availability. When not in use, the devices are kept in a charging cart; and b) Bring Your Own Device (BYOD), where students may access their device continuously in school and at home.

With regards to academic performance, such programs often show some benefits for students (de Melo, Machado, & Miranda, 2017; Lei & Zhao, 2008; Penuel, 2006; Zheng, Warschauer, Lin, & Chang, 2016). However, looking beyond achievements, and considering the teachers' point of view, these programs may change the ways teaching is handled. Specifically, they may alter teaching strategies, classroom management, teacher-student interactions, and teachers' perceptions of their role (Spires, Oliver, & Corn, 2012). These, in turn, are closely related to the teacher-student relationship (Khan, 2013; Oren & Jones, 2009; Rudasill, 2011; Sun, 2012; Wubbels & Brekelmans, 2005). Additionally, implementing 1:1 computing programs might influence the student-teacher relationship as these initiatives are aimed at moving towards a learner-centered approach to learning (Carey & Grant, 2015; Rosen & Beck-Hill, 2012; Spires et al., 2012; Zheng et al., 2016).

Following that, the current paper will present empirical evidence from six studies of the impact of 1:1 computing programs on various aspects of classroom dynamics and teachers' perceptions, which might affect the teacher-student relationship. All these studies refer to technology-enriched face-to-face teaching. Finally, another study presented herein discusses the student-teacher relationship in online teaching, as it sheds further light on the topic. In the following sections, we will shortly present each of these studies separately, and then will discuss the picture that emerges from their findings taken together.

THE STUDIES

The seven studies presented herein were carried out between 2014–2016 across Israel and used various methodologies. The quantitative studies were mostly designed adopting a within-subject approach, assuming that every teacher has their own educational agenda, their own practices of teaching, and their own way of handling technology in teaching. Details about the studies are summarized in Table 1.

Table 1. Summary of the studies presented in this article, with a total of N=238 teachers

#	Title	Theoretical Framework	Methodological Approach	# Teachers	Data Collection Method	Data Collection Period	Data Analysis Method
1	Classroom dynamics	(Good & Brophy, 1970; Reyes & Fennema, 1981)	Multiple case study, quantitative	3	Observation	11-12/14	Within-subjects
2	Student-teacher interactions	(Pianta & Hamre, 2009)	Multiple case study, quantitative	3	Observation	1-5/16	-
3	Classroom climate	(Pawlowska, Westerman, Bergman, & Huelsman, 2014)	Quantitative	111	Self-report questionnaire	5-6/16	Within-subjects
4	Teachers' academic and emotional support to students	(Hamre & Pianta, 2005; Midgley et al., 2000; Zimmerman & Martinez-Pons, 1986)	Quantitative	66	Self-report questionnaire	11/14-1/15	Within-subjects
5	Entirety of teaching	-	Qualitative	14	Semi-structured interview	2-6/16	Bottom-up
6	Teachers' out-of-class work	(Danielson, 2011)	Quantitative	37	Self-report questionnaire	5-7/16	Within-subjects
7	Teacher-student relationship in distance teaching	(Pianta, 1999)	Qualitative	4	Semi-structured interview	3-4/15	Bottom-up
		(Pianta & Hamre, 2009)	Multiple case study, quantitative	3	Observation	5-6/15	Within-subjects

Study 1: Classroom Dynamics

The main objective of this study was to analyze classroom dynamics—specifically instructional strategy, teacher's location and teacher-student interactions—in the one-to-one classroom. We developed a mobile app for data collection, which allowed us to easily record fine-grained data in the field and to have it ready for analysis once the observation was over.

Variables and Tools. We analyze teacher-student interactions based on Good and Brophy's (1970) observation protocol, and considering its modification by Reyes and

Fennema (1981); originally formulated to serve for classroom observations, these protocols refer to dyadic teacher-student interactions, and help in coding each such interaction based on a pre-defined set of categories. Drawing from these, we defined an observation protocol for coding every interaction between the teacher and a student or a group of students, in the context of the technology-enriched classroom. Each such interaction has been coded as one of the following:

- **Content-Related Interactions**
    - *Response Opportunity.* A response opportunity is a public, content-related attempt by an individual student or a group of students to deal with a question posed by the teacher.
    - *Teacher's Comment.* A teacher's comment is a public, content-related interaction initiated by the teacher not in a form of a question.
    - *Student's Comment/Question.* A student's comment/question is a public, content-related interaction initiated by a student or a group of students that is not preceded by a teacher's question.
- **Behavioral Interactions**. These are public, non-content related teacher's comments, either an appraisal or discipline related.
- **Procedural Interactions**. These teacher-initiated interactions are public, non-content related; they are related to student- or class management, e.g., permission, supplies, or equipment.
- **Non-Public Interactions**. Non-public interactions are held privately between the teacher and one or more students. As such, we assume not being able to further categorize them.

Additionally, **learning configuration** was documented (whole class discussion, group work, pair work, individual work, or arrangement), as well as **teacher's location** (marked on an imaginary 4x4 division of the classroom). For the purpose of this study, we developed a mobile-app, using which the observer can conduct the observation efficiently; every occurrence is easily documented with a hit of a button (Hershkovitz, Merceron, & Shamaly, 2015). A scheme of the main observation screen in this app is presented in

Figure 1.

Figure 1. The main observation screen in the data collection app (Study 1)

Process. Class observations took place during November–December 2014 and March–June 2015. We made nine visits to the school, during which we repeatedly observed three classes; each teacher (and her students) was observed at least 3 times during traditional classes (with no use of computers at all) and at least 2 times in 1:1 classes (during which tablets were available to be used on a one-to-one basis, but were not necessarily used throughout the class). The observer was located at the back of the classroom, from where he could watch the whole class.

Population and Data. Participants were three 5th- and 6th-grade English female teachers in a Druze village in the north of Israel, and their students. These teachers used tablets for teaching purposes for the first time during the school year 2014/15 (when the study was conducted). Each of the teachers was observed for an overall of 5–6 classes of 45–50 minutes each. Overall, 3,147 student-teacher interactions were recorded during 17 classes.

Main Findings. For each teacher—noted here as AM, RI, AR—we compared their own behavior during traditional and 1:1 classes. The average time spent on tablets in 1:1 classes was 69.2% for AM, 71.2% for RI, and 80% for AR.

Interestingly, each of the teachers had significantly changed the way they were handling 1:1 classes compared to traditional classes, however these changes were manifested differently. AM had maintained a similar level of whole-class discussions while extending pair-work time on the account of individual work; RI had somehow reduced the overall whole-class discussion time, switching from allocating time to individual work to allocating time to pair work; and AR dramatically reduced the whole-class discussion time, allocating it to individual work. Findings are summarized in Table 2.

Table 2. Average time [sec] for each learning configuration in traditional and 1:1 classes

Configuration	AM		RI		AR	
	Traditional	**1:1**	**Traditional**	**1:1**	**Traditional**	**1:1**
Whole-Class Discussion	1704 (60.1%)	1633 (61.2%)	1872 (65.5%)	1661 (56.9%)	2201 (88.4%)	1388 (57.6%)
Pair Work	537 (19.0%)	930 (31.7%)	0 (0%)	1224 (41.3%)	0 (0%)	0 (0%)
Individual Work	521 (18.7%)	0 (0%)	815 (28.8%)	0 (0%)	258 (10.4%)	993 (42.0%)
Arrangement	45 (1.5%)	150 (5.1%)	93 (3.3%)	0 (0%)	0 (0%)	0 (0%)
Chi-square	$\chi^2(3)=683^{***}$		$\chi^2(3)=2143^{***}$		$\chi^2(1)=615^{***}$	
Average % duration of 1:1 activities during 1:1 classes	69.2%		71.2%		80%	

*** $p<0.001$

Overall, the teachers spent most of the class time near their desk and the whiteboard. During 1:1 activities, two of them (AM and RI) lessened the time spent in this "safety zone" and reached to other regions. The third teacher (AR) used 1:1 activities to spend more time at her desk (checking homework and calling students for private conversations, as was noted in the observation file). Results are summarized in Figure 2.

Figure 2. Heat maps of teacher's location during lessons with/without tablets and during activities in which tablets were in use. The white board is located in the top-middle locations; the teacher's desk is located in the top-left corner
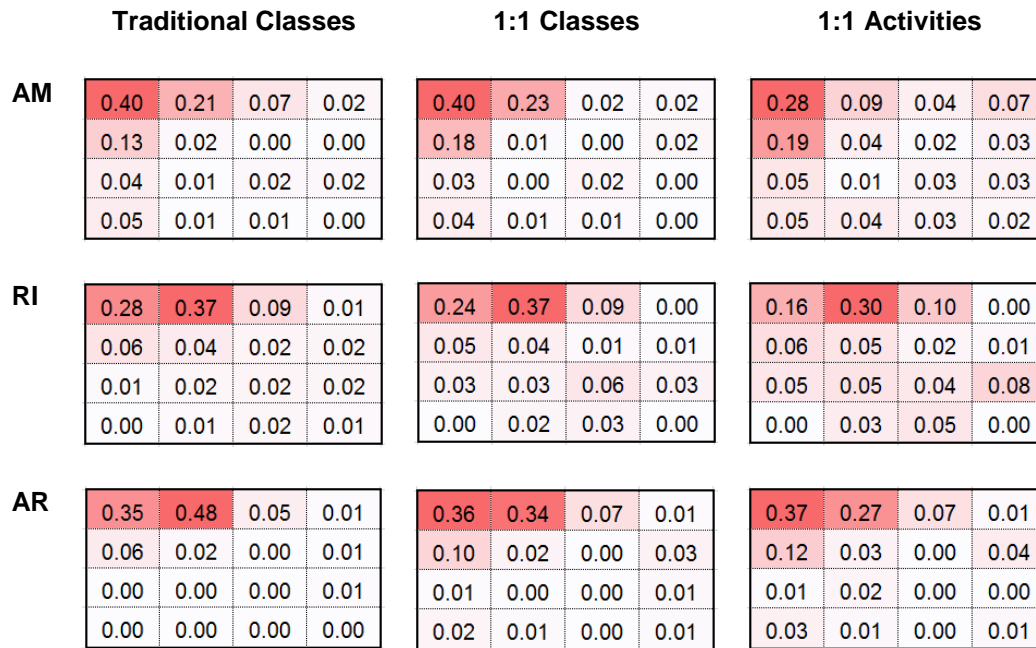
For two of the teachers, we found significant differences in frequencies of interaction types between 1:1 and traditional classes, however, in different directions. AM had suggested much less response opportunities and more non-public interactions in the 1:1 classes compared to the traditional classes (the latter is consistent with her being physically closer to more students during 1:1 activities compared to traditional classes, as mentioned above), while RI demonstrates an opposite pattern, suggesting more response opportunities and having less non-public interactions during 1:1 classes compared to traditional classes. These differences are not in line with a recent study that found no significant difference in teacher-student interaction with the use of iPads (Leslie & Johnson-Leslie, 2013), probably as a result of the analysis enabled by our data granularity.

Summary. Findings suggest that the use of tablets increased the potential for close, non-public student-teacher interactions, as it extended the time allocated to learner-centered activities (individual and pair work). However, this potential is not always satisfied, as teachers may use the time spent by students on independently undertaken activities to work on their own tasks instead of "being there" for their students.

Study 2: Teacher-Student Interactions

The main objective of this study was to explore how technology-enhanced classrooms are characterized by multiple dimensions of student-teacher classroom interaction that are linked to student achievement and development.

Variables and Tools. We used the CLASS framework for secondary schools (Pianta & Hamre, 2009) and followed its observation protocol to measure four domains of student-teacher interactions: emotional support (e.g., positive climate, teacher sensitivity), classroom organization (e.g., behavior management, productivity), instructional support (instructional learning formats, quality of feedback), and student engagement. Each domain is scored separately on a 7-point Likert scale, the overall grade is the mean of the four domains' values.

Process. Observations took place during January–May 2016. During four visits to the school, we repeatedly observed six classes, with an overall of 17 lessons (either single, 45 minutes long, or double, 90 minutes long) and 40 within-lesson-sessions were observed. A 45-minute lesson included two observation cycles, a 90-minute lesson included three observation cycles. Each class was observed between 2–5 times, the lessons observed demonstrated different levels of technology use (e.g., using a projector, using desktops in a computer lab, or unrestricted use of mobile devices). The observer was located at the back of the classroom, from where he could watch the whole class.

Population and Data. Participants were three 7th-, 8th-, and 9th-grade teachers (denoted by AN, RA, and RO) and their students (number of students in a class during observations varied between 7–33), in a school located in a big city in the center of Israel. Topics taught were mostly from the Humanities (Bible, Israeli Culture, and History), with one of the participating teachers (RA) working with a small, multi-grade group on various projects. In the school year when this study was conducted, the participating teachers were leading a new technology-enhanced, project-based approach to learning.

Main Findings. Optimally, we would take a within-subject approach here as well. However, due to the relatively low number of observations for each teacher (6 lessons and 14 sessions for AN; 2 lessons and 6 sessions for RA; and 7 lessons and 20 sessions for RO), we will use the whole data. First, we compare the teaching strategies during sessions in which 1:1 technology was used with traditional sessions (including sessions where only a projector was used). Running a cross tabulation analysis between strategy of learning—either whole-class learning or working in groups/individually—and the use of 1:1 technology, we find a significant change in the teaching strategies, with more learner-

centered activities during the technology-enriched sessions (χ^2=19.6, p<0.01). Findings are summarized in Table 3.

Table 3. Cross tabulating the use of 1:1 technology and learning format

Use of 1:1 Technology	Learning Format		Total
	Whole Class	Groups or Individuals	
Yes	12	5	17
No	1	22	23
Total	13	27	40

Comparing the CLASS values between technology-enhanced and traditional sessions, we get a significant increase in all but one of the axes. This means that emotional support, instructional support, and student engagement were higher in the 1:1 sessions compared to the traditional ones. The first two support-related dimensions are related to the very definitions of teacher-student relationship (Ang, 2005; Pianta, 1992), and the third is associated with teacher-student relationship (Roorda et al., 2011). Hence, the observed improvements are indicators for improvement in teacher-student relationships. Findings are summarized in Table 4.

Table 4. Comparing CLASS domains between traditional and 1:1 lessons

CLASS Axis	Mean (SD) for Traditional Sessions (N=17)	Mean (SD) for 1:1 Sessions (N=23)	t(38)
Emotional Support	4.57 (1.06)	5.52 (0.86)	3.13**
Classroom Organization	5.00 (0.95)	5.01 (1.13)	0.04, p=0.97
Instructional Support[†]	2.83 (1.21)	4.47 (1.49)	3.54**
Student Engagement	2.65 (1.37)	4.09 (1.53)	3.07**
Total	3.81 (0.87)	4.77 (1.09)	3.00**

[†] For this axis in traditional sessions, N=15, and df=36.
** p<0.01

Summary. Findings from this study suggest that during 1:1 sessions, learning was more learner-centered, and the overall teacher-student relationship was more positive than during traditional sessions.

Study 3: Classroom Climate

This study aimed at identifying changes in classroom environment during 1:1 lessons, compared to traditional teaching.

Variables and Tools. The dependent variable was classroom environment, as used in Pawlowska et al. (2014). Based on this framework, classroom environment is characterized by five dimensions: structure and focus (example item: "Almost all class time is spent on discussing the course material"), participative learning ("New and different ways of teaching are tried very often in this course"), classroom involvement ("Students sometimes present something they've worked on to the class"), instructor support ("The instructor takes a personal interest in students"), and student competition ("Students try hard to get the best grade"). Our self-report questionnaire for teachers is an adapted version of Pawlowska et al.'s CES (Classroom Environment Scale), and has 16 items to be ranked on a 5-point Likert scale. In addition, we collected data about the actual use of the portable devices in the classroom: frequency of use throughout the school year, extent of use when used in lessons, and types of activities facilitated by these devices.

Process. Data was collected during May–June 2016 via pen-and-pencil self-report questionnaires. Participants were recruited in three public schools in cities in the center of Israel. Participants were teachers who during the 2015/6 school year had taught in both traditional and 1:1 settings. The research questionnaire was designed so that first the participant chose a subject she or he is teaching, and then ranked each item twice— regarding 1:1 lessons and traditional lessons on this subject.

Population. Overall, 111 middle and high school teachers had filled out the research questionnaire. Participants' ages ranged between 24–58 y/o (M=38.1, SD=7.0, N=107), teaching experience ranged between 1–37 years (M=14.6, SD=7.6, N=108), with 80% females (86 out of 108; 3 participants had not filled out the gender field) and 20% males (22 out of 108).

Main Findings. About 28% of the participants (31 out of 111) stated that they never or only seldom use mobile devices in their lessons, 44% (49 out of 111) stated that they often use them, and 28% (31 out of 111) stated that they almost always use them.

When asked about the time of the 1:1 lessons that is usually dedicated to computer-related activities, 23% of the teachers (25 out of 110) mentioned that they use the computers for less than half of the lesson, 46% (50 out of 110) said that they use them for about half of the lesson, and 21% (35 out of 110) stated that they use them for more than half of the lesson.

We provided the participants with a list of types of activities, and they were asked to mark whether they implement any of these activities during the 1:1 sessions. The activities that were scored by more than half of the teachers were watching movies (72%, 79 out of 110), practicing (71%, 78 out of 11), and using a digital book (53%, 58 out of 110). Other activities included playing games (43%, 47 out of 110), collaborative learning (41%, 45 out of 110), research-based learning (26%, 29 out of 110), information seeking (19%, 21 out of 110), and other activities (11%, 12 out of 110).

One of the components of CES (student competition) was found to be non-reliable (testing using Cronbach's alpha), therefore was removed from the analysis. Of the remaining components, when comparing 1:1 with traditional lessons, we found that participative learning and classroom involvement were significantly higher in the 1:1 lessons, with medium-high effect sizes, and that no differences were found in structure and focus and in instructor support. Findings are summarized in

Table 5. Interestingly, when considering only those teachers who used the computers at the highest frequently ("Almost always", N=27), the structure and focus component was also found significant, with higher mean in the 1:1 lessons (M=4.18, SD=0.53, compared with M=3.91, SD=0.65), with t(26)=2.34, at p<0.05, with a medium-large effect size, Cohen's d=0.45.

Summary. As findings from this study suggest, most of the teachers in schools that implemented 1:1 computing programs did use the computers frequently and extensively, however, they did not necessarily promote meaningful learning using the computers. Participative learning and classroom involvement were reported as higher in the 1:1 lessons, and structure and focus was reported higher for teachers who used computers most frequently.

Table 5. Comparing classroom environment between traditional and 1:1 teaching

Variable	Traditional Lessons		1:1 Lessons		t, effect size
	Cronbach's α	Mean (SD)	Cronbach's α	Mean (SD)	
Structure and Focus (N=105)	0.67	3.79 (0.66)	0.75	3.82 (0.71)	0.4, p=0.69
Participative Learning (N=105)	0.67	3.69 (0.65)	0.74	4.01 (0.74)	3.84*** d=0.37
Classroom Involvement (N=106)	0.42	2.85 (0.76)	0.53	0.76 (0.86)	4.81*** d=0.47
Instructor Support (N=105)	0.53	3.50 (9.87)	0.53	3.41 (0.94)	1.00, p=0.32
Student Competition (N=104)	0.27	3.70 (0.61)	0.17	3.57 (0.70)	1.76, p=0.81

** p<0.01, *** p<0.001

Study 4: Teachers' Academic and Emotional Support to Students

The main objective of this study was to explore teachers' perceptions of their role in promoting academic and emotional aspects of learning in 1:1 classes, compared to traditional teaching.

Variables and Tools. In this study, we measured three variables. First, self-regulated learning, that is, the extension to which learners select, structure, and create social and physical environments that optimize learning; this construct was measured using a shorter (8 out of 18 items) adapted version of the Rating Student Self-Regulated Learning questionnaire (RSSRL, Zimmerman & Martonez-Pons, 1988); example items: "The students express interest in the activity", "The students solicit further information regarding my feedback to their work".

Second, we measured instructional and emotional support in learning, based on Hamre and Pianta's (2005) COS-1 Ratings of Emotional and Instructional Climate. This rating is composed of a few constructs of instructional support, e.g., evaluative feedback, or encouragement of child responsibility, and emotional support, e.g., teacher sensitivity, positive climate, or intrusiveness (reversed), each of which is described at its high end. Based on these constructs, we drew up a self-report questionnaire, converting each construct description to an item (a total of 10 items); example items: "I encourage my students to engage in conversations and expand on their ideas and perceptions of events" (instructional conversation, under instructional support), "The planning and running of the activity is guided by the students' needs, moods, interests and capabilities" (teacher sensitivity, under emotional support).

Lastly, we measured teachers' perceptions of academic press, that is, of how they press their students for understanding. This variable was measured using an adapted questionnaire, based on the Academic-Related Perceptions, Beliefs, and Strategies: Academic Press scale of the students' version of Patterns of Adaptive Learning Scales (PALS, Midgley et al. [2000]), with 7 items; example items: "I encourage my students to do thoughtful work", "When my students are working out a problem, I tell them to keep thinking until they really understand". All the questionnaires' items were ranked on a 5-point Likert scale.

Additionally, a single item was added to measure teachers' perceptions of their role on the axis between "sage on the stage" and "guide on the side" (King, 1993), on a 10-point Likert scale.

Process*.* Data was collected during November 2014–January 2015 via both pen-and-pencil and computer filled out self-report questionnaires. Participants were recruited online (via personal and professional mailing lists, as well as via social networking sites) and in schools and centers for teachers' professional development. Participants were teachers who during the 2014/5 school year had taught in both traditional and 1:1 settings. The research questionnaire was designed so that first the participant chose a subject she or he is teaching, and then ranked each item twice—regarding 1:1 lessons and traditional lessons on this subject.

Population*.* Overall, 66 middle and high school teachers had filled out the research questionnaire. Participants' ages ranged between 23–63 y/o (M=43.5, SD=10.0, N=65), teaching experience ranged between 2–42 years (M=17.0, SD=10.6, N=65), with only 3 males and 62 females (one participant did not fill out the gender field).

Main Findings*.* As mentioned above, a within-subject approach was followed when designing this study. Therefore, we compare the variable values of 1:1 lessons with traditional lessons (for the same subject taught). Findings suggest that the participating teachers ranked their academic and emotional support and their students' self-regulated learning significantly higher in 1:1 lessons compared to traditional lessons, with high and medium effect sizes, effectively. Teachers' academic press was not found to be significantly different between these two settings.

Overall, teachers perceive their role significantly higher on the "sage on the stage"-"guide on the side" axis in 1:1 lessons, compared to traditional lessons, with a medium-high effect size. Findings are summarized in

Table 6.

Summary*.* One-to-one lessons facilitated more learner-centered learning, compared to traditional lessons, including better academic and emotional support. These differences in teachers' role in 1:1 settings may promote teacher-student relationship at large.

Table 6. Comparing teachers' support and students' learning between traditional and 1:1 teaching

Variable	Traditional Lessons		1:1 Lessons		t, effect size
	Cronbach's α	Mean (SD)	Cronbach's α	Mean (SD)	
Self-Regulated Learning (N=65)	0.79	3.31 (0.53)	0.76	3.82 (0.57)	6.74*** d=0.84
Academic and Emotional Support (N=66)	0.61	3.58 (0.51)	0.55	3.76 (0.49)	2.92** d=0.36
Academic Press (N=65)	0.81	3.97 (0.57)	0.88	4.08 (0.67)	1.50, p=0.14
Overall Teacher's Role (N=65)	-	5.78 (2.01)	-	7.31 (2.13)	4.58*** d=0.57

** $p < 0.01$, *** $p < 0.001$

Study 5: Entirety of Teaching

The main goal of this qualitative study was to explore teachers' perceptions of the various implications of 1:1 computing programs on the entirety of teaching. Some themes that were identified in this study are relevant to student-teacher relationships.

Methodology*.* Data was collected via semi-structured interviews with teachers. The interview protocol included four broadly phrased questions, which guided the interviewer. The teachers were asked about the implications of using 1:1 computing programs, implementation in their classes, lesson planning, teaching and learning during lessons, classroom management, and students' evaluation. For each topic, the interviewees were asked to specifically refer to 1:1 lessons, and then to compare them to traditional lessons.

Process*.* Participants were recruited via the researchers' personal networks and were interviewed in a location of their choice, during February-June 2016. Interviews—14 lasting 54 minutes—were recorded, and then fully transcribed. The transcriptions were analyzed following the conventional qualitative analysis approach, where coding categories are derived directly from the text data (Helgevold & Moen, 2015) for identifying themes, with a basic analysis unit being a statement.

Population*.* Fourteen 29–58 y/o elementary and middle school teachers (12 females and 2 males) participated in this study. Participants were teaching in public schools in the center of Israel and, had 1–34 years of teaching experience and 1–12 years of experience in using computers in the classroom. All of the participants incorporated to some extent 1:1 computing in their teaching and had been trained in the use of information and communication technologies (ICT) in the classroom as part of their professional development.

Main Findings*.* Overall, six categories were identified, some of which include a few themes. Those themes that are most relevant to student-teacher relationships are presented herein along with some examples of participants' statements:

- 1:1 lessons are characterized by more learner-centered activities, compared to traditional lessons. *"When I prepare a lesson in which mobile computers are used, frontal instruction is minimal, say 10 minutes, no more than that, in order to allow students more time with computers"* (T5, Female, 54 y/o).

- 1:1 lessons—more than traditional lessons—are aimed at the development of an active and independent yet collaborating student. *"I always love to incorporate some collaborative learning [during 1:1 lessons…]. It is very very important to me that every lesson includes a tool that allows students to express themselves"* (T11, Female, 46 y/o).

- Less discipline issues are presented in 1:1 lessons than in traditional lessons; this is a result of: a) Enforcing the non-use of computers when classroom discussions are taking place; and b) Screens keeping the kids fascinated when being used. *"There are clear rules - when the teacher says to turn off the [laptops] screens, then everybody turns them off. It's just like closing books and notebooks" (T2, Female, 48 y/o)*; *"I don't have chitchatting problems [in 1:1 lessons], they are using their computers, focused" (T12, Female, 53 y/o)*.

- 1:1 lessons enable more interactions with students than traditional lessons. *"[During frontal instruction time] there is a very specific kind of interaction, and then [when the students start working with computers] I'm free for most of the lesson to approach the groups, to lead a group" (T6, Female, 47 y/o)*; *"When the kids are working with computers, I am walking around among [them] and trying to help those who need help. I can simply reach all students, which I cannot do in traditional lessons" (T5, Female, 54 y/o)*.

- 1:1 lessons are more enjoyable than traditional lessons. *"The kids have much more fun doing [computerized] tasks" (T4, Female, 31 y/o)*; *"Mathematics class has become a class that the students really love, it is not as terrifying as it used to be" (T13, Female, 58 y/o)*;

Summary. Overall, the narrative identified in this study is one that characterizes 1:1 lessons as catalysts for enjoyable, engaging, active learner-centered activities, which allow the teacher to successfully interact with the students—more than traditional lessons.

Study 6: Teachers' Out-of-Class Work

The main objective of this study was to study the effects of using 1:1 computers in the classroom on the teacher's role outside of the classroom.

Variables and Tools. Danielson's (2011) Framework for Teaching defines the components of teaching in three domains—*Planning and Preparation*, *Classroom Environment*, *Instruction*, and *Professional Responsibilities*—each of which is then described by a few features. Danielson's evaluation practice is based on defined indicators that are detailed on a scale between "Ineffective" to "Highly effective". Our variables are based on the three domains, and on their respective features—that do not explicitly refer to the classroom. For each feature, we formulated a few items, based on the "Highly effective" indicators of this feature.

Overall, we defined 12 variables (which refer to Danielson's features) in 3 categories (which refer to Danielson's domains). Consequently, the research questionnaire consisted of 44 items on a 5-point Likert scale. All of the questionnaire parts were found to be highly reliable, as summarized in Table 7.

Process. Data was collected during May–July 2016 via computer filled out self-report questionnaires. Participants were recruited online (via personal and professional mailing lists, as well as via social networking sites). Participants were teachers who during the 2015/6 school year had taught in both traditional and 1:1 settings; they were first asked to think about both teaching settings, and then rank each item twice—regarding 1:1 lessons and traditional lessons.

Population. Overall, 37 middle and high school teachers filled out the research questionnaire. Participants' ages ranged between 27–34 y/o (M=36, SD=6.8), teaching experience ranged between 1–25 years (M=7.2, SD=7.0), with 38% females (14 of 37) and 62% males (23 of 37).

Main Findings. Under the *Planning and Preparation* domain, Demonstrating Knowledge of Resources was found to be significantly higher for 1:1 teaching than for traditional teaching, with a medium to high effect size. The other features—regarding teachers' knowledge of teaching and of their students—did not differ between the two teaching settings.

The single feature of the *Instruction* domain, namely, using assessment in instruction, was found to be significantly higher for 1:1 teaching than for traditional teaching, with a high effect size.

Under *Professional Responsibilities*, Using Assessment in Instruction, Maintaining Accurate Records, and Participating in a Professional Community were found to be significantly higher for 1:1 teaching than for traditional teaching, with high effect sizes. That is, differences were found in the ways teachers manage their teaching and participate in professional community; differences were not found in the way teachers communicate with students' families and in their overall professionalism.

Summary. Findings from this study suggest that regarding 1:1 teaching, compared with traditional teaching, teachers perceive that they benefit from a wealth of resources, but do not, however, prepare themselves differently for classes; they also benefit from having more ways to assess their students. They manage their teaching better, and develop better professionally, mostly in the community-related sense.

Table 7. Details about the research questionnaire for Study 6, based on Danielson's (2011) Framework for Teaching

Feature	# Items	Example Item	Cronbach's α	
			Traditional Activities	1:1 Activities
Planning and Preparation (20 items)				
Demonstrating Knowledge of Content and Pedagogy	4	I use different effective pedagogies.	0.89	0.87
Demonstrating Knowledge of Students	5	When planning lessons, I consider the students' areas of interest and cultural background.	0.83	0.83
Setting Instructional Outcomes	4	I set clear and clearly phrased learning goals in a way that they enable an evaluation of the learning process.	0.84	0.92
Demonstrating Knowledge of Resources	3	I am familiar with a variety of resources that can help my students.	0.86	0.88
Designing Coherent Instruction	4	The lessons' structure is clear, consistent, and allows me to choose different paths, based on students' needs.	0.75	0.79
Instruction (4 items)				
Using Assessment in Instruction	4	I give immediate feedback to students about their learning process.	0.67	0.84
Professional Responsibilities (20 items)				
Reflecting on Teaching	2	I accurately evaluate the lessons' effectiveness and the extent to which my goals have been met.	0.76	0.66
Maintaining Accurate Records	3	I effectively document data about my students' task completion.	0.85	0.96
Communicating with Families	3	My students' parents are updated about the students' learning progress.	0.85	0.88
Participating in a Professional Community	4	My relationships with peers who teach the same way are based on collaboration and support.	0.72	0.70
Growing and Developing Professionally	3	I make efforts to develop myself professionally, content-wise and pedagogically.	0.87	0.86
Showing Professionalism	5	I make efforts to ensure that all of my students are respected.	0.80	0.85

** p<0.05, ** p<0.01, *** p<0.001

Table 8. Comparing teaching components between traditional and 1:1 teaching

Variable	Mean (SD) for Traditional Teaching	Mean (SD) for 1:1 Teaching	t, effect size
Planning and Preparation (N=37)			
Demonstrating knowledge of content and pedagogy	3.92 (1.01)	4.01 (0.69)	0.52 p=0.61
Demonstrating knowledge of students (N-25)	3.57 (0.78)	3.67 (0.87)	0.51 p=0.61
Setting instructional outcomes	3.74 (0.77)	3.80 (1.00)	0.32 p=0.75
Demonstrating knowledge of resources	3.41 (1.00)	4.07 (1.14)	2.53[*] d=0.42
Designing coherent instruction	3.61 (0.73)	3.84 (0.80)	1.67 p=0.11
Instruction (N=35)			
Using assessment in instruction	3.03 (0.76)	3.71 (0.97)	3.97[***] d=0.67
Professional Responsibilities			
Reflecting on teaching (N=35)	3.43 (0.99)	4.06 (0.95)	2.82[**] d=0.48
Maintaining accurate records (N=35)	3.03 (1.06)	3.92 (0.93)	4.04[***] d=0.68
Communicating with families (N=35)	2.49 (0.98)	2.60 (1.06)	0.82 p=0.42
Participating in a professional community (N=37)	3.00 (0.77)	3.28 (0.81)	2.08[*] d=0.34
Growing and developing professionally (N=35)	3.49 (0.92)	3.71 (0.96)	1.41 p=0.17
Showing professionalism (N=35)	4.08 (0.74)	3.98 (0.87)	1.16 p=0.26

Study 7: Teacher-Student Relationship in Distance Teaching

The main objective of this qualitative study was to examine teacher-student relationships in distance teaching.

Methodology. Data was collected via semi-structured interviews with Israeli teachers who teach in two settings: synchronous, online teaching of US-based classes, and traditional classes (in Israel). We were following the Teacher Relationship Interview protocol (TRI) (Robert C. Pianta, 1999). This interview protocol aims at collecting data

about the relationship of teaching to a single student; at the beginning of the interview, the interviewee is asked to choose one of her or his students and to refer to this particular student, and to some specific instances in their relationship. Interviews were recorded, and then fully transcribed. The transcriptions were then analyzed following the conventional qualitative analysis approach (Helgevold & Moen, 2015) for identifying themes, with a basic analysis unit being a statement.

In addition, data was collected via observations on the participating teachers' recorded lessons that were taking place as part of their distance teaching. Observations followed the CLASS-S protocol (Pianta & Hamre, 2009), in which four domains were coded on a 1–7 scale: *Emotional Support*, *Classroom Organization*, *Instructional Support*, and *Engagement*.

Process. Each teacher was interviewed twice (in a row), where one interview focused on the distant class this teacher was teaching, and the other on the traditional class. Interviews took place between March–April 2015. In addition, recorded online lessons of three of the participants were observed and coded during May–June 2015 (about four classes were observed for each teacher).

Population and Data. Participants were 4 Israeli middle school teachers (3 females and 1 male), ages 39–50 y/o. Participants were teaching online synchronous classes to US-based classes, and additionally teaching traditional classes in Israel. Participants had 15–35 years of teaching experience and 3–5 years of online teaching experience. Interviews were 37–61 minutes long.

Main Findings. In the analysis of the interviews, we came up with 4 main themes regarding the teacher-student relationship, as can be seen in the statements below:
1. When choosing the student from the online class, teachers referred to a highly academically motivated student with whom they have an intellectual connection, whereas from the traditional class, they chose a lowly academically motivated student, a connection that had arisen from that student's distress. *"If there's something she doesn't understand, then she's writing to me, asking what she can do" (T3, female, 39 y/o, regarding the online class student)*; *"Many hours of meetings and talks with teachers didn't bring about the expected result, mainly with regards to her motivation and cooperation" (same teacher, regarding the traditional class student)*.
2. Only with reference to the student from the online class, did teachers mention instances of unusual communication. *"Immediately when she doesn't understand something or something is going to be late or she really loved something, she will write back to me, she will send an email […] she will let me know how she feels, what's going on in her life " (T4, female, 62 y/o, regarding the online class student)*; *" his writing is so immediate and impulsive that it brings him alive, you know,*

because so often there are exclamation points and five question marks, so he's really present in his written communication" (T2, female, 62 y/o, regarding the online class student).

3. Regarding online teaching, teachers used the term "care" mostly in the context of academic issues, while in traditional teaching, teachers used the same term for emotional issues. *"[She knows] that I care and that my goal is for her to love class and to learn something" (T4, regarding the online class student); "because of our respect for each other, we really cared about each other, we were very close" (same teacher, regarding the traditional class student).*

4. The online teaching platform is focused on academic issues, it does not strengthen emotional bonds. *"I think that we ended up in our relationship just by the way it was designed, [it] was a very transactional relationship, as in: I was hired to present material, he was there to learn from this material, and we concluded our business" (T1, male, 50 y/o, regarding the online teaching student).*

Overall, participating teachers regarded their relationship with the online class student as academically focused, while the descriptions of their relationship with the traditional class student involved a broader array of emotions. One of the participants brilliantly summarized it when referring to the two students he chose to talk about: Tyler, the traditional class student, and Owen, the online class student. *"I think of Tyler[1] the person and of Owen the student", the participant said (T1).*

The analysis of the recorded online lessons, using the CLASS-S observation protocol, adds to our understanding of these themes. We compare the scores from this study to average scores obtained in a large study that used the same framework to observe traditional classes of 82 middle and high school teachers from 40 schools in the US (Gitomer, Bell, Mccaffrey, Hamre, & Pianta, 2014). As can be seen in Table 9, *Instructional Support* was significantly higher and *Classroom Organization* was significantly lower in our study than in Gitomer et al.'s. However, no clear differences can be observed in *Emotional Support*. The latter might be surprising considering the interviews' analysis, however we should recall that the participants were interviewed about a single student while the observation took into consideration the entire class.

Summary. Based on perceptions of teachers who teach in both online and traditional settings, the student-teacher relationship in online teaching is more academically focused and less person-focused than in face-to-face teaching. Observational analysis support the former but not necessarily the latter.

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[1] We use pseudonyms.

Table 9. Comparing CLASS-S scores between our study (online classes)
and Gitomer et al.'s (2014) (traditional classes)

Domain	Our Study (N=3)			Gitomer et al. (2014) (N=82)		
	Mean	SD	SE	Mean	SD	SE[†]
Instructional Support	5.38	0.24	0.14	3.64	0.56	0.06
Classroom Organization	5.03	0.14	0.08	5.70	0.63	0.07
Emotional Support	3.96	0.54	0.31	4.05	0.65	0.07

[†] Not reported in the original article, calculated here

DISCUSSION

This paper presents six studies of the impact of one-to-one computing programs on various aspects of teaching which are closely related to teacher-student relationships. A seventh study explored student-teacher relationships in online teaching. Looking beyond achievements, one-to-one computing programs—where every student is using an Internet-connected portable computer (and in many cases this device will go home with the student, that is, will be available for her or him at all times)—have the potential of dramatically changing the ways teachers teach and students learn (Spires et al., 2012). However, although such programs have been implemented in many countries and with millions of students for over a decade—almost 9 million computing devices for students around the world have been counted a few years ago in an effort to map the large-scale 1:1 initiatives (Richardson et al., 2013)—this far-fetching potential has not yet been fulfilled (Jenni & Mikko, 2013). Indeed, some schools had dropped such programs after a few years of implementation (Hatakka, Andersson, & Grönlund, 2013; Hu, 2007).

On the other hand, even though the modes of teaching and learning have not undergone dramatic changes, successful implementation of one-to-one programs has led to satisfying results besides improving achievements. Student engagement, students' research skills and technology proficiency, as well as teacher practices—all were shown to be improved as a result of a one-to-one computing program (Bebell & Kay, 2010; Lebo, 2014; Lei & Zhao, 2008).

Some preliminary evidence advises us that student-teacher relationship might be also improved when implementing one-to-one computing programs in schools (Danielsen, 2009; Higgins, 2015; Pettit & McManus, 2014; Pischetola, 2010). Overall, the studies presented here agree with such a claim. As findings from our studies suggest, one-to-one computing programs, compared with traditional teaching, are characterized by: a) **Closer, more personal teacher-student interaction in the classroom** (Study 1, Study 5); b) **Taking a more learner-centered approach** (Study 1, Study 2, Study 3,

Study 4, Study 5); c) **Better teachers' academic and emotional support to students** (Study 4); and d) **More effective, more collegial teaching management** (Study 6). These aspects of learning and teaching are directly associated with teacher-student relationship, as we will now explain.

Teacher-student interactions are key to most school-taught lessons, and their importance have not dimmed even in distance learning (Holmberg, 1983). Clearly, learning with computerized devices in the classroom, specifically when every student has their own device, might change the ways teachers perceive and manage classroom interaction (Spires et al., 2012), and indeed our empirical evidence shows this occurring. Importantly, interactions between teachers and students are not merely a means of communication, but also serve as an enabler for closer teacher-student relationships (Abidin & Kmetz, 1997; Ahmad & Sahak, 2009).

Learner-centered teaching has long been one of the big promises of technology-enhanced learning, as it was argued that technology can support individual differences in a way that will increase cognitive, motivational and social aspects of learning (Curtis Jay Bonk & Cunningham, 1998; Hannafin & Land, 1997; Sandholtz, Ringstaff, & Dwyer, 1997). Giving students more control over the learning process and getting them to be more actively involved in the learning—two of the building stones of learner-centered instruction—might allow the promotion of student-teacher relationship (Zygmont & Schaefer, 2005). Furthermore, as a learner-centered approach is implemented, the teacher is more freely available to walk across the classroom, and then unplanned interactions with students are more likely to happen, which again can enhance the student-teacher relationship.

Teachers' support to students is an inherent component of student-teacher relationships (Wade, 2014). Two common frameworks of teacher-student relationships refer to teacher support as an integral part of their measuring: Ang's (2005) Teacher-Student Relationship Inventory (TSRI) refers to *Instrumental Help*—advice, sympathy or help given by the teacher to her or his students—as one of three components of teacher-student relationships (the other two are *Satisfaction* and *Conflict*), and Hughes, Cavell, and Willson (2001) refer to *Teacher Support* as one of two domains of these relationships (the other being *Teacher Conflict*).

Lastly, **Effective, collegial teaching management** might be perceived as the least obvious factor relating to teacher-student relationships; however, some evidence might hint to such an association. Caring relationship between teachers and students were suggested as being important to teachers' professional identity (O'Connor, 2008), and classroom management is indeed a predictor of student-teacher relationships (Mitchell & Bradshaw, 2013). Moreover, collegiality and teacher-student relationships were both found as predictors of commitment in teaching (Krishnaveni & Anitha, 2008).

As for these connections, we argue that one-to-one computing programs have the potential of promoting teacher-student relationships at large. Indeed, when measured directly, student-teacher relationship indicators were higher for one-to-one lessons

compared to traditional lessons (Study 2). The findings from Study 7, according to which teacher-student relationships in online teaching are more academically focused than in traditional teaching, highlight the importance of the teacher's presence in the classroom. Indeed, the lack of instructor presence in online environments was previously shown as a potential barrier for learning in these environments (Shen & Chen, 2014; Stodel, Thompson, & MacDonald, 2006).

As one-to-one computing programs have become popular worldwide, the findings presented in this paper are not to be underestimated, as our evidence points out to some important mechanisms that bring about a real change in both teaching practices and teachers' beliefs in such settings. Notably, these effects may not occur in fully online learning, as the very presence of the teacher still takes an important role in the development of student-teacher relationships.

Overall, two complementary question arise whilst examining the findings reported in this paper. The first is, **why do such changes in student-teacher relationships even occur when the use of computers in the classroom is minimal?** As previously shown (and also demonstrated in Study 3), the use of ICT in the classroom —even in the case of one-to-one computing programs—is mostly limited and does not dramatically change teaching and learning (Shamir-Inbal & Blau, 2016; Steiner & Mendelovitch, 2016). A first possible answer to that question might have to do with the stage of the implementation of the one-to-one programs examined. The Israeli national program for integrating one-to-one computing in the classroom is rather young (officially launched in 2011/12), and it is known that enthusiasm for such programs is relatively high in the early stages (Berger-Tikochinski, Zion, & Spektor-Levy, 2016). Another explanation might lie in the fact that the classroom is a complex system (Cvetek, 2008; Doyle, 1977), hence any change in it (be it technological or not) might meaningfully affect the comportment of this ecosystem and of its inhabitants.

However, one may argue, based on our findings, that it is not the very presence of new technology that drove the improvement in student-teacher relationships. Rather, it seems that this change was mediated by a change in the ways teachers managed their teaching. Therefore, the second question is, **are computers in the classroom really needed to initiate such a change in teaching/learning?** The obvious answer to this question is, of course, negative. After all, highlighting the affordances of learner-centered teaching was done decades before the current technological era, with theorists as John Dewey, Jean Piaget, Lev Vygotsky, and Carl Rogers.

Nonetheless, the improvement in teacher-student relationships—mediated by the change in teaching—is not only a byproduct of the introduction of one-to-one computing programs to schools. Rather, it is this change in teaching that has been set as a main goal for such programs in the first place (Penuel, 2006; Severin & Capota, 2011). In that sense, the current paper adds an important contribution to the growing literature on one-to-one computing programs, as it highlights that the expected change indeed happens (even if to a limited degree), and that it further supports teacher-student relationships.

Of course, it is assumed—or, better phrased, it is the case—that the implementation of one-to-one computing programs is indeed initiated by pedagogical considerations. As such, the particulars of the impacts of the technology implemented should be examined in light of these pedagogical objectives, and not vice versa.

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YOUNG PEOPLE AND VIRTUAL COMMUNITIES. NEW WAYS
OF LEARNING AND OF SOCIAL PARTICIPATION IN THE DIGITAL SOCIETY

Los jóvenes y las comunidades virtuales.
Nuevas maneras de aprendizaje y de participación social en la sociedad digital

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Abstract: This paper is based on a research project developed in Spain, where we explored how and what young people learn in virtual communities. Although the term virtual community has been broadly used to approach online social interactions, it has generated several academic debates. Nevertheless, it is a useful term to define a social network made up mostly of young people who share an interest and choose to interact online with others to discuss, exchange, show their creations to the world, and promote certain values. As researchers on Sociology and Education, we find this phenomenon especially intriguing. We wonder why young people engage in virtual communities, why they should spend so much time interacting with others online and what benefits they consider they have. Our hypothesis is that it has to do with a shared sense of belonging to a community and the possibilities young people find to create opportunities to learn with and from each other. The results of this article are based on the analysis of seven case studies conducted in virtual communities, and they address two main questions: what leads young people to participate in virtual communities and how is learning and social participation promoted through virtual communities.

Keywords: virtual communities; youth; sociocultural learning; ethnography.

Resumen: El presente trabajo está basado en un proyecto de investigación llevado a cabo en España, donde exploramos cómo y cuándo los jóvenes aprenden en comunidades virtuales. Aunque el término «comunidad virtual» se ha utilizado ampliamente para abordar interacciones sociales en línea, ha generado varios debates académicos. Sin embargo, es un término útil para definir una red social constituida mayormente por jóvenes que comparten intereses y eligen interactuar en línea con otros para discutir, intercambiar, mostrar sus creaciones con el mundo y promover ciertos valores. Como investigadores de Sociología y Educación, consideramos este fenómeno particularmente intrigante. Nos preguntamos por qué los jóvenes se involucran con las comunidades virtuales, por qué pasan tanto tiempo interactuando con otros en línea y qué beneficios consideran que tiene. Nuestra hipótesis es que guarda relación con un sentido de pertenencia a una comunidad y con las posibilidades que los jóvenes encuentran para crear oportunidades para aprender con otros y de ellos. Los resultados del presente artículo tienen base en el análisis de siete casos de estudio llevados a cabo en comunidades virtuales y pretenden contestar dos preguntas principales: ¿qué lleva a los jóvenes a participar en las comunidades virtuales? y ¿cómo se promueven el aprendizaje y la participación social a través de las comunidades virtuales?

Palabras clave: comunidades virtuales; juventud; aprendizaje sociocultural, etnografía.

INTRODUCTION. WHAT ARE VIRTUAL COMMUNITIES?

Living in a reality mediated by digital technologies allows us — and, at the same time, pushes us — to learn beyond the contexts in which we place ourselves. More and more, it is asked that all generations be able to learn, not only life-long but also life-wide (Banks, Au et al, 2007), not only in our school, university or workplace, but also through informal and non-formal education institutions, at home, on the streets or in virtual spaces.

Since the Internet began, there have been academic discussions in many fields about how computer mediated communication (CMC) might influence the lives of individuals, interpersonal relationships between people, and the social institutions that emerge from human relationships (Rheingold, 2000). A term that has been broadly used to approach online social interactions has been virtual community. However, this is a controversial term, since it has generated debate around the tensions between the promises and limitations of cyberculture, the relationship between online and 'real' life, and the notion of community itself (Bell, 2001).

The term 'virtual community' was used by Rheingold (1993) to describe the webs of personal relationships in cyberspace. Later, it was defined as a group of individuals with shared interests that regularly gather to discuss the subject of interest shared by its members through online platforms (Figallo, 1998).

These virtual communities, made up mostly of young people, besides being communities of interest, are learning and knowledge-creation communities, although not in the academic sense of these terms. That is, it is not about educational communities with pre-established teaching objectives and static characteristics and roles that establish what to learn and those who teach or learn, as is defined by Sacristán (2013). On the contrary, the simple fact of sharing information and diverse practices generates certain learning in the participants. These communities are becoming the way to learn par excellence, in particular among the people of the age group indicated above.

Furthermore, virtual learning communities incorporate many of the characteristics of the discourse communities, practice and knowledge construction (Montes de Oca, García & Fuster, 2011). These common elements make it difficult to draw a definitive dividing line between the different types of communities, as well as to determine when a virtual community (created for other types of functions) promotes practices that contribute to the members' learning. In fact, people often use social networks both to satisfy emotional needs or socialize and to produce knowledge and learn. However, in the virtual-learning, practice and knowledge communities, the idea of learning as a social construction is highlighted (Gros, 2008). That is, from some knowledge, skills or attitudes that come mainly from the intensive interaction between people (Bosco, Miño, Rivera-Vargas, Alonso, 2016).

In different forms of online social networks, several of their members have never met face-to-face, but they feel they belong to a group of people with similar interests and characteristics. Likewise, that lack of physical experience does not affect the possibility

of sharing common interests that enable the development of social capital, such as: arts, culture, activism, and politics. One of the collectives that make use of online social networks is young people. According to the study *Digital Youth*, most youngsters in their middle-school and high-school years use online networks to extend their friendships and some use them to explore their interests and find information to which they have no access to at their local community (Ito et al, 2008).

It should be noted, however, that many social networking services can host virtual communities, since they bring together people linked by common interests that remain linked and involved for a long period, as they use the Internet as a new anthropological space where they share knowledge and learn (Henri and Pudelko, 2003).

Virtual communities, although not a novel concept, refer to an online environment where some people find a place to socialize in a different or complementary way of what they find in face-to-face interaction (Rheingold, 2000). In order to differentiate virtual communities from other forms of online social networks, we use the notion of community as a social space created and maintained by people who have the necessity or the desire of a *safe shared space*. In theorizing about community, we develop Hobsbawm's conception of communitarianism that has to do with the necessity shared by people to create a safe refuge, since "men and women look for groups to which they can belong, certainly and forever, in a world in which all else is moving and shifting, in which nothing else is certain" (1996, p. 40). Zygmunt Bauman (2000) also considered that communitarianism is attractive when everything feels uncertain. In Liquid Modernity, he related the idea of belonging to a community with the promise of finding a safe refuge and the heat of shared identity.

In this paper, we are presenting some results of the research project "Youth Virtual Communities: making visible their learning and their knowledge", funded by the Reina Sofía Centre of Adolescence and Youth (Call 2015). In this research, we have sought to explore how and what young people learn in virtual communities in order to show the potential of such communities in the process of learning and identity-building of 15 to 29-year-old Spaniards. Our study has paid attention to communities of interest (Sacristan, 2013), with the hypothesis that sharing an interest encourages young people to learn and build knowledge, but not in an academic sense.

In the results section, we first present the characteristics of the virtual communities that have been researched, building from the final report of the project, which has been published recently (see Alonso, et al., 2016). On the second part, we extend the discussion, by analyzing further the relationship between the ways young people learn through virtual communities and social participation. Through this analysis we aim to answer the following two questions: (i) Which reasons lead young people to participate in virtual communities?; and (ii) how is learning and social participation promoted through virtual communities?
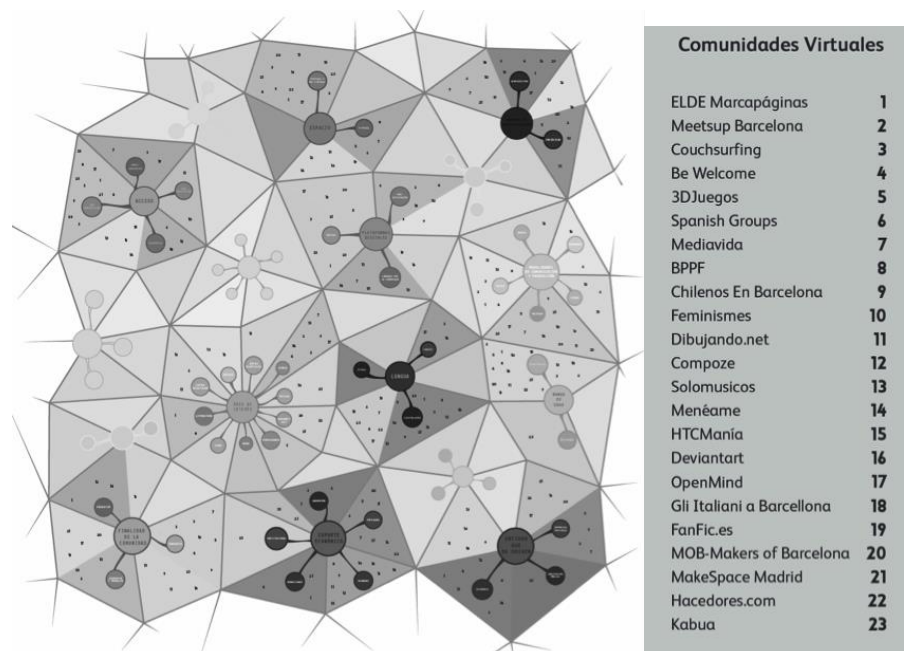
METHODOLOGICAL PROPOSAL

In order to approach this phenomenon that takes place in multiple spaces, we conducted seven case studies based on virtual (Hine, 2004, 2005) and multi-sited (Falzon, 2009) ethnography. This methodological approach allowed us to follow connections, interactions, trajectories and tensions between time and space and to pay attention to the implications the Internet has in the organization of social relationships, communication, authorship, and privacy. Therefore, we understood communities not as isolated places, but as spaces created by connections, realizing that we needed to cross constantly the border — if there is one, that is — between physical and virtual spaces which are constantly intertwined (Falzon, 2009).

The research process had two main stages: (1) the detection and mapping of 23 virtual communities with a high participation of Spanish youth between 15 and 29 years of age, and (2) the implementation of case studies in seven virtual communities.

The first exploration allowed us to create a cartography — Figure 1 — of the 23 communities, from the categories that emerged by the saturation of the observations made at each community. To choose the sample, we started from previous research projects with young people, our experiences in communities and the relationships we had with youngsters who were involved and linked to these spaces by interest or need.

Figure 1. Cartography of the virtual communities, from the first stage of the studio

Comunidades Virtuales	
ELDE Marcapáginas	1
Meetsup Barcelona	2
Couchsurfing	3
Be Welcome	4
3DJuegos	5
Spanish Groups	6
Mediavida	7
BPPF	8
Chilenos En Barcelona	9
Feminismes	10
Dibujando.net	11
Compoze	12
Solomusicos	13
Menéame	14
HTCManía	15
Deviantart	16
OpenMind	17
Gli Italiani a Barcellona	18
FanFic.es	19
MOB-Makers of Barcelona	20
MakeSpace Madrid	21
Hacedores.com	22
Kabua	23

From: Alonso, et al., (2016)

The categorization system we developed for the analysis emerged in an inductive form. As it can be seen in Table 1, we created ten categories or axes that allowed us to order the great diversity of communities. We took into account aspects such as the main topics or interests of the community, the open/close nature of access, the entities who created the community, their financial sources, the ages of the participants, the virtual and face-to-face spaces where they met, the languages spoken, the rules of participation and the modalities of communication.

Table 1. Table of categorization of the virtual community for the first stage of the study.

Category	Typology
1. Access of the members to the community	Open, semi-open, by registration or by invitation
2. Entities that created the community	The members, public or private institutions
3. Economic support	Donations, fees, private financing or without financing
4. Age range of the participants	Undetermined or determined
5. Spaces in which members interact	Virtual or mixed (virtual and face-to-face)
6. Digital platforms used	Pre-existing, created for the community or mixed
7. Spoken language(s)	Spanish, English, and other languages
8. Rules for participation and coexistence	More or less explicit
9. Modalities of communication and production	Images, video, text, audio, etc.
10. Purpose and area/s of interest of the community	Music, plastic arts, digital arts, literature, cinema, makers, health, fashion, videogames, etc.

From: Alonso, et al. (2016)

In the second phase of the project, we conducted case studies in seven virtual communities we chose from the first sample. In order to choose seven cases that would be rich in terms of data and different among them, we selected communities with high participation of young people aged between 15 and 29 years old. We also chose communities that were related with arts, culture, the maker movement and activism or social change.

The communities identified for the study were (1) Devianart, (2) The Book of the Writer, (3) Dibujando.net, (4) Cosplay Spain, (5) Kabua, (6) Openmind, and (7) Feminisms. We negotiated with the administrators of the communities and sent them ethics documents, in order to conduct face-to-face or virtual interviews with 2-3 members of the community and virtual observations of the virtual environment they used to interact. We also informed the members of the community of our participation, asking for volunteers and informing that we would guarantee the confidentiality of the informants.

Below are the descriptions of the virtual communities in which the case studies were conducted. The thematic analysis (Braun & Clarke, 2006) we implemented was based on the categorization made in the first phase of the research, with the interest of highlighting the most relevant aspects of virtual communities as spaces that: (a) question the liberal social order, (b) make visible the participation of young people and (c) vindicate and promote social, economic and production, educational or cultural changes.

DESCRIPTION OF THE VIRTUAL COMMUNITIES

Dibujando

Dibujando is defined as a "social platform of artists who wish to show their artworks to the world" and where others can discover the creativity and talent housed in it. It was created in 1999 in Valencia with the purpose of providing artistic knowledge to the Spanish-speaking community and therefore its creators had didactic purposes from the beginning. It has 20,000 users who share an interest in drawing, and although we cannot determine the age range, a good part of the participants is between 15 and 29 years old. Even so, it is important to note that approximately 400 of the members participate in an active way through the website.

The website the members of this community use to interact and show their artworks was created specially with this purpose. It has three main environments in which learning is promoted: *The Gallery*, *The Tutorials* and *The Community*. The dynamics and possibilities that are generated in these spaces are: the participation in drawing contests, communication through discussion forums and the contribution and access to image galleries.

Feminismes

Feminismes is a group of Spanish origin that was created through the social network service *Facebook*, where "the ideas, information and activism about feminism are shared, discussed and exchanged, mostly in Spanish" (Description of the *Feminismes* group). In the description, it is specified that any kind of feminism is welcome, since they consider that there is not only one type of it, and that the constructive exchange is always enriching. At present, it has 2951 members and six administrators. Its access is closed, which means that users who want to access the content and interact with its members, need to receive an invitation and be accepted by one of the administrators.

All kinds of people are welcome to the group, as long as they take into account the following participation rules: (1) sexist ideas and attitudes are not allowed, (2) every idea and every person has to be respected, (3) insults are not accepted, (4) people who do not consider themselves feminist can participate only if they express their ideas with respect and they do not question the existence of feminism and (4) heterosexual men are invited to be part of the community, only if they do not abuse of their power by constantly posting messages to the group. Their administrators are presented as those in charge of moderating and ensuring the safety of the group. To do this, they offer members the possibility to address them if they feel they are not being treated with respect.

OpenMind

OpenMind is a virtual community aimed at all people who want to participate and share their reflections around a series of areas of knowledge. It was created by the BBVA bank in order to generate and spread knowledge through books, articles, posts, reports, infographics, and videos. The community is based on the idea of generating "a point of encounter and space for the dissemination of present and future knowledge" (Section 'What is OpenMind. Rules of etiquette').

The differentiation and hierarchization of roles among the participants of this community is more evident than in the other communities since there are administrators, authors, collaborators and participants defined by institutional criteria. Three people are dedicated to the administration of the community through the areas of strategy and dissemination, social relations and knowledge management. Secondly, the authors are usually internationally recognized people who write essays or academic articles in the book that is published annually in both physical and digital format. These authors are contacted by the administrators to be part of the publication, which has previously defined themes. Finally, the collaborators are researchers, master's degree holders or doctoral students, people related to the company, institutions and individuals who are active in the network and are interested in scientific dissemination. These can be contacted by the administrators, but they can also request their participation as collaborators.

El Libro del Escritor

El Libro del Escritor is defined as a community of writers, professionals, and amateurs. It was created in 2014 by two young people with the intention of creating multi-platform software oriented to writers that could be used from different mobile devices. In order to make the space known, the creators of the community developed a blog where every week they published texts related to writing and offered short training courses and other services.

At this moment, the community is organized in groups by regions of the Spanish State, and although the platform that is most used is Facebook, they have also created the website "Gamified literary social network". The founders organized a crowdfunding with the purpose of remunerating the work of the developer of the website and the organizer of the community activities. The range of profiles and ages of the participants is very wide, since both professional writers and amateurs, young people and adults participate.

Kabua

Kabua was created by the UNESCO Center of Catalonia in 2008 with a budget item in collaboration with the Universitat Autònoma de Barcelona, the Universitat Pompeu Fabra, and TV3. Their main interest was to create a platform for young people between 12 and 18 years old to promote values related to social transformation using digital technologies. The website specifies that the initiative seeks to "help young people enhance their empowerment as transforming agents of reality" (Kabua website).

It is an open site in which any young person can participate in forum spaces, gallery, visual resources and guides in relation to their topics of interest. There are also links to the Facebook and Twitter accounts of the community. There are rules of coexistence that ensure mutual respect in exchanges between participants. Although the web space is organized in a similar way to the rest of the virtual communities of the study, online participation of young people takes place much more in social networks, so the web space became a consultation tool.

Cosplay (Spain)

This community was created in 2010 with the intention of creating a meeting point and a way to publicize the Cosplay[1]. As indicated on the website, members consider that Cosplay "apart from being a hobby and fun, is also an art form". Therefore, the purpose

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[1] Cosplay is the contraction of costume play. The participants of this fashion wear costumes, accessories and costumes that represent a specific subject or an idea, often linked to comics, movies, anime, manga and videogames.

of the community is to encourage people who share an interest in cosplay to share their experience and publicize.

Creating the community was not easy for its two founders, but little by little, experienced cosplayers and also amateurs with a desire to learn began to participate. Cosplay has a website with 999 registered members, a Facebook page and a space on Twitter. Most of the interaction happens in the Forum of the web, where they have a moderator that promotes respect and constructive criticism.

DeviantArt

This is one of the largest virtual communities on art that can be found on the Internet, since it is made up of 35 million users from all over the world. Most of these are from the United States and the main language is English, but young people from Spain also participate in the website that houses it. It was founded in 2000 and, although its initial purpose was very limited, it quickly became the sharing of digital and traditional art. It is a semi-open community, so all registered people can access and upload content. Users can also be organized into groups with their own rules of participation, although they are subordinated to those of the community in general.

The founders allocated 15,000 Euros to maintain the service and it soon became a company that used financing methods such as advertising and even the possibility of creating Premium accounts that give advantages to participants who pay a fee. Although the main objective is to share productions, they also publish tutorials, contests, and face-to-face meetings. Some users even use the website as a personal and professional portfolio.

DISCUSSION

From the information that we have obtained and analyzed during the execution of this research[2], and considering other new focuses of interest that have emerged once we have finished the research, next, we will analyze the two questions that we have proposed in the introduction of this article: Which reasons move young people to participate in virtual communities?; and how is learning and social participation promoted through virtual communities?

A characterization of virtual communities

In relation to the configuration of virtual communities, we do not intend to define them from a technical point of view, but to broaden our understanding of the reasons that

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[2] The final report of the project where it is possible to consult the results of the investigation, as well as a description of all the processes carried out, can be downloaded at the following link: http://bit.ly/2BqQkXk

motivate young people to create virtual environments and use them to interact with people they have never met face to face. To start with, the members of the majority of the communities we have analyzed shared a sense of familiarity, comfort, emotional attachment or feeling at home, that has been theorized as a "sense of belonging" (Antonsich, 2010).

Secondly, although participation in virtual communities tends to be high beyond the age groups and gender or socioeconomic dimensions, many of these communities were created by young people and they were the most active users. The main reason that motivated them to feel they belong and participate in a virtual community was to exchange knowledge by interacting with others with whom they shared an interest. They described the communities as spaces to share, discuss and exchange ideas, information and activism, to show their artworks to the world, to spread knowledge, to promote values related with social transformation and to create a meeting point to share experiences and publicize ideas.

We also characterize them as multi-purpose spaces, because of two main reasons. On the one hand, the virtual environments used by its members had several sections, such as *Community*, *Gallery* and *Contests*. This means that not all members necessarily surfed all sections and some of them could be interested mainly in the discussions, while others would just consult the gallery. Consequently, not all participation in virtual communities was active, but in some cases, it was passive (Jenkins, 2014; Jenkins, Ito & Boyd, 2016). On the other hand, through the interviews we identified that individuals that were part of each community had different reasons to participate. For example, one member of *Feminismes* wanted to get answers to the discomfort she felt as a woman with some attitudes and situations in her everyday life. Another member wished to make a change in society through activism and another one considered the didactic potential of the community, by helping others to understand better what feminism is and to identify patriarchal values and practices.

Another common characteristic was that the participants used one or several virtual environments to interact, discuss and share or access ideas and productions. Nevertheless, only three of the communities interacted through a website that has been created specially to host the community. Another one used *Facebook* and the three remaining cases used both their website and social network services to communicate, such as *Twitter* or *Facebook*.

A clear level of differentiation among the communities is also significant. In the first place, some communities were constituted by no more than one thousand members, while others had up to 35 million users. More importantly, some communities were created by its members following their common interests, while in other cases, an institution with corporative interests and a budget induced their creation. Therefore, we question to which extent we can define any group of individuals who interact online with a common interest as a virtual community. It is necessary to differentiate between communities that are created by young people who share a common interest and want to

share their ideas (from the bottom up) from institutions who wish to replicate this kind of community to meet their corporative goals (from top to bottom) (Miño, Rivera-Vargas & Salazar, 2017).

All the virtual communities we have analyzed shared another characteristic: the creation of a common set of norms of coexistence to ensure mutual respect in the exchanges between their members. They also used mechanisms to make the participants follow the rules, such as the figure of an administrator to moderate the discussions when a member became aggressive and disrespectful, a 'closed' feature of the website or the group to choose who could be part of it, and the possibility of expelling a member that broke the rules. Nevertheless, only the communities that were created by external institutions set the rules and mechanisms from the beginning and maintained them over time. In the communities created by its members, these rules and mechanisms emerged from specific moments and situations that made the participants feel they needed some kind of moderation or control.

Regardless of the size of the community or if it was created *by* young people or by an institution *for* young people, all the virtual communities we have analyzed were located in a bigger social context and had changed over time. They all emerged as a consequence of the phenomena that shape society and therefore, they were in permanent transformation and redefinition. However, some virtual communities were a big success among young people and they grew fast, while others failed to engage others and did not survive.

Learning, social participation and belonging

Virtual communities are built on social interactions, practices and relationships. Therefore, their success is not necessarily measured by the number of individuals that are part of it, but by the ability of their members to create social bonds and engage in online conversations or activities. In the interviews with the founding members, they recognized their lack of expectations towards the possibility that thousands of people would end up being part of it. This brings us to the questions: why do young people engage in virtual communities? Why should they spend so much time interacting with others online? And what benefits do they find?

As researchers on Sociology and Education, we find this phenomenon especially intriguing. Through this article we have explored the hypothesis that what makes young people engage in virtual communities is the sense of belonging to a group and the opportunities it gives them to learn. Building on the notion of situated learning (Lave & Wenger, 1991), we identify that one vital aspect of virtual communities is that they feel part of it and because of this, their members are constantly creating opportunities to learn *with* and *from* each other.

An example from the case study *dibujando.net* is the collective learning process that emerged from a conversation in a Forum. Some members opened a discussion

through their website to promote the creation of a magazine. Their idea was to bring together some of the best drawings and comics of their gallery, to create tutorials that teach others how to use graphic software and to make reviews of artists that could be of interest to the community. The user who made the proposal specified: "Everybody can participate without any kind of distinction. All contributions will be taken into account and don't be afraid to make comments because almost everybody is new at this" (dibujando.net website). His message received hundreds of answers with questions, proposals, and contributions. For example, one user proposed to create a section with illustrated poems and tales for the fourth edition of the magazine.

Creating a magazine promoted learning in many different ways. Firstly, the majority of the participants who volunteered were not experts in the field and they encountered many difficulties in creating their comic stories, tutorials or author reviews. Participating in this activity was an opportunity to surf the web in search of how to do it, take a book from the library or ask an expert for help. Secondly, the volunteers had to collaborate with each other in order to achieve their goal, which involved many skills related with the processes of management and production. In the case of the volunteers who made the tutorials, when they made explicit how to use a tool, they were becoming aware of their knowledge and at the same time putting into practice their teaching skills. Finally, the volunteers used several tools to create, edit and publish the content of the magazine. Their discussions implied putting their competences into practice, broadening their knowledge and improving their social skills.

The members of the virtual communities created from the bottom up considered that being part of that community promoted learning about topics and through processes that not always had space (or place) in formal institutions (Alonso et al, 2016). As we can see in the last example, some activities promoted independent learning, collaboration, answer to questions that are discovered through the creative process, consulting experts and teaching and learning at the same time. Furthermore, learners were able to choose what to do, how to do it and with which tools; their contributions were related to their individual and collective interests and their experience might have helped them improve competences they needed in their present and future lives.

However, we also identified that virtual communities were not free of hierarchies, norms and internal power relations which could repeat the hierarchies and stratifications present in modern institutions. For example, in the case of *Feminismes,* the administrators took decisions on behalf of the rest of the members of the community, such as who was accepted or who should be expelled from the group, and therefore, they played a privileged position of power or influence. On the other hand, the majority of the members of this community have been young women who wanted to create a virtual safe space to discuss gender issues "without the risk of being physically harmed if you say something controversial".

Therefore, this virtual community created its own politics of belonging (Antonsich, 2010) through structures of power, freedom and control, which at the same time were

drivers that enabled or inhibited feelings, sense of belonging and identity (Miño, Rivera & Cobo, in press). In this regard, we question if virtual communities facilitate free expression and promote social inclusion or if they create fragmentation and exclusion by not accepting the presence of certain individuals who do not respect the rules.

Finally, we have been able to recognize that virtual communities with activist goals have the potential to become spaces for social participation, capable of harboring and promoting various ways of resisting the repression sometimes exerted by the social, political and cultural structure of modern societies. In these kinds of virtual communities, learning is associated with resistance and social demand, promoting and giving visibility to new attitudes, expectations, experiences and knowledge (Alonso et al, 2016).

CONCLUSIONS

Based on the main results of the project "Youth Virtual Communities: making visible their learning and their knowledge" and on the subsequent analysis that we have carried out, we have explored the questions: which reasons lead young people to participate in virtual communities?; and how is learning and social participation promoted through virtual communities? In this section, we summarize some of the main ideas that have been developed throughout the article.

In relation to the characterization of virtual communities and the reasons that lead young people to participate, we highlight the following:

- Firstly, the participants of virtual communities engage in them essentially to exchange knowledge interactively. In this sense, virtual communities are multi-purpose spaces legitimized by their most active participants.

- Secondly, although the profile of the participants tends to be beyond age groups, gender or socioeconomic dimensions, they are preferably created by young people, who are also the most active users.

- Thirdly, it is necessary to differentiate between communities that are created by young people who want to share their ideas from institutions who wish to replicate this kind of community to meet their corporate goals (from top to bottom, and young people that want to share a common interest as a vindictive act (from the bottom up), and). In this sense, virtual communities have the potential to become spaces for social participation, capable of harboring and promoting various ways of resisting the repression sometimes exerted by the social, political and cultural structure of modern societies.

In relation to the learning and social participation that are promoted among virtual communities, we find that:

- Firstly, the members of virtual communities recognize the constant and permanent learning opportunities they find and create. In addition, the activities promoted by their members might be opportunities for them to put their competences into practice, broaden their knowledge and improve their social skills.

- Secondly, we have noticed that many virtual communities are recognized as learning environments that have no space (or place) in formal institutions. In this sense, we recognized that the participants of these virtual communities do not follow established teaching goals, the roles of the participants are not static, and learning is understood as a social construction (Gros, 2008).

- Thirdly, in order to remain valid and to prevail over other similar spaces, virtual communities are hierarchized through norms and internal power relations, which can even repeat the hierarchies and stratifications present in modern societies. We have found that this action happens with the intention of transforming the virtual communities into a safe environment. In this way, it is possible to promote the free expression of their members and the possibility of generating transgressing speeches. Virtual communities facilitate free expression, and this can promote social inclusion, but at the same time they might create fragmentation and exclusion by not accepting the presence of certain individuals who do not respect their rules.

Finally, it should be noted that this type of environment can be transformed into important, non-formal learning spaces among its own participants. Being part of a virtual community is an opportunity for young people to explore their interests and satisfy their curiosity, deciding what they want to know and how they want to delve into it. This promotes their agency and poses an alternative to formal and structured educative contexts. Nevertheless, while it can be very rich in terms of learning, young people also need to be prepared to face the variety of information and perspectives they find when they surf the Internet.

At the same time, the active proliferation of new virtual communities shows us how important it is for our society to think about the new needs of inclusion and social participation that young people have in the present. Both through its creation and participation, in most virtual communities, young people are the main actors. In these spaces, young people seek new ways to build their identities in a society that increasingly considers and represents their lifestyles and concerns.

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LA PRIMERA *EDTECH WINTER SCHOOL*:
APORTES METODOLÓGICOS PARA UNA INCLUSIÓN DIGITAL
CON SENTIDO PEDAGÓGICO ASCENDENTE

The First EdTech Winter School: Methodological Contributions
for Digital Inclusion with Ascending Pedagogical Sense

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Resumen: En esta reseña se presenta la primera edición de la *EdTech Winter School: "Emerging trends and new horizons in the study of education and technology",* organizada en 2017 por la Fundación Ceibal, y se exploran sus aportes para la reflexión en torno a la formación docente en Argentina y Uruguay. Para ello, se realiza un enfoque tridimensional centrado en las posibilidades que la *metodología de la provocación* (MP) supone para los contextos educativos de los participantes del evento. Primero, se describen las características de la formación docente en estos países. Luego, se aborda y se expone en detalle en qué consiste la *metodología de la provocación*, presentada en el evento por una de las investigadoras invitadas. Por último, se despliegan las posibilidades y desafíos que esta propuesta metodológica ofrece a los proyectos educativos de inclusión digital de esta región.

Palabras clave: metodología de la provocación; investigación; formación docente; inclusión tecnológica.

Abstract: *This review presents the First EdTech Winter School: "Emerging trends and new horizons in the study of education and technology", organized by Fundación Ceibal in 2017, and its contributions to the conceptualization of teacher training in Argentina and Uruguay. In this three-dimensional approach, the characteristics of teacher education in these countries are first described. Next, the provocation methodology, presented at the event by one of the invited researchers, is discussed and explained in detail. Finally, the possibilities and challenges that this methodology offers for the regional projects of educational technology inclusion are outlined.*

Keywords: *provocation methodology; research; teacher education; digital inclusion.*

INTRODUCCIÓN

Esta reseña de la primera EdTech Winter School: "Emerging trends and new horizons in the study of education and technology"[1] se enfoca en los aportes que la metodología de la provocación (MP) —presentada durante el evento por la Dra. Luci Pangrazio— ofrece para reflexionar sobre la formación docente continua y su relación con las políticas de inclusión digital en Argentina y Uruguay. Este es un tema complejo, actual y de particular relevancia en los escenarios educativos y tecnológicos de los países latinoamericanos.

La *Winter School* planteó, desde el momento de su lanzamiento, una serie de objetivos orientados a "la construcción de un ambiente de discusión y análisis", "la presentación y el intercambio de investigaciones" y "la creación de una red académica internacional de excelencia en educación y tecnología" (Fundación Ceibal, 2017, p. 16). Para lograr estos objetivos, centrados en el intercambio y la discusión, los participantes se organizaron en grupos de trabajo orientados por diferentes líneas de investigación. Las sesiones de trabajo de estos grupos se intercalaron con las disertaciones de diferentes investigadores y referentes institucionales en el campo de la educación, la tecnología y las políticas públicas, tanto locales como internacionales.

Las reflexiones que se vuelcan a continuación son el producto de las discusiones del grupo dedicado a la temática *Educadores en la era digital,* en diálogo con las reflexiones introducidas por los diferentes disertantes y, en particular, con los desarrollos realizados por Pangrazio en torno a la *metodología de la provocación.*

En la primera parte de esta reseña se comparten las características político-educativas de los contextos de trabajo de los integrantes del grupo, provenientes de Argentina y Uruguay. En la segunda parte, se profundiza en las características y principios de la MP, a partir de la exploración de las principales líneas desarrolladas por Pangrazio (2016). En la tercera parte, siguiendo el principio de generar procesos ascendentes de autorreflexión en los docentes para integrar la tecnología en su quehacer profesional, se establecen dos sentidos específicos en los que la MP supone un aporte para la formación docente en estos países: por un lado, el modo en que contribuye a superar la desvinculación del docente respecto de la investigación educativa; por otro, la forma en que favorece que los docentes que ya han atravesado su formación inicial interpelen los modos en que se construye el conocimiento en el marco de las prácticas cotidianas de enseñanza de la escuela.

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[1] Esta *EdTech Winter School* fue organizada por la Fundación Ceibal en Punta del Este durante julio de 2017. Asistieron participantes de distintos países de Latinoamérica, Estados Unidos, Europa y Oceanía.

LA INCLUSIÓN DIGITAL CON SENTIDO PEDAGÓGICO ASCENDENTE:
UNA TAREA PENDIENTE

A lo largo de las últimas décadas, buena parte de los países de América Latina han llevado adelante políticas educativas enmarcadas en proyectos democráticos de inclusión social. En el marco de esa agenda educativa —que comprende, entre otras, legislaciones dedicadas al aumento de los años de escolaridad obligatoria, la ampliación a sectores sociales previamente excluidos y el aumento de la financiación de los sistemas educativos— cobran particular relevancia las políticas educativas de inclusión digital, de fuerte expansión en la región (Dussel y Quevedo, 2010; Maggio, 2012b).

Si bien hay diversas escalas, modelos tecnológicos y pedagógicos, así como distintos destinatarios de las políticas de inclusión digital, una de las apuestas más extendidas ha sido el modelo 1 a 1, que impulsó inicialmente Nicholas Negroponte en Davos y que fue adoptado, con distintas improntas tecnológicas y educativas, en países como Argentina y Uruguay (Severin y Capota, 2011). Existen fundamentalmente dos enfoques que dan sentido de estas políticas: el enfoque social, orientado a combatir la brecha digital que surge de los escenarios socioeconómicos de desigualdad en la región, y el enfoque pedagógico, destinado a mejorar la calidad educativa a partir de la transformación de los procesos de enseñanza y aprendizaje (Tedesco, 2012).

Diversos estudios han mostrado las tensiones entre estas dos orientaciones (Maggio, 2012b; Lugo, Kelly y Schurmann, 2012), visibles tanto en los documentos institucionales que dan origen a estos programas como también en etapas más avanzadas de su implementación. Al mismo tiempo, se advierte el progresivo avance que, en el marco de estos programas, ha tenido la búsqueda de dotar de sentido pedagógico a la inclusión digital en la escuela, al punto de convertir a la orientación pedagógica en punta de lanza de las iniciativas de inclusión tecnológica. En Uruguay, tal es el caso del recorrido que atraviesa el Plan Ceibal, desde su constitución hasta la actualidad, y la creación de la Red Global de Aprendizajes. En Argentina, esto se percibe en la creación de propuestas de formación como el Postítulo en Educación y TIC del Ministerio de Educación de la Nación y, fundamentalmente, en la continuación que el Plan Conectar Igualdad encontró en el Plan Nacional de Inclusión Digital Educativa, orientado por búsquedas pedagógicas y curriculares.

El modelo 1 a 1 ha sido objeto de distintos estudios orientados a comprender su impacto. Muchos de ellos se han centrado en el alcance cuantitativo de la dotación de dispositivos tecnológicos, siguiendo una impronta visible en otras regiones (Cuban, 2009). Otros han dado cuenta de avances en las dimensiones educativas de las políticas implementadas. En el caso del Plan Conectar Igualdad,[2] lanzado en el año 2010, Mariana Maggio (Maggio, 2012b; Latorre et al., 2012) advierte, entre otros, cambios en la

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[2] Desde diciembre de 2015, a partir del cambio de gestión política en Argentina, el Plan Conectar Igualdad fue desfinanciado y desmantelado progresivamente hasta llegar a su actual estado de inactividad.

permanencia de los alumnos en la institución escolar y la creación de condiciones para que estos desarrollen actividades por fuera de los espacios y los tiempos tradicionales de la escuela. Más allá de estas transformaciones relevantes, en lo que refiere a las prácticas de enseñanza, si bien distintos estudios señalan las características que adoptan las buenas prácticas de docentes en el marco del modelo 1 a 1, también se ha constatado la existencia extendida de formas de inclusión tecnológica efectivas. Estas son situaciones en que "la puesta a disposición de tecnología se produce por razones ajenas a la enseñanza" (Maggio, 2012a, p. 55) y responde, en su lugar, a las políticas o a las decisiones de las instituciones educativas: una línea descendente de presiones o estimulación positiva que termina por vaciar de sentido la apropiación de las TIC para el docente en su trabajo cotidiano.

Diversos estudios sobre los modos en que las reformas educativas promotoras de la inclusión digital interpelan a los docentes, en el marco de la cultura escolar, presentan en términos de "choque" el cruce que se genera entre la cultura digital y las pautas propias de la cultura de la escuela, junto con sus subculturas disciplinares (Goodson, Knobel, Lankshear y Mangan, 2002). Otros entienden esa relación entre escuela y tecnologías en términos de negociación, que no supone una resistencia al cambio por parte de la institución escolar, sino más bien la apropiación por parte de esta de un necesario lugar de mediadora con la cultura digital, sus valores y pautas culturales (Dussel y Quevedo, 2010).

A lo largo de las discusiones grupales de la *EdTech Winter School*, se asumió este diagnóstico sobre los procesos de innovación en la escuela desde el rol de formadores docentes e investigadores. Esto permitió tomar conciencia de dos cuestiones fundamentales: por un lado, que es necesario comenzar a estudiar el sentido que tienen el choque cultural y la negociación aludidos, específicamente para los docentes y los modos en que abordan la enseñanza de sus disciplinas. Por otro lado, que es preciso explorar nuevos puntos de partida para la tarea como formadores y preguntarse cómo lograr que, en un movimiento que se entiende como ascendente, los docentes se apropien de forma activa del sentido cultural transformador que suponen las tecnologías para los saberes que construyen en clase y que, a partir de ese reconocimiento, se vean interpelados a repensar las prácticas que llevan adelante.

Este cambio de punto de partida y estas inquietudes se tradujeron en una serie de preguntas que surgieron en diferentes momentos de la *Winter School*, y que interpelan a los educadores comprometidos con los procesos de innovación e inclusión social: ¿Cómo lograr que las políticas educativas de inclusión digital no sigan una trayectoria descendente y que, por el contrario, se generen procesos pedagógicos ascendentes de inclusión digital, motorizados por los educadores, sus ámbitos de trabajo, sus disciplinas y la cultura escolar que dota de sentido sus prácticas? ¿Cómo favorecer que los docentes se apropien de la innovación que suponen las TIC para los sentidos que negocian con los alumnos en su práctica cotidiana?

LA *METODOLOGÍA DE LA PROVOCACIÓN*

Luci Pangrazio es investigadora en la Universidad de Deakin, en el Centro de Investigación para la Innovación Educativa en Australia. Sus estudios abordan las alfabetizaciones digitales críticas y la naturaleza cambiante de los textos digitales, en particular para los jóvenes. Su trabajo también explora metodologías creativas en el contexto digital. Durante la *Winter School*, disertó sobre dos temas: "Hacer sentido en el contexto digital" y "Uso de métodos creativos y críticos en la investigación digital". A lo largo de sus disertaciones, Pangrazio propuso abordar la *metodología de la provocación* (*provocation methodology*), cuya propuesta retoma los aportes de la Investigación-Acción Participativa (Fals Borda, 1990), a la vez que invita a pensar el trabajo de campo en la investigación educativa desde la práctica de "interpelar" y "provocar" a quienes no son objeto de estudio, sino sujetos de la investigación que se realiza.

La propuesta metodológica de Pangrazio aborda la provocación desde los campos que usualmente apelaron a ella como método: las ciencias naturales y el arte, y se pregunta si es posible pensarla como método de investigación en las ciencias sociales. En este sentido, la práctica provocativa posiciona al investigador y a los actores que involucra en su proceso de investigación en otro vínculo, crítico y de mutuo aprendizaje. Genera un espacio reflexivo de a pares y quita la división tajante entre investigador/objeto, al sumarle una dimensión de acción y construcción que produce intercambios valiosos en el trabajo de campo.

Esta propuesta hace foco en la relación entre teoría y método y, a su vez, critica la noción de método entendido como una operación de extracción de información a partir de simples técnicas. El método de investigación de la provocación busca, en cambio, enraizar el análisis en un contexto determinado, desnaturalizar prácticas y prenociones en pos de construir nuevas relaciones en el proceso de investigación entre el investigador y su sujeto. En esta nueva relación, se desplaza al entrevistado del lugar en que suele ser encasillado, es decir, como sujeto pasivo, sin agencia y oportunidad de reflexión sobre el proceso de investigación. El desafío es crear un espacio de intercambio y de mutuo encuentro, en el que emergen debates y reflexiones propias de los sujetos que intervienen y se interpelan en el proceso.

Pangrazio hace particular hincapié en la importancia de lograr una "multiplicidad de voces", dado que la polifonía constituye un acto que democratiza la práctica y los vínculos que se crean en el trabajo de campo. El conocimiento no fluye unidireccionalmente, sino que se construye en las relaciones que la práctica genera. Por eso, la autora postula que esta metodología es "creativa, participativa y provocativa" (Pangrazio, 2016, p. 8).

PRINCIPIOS DEL MÉTODO DE INVESTIGACIÓN PROVOCATIVA

Pangrazio enuncia tres principios que rigen de forma flexible el método de la provocación. El primero es denominado "distancia crítica" y busca que los participantes logren alejarse del contexto cotidiano en que habitualmente experimentan el fenómeno social estudiado para poder analizarlo. Esto se logra mediante la participación voluntaria del entrevistado en un lugar apartado de su contexto cotidiano, que lo aleja de los efectos inmediatos de dicho contexto.

El segundo principio consiste en "materializar pensamientos" y asume que en el vínculo entre investigador e investigado (entrevistado) se asiste a un proceso de transformación cuyo desarrollo precisa en igual medida de ambas partes. En ese marco, el investigador asume el rol de "provocador" y desarrolla tres estrategias a fin de provocar al participante: presentar nueva información, descontextualizar una práctica cotidiana para iniciar el debate o trasladar una idea para crear nuevas o diferentes interpretaciones sobre un tema. Estas tres estrategias pueden funcionar en conjunto o por separado. Lo importante es que permiten materializar los pensamientos y las ideas más allá del tema en cuestión que se está investigando. Esto habilita a que, en el proceso de investigación, surjan nuevas reflexiones críticas en el marco de la entrevista, ya que el entrevistado asume una responsabilidad que implica mayor compromiso a la vez que materializa un proceso creativo.

El tercer principio se desprende del segundo y se vincula con la importancia de generar, en particular en el entrevistado, una autorreflexión a partir de la que pueda lograr una lectura crítica de su contexto, de su cotidianidad y entorno. Es un principio que permite hacer preguntas que en otra situación no se hubiesen materializado.

¿CUÁL ES EL APORTE DE *LA METODOLOGÍA DE LA PROVOCACIÓN* A LA FORMACIÓN DOCENTE?

A partir de los debates del grupo de trabajo durante la *Winter School*, y en el marco de una búsqueda de procesos ascendentes de apropiación tecnológica, se entiende que la MP puede aportar a los dispositivos de formación docente continua de Argentina y Uruguay en dos sentidos específicos.

En primer lugar, contribuye a superar la desvinculación del docente respecto de la investigación educativa, necesaria para la transformación de las prácticas y la atribución de un sentido pedagógico al uso de las tecnologías. De forma generalizada y en el plano regional, la investigación no suele formar parte de la formación inicial docente. La investigación en servicio, por su parte, tampoco encuentra marcos formales de concreción en los planes de estudios de los profesorados e institutos docentes.

A lo largo del tiempo se han asumido diferentes posiciones respecto del vínculo docencia-investigación. Existen antecedentes que trazan un mapa de esta discusión:

desde estudios internacionales desarrollados en Latinoamérica y Europa, que resaltan la importancia de repensar las prácticas de formación docente y su vínculo con la investigación (Murillo Torrecilla, 2006), hasta análisis particulares que destacan el carácter estructural del problema que implica la falta de aportes investigativos como parte de la práctica docente.

Según Flavia Terigi (2012), las características del trabajo docente y sus contextos específicos son cruciales al momento de evaluar prácticas y experiencias de enseñanza. Allí se pone en tensión el rol del docente como productor/reproductor o transmisor de saberes en el sistema escolar, que varía según cada coyuntura. Si bien existen muchos docentes que producen saberes y diseñan proyectos a partir de sus propias experiencias,

> lo cierto es que la definición del trabajo docente en el sistema educativo no contiene el trabajo de producción de saber sobre la transmisión ni contempla las condiciones para hacerlo posible. El listado de funciones en que se despliega la posición docente no incluye la producción de saber pedagógico, ni su puesta en circulación pública, ni su revisión bajo procedimientos de análisis crítico; no se trata de que alguna vez haya habido condiciones para ello que luego se deterioraron, sino que estas tareas no forman parte de la definición tradicional del trabajo de los maestros y profesores en la escuela moderna tal como la conocemos (Terigi, 2012, p. 19).

Ante este escenario problemático, la *metodología de la provocación* busca interpelar al docente como investigador. Lo ubica y lo desafía a encarar su práctica como objeto de estudio que lo interpela y a la vez lo transforma de dos modos estrechamente vinculados. Por un lado, apunta a una transformación de las prácticas de enseñanza a partir de una provocación vinculada a ciertos conocimientos o saberes asociados a su práctica. Por otro, dada la relación de aprendizaje mutuo que establece entre el investigador y los participantes de la investigación, involucra al *otro* en el quehacer de la producción de conocimientos y abre un camino posible para acercar a los docentes a la investigación sobre las prácticas educativas en ámbitos enriquecidos por tecnologías. Así, la MP presenta también un nuevo modo de investigar esas prácticas y de producir conocimiento.

En segundo lugar, puede detectarse en la historia de las reformas educativas de Argentina y Uruguay una fuerte tradición de miradas aplicacionistas que, lejos de reconocer a la escuela como un ámbito de producción del conocimiento con pautas culturales y una historia propias, la comprenden como un ámbito de recepción, adaptación o deformación del conocimiento legítimo generado en otros ámbitos culturales, como el académico y el científico (Viñao, 2002). Esta mirada que sostienen las reformas sobre la innovación ha generado resistencias en los docentes, que no encuentran sentido en los cambios, en la medida en que no entablan un diálogo transformador con las formas en que tradicionalmente han construido el conocimiento desde sus disciplinas.

En lugar de descartar la cotidianeidad de las prácticas y los saberes teórico-metodológicos de los docentes, la MP permite partir de ellos para entablar un proceso de reflexión sobre la práctica docente y los modos de producir conocimiento de la cultura digital que la interpelan en el presente. En lugar de omitir el devenir de la cotidianeidad del trabajo docente, la MP la detiene para que —mediante estrategias provocadoras de descontextualización, la introducción de nuevas perspectivas sobre un tema y la generación del debate— el docente produzca una lectura crítica de su contexto, los conocimientos de su disciplina y sus prácticas. En este sentido, la MP tiene el potencial de contribuir a procesos de inclusión digital ascendentes, que tomen su sentido de la práctica de los docentes, de su cotidianeidad, sus saberes y sus tradiciones de enseñanza, y no de los enfoques considerados como valiosos por los académicos del ámbito universitario o los especialistas en tecnologías.

CONCLUSIÓN

La primera *EdTech Winter School* resultó un encuentro valioso de intercambio de reflexiones de países que, en los últimos años, han atravesado procesos de innovación educativa e inclusión digital similares, aunque no idénticos, como Argentina y Uruguay. En esta reseña se pretendió mostrar el valor de ese intercambio, surgido también gracias a los aportes metodológicos de la doctora Luci Pangrazio.

La reflexión sobre los aportes de la MP a la práctica educativa y la investigación permite repensar el rol docente en las aulas y en las propuestas de formación vigentes. Los lineamientos de esta metodología —puestos en diálogo con otras políticas orientadas a la jerarquización del docente y su trabajo— pueden habilitar potencialmente a rejerarquizar el rol docente desde los propios espacios de formación, al posicionarlos como investigadores en y desde sus prácticas cotidianas. A su vez, pensar proyectos de formación en diálogo con la provocación es una vía para reflexionar sobre las innovaciones que se encuentran pendientes en el sistema educativo (Cobo, 2017). Entre ellas, el debate sobre el papel activo de los docentes en relación con el conocimiento y su producción, tal como señala Cobo:

> [Establecer] una relación distinta a la que tradicionalmente habían tenido (y bajo la cual muchos fuimos formados). Esto significa que el valor central ya no está en el acceso o dominio de un conocimiento en particular sino en la capacidad de desfragmentar y reconstruir conocimientos bajo nuevas combinaciones, formatos y canales" (Cobo, 2017, p. 19).

La articulación de la MP con las problemáticas propias de las tradiciones de reforma educativa y formación docente de Argentina y Uruguay permite abrir una nueva puerta de indagación metodológica. Esta se aleja de los enfoques aplicacionistas en dos sentidos: primero, porque propone procesos de innovación ascendentes, susceptibles de

abrir a los docentes a una puesta en suspenso y reconstrucción del conocimiento y las prácticas que dan sentido a su trabajo, en lugar de realizar presuposiciones infundadas y en exceso academicistas de esas prácticas. Segundo, porque lejos de buscar recetas aplicables a todos los sistemas educativos de forma homogénea, la *metodología de la provocación* —o, mejor aún, el modo en que esta ha sido releída en el marco de las problemáticas de la formación docente continua— está atravesada por el espíritu del código abierto. Esto quiere decir que, en lugar de ser un modelo cerrado a seguir a rajatabla, constituye una serie de principios teórico-metodológicos vinculados a una concepción del docente, la formación, la historia y las tradiciones de la escuela, su cultura y sus procesos de innovación; es así, un modelo susceptible de ser readaptado y reconfigurado a los fines prácticos de repensar las problemáticas que presenta cada escenario educativo.

Por último, es preciso subrayar que este proceso detenido de reflexión y puesta en común de experiencias no hubiese sido posible sin el esquema de trabajo e intercambio propuesto por la *Winter School*. El trabajo grupal orientado a la producción de propuestas de innovación, potenciado por la organización de los asistentes en núcleos temáticos relevantes, creó las condiciones para compartir prácticas e inquietudes basadas en los contextos locales de trabajo, así como para pensar estrategias que provoquen e interpelen diferentes realidades educativas en el marco de los nuevos escenarios culturales y tecnológicos.

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