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Culture, Identity and Learning: A Mediation Model in the Context of Blogging in Teacher Education

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Abstract

National culture has been an influential framework for comparative and international research. However, current theories suggest that people and societies are rather more complex constructs than their cultural layer. This work is based on a previous study in which, when students from Spain were compared to German students, the former showed higher levels of identity with their blogs and learning impact. The current study is a step forward as it presents the differences in identity and learning impact in blogging between Spanish and Israeli student teachers and offers a mediation model in which the relationship between culture and learning is mediated by the identity factor. The results show that Spanish student teachers feel more identified with their blogs and thus perceive a greater learning impact. Accordingly, this work suggests that blogging could act as learning spaces that may raise students' identity with their learning products and their self-perceived learning impact.

Keywords: Culture, identity, teacher education, Personal learning environment, Blog

Introduction

Personal Learning Environments (PLE) is the approach to Technology Enhanced Learning (TEL), which focuses on the need to give students control and ownership of their learning process. Although it was initially explored from a technical perspective, the pedagogical strand subsequently went on to explore the importance of developing students' skills for self-regulated learning rather than being limited to tools (Fiedler & Väljataga 2010; 2014). In this sense, Buchem (2012) observed the impact on learning afforded by feeling a sense of ownership especially related to intangible elements of Personal Learning Environments – such as control of content and data – rather than tangible elements, such as control over technical tools.

This line of research is rooted in the theory of psychological ownership and based on previous work exploring the impact of psychological ownership on learning (Buchem, 2012; Buchem, Tur, & Holterhof, 2014). In the study by Buchem et al. (2014), psychological ownership was explored in its five dimensions – sense of responsibility, sense of self-identity, sense of accountability, sense of self-efficacy and sense of belongingness – and compared in three international groups of students, two from Germany (Berlin and Duisburg), and one from Spain (Ibiza). In general, it was observed that the Ibiza sample developed the strongest sense of ownership over their Personal Learning Environments

and perceived the highest impact of the changes in the way they learned. A detailed analysis of data showed that students from Ibiza obtained the most positive results in terms of a sense of identity, thus uncovering a challenging relationship between identity and learning.

Furthermore, previous studies of PLEs were conducted from a cross-cultural perspective, indicating that the use of social media may be affected by the users' national culture (Carpenter, Tur & Marín, 2016; Chen, Mashhadi, Ang, & Harkrider, 1999; Tur, Marín & Carpenter, 2017). Conclusions from these studies were extremely interesting and suggested the importance of further work in order to be able to explore new implementations of PLEs and analyse the possible influence of cultural aspects. Thus, this new stage of research explores in greater depth the previously rather unexplored relationship between culture, identity and learning. Specifically, the study explores the relationship between culture and learning from the perspective of the mediator role of identity in two groups of student teachers from Israel and Spain.

The study presented in this paper applies a holistic approach as it is derived from two educational perspectives. Firstly, it adopts a psychological perspective and focuses on the concept of psychological ownership and secondly it is based on a socio-anthropological perspective with the focus on Hofstede's (1986; 2011) concept of culture and the alternative social identity model for describing cultures (Straub, Loch, Evaristo, Karahanna, & Srite, 2002). In the current research stage, participants are student teachers with a common academic background (i.e., academic culture) but differ in their national culture (Spain vs. Israel). Thus, the element of identity ownership is explored in terms of learning impact through the cultural lens in a mediation model. The Spanish (Ibiza) sample was chosen since the students had previously shown a strong sense of identity which in turn had a greater impact on learning. The mediation model is explored and compared with a corresponding sample of student teachers from Israel. This is of especial interest since the students from Spain and Israel represent the furthermost eastern and western sides of the Mediterranean region, which could reveal interesting differences and commonalities with relevant implications for international research.

Background

Culture, Learning and Technology

Culture is a very complex and abstract concept with a variety of definitions and interpretations attributed to it. According to Biesta (2011) cultures may be seen as a way of acting and being. Cultures are produced and reproduced through human collective activity. Thus, individuals are neither totally determined by culture, nor are they totally free of them. Gunawardena et al. (2001) argue that culture is not static, as it is being constantly changed by individuals who are polycultural, holding different cultural identities at the same time. Hofstede (2011) defined culture as "the collective programming of the mind that distinguishes the members of one group or category of people from others" (p. 3). There are two approaches to the cultural dimension in his framework: a very popular and frequently explored framework in which culture is said to play a dominant role in predicting human behaviour; and an alternative one in which identity is perceived as more than just a national culture. In his classic work, Hofstede (1986) related to culture at the national level. He initially developed a four-dimensional model, which has since been extended to six dimensions, to describe national cultures (Hofstede, 2011). This model has represented one of the most influential existing frameworks and has been supported by a large number of empirical studies (Sánchez Franco, Martínez López, & Martín-Velicia, 2009). It can be informative for online learning design as it can be of assistance in understanding how it is perceived by students.

According to data on the Hofstede's website[1], Israel and Spain do not differ significantly since similar results are obtained in dimensions such as individualism (54-51), masculinity (47-42), and uncertainty avoidance (81-86), whereas the greatest difference is in power distance (13-57) followed by long term orientation (38-48). Based on scores obtained in Israel and Spain, at an educational level, both countries share some patterns for the teacher-student interaction as argued by Hofstede (1986). Therefore, it can be hypothesised that both Israel and Spain would have similar educational patterns such as (a) little symbolic value given to diplomas and the importance of developing skills (both Israel and Spain are individualistic societies); (b) being comfortable in structured learning situations; (c) the conception of teachers as experts (strong uncertainty avoidance societies); (d) rewarding students' academic performance: (e) and a competitive approach in education (masculine societies). Considering the individualistic attribute in particular, ICT should be easily integrated into both Israeli and Spanish societies, as ICT can be used to connect individuals (Viberg & Grönlund, 2013). However, Israel should presumably be less hierarchical than Spain and better allow student-centred education and a two-way communication in class, which can also be initiated by students, as a result of the characteristics of the power distance dimension. It has been said that in cultures with short power distance, quality of learning is determined by student excellence whereas in long power distance cultures, it is considered to be the teachers' responsibility (Viberg & Grönlund, 2013). This is extremely challenging in the context of educational technology since TEL has been deemed as critical for the shift towards a more flexible model with the student at the centre (Salinas, 2013), which seems especially suitable for small power distance societies.

Culture influence values and perceptions may shape how learners respond to computer-based learning (Collis, 1999). In early research, the need to consider culture as variable for the design of software was affirmed (William-Green, Holmes, & Sherman, 1997; Chen et al., 1999) and for example, in the creation of instructional software, the cultural factors were alleged to be important for issues related to the design of graphical interface, symbols and sounds (Chen et al., 1999) as well as the presentation of text and information design (Marcus, 2002). Jayatilleke and Gunawardena (2016) carried out research into how 30 university academics from Mauritius, Sri Lanka and Pakistan perceived their own cultural context and how it influenced their online learning. In regard to perceptions on the influence of culture in online communication, the scholars found that, in contrast to the Pakistani participants, the majority of the participants from Mauritius and Sri Lanka felt that the cultural aspects of the power difference between teachers and learners may influence the way they participate and engage in online interactions. Moreover, Sri Lankan participants felt that they were less likely to challenge the ideas expressed by their peers as opposed to Pakistani and Mauritian participants. In contrast to all the Sri Lankan participants, the other two groups of participants felt that opposing ideas online would be taken at a personal level rather than at the level of sharing ideas. According to these results, the scholars argued that "it is still crucial to examine the cultural frameworks and expectations students and teachers bring with them in order to build an inclusive online learning environment" (p. 60).

In recent research, through the development of Web 2.0, the focus has been on social media – see for example, the literature review by Jackson and Wang (2013), and by Tarhini, Hone and Liu (2015)– and mobile learning –see for example, the revision of literature by Arpaci (2015), and Choi, Im, and Hofstede (2016). Although there are numerous nuances, the general conclusion is that cultural differences exist among users of social media for diverse aims: technology has never been more dominant than culture (Choi et al., 2016). It has also been argued that online environments reflect offline culture (Jackson & Wang, 2013). Research has permitted the exploration of some

[1]Retrieved from: https://geert-hofstede.com/israel.html

cultural patterns. In general, in more collectivist societies such as China, social media use has been observed as being of less importance to users than in more individualistic countries such as the US (Jackson & Wang, 2013). In relation to Twitter, in particular, users from collectivist societies prefer to strengthen relationships with people they already know, while users from individualistic societies prefer to use Twitter to connect to strangers (García-Gavilanes, Quercia, & Jaimes, 2013).

In research by Krasnova, Veltri and Günther (2012) the level of self-disclosure in social networks was related to American and German cultural factors and it was concluded that American participants in particular were influenced by trust in those services rather than by privacy issues. Within an educational context, Sánchez-Franco et al. (2009) conclude that cultural factors are relevant for the acceptance and usage of ICT: in weak uncertainty avoidance societies e-learning should be designed based on a clear description of tasks, roles, games and competitions, whereas in societies with strong uncertainty avoidance levels, e-learning should be designed to help in risk management and give more opportunities for control and self-efficacy perceptions. It has also been argued that cultures with higher levels of acceptance of uncertainty will show more willingness for innovation (Arpaci, 2015).

There also exists research that seems to show that data may not always respond to patterns described by Hofstede's model and unexpected results lead to the questioning of its validity (Viberg & Grönlund, 2013). There have also been critiques of Hofstede's quantitative methodology since it fails to explain a possible variability within the same national culture, something which Hofstede has himself understood, arguing that his framework aims to describe the characteristics of an entire nation rather than an individual person (Cronjé, 2011).

However, when considering the concept 'culture' as fluid, it should be noted that Hofstede's cultural dimensions model was criticised by other scholars regarding its validity and limitations, and in particular for its theoretical basis and sampling. For example, Gunawardena and Jung (2014) pointed out the important limitations of the model focusing on: a) limitations of bipolar dimensions, (b) assumption that members of a national culture are homogeneous, (c) samples based on a single multinational organisation, (d) participants predominantly middle-class males, (e) neglect of subcultures within various countries, (f) dated results as cultures are not static but change over time, and (g) the danger of stereotyping individuals of a particular culture (p. 22). In this regard, scholars presented other culture models. For example, considering that cultures are context related, Hall (1976) posited a difference between high-context and low-context cultures as displayed in a communication message. In order to understand messages in a low-context cultures one may only imply the explicit code of the message. While in high-context cultures one may state directly the information in the message.

The Social Identity Theory (SIT) and the virtual onion metaphor (Straub et al., 2002) have been argued as an entire new perspective in offering a more complex description of culture and individual identity that can guide and complement technology research beyond simplistic frameworks (Gallivan & Srite, 2005; Straub et al., 2002; Sánchez-Franco et al., 2009). Although one cannot ignore Hofstede's model's shortcomings and limitations, the main rationale for adopting his classic framework is both because it helped to address the learning design for each group and because the mediation model tested in the current pilot study approaches 'cultures' as different nations.

Identity, Learning and Technology

After an in depth literature review of the fragmentary and analytical perspective of national cultures, Gallivan and Srite (2005) expose a more holistic approach grounded in the Social Identity Theory (SIT) and the virtual onion metaphor introduced by Straub et al. (2002). The virtual onion metaphor is based on the idea that a person's cultural identity is more than just national identity

(Choi et al., 2016). A similar onion-like model of culture has been proposed by Trompenaars and Hampden-Turner (1997). This approach argues that individuals contain layers of cultural identity and experiences rather like the layers of an onion. These layers of social identity are the reflection of the depth at which a certain attitude or belief lies in a person and they can shift depending on variables such as time and circumstance or how they converge or interact in each individual. Thus, there is no fixed representation of the order of layers in relation to their distance from the onion core and a key issue is that there are different ways in which these layers may combine and impact an individual's set of beliefs and attitudes towards an object in a specific setting. As an example, Gallivan and Srite (2005) suggest that national culture is presumably of greater importance in relation to beliefs about international policy, whereas professional cultures are more likely to influence attitudes towards technology. SIT explains three processes in the development of self-identity: (a) the categorisation of objects and people in order to understand them; (b) identification with one particular group and not others; and, (c) the comparison between in-groups and out-groups (Gallivan & Srite, 2005). The authors suggest that research into technology cannot only be guided by a single factor of an individual's identity such as culture because this may overlook other relevant elements such as gender, age, ethnicity, or social or linguistic groups. Although there does exist some work based on this model, it has not as yet been validated (Choi et al., 2016) and more empirical data is needed in the context of ICT research (Gallivan & Srite, 2005).

In the context of PLE research, identity has been previously rather unexplored as demonstrated in the literature review by Buchem, Attwell and Torres (2011). When applying the Activity Theory lens, the authors observed that identity is usually studied in relation to the subject; specifically, research on learners' autonomy and empowerment, their role in identity management and, to a lesser extent, in relation to their interest in learning towards the object. In general, it can be argued that identity has often been addressed in research on PLEs in relation to the skills needed by learners to develop their online identities. This paper suggests that identity is classified as a dimension of PLEs for learner autonomy.

The Study

This section describes the context of learning for the two samples of teacher students from Israel and Spain including learning activities, technical tools and sample characteristics.

Context and Learning Activity

The similar educational characteristics based on Hofstede's (1986) framework, permitted the integration of ICT into the learning process under the PLE approach in both countries, stressing the usage of blogging for reflective aims. However, each PLE was developed from different characteristics that could be useful in addressing the great difference of both groups regarding their power distance dimension. In Israel, Moodle as the Virtual Learning Environment was considered as the institutional part of students' PLE (Biberman-Shalev, 2018). This is a closed platform, in the sense that only the student teachers participating in the course with the addition of the lecturer can read the posts and add comments, and the amount of freedom in designing the blogs is rather limited by the Moodle characteristics and possibilities, and thus might receive greater acceptation by high power distance groups of people. In Spain, the task was developed with Blogger, as openness had been considered a central issue in students' PLEs (Tur & Urbina, 2014), and students were free both for the content and the digital design of their blogs, which in turn were totally open for everyone and could be aligned with the lower power distance dimension that might be expected from the Spanish group.

Thus, the main difference in both activities related to the role of the VLE in students' PLE, which has evolved towards a more interactive approach with students' social media (Dabbagh & Fake, 2017). Nevertheless, one can argue that the role of educational technology in both activities was similar to the communal blogs described by Biberman-Shalev (2018), in which students could read and comment their peers' work, but with a different degree of openness towards a wide audience.

Although the digital platform was different, the learning design was common to both groups. Thus, students had to write their reflective written pieces and read and comment on their peers' work once a week. The topics addressed were those studied in class, from a theoretical perspective in Spain (e.g. write your thoughts about the way the new lesson has changed your vision on traditional methodologies) and practical in Israel (e.g., write your thoughts about your practical day at the school). Both groups were given general instructions for their written text, which enabled the student teachers to have quite a broad control of the content of their posts, comments and their designing (i.e., including pictures or not, films and links to other websites). However, the Israeli student teachers were restricted to the ethical code as they were posting about specific students engaged in their practical work.

Participants

The participants in this study were student teachers from Spain and Israel, with different training backgrounds, as can be seen in table 1 –B.A and M.A programs of Spanish students and a B.A. program of Israeli students. The rationale for selecting these two groups was related to the similarities and differences between them. The geographical basis (i.e. Mediterranean Basin) as well as the professional interest (i.e. teacher education) of these two groups related to their shared characteristics. The main difference between these two groups is their country of origin and the predominant culture that each may embody. This main difference supports the theoretical mediation model examined in the current pilot study (see figure 1). This means that the focus is on the generic relationship between culture and learning and thus it can be examined across different cultures whether in the case of Spain and Israel or other countries (Jayatilleke & Gunawardena, 2016). The descriptive statistics of the two groups are represented in table 1.

Table 1: Demographic information of the study's samples

Sample	N	Age *M(SD)*	Gender (%)		Academic Program (%)	
			Female	Male	B.A.	M.A.
Spanish	75	*23.4(2.96)*	85	15	83	17
Israeli	32	*23.4(2.14)*	100	0	100	0
Total	107					

Method

For the examination of the mediatory role of identity in the association between culture and learning, we offer a mediation model (see Figure 1) which follows Baron and Kenny's (1986) three-path scheme. The first path (path c) establishes the direct relation between culture and learning. As mentioned above, this path has received some empirical support in previous studies (Hofstede, 1986; 2011). The second and third paths of the model constitute our main contribution by establishing

the association between culture and identity (path a), as well as the effect of the identity factor on learning (path b). In line with the theoretical background of our mediation model, we offer the following research hypotheses:

Leaning on previous studies (Buchem et al., 2014) which have found that Spanish student teachers perceived that blogs have a stronger impact on their learning, we introduce the following hypothesis 1 (culture and learning; see Figure. 1, path c): Ibiza (Spain) student teachers will perceive the blog as contributing to their learning process more than Israeli student teachers.

The characteristics of the Spanish group's task enabled the students to have more freedom and control than those afforded by the Israeli task. Moreover, it was found that the more control students have of their learning task, the more they tend to identify with it (Buchem, 2012). Accordingly, we introduce hypothesis 2 (culture and identity; see Figure. 1, path a): Ibiza student teachers will express a higher level of identity with their blogs as compared to Israeli student teachers.

The previous study by Buchem et al. (2014) found a positive relationship between student identification with the technological product and the perceived impact on learning. Therefore, we introduce hypothesis 3 (identity and learning; see Figure 1, path b): student teachers who express high identity with their blogs will perceive this PLE as having a greater impact on their learning process.

These hypotheses can be integrated into the following mediation hypothesis (Figure 1, path c'): Ibiza student teachers will identify more with their blogs, and so will perceive their blogs as having more impact on their learning. Conversely, Israeli student teachers will identify less with their blogs, and so will perceive the blogs as having a lesser impact on their learning.
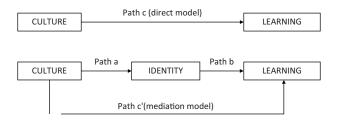

Figure 1: Research Mediation Model.

Instrument

The Israeli as well as the Spanish participants were recruited using convenience sampling. This sample fits the current study as it constitutes a pilot testing of the theoretical mediation model. Maintaining the ethical guideline, the Israeli author received institutional permission to conduct this study, which was also valid in the case of the Spanish author as no other authorisation was required to go ahead with the project. At the end of the year and after the students' work had been graded and assessed, the authors sent a digital message to all the course participants asking them to complete an anonymous online and personal questionnaire. The questionnaire was created using a Google form and was attached as a link to the message. The questionnaire included 6 items regarding the impact of combining blogs in their academic learning process and their sense of identity related to their blogs. This questionnaire is based on a validated questionnaire (Buchem et al., 2014). Possible responses ranged in a Likert scale from 1 = fully agree to 5 = fully disagree. Completing the questionnaire was on a voluntary basis and the students were able to complete the questionnaire either in class or outside the classroom as they preferred, but the time-frame for completing the

questionnaire was until a week after the sending of the message. The return rate for the Spanish sampling was 100% while the return rate of the Israeli sample was 46%. Each of the responses completed all the 6 items included in the questionnaire. Thus, the statistical tests included all the data that was received from the responses. One might argue that the responses resulted in a rather reduced sample size. However, leaning on Bujang, Sa'at and Bakar (2017) as well as on Roscoe (1975) it seems that activating linear regressions in order to test the theoretical model is possible if the sample is higher than 30 participants. The return rate of each of the samples allowed us to lean on these criteria and to continue to test this pilot model.

Measures

Dependent Variable: Learning Impact
The learning impact of blogs included 3 items:

I have a feeling that with my blog I was collaborating for learning

I can use the idea of creating my own blog for my further learning

Creating my blog has changed the way I learn

The descriptives statistics of the *learning impact* dependent variable are Cronbach's α=.86; Ibiza *M*=1.95, SD = .67; Israeli *M*=3.14, SD=.59.

Independent Variable: Teacher Student National Culture
This categorical variable was coded into a dummy variable (Hardy, 1993). Israeli culture was used as the comparison point:

1. 1=Ibiza

   0=Israel

Mediation Variable: Sense of Identity
The student teachers' identity with their blogs included 3 items:

1. I was happy to take the responsibility for creating my blog
2. I can identify with my blog. This is my creation
3. I am proud of my blog

The descriptives statistics of the *sense of identity* mediation variable are Cronbach's α=.74; Ibiza *M*=1.96, *SD*=.70; Israeli *M*=3.54, *SD*=.45.

Results

Mediation Model

The methodology developed by Baron and Kenny (1986) has proven useful for testing mediation model regressions. In our mediation model we applied three ordinary linear regressions for each path of the mediation model.

Path c: The Direct Effect of Culture on Learning Impact when Using Blogs. We first carried out a linear regression, with student teacher culture as the independent variable. Findings in Table 1 (Model 1) indicate that the student teachers' culture had a significant negative effect on their learning impact when using blogs (β=-.65, p < .001, 95% CI [-.46, -.91]) accounting for 42% of the variance (F(1,105)= 74.87, p < .001). Specifically, Ibiza student teachers perceived that the blog had more impact on their learning than the Israeli students. These results supported our first hypothesis. The explanation for these results may be related to the different interpretation of the term 'culture'. If the meaning of 'culture' is related to 'national culture', one may explain the difference between the two groups as the way the impact of integrating blogs or other technological platform on students' learning is perceived by its members. If the term 'culture' means the extent of openness and control that the technological platform allows its users, the difference in the learning impact between the two groups may be related to the platform's characteristics.

Table 1: Ordinary linear regressions for mediation variable predicting learning impact

	Model 1 (path c=direct effect) DV=LI			Model 2 (path a) DV=LI			Model 3 (path b) DV=ID			Model 4 (path c'=indirect effect) DV=LI		
	β	SE	R²	β	SE	R²	β	SE	R²	β	SE	R²
Step 1: Independent variable: Culture (1=IB; 0=IS)	-.65***	.14	.42	-	-	-	-	-	-	-.19	.18	.42
Step 2: Mediation variable: Identity	-	-	-	-.75***	.13	.57	.75***	.06	.57	.60***	.09	.57

*** p < .001; DV=Dependent Variable; LI=Learning Impact; ID=Identity

Path a: The Effect of Culture on Students' Identity with their Blogs. Findings in Table 1 (Model 2) indicate that the dummy culture variable also had a strong significantly negative affect on student teachers' identity with their blogs (β=-.75, p < .001, 95% CI [.05, .30]; β=.25, p < .001, 95% CI [-1.84, -1.31]), accounting for 57% of the variance (F(1,105)=137.80, p < .001). Specifically, Ibiza student teachers identified more with their blogs than the Israeli students did, thus, supporting hypothesis 2. These results may be explained according to the characteristics of the learning task and the technological platform of the Ibiza group. As previously mentioned, the Ibiza group's task allowed for more student control and as a result more identification with their blogs.

Path b: The Effect of Identity on Learning Impact. Findings in Table 1 (Model 3) indicate that the mediator student' identity with their blogs had a significantly positive effect on learning impact (β=.75, p < .001, 95% CI [.54, .77]), accounting for 57% of the variance (F(1,105)= 132.81, p < .001). Specifically, the more students identify with their blogs, the stronger the impact on their learning, thus, supporting hypothesis 3. This positive relation between identity and perceived learning impact is also supported by the previous study by Buchem et al. (2014).

Path c': The Mediating Role of Students' Identity with their Blogs on their Learning. Finally, we examined the extent to which the effect of students' culture on learning impact is mediated by students' identity with their blogs (path c'). Accordingly, we applied a linear regression, entering the dummy culture variable in the first step and the mediator variable (identity) in the second step. Examination of the mediation hypothesis (Table 1 Model 4) reveals that, when students' identity with their blog was introduced into the model of effects on learning impact, the estimated culture effect was no longer significant, and the accounting variance was increased from 42% to 57%. According to Baron and Kennys' (1986) when the independent variable no longer affects the dependent variable after the mediator had been controlled (path c zero) it specifies a complete mediation model. Thus, according to this study's results, the relationship between students' culture and the learning impact when using blogs was mediated by the students' identity with their blogs.

Discussion and conclusions

In the current study it was found that the relationship between students' national culture and learning impact in the context of blogs may be mediated by the extent to which the students identify with their blogs. In particular, the Spanish students expressed a higher level of learning impact when integrating blogs into their study program than the Israeli students. These results are of considerable interest since from the sociological perspective with the focus on cultural mapping (Hofstede, 2011), blogs may support the student-centred education idea, which Israeli educational culture tends to encourage more than Spanish educational culture may do. Data obtained lead to the idea that learning has more to do with context and personal characteristics than national identities. This result leads to further hypothesis as to the mechanisms that activate or stand behind the relationship between national culture and learning impact when integrating blogs.

An examination of the results of previous studies by Buchem et al. (2014) revealed that Spanish students developed the strongest feelings of identity in their learning environments (i.e., blogs) compared to German students. In other words, Spanish students focused more than German students on designing the representations of their identity in their blogs and thus perceived that the blog had a greater impact on their learning. Our study's results supported these findings as it was also found that Spanish student teachers identified with their blogs more than the Israeli students did, and that the more the student teachers identified with their blog, the greater the impact on their learning. One explanation for these differences in perception of identity between the two groups was ascribed by other researchers (Buchem et al., 2014) to the disciplinary culture (Becher & Trowler, 2001) or the academic background of their research participants. Our study's results may refute this explanation as both groups of students had the same academic background, i.e., teacher education. However, as there are some differences in their educational backgrounds, further research is needed to explore this issue.

All of the above made us think of 'identity' as a factor which may act as the psychological mechanism in the relationship between culture and learning impact. Examination of our mediation model revealed that the level of student identity with their blogs mediated the associations between the students' national culture and their perception of the learning impact of blogs. In particular, complete mediation was found as the Spanish students identified more with their blogs than the Israeli students did and thus, they perceived that the blogs had a greater impact on their learning. In this regard, one may suggest that factors such as identification with the technological product may in fact have a greater effect on student learning than students' national culture.

Buchem et al. (2014) also suggested that the differences in perception of identity can be ascribed to the learning activity or its context, especially in relation to how much freedom of choice and thus control is granted to students in their PLE practice. In this regard, the meaning of 'culture' in the current study may not refer only to the students' nationality. As the learning activities that were given to each of the groups differ in their extent of freedom of choice and in their context (i.e., Moodle vs. Blogger), 'culture' may also represent the different characteristics of the tools involved in the learning activities. Embracing this interpretation into this study's mediation model, one may argue that the characteristics of the learning activity, as well as the technological platform chosen to display it, may affect the level of students' identity with their learning products and thus to perceive that it has a greater impact on their learning. Furthermore, these tools mainly differ in their possibilities for openness, allowing us to suggest for further research the hypothesis of openness as a possible variable for identity in students' PLEs.

Research Implications

The main results of this current study and the mediation model it presents may suggest some educational implications for educators in the context of higher education and especially in teacher education programs. A general but major implication is related to the significant direct relationship between culture and learning. The effect of culture on students' learning may empirically strengthen the importance of taking into account students' culture in designing learning environments as well as the idea of multicultural teaching and learning. In this regard, educators should consider the socio-cultural context of their learners and adapt their instructional design for online learning to their cultures, as has already been suggested by Barberà, Layne and Gunawardena (2014). Specifically, in their courses, teacher-educators should continue to place emphasis on the concept of multicultural education and the multicultural competences needed to understand the effect of culture on students' learning in face to face settings (Alismail, 2016) as well as in virtual learning platforms (Jayatilleke & Gunawardena, 2016).

Teacher-educators who wish to achieve a greater impact on students' learning process, may design their learning activities in a way in which students will be able to better identify with their learning outcomes. For example, when integrating blogs into the learning process, educators should allow more open and flexible assignments (i.e., flexibility in postings and blog design) which would allow students to identify more with their blogs and to perceive a greater impact on their learning process. Furthermore, the research presented in this paper has been carried out in relation to Teacher Education programs, with implications for future transferability to other educational levels and inter-professional programs.

Therefore, this work is a contribution to international research and suggests important implications for further research from a comparative approach. The national culture element has been relevant in the analysis of possible differences in its impact on learning and particularly in the context of educational technology, as has been demonstrated in the literature review. The work by Hofstede (1986; 2011) has been paramount for comparative research; and it could still be useful even in the analysis of national educational technology programs for stakeholders at different levels. However, this does not seem to offer a sufficient explanation for identity, which is a more complex construct, as the social identity framework suggests. This work is in line with the alternative vision of the dominance of the culture element above all, since the mediation model evidences that factors such as personal identity can also be influential.

Although a considerable amount of work on identity has already been carried out, our focus on identity and learning impact is a rather under-researched perspective in the context of social media.

On the one hand, it has mostly been addressed as the image individuals create of themselves in virtual worlds or, regarding learning in PLEs, as the development of skills to manage one's own identity, as has been shown in the literature review. On the other hand, it has been observed as one of the main issues in teachers' professionalisation, and it has been said that the empowerment of student teachers' identity needs to be improved all across Europe (European Commission, 2013). In recent times, some issues in relation to teachers' professionalisation have been observed from in-service teacher identity as reflected in social media (Kimmons & Veletsianos, 2015). Moreover, it has been stated that blogs are currently being used as a place in which to express opinions and local implications of national educational policy (Greene, 2017). Nonetheless, blogging in Teacher Education can be of great relevance in order to help student teachers to define their own self-identity, by becoming spaces in which to express and reflect on their educational knowledge, beliefs and attitudes, which may well have very relevant implications in student teacher learning and outcomes. Similarly, in another study with pre-service teachers, the greater reflective activity on blogs was carried out by those students who also perceived their potential for their future professional careers (Pinya, Tur, & Rosselló, 2016).

The polyhedral approach to identity and culture in online learning that this research supports requires a new phase in which the conceptual background is extended. The models referred to above have contributed to the foundation of the concepts for the learning design and data collection although our conclusions would suggest a highly multifaceted approach concept for which other theoretical frameworks should be reviewed in future work. This is the case of the concept 'idioculture', which was described as highly contextual, but also included "multiple cultural selves and hybrid identities on the Internet that interact with each other cross-culturally to form unique cultures of their own" (Gunawardena, 2014, p. 84). Therefore, further research should include and state how these varied layers of identity and culture interact and influence student teachers' learning.

Reaserch Limitations

One cannot ignore the fact that testing the mediation model in the current study has some major limitations that should be considered. The first limitation is that the sample of our study is rather small, thus making it more complicated to generalise its results. Moreover, the two samples also differ in size since the Spanish sample was more than twice that of the Israeli sample. The reason for that was the relatively low return rate of completed questionnaires which may also reflect a cultural aspect relating to the academic context. The second limitation is that the participants in each sample are (in part) not homogeneous in their belonging to the same academic program. In this regard, B.A. programs compared to M.A. programs may be perceived as different academic contexts and cultures.

The third limitation is related to the idea of culture and the way to address it in the mediation model. Since the definitions, limits and constructs of culture as a concept are complicated, fluid and interpretative, in the current study we leaned on Hofstede's classic model which argues that different nations may display different cultures. Thus, the current study looks on Spain and Israel as different cultures despite the fact that each of these two countries may be viewed as subcultural and multicultural nations. For example, Israel is a country composed of a Jewish sector and an Arab sector and each of these sectors also contains sub-sectors (i.e. Jewish secular, Jewish orthodox, Muslim Arabs, Christian Arabs, Druze etc.).These sectors design and display different subcultures encompassing 'national culture' as an umbrella term for the concept of 'Israeli culture'. This means that the Israeli as well as Spanish population may in fact have a polycultural identity. Thus, the participants in each sample may not present only one culture but in fact, a whole variety of cultures.

In this regard, the three major limitations of this study related to variance errors especially related to within-group variation. Thus, future research should validate our mediation model by including, both larger and more homogeneous groups of participants, and a greater variety of national cultures and subcultures including gender and age.

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