THE RELATIONSHIP BETWEEN THE LEARNING ORGANIZATION AND SELF DIRECTED LEARNING READINESS CONCEPTS AND THE USE OF PERSONAL LEARNING ENVIRONMENTS: AN EMPIRICAL ASSESSMENT

Joaquin Azcue Castillon; EAE Business School
Harold Torrez Meruvia; EAE Business School
Mariona Vila Bonilla; EAE Business School

ABSTRACT

The exponential growth of open on-line learning resources has dramatically changed the way adults learn. The scholarly literature has been studying this phenomenon mainly through the concept of Personal Learning Environments (PLE), which refers to the set of self-managed on-line tools and resources that learners use more and more frequently to meet their goals. On the other hand, in an increasingly competitive world, learning in the workplace has also evolved as new learning capabilities have been required to innovate and adapt in a world that is changing at a faster rate all the time. Already before the Internet became a massively used tool, social scientists had coined the concepts of Self Directed Learning Readiness (SDLR) and the Learning Organization (LO) to explain the evolution of adult learning. The development of a culture of learning organization and self-directed learning in a company was proven to correlate with higher levels of financial performance and capacity to innovate and, for this reason, most companies that operate in contexts where innovation is crucial for survival, have been trying to evolve their cultures in that direction. Now, as the massive use of Internet becomes part of everyday life, we ask ourselves if there is any relationship between the use of on-line personal learning environments and the cultural evolution required to become self-directed learning ready and a learning organization. To asses this association, we carried out an empirical assessment by deploying an on-line questionnaire to more than 9.400 Telefonica employees worldwide, with the positive results that are discussed in this article.

INTRODUCTION

Neo, the hero in the 1999 film "The Matrix", is trying to run away from his pursuers. It is life or death. There is a helicopter on the roof of the building that he could use to run away, if he knew how to fly it, of course. No problem, remember his brain is connected to the network. All he has to do is to request the downloading of the specific training course and implant into his brain. In less than one second, he is ready to fly (Bui, 2010). Neo's brain is connected to a network similar to the Internet and the helicopter flying learning program that is downloaded into his brain is like an on-line learning program. However, this lesson is not about the power of on-line learning, but about the evolution of the way we learn. What this trick comes to show is that the acquisition and possession of knowledge will not be so relevant in the near future, instead of that, what will be much more important is the capacity to find it and be able to use it. Knowledge will no longer be located in people´s brains but in the network. There is no

Citation Information: Castillon., JA; Meruvia., HT; Bonilla., MV. (2023). The Relationship Between the Learning Organization and Self Directed Learning Readiness Concepts and the Use of Personal Learning Environments: An Empirical Assessment. *International Journal of Entrepreneurship*, 27(1), 1-16.

.

doubt about the huge implications this will have in the evolution of adult learning in the workplace (Anderson, 2010)

The exponential growth of data stored in the Internet that has taken place over the last fifteen years is probably the strongest driver of change in the world of adult learning. According to (Weinberger, 2011), as opposed to physical media like books and pictures through which knowledge was transmitted in the past, the digital media in Internet is characterized by a set of unique features that imply a huge paradigm shift: abundance; linking and searching options; open and public access; richness in points of view and collaboration; etc.

This new set of possibilities in the way we have access to all kind of information and knowledge has great implications in the way we learn. (Siemens, 2005), proposed a new learning theory, connectivism, and suggested that learning, defined as actionable knowledge, can reside outside of ourselves (within an organization or a database) and is focused on connecting specialized information sets and experts. "The pipe is more important than the content within the pipe and our ability to learn what we need for tomorrow, is more important than what we know today".

(Sahin, 2012), conducted a Delphi study that concluded that connectivism plays a central role in the "learning to learn" concept, because "it allows individuals to discover continuous learning in its greatest expression, by providing them a most effective way to learn and discover".

Now, if we look at the technological aspects of the learning revolution, we can acknowledge the deep conceptual changes that have taken place in the way the new generations learn. According to (Brown, 2000) scientist and Xerox´s chief technology officer, there is a set of conceptual changes in the learning modes as a result of the prospects brought by the digital technologies: Bi-directionality (the user can at once be a receiver and a sender); Multimedia (the user can take advantage of his multiple intelligences); Cooperation (resources are available from virtually unlimited sources); Searching (researching capabilities are developed in a natural way); Action (agility becomes the norm); Collective intelligence and diversity (users develop a culture of collaboration in a rich diverse environment).

The concept of Personal Learning Environment (PLE), that is central to this research, was originally introduced as a potential technological evolution of the traditional software systems used by learning institutions to manage on-line learning, the so called learning management systems (LMS). According to (Farooq, 2012), "the appearance of open learning resources and the interactive social media applications, has conditioned the vision we have of the traditional LMSs, making them obsolete. A traditional LMS is centered too much in the owning educational institution, opposed to the students it serves, since it is not opened to the possibilities offered by the Internet".

The scholarly literature is paying more and more attention to the concept of PLE and acknowledging the fact that it is no longer about the development of new technologies but about the way the new generations learn in and open on-line world. (Llorente, 2013) defines a PLE as "a new way to understand how students learn and how teachers teach in the digital era". (Attwell, 2007,2008) defines a PLE as "the set of all the different tools that we use in daily life to learn". Whatever definition we may want to use, there is no doubt any longer about its relevance. (Gallego & Chaves, 2014) state that PLE "is an emerging and booming concept that demands more empirical research".

Our empirical research is focused on the relationship of the emergence of PLE as a new way of learning, and the evolution of adult learning within enterprises to innovate and adapt in a context of permanent change (Attwell, 2009). To do so we developed a tool to measure PLE capabilities and we used the already existing tools to measure the evolution of the learning models within organizations, basically its employee´s capabilities to be self-directed learners and of the organization to become a learning organization (Schaffert, 2008).

Already before the Internet became a tool massively used, social scientists had coined the concepts of Self Directed Learning Readiness (SDLR) and the Learning Organization (LO) in order to explain the evolution of adult learning (Artis, 2007). The development of a culture of learning organization and self-directed learning in a company was proven to correlate with higher levels of financial performance and

Citation Information: Castillon., JA; Meruvia., HT; Bonilla., MV. (2023). The Relationship Between the Learning Organization and Self Directed Learning Readiness Concepts and the Use of Personal Learning Environments: An Empirical Assessment. *International Journal of Entrepreneurship*, 27(1), 1-16.

.

capacity to innovate and, for this reason, most companies that operate in contexts where innovation is crucial for survival, have been trying to evolve their cultures in that direction.

(Peter Senge, 1990) defines a learning organization as one that is capable of mastering in five disciplines, in order to be able to survive in a changing world:

System Thinking - The organization and each of its components are considered open interrelated systems

Personal Domain - Every individual is conscientious of the need to evolve permanently

Open Minded Models - Challenging all pre-established judgments all the time

Shared Vision - Leadership to create a vision shared among all individuals

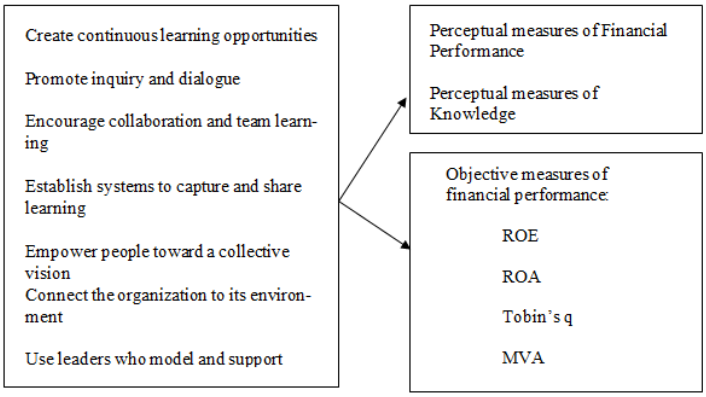
Team Learning - Promoting a culture of dialogue, testing and learning from mistakes

On the other hand, the concept of self-directed learning has been considered as central to the adult learning theory in the last decades. (Baldwin, 1997) states that "individuals are becoming more and more conscientious of their responsibility regarding their own development". (Brookfield, 2009) described Self-directed learning as "*that in which the conceptualization, design, conduct and evaluation of a learning project are directed by the learner"*. This does not mean that self-directed learning is highly individualized learning, always conducted in isolation, in fact learners can work in self-directed ways while engaged in group-learning settings, if this is a choice they have made believing it to be conducive to their learning efforts (Bartlett, 1999). Self-directed learners are not to be thought of as Robinson Crusoes working without human contact. Indeed, a recurring theme of research in this area is the way learners move in and out of learning networks and consult a range of peers (Brookfield, 1986).

Now, the *self-directed learning* and *learning organization* concepts are both linked together. According to (Cho, 2002), the concepts of SDLR and LO are connected, since the learning organization concept is constructed upon the willingness of individuals to learn and construct collectively. This connection is an important part of the results of this research study (Berghman, 2013).

Now, why do we consider the self-directed and learning organization concepts to be relevant as part of this research? The truth is that research shows that both SDLR and LO go together with higher financial performance and innovation rates. In 2002, Ellinger et al conducted an empirical study over 400 managers belonging to an extensive list of US companies form different sectors having in common the need to innovate: automotive parts and supplies, chemicals, electronics or telecommunications among others, to find out the relationship between the capability of the company to operate as a Learning Organization and its Financial Performance. To do so they used (Marsick & Watkins, 1993) dimensions of the learning organization construct and they measured the financial performance of the company both objectively and as perceived by the employees. Figure 1 shows the positive relationship obtained.

Relationship between the Dimensions of the Learning Organization and Financial Performance (Ellinger et al, 2002)



Note: Effect sizes of the canonical correlations range from 0.246 to 0.312 for the perceptual variables with statistical significance at P<0.001, and effect sizes range from 0.104 to .108 for the secondary measures of financial performance (ROE, ROA, Tobin's q, and MVA), statistically significant at p 0.05.

Citation Information: Castillon., JA; Meruvia., HT; Bonilla., MV. (2023). The Relationship Between the Learning Organization and Self Directed Learning Readiness Concepts and the Use of Personal Learning Environments: An Empirical Assessment. *International Journal of Entrepreneurship*, 27(1), 1-16.

.

Figure 1
RELATIONSHIP BETWEEN LO AND PERFORMANCE. ELLINGER ET AL (2002)

Further on, in 2008 Li An Ho carried out an empirical study over 230 experts out of 21 technological companies in Taiwan. Taiwan is known for hosting some of the most important high tech electronic component manufacturing companies (Caffarella, 1993). This is an environment where innovation is essential. Li An Ho, measured the positive relationship between the learning organization capabilities, self-directed learning capabilities, knowledge management capabilities and the organization performance. Once again, this shows that acquiring learning organization and self-directed learning practices is essential to compete in a changing environment. Figure 2 shows the results obtained by Li An Ho.

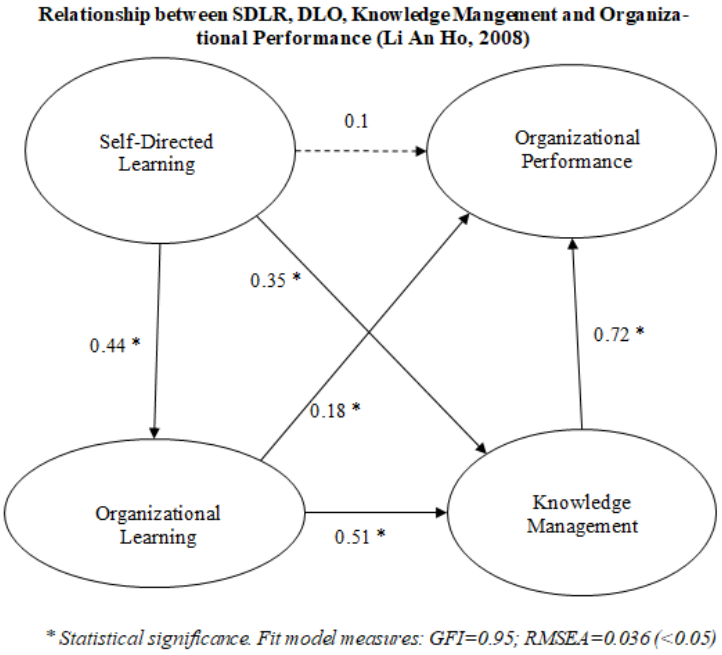


Figure 2
RELATIONSHIP BETWEEN LO, SDLR AND ORGANIZATIONAL PERFORMANCE. LI AN HO (2008)

According to (Bernardo Quinn, 2015), Telefonica's CHRO, "the organizations in the 21 century confront a situation of permanent change that is forcing them to take active measures to survive". Now, as the use of Internet becomes part of everyday life, we ask ourselves if there is any relationship between the use of on-line personal learning environments by the members of an organization and the cultural evolution required for them to become self-directed learning ready and acquire learning organization practices (Chiva, 2005). To asses this association, we deployed an on-line questionnaire to more than 9,500 Telefonica employees worldwide, with the positive results that are discussed in this article. What we tried to prove is that those organizations who promote the use of on-line open learning tools and resources are more likely to become self-directed learning ready and learning organization and, by doing so, have better chances to survive in a context of change (Ismail, 2014).

Theoretical Framework

Citation Information: Castillon., JA; Meruvia., HT; Bonilla., MV. (2023). The Relationship Between the Learning Organization and Self Directed Learning Readiness Concepts and the Use of Personal Learning Environments: An Empirical Assessment. *International Journal of Entrepreneurship*, 27(1), 1-16.

.

The theoretical framework is based in two already existing constructs that have been proven to be useful to measure self-directed learning readiness and learning organization capabilities, and to correlate with higher levels of financial and innovation performance in those organizations where it is manifest, as shown in the previous section, plus a new construct designed and developed by ourselves to measure personal on-line learning environments capabilities (Cho, 2002).

Regarding self-directed learning readiness capabilities, we chose the construct developed by Lucy (Guglielmino, 1997). According to Guglielmino, a highly self-directed learner, "is one who exhibits initiative, independence, and persistence in learning; one who accepts responsibility for his or her own learning and views problems as challenges, not obstacles; one who is capable of self-discipline and has a high degree of curiosity; one who has a strong desire to learn or change and is self-confident; one who is able to use basic study skills, organize his or her time and set an appropriate pace for learning, and to develop a plan for completing work; one who enjoys learning and has a tendency to be goal-oriented".

Guglielmino's original construct shows eight dimensions, although in the last 30 years different simplified versions have been used in different contexts. In our case we used a simplified version that probed to work properly in the Telefonica context, with only four out of the eight original dimensions of its scale (Confessore, 1998).

The following are the four dimensions used in this research to validate up to what extend Telefonica employees are self-directed ready learners:

Positive attitude towards learning (I consider continuous learning to be essential for my career)

Enthusiasm for learning (I love learning)

Confidence in own capacities for learning (I trust in my own capacity to learn)

Tolerance towards ambiguity and risk in learning (I feel comfortable under uncertain conditions for learning, specially where there is no strong guidance)

Regarding Learning Organization capabilities, we chose the construct developed by (Victoria Marsick & Karen Watkins, 1993). According to Marsick and Watson a learning organization is "an organization of people that provide learning at the individual, group and organizational level with the ultimate goal of inducing innovation and change within the organization". The original construct designed by Marsick and Watson shows 7 dimensions but we used only the first six dimensions since this probed to work best in the Telefonica context. The seventh dimension of the original construct referred to the need of "embedded systems to support knowledge sharing" but this seems to be no longer relevant as a result of the appearance of numerous open free use on-line tools like Linkedin, tedX, You tube, slideshare or even Facebook, that are clearly displacing the old corporate knowledge management systems and compose the essence of the personal learning environment concept (Jerez-Gomez, 2005).

The following are the six dimensions used in this research to validate up to what extend Telefonica employees consider their organization embraces the practices of a learning organization:

Strategic leadership for training (leaders support training as an essential part of the strategy)

Empowerment to create a collective vision (people are encouraged to create and be part of a shared vision)

System thinking (people are encouraged to reflect upon the relationship of their jobs with other departments and the rest of society)

Citation Information: Castillon., JA; Meruvia., HT; Bonilla., MV. (2023). The Relationship Between the Learning Organization and Self Directed Learning Readiness Concepts and the Use of Personal Learning Environments: An Empirical Assessment. *International Journal of Entrepreneurship*, 27(1), 1-16.

.

Team learning (people are encouraged to take part in collective learning processes)

Continuous learning (the organization is constantly providing opportunities for continuous learning)

Dialogue and investigation (people and teams are encouraged to experiment, learn from mistakes and share the findings)

We have used a third construct in this research to assess up to what extend Telefonica employees have capabilities to create and use their own on-line personal learning environments. We developed this construct ourselves, since there was none available so far (Cross, 2011). We encourage anyone interested in measuring these capabilities within its organization to use it if convenient.

(Crossan, 1999) Having capabilities to create and use on-line personal learning environments implies that the individual is capable to cover most of his learning needs through the use of an extended on-line network of experts and knowledge resources, which include a large variety and range of sources, going from very structured learning contents, like the MOOCs offered in different platforms by Universities all around the world, to very unstructured contents like blogs or even the posts in Twitter from experts in whatever topic one may be following (Keursten, 2006).

The construct we developed, which probed to work in the Telefonica context, contains three main dimensions:

PLE1: Open on-line learning tools

PLE2: Corporate on-line learning tools

PLE3: Collaboration on-line tools

For all three we assessed both the capability to use the corresponding tools and the value obtained by using them, as perceived by the individual.

We wanted to find out the relationship among these three concepts, SLDR (self-directed learning readiness), DLO (dimensions of a learning organization) and PLE (personal learning environments) in order to probe that an organization where people are encouraged to use on-line collaboration and learning open tools is more likely to become a learning organization with self-directed learners and therefore improve its capability to innovate and adapt in a context of constant transformation. Figure 3 shows the main hypothesis we wanted to test.

Citation Information: Castillon., JA; Meruvia., HT; Bonilla., MV. (2023). The Relationship Between the Learning Organization and Self Directed Learning Readiness Concepts and the Use of Personal Learning Environments: An Empirical Assessment. *International Journal of Entrepreneurship*, 27(1), 1-16.

.

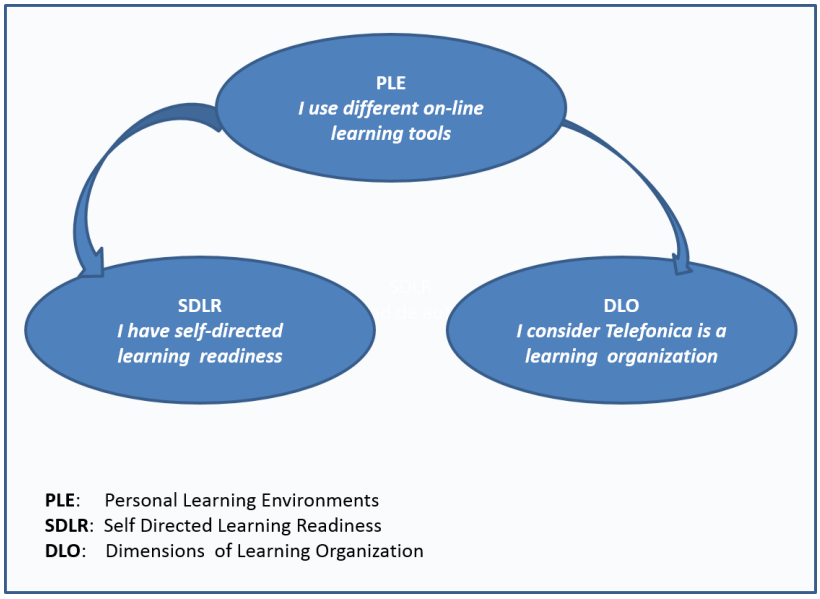


Figure 3
RELATIONSHIP BETWEEN PLE, LO, SDLR AND ORGANIZATIONAL PERFORMANCE

We have considered Telefonica as a perfect context for this research for several reasons. First because Telefonica is a company that offers services to its customers based on state of the art technologies, that are evolving constantly and at the highest pace. Its 100 years of history is a story of constant transformation (Daft, 1984). Secondly because it is a multi-local company that has employees working in different operations in more than 24 countries, operating in different cultural settings, even if they share the same purpose. Finally, because Telefonica has been lately encouraging its employees to use open on-line learning and collaboration tools and resources as part of its strategy to transform and become a more agile and innovative company and we wanted to assess the value of this strategy (Downes, 2010).

Research Questions

This research addresses the following questions:

Up to what extend is Telefonica an organization where: a) employees are self-directed learning ready (SDLR); b) employees are encouraged to follow learning organization practices (DLO); c) employees create and use on-line personal environments to improve their performance and develop their careers (PLE)

Is there a positive relationship between using personal on-line learning environments (PLE) and being self-directed learning ready (SDLR)?

Is there a positive relationship between using personal on-line learning environments (PLE) and perceiving your organization as a learning organization (DLO)?

Has there been an evolution of the employees´ perception of the importance of being self-directed learning ready (SDLR) and working in a learning organization environment (DLO) as a result of the use of on-line personal learning environments (PLE)?

Citation Information: Castillon., JA; Meruvia., HT; Bonilla., MV. (2023). The Relationship Between the Learning Organization and Self Directed Learning Readiness Concepts and the Use of Personal Learning Environments: An Empirical Assessment. *International Journal of Entrepreneurship*, 27(1), 1-16.

.

Research Design

We designed and implemented a 110 questions on-line survey. It was originally designed in Spanish and translated into Portuguese, English and German. It contained the following blocks:

PLE (Personal Learning Environments capabilities): 18 items construct design by ourselves. Shows 3 dimensions that explain 70.5% of total variance

SDLR (Self-Directed Learning Readiness): 18 items construct adapted from Guglielminos's scale. Shows 3 dimensions that explain 64.6 % of total variance

DLO (Dimensions of Learning Organization capabilities): 36 items construct adapted from Marsick & Watson DLO questionnaire. Shows 6 dimensions that explain 66,0 % of total variance

EVSDLR & EVLO (Evolution of the perception of SDLR and DLO as a result of the appearance of PLE): 7 items construct designed by ourselves to measure evolution of individuals perception of their self-directed learning readiness (SDLR) and of their company as learning organization (DLO)

Social and demographic distribution variables

We deployed the on-line survey over 80.000 Telefonica employees worldwide, out of which 9.500 answered, a very broad sample. Table 1 and 2 shows the demographic distribution of the sample, composed mainly of highly qualified employees with an average age around 40 years (Ellinger, 2002).

Table 1
SAMPLE GEOGRAPHIC DISTRIBUTION

Country	Frequency	%
Argentina	1.508	15,90%
Brazil	1.372	14,47%
Chile	429	4,52%
China	2	0,02%
Colombia	749	7,90%
Ecuador	143	1,51%
El Salvador	28	0,30%
Germany	10	0,11%
Guatemala	64	0,67%
Mexico	322	3,40%
Nicaragua	32	0,34%
Panama	1	0,01%
Peru	646	6,81%
Puerto Rico	2	0,02%
Spain	3.198	33,72%

Citation Information: Castillon., JA; Meruvia., HT; Bonilla., MV. (2023). The Relationship Between the Learning Organization and Self Directed Learning Readiness Concepts and the Use of Personal Learning Environments: An Empirical Assessment. *International Journal of Entrepreneurship*, 27(1), 1-16.

UK	80	0,84%
USA	24	0,25%
Venezuela	403	4,25%
Unidentified	471	4,97%
Total	**9.484**	

Table 2
SAMPLE DISTRIBUTION (AGE, EDUCATION, YEARS IN TELEFONICA, GENDER)

Age	>50	[50 - 40]	[40 - 30]	>30
	13%	37%	34%	16%
Education	Undergraduate	Technical	University Degree	Postgraduate
	5%	19%	45%	31%
Years in Telefonica	>10	[10 - 5]	[5 - 1]	>1
	13%	37%	34%	16%
Gender	Male	Female		
	60%	40%		

Age is probably the most relevant parameter. Research shows that the younger generations use Internet and on-line learning resources much more extensively than the older generations for the obvious reason that they have been exposed to Internet since childhood (Ureña, 2013). The fact that most of the individuals in this research belong to the older generations was crucial to be able to analyze the evolution of their perception of the importance of the self-directed learning and learning organization capabilities as a result of the appearance of Internet and the concept of personal on-line learning environments (Ellis, 2003). On the other hand, the fact that we had also individuals belonging to the younger generation was useful to validate the PLE construct in all of its 3 dimensions. Obviously the younger the individual, the higher the score in the PLE scales as shown in table 3.

It is interesting to point out that we got the same results both for the self-directed learning readiness and learning organization scales, that is the younger the individual, the higher the scores in both cases (Farooq, 2012). This was also the case with the educational level, the higher the educational level, the higher the scores in all scales which also contributed to the validation of the scales, as other previous research showed, Ureña (2013) for PLE; ? (Guglielmino & Roberts, 1992) for SDLR; (Kassim, 2007) for DLO (Field, 1989).

Table 4 shows the results obtained for the entire population, including the consistency measurements for each scale. Table 4 shows the comparison of mean values for the total scores in each of the three scales as a function of gender, age, education level and functional area within the company. We could say that the typical individual with higher scores in all scales would be a young female with postgraduate studies and belonging to the R&D department. The R&D function is by definition the most innovative and cutting edge area, and the one that requires the highest level of skills and knowledge updating and sharing.

Citation Information: Castillon., JA; Meruvia., HT; Bonilla., MV. (2023). The Relationship Between the Learning Organization and Self Directed Learning Readiness Concepts and the Use of Personal Learning Environments: An Empirical Assessment. *International Journal of Entrepreneurship*, 27(1), 1-16.

Table 3
MEAN VALUES AND CONSISTENCY ESTIMATES OF THE MEASUREMENT SCALES

Scales and Subscales	Number of items	Coefficient Alpha (α)	Mean (1-5 scale)	Standard Deviation
PLE (Personal Learning Environments)	18	0.93	3.70	0.71
PLE1 (corporate on-line learning tools)	6	0.89	3.53	0.86
PLE2 (open on-line learning tools)	6	0.93	3.71	0.89
PLE1 (open collaboration on-line learning tools)	6	0.95	3.85	0.88
SDLR (Self-Directed Learning Readiness)	15	0.77	4.13	0.41
Positive attitude towards learning	4	0.91	4.81	0.45
Enthusiasm for learning	3	0.87	4.72	0.50
Confidence in own capacities for learning	4	0.71	3.32	0.86
Tolerance towards ambiguity and risk in learning	4	0.77	3.84	0.68
DLO (Dimensions of the Learning Organization)	37	0.93	3.55	0.88
Strategic leadership for training	8	0.93	3.55	0.94
Empowerment to create a collective vision	6	0.90	3.29	0.99
System thinking	7	0.93	3.55	0.97
Team learning	7	0.93	3.49	0.99
Continuous learning	4	0.94	3.60	0.96
Dialogue and investigation	5	0.94	3.93	0.87
Note: N= 9500				

Table 4
COMPARISON OF MEAN VALUES

		TOTALTPLE (*)		TOTALSDLR (*)		TOTALDLO (*)	
		Mean (*)	St. Dev.	Mean (*)	St. Dev.	Mean (*)	St. Dev.
Gender	Male	3.67	0.72	4,11	0,42	3,53	0,89
	Female	3.74	0.71	4,18	0,39	3,60	0,88
		F=19.9; P=0.000; η2=0.002		F=55.4; P=0.000; η2=0.006		F=16.4; P=0.000; η2=0.002	
Age	< 30	3,96	0,58	4,24	0,37	3,79	0,76
	30 to 40	3,83	0,64	4,21	0,38	3,64	0,87
	40 to 50	3,55	0,74	4,07	0,42	3,43	0,90
	> 50	3,45	0,78	3,99	0,43	3,41	0,92

Citation Information: Castillon., JA; Meruvia., HT; Bonilla., MV. (2023). The Relationship Between the Learning Organization and Self Directed Learning Readiness Concepts and the Use of Personal Learning Environments: An Empirical Assessment. *International Journal of Entrepreneurship*, 27(1), 1-16.

.

		F=215.0; P=0.000; η2=0.006		F=162.7; P=0.000; η2=0.005		F=81.9; P=0.000; η2=0.003	
Education	Postgraduate	3,78	0,64	4,23	0,37	3,59	0,85
	Univ. degree	3,73	0,70	4,15	0,40	3,60	0,86
	Technical	3,52	0,79	4,00	0,42	3,43	0,95
	Basic	3,59	0,86	3,96	0,46	3,44	0,97
		F=56.1; P=0.000; η2=0.017		F=159.3; P=0.000; η2=0.048		F=19.3; P=0.000; η2=0.006	
Position	Senior manager	3,61	0,70	4,23	0,40	3,86	0,70
	Manager	3,73	0,70	4,16	0,39	3,72	0,80
	Expert	3,78	0,68	4,18	0,38	3,59	0,87
	Tecnician	3,61	0,75	4,06	0,44	3,39	0,94
		F=34.9; P=0.000; η2=0.011		F=58.2; P=0.000; η2=0.018		F=79.9; P=0.000; η2=0.025	
Function	Operations	3,64	0,75	4,08	0,43	3,47	0,91
	Sales	3,75	0,73	4,15	0,41	3,63	0,90
	IT	3,69	0,65	4,13	0,40	3,53	0,80
	Technology	3,78	0,66	4,16	0,41	3,62	0,84
	Marketing	3,69	0,66	4,18	0,38	3,51	0,89
	Finance	3,69	0,71	4,15	0,39	3,60	0,86
	HR	3,78	0,60	4,15	0,37	3,61	0,83
	Communication	3,63	0,85	4,10	0,43	3,53	0,95
	R&D	3,80	0,58	4,30	0,34	3,61	0,80
		F=34.9; P=0.000; η2=0.006		F=58.2; P=0.000; η2=0.011		F=79.9; P=0.000; η2=0.006	

Data Analysis and Results Obtained

We wanted to probe that the development of personal learning environment practices within the members of the organization had a positive relationship with the acquisition of a learning organization culture and the evolution of the employees to become self-directed learners

(Garvin, 1985) The multivariate tests suggested a statistically significant relationship between the 3 dimensions of the personal learning environment concept and the six dimensions of the learning organization construct, on the one hand, and the 4 dimensions of the self-directed learning readiness construct as well, as shown in figure 4.

Citation Information: Castillon., JA; Meruvia., HT; Bonilla., MV. (2023). The Relationship Between the Learning Organization and Self Directed Learning Readiness Concepts and the Use of Personal Learning Environments: An Empirical Assessment. *International Journal of Entrepreneurship*, 27(1), 1-16.

.

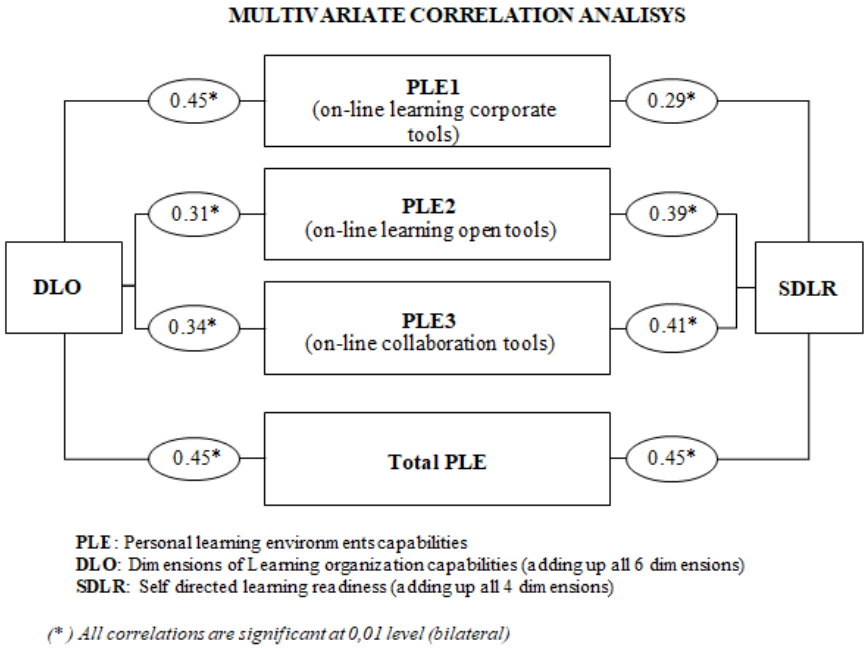


Figure 4
VALIDATION OF MAIN HYPOTHESIS: CORRELATIONS

(Goh, 2003) The regression analysis also shows that the personal learning environment capabilities are a good predictor of both, learning organization and self-directed learning capabilities as shown in Table 5.

Table 5
STEPWISE REGRESSION MODEL FOR SELF DIRECTED LEARNING READINESS

	TDLO			
	F=970.150; R^2= 0.235 ; Durbin-Watson=1.923			
	β	SE	t	P
TPL1: Corporate on-line learning	0.361	0.064	35.663	0.000
TPL2: Open on-line learning	0.064	0.073	5.372	0.000
TPL3: Open on-line collaboration	0.152	0.074	12.634	0.000
Note: Dependent variable Learning Organization Capabilities , N=9500				
STEPWISE REGRESSION MODEL FOR THE LEARNING ORGANIZATION				
	TSDLR			
	F=824.496; R^2= 0.207; Durbin-Watson=1.935			
	β	SE	t	P
TPL1: Corporate on-line learning	0.111	0.012	10.781	0.000

Citation Information: Castillon., JA; Meruvia., HT; Bonilla., MV. (2023). The Relationship Between the Learning Organization and Self Directed Learning Readiness Concepts and the Use of Personal Learning Environments: An Empirical Assessment. *International Journal of Entrepreneurship*, 27(1), 1-16.

TPL2: Open on-line learning	0.188	0.014	15.373	0.000
TPL3: Open on-line collaboration	0.245	0.014	20.033	0.000
Note: Dependent variable Self Directed Learning Readiness , N=9500				

We also wanted to check if the perception of the importance of being self-directed learning ready (SDLR) and developing a learning organization culture (DLO) had evolved positively as a result of the appearance of the personal learning environments as new way of learning (Harris, 2000). Table 10 shows the results for both SDLR and DLO, with the different mean values obtained in all the countries of Telefonica's footprint (Harvey, 2006). It is interesting to highlight the fact that operations with higher scores are those countries in which the company is an incoming young competitor and therefore with a higher need to innovate and become differential: El Salvador, Venezuela, Mexico (Puijenbroek, 2014). On the contrary, the lower scores are obtained in those countries where Telefonica is an incumbent operator with a long story of being a monopoly with no need at all to compete, like the case of Spain (Huber, 1991).

Table 6
EVOLUTION OF SDLR, DLO

	EV1: Evolution of SDLR (*)				**EV2: Evolution of DLO (*)**		
	Frequency	**Mean (0-5 scale)**	**Standard Deviation**		**Frequency**	**Mean (0-5 scale)**	**Standard Deviation**
El Salvador	28	4,61	0,45	Ecuador	143	4,31	1,08
Venezuela	403	4,56	0,56	Venezuela	403	4,29	1,10
México	322	4,47	0,51	Colombia	749	4,28	0,94
Colombia	749	4,44	0,56	Guatemala	64	4,17	0,94
Guatemala	64	4,44	0,68	El Salvador	28	4,11	1,08
Ecuador	143	4,43	0,67	Chile	429	4,06	1,05
Nicaragua	32	4,39	0,56	México	322	4,05	1,08
Chile	429	4,28	0,66	Nicaragua	32	4,02	1,02
Peru	646	4,24	0,68	Brazil	1372	4,00	0,92
Brazil	1372	4,20	0,66	Peru	646	3,94	1,01
Argentina	1508	4,06	0,76	Argentina	1508	3,78	1,06
E. Spain	266	3,67	0,85	E. Spain	266	3,49	1,06
C. Spain	1902	3,62	0,86	S. Spain	309	3,33	1,08
USA	24	3,58	1,05	C. Spain	1902	3,27	1,07
S. Spain	309	3,57	0,90	Germany	10	3,25	1,11
Cataluña	400	3,55	0,93	Cataluña	400	3,22	1,11
UK	80	3,54	0,73	N. Spain	321	3,19	1,13
Germany	10	3,54	1,13	UK	80	3,13	0,94
N. Spain	321	3,36	1,00	USA	24	3,00	1,01

Discussion and Limitations

Our research examined the relationship between practices associated with the learning organization concept (DLO) as articulated by (Watkins & Marsick, 1993) and of self-directed

Citation Information: Castillon., JA; Meruvia., HT; Bonilla., MV. (2023). The Relationship Between the Learning Organization and Self Directed Learning Readiness Concepts and the Use of Personal Learning Environments: An Empirical Assessment. *International Journal of Entrepreneurship*, 27(1), 1-16.

.

learning readiness concept (SDLR) as articulated by (Guglielmino, 1997), and the practices associated with the personal learning environment concept (PLE) articulated by ourselves.

The positive correlations between the six dimensions of the LO, the four dimensions of SDLR and the 3 dimensions of the PLE practices, together with the positive results obtained in the regression analysis, show the positive value of promoting the use of on-line personal environments as a way to evolve towards an organization where learning organization and self-directed learning practices are the natural way of operating (Leufven, 2015).

During the last 5 years the HR departments of the Telefonica global organization have approached a series of initiatives to promote the cultural shift to become a digital organization. Promoting the use of personal learning environments was considered a critical aspect that was thoroughly approached. From our point of view, the most relevant part was all that had to do with open on-line tools and resources (March, 1991). Some of the actions taken included: participating and creating Ted Talks; creating an open MOOC platform (MiriadaX) which has now more than 3 million users worldwide; using massively all kind of collaboration on-line tools like Twiter, Yammer or Facebook (Moore, 2011).

Our research findings offer tentative support for the existence of a business case for the personal learning environment concept (Siemens, 2005). The positive associations between the personal learning environment concept and the learning organization and self-directed learning concept suggest that there is a payoff for organizations that embrace practices and strategies consistent with the personal learning environment literature (Nonaka, 1997). HRD practitioners may use our findings to support the case for implementing personal learning environments practices as shown above (Van der Krogt¸ 2000).

Our findings may also be useful to senior managers who have assessed the need to become a learning organization and a self-directed learning ready organization, but do not have a clear idea of how to achieve it (Noubar, 2011). Our research shows that promoting the use of personal learning environments can be part of the solution. In this new digital era individuals and organizations need to be aware of the fact that knowledge is created and developed in the network and therefore the capability to find it, share it and use it as needed, has become a critical skill to succeed (Weinberger, 2011).

Our research study also presents an opportunity to further examine the personal learning environment concept (Zhou, 2013). How can we improve the way to measure it? How else can it help to improve the organization capabilities? What actions can we take to implement personal learning environments practices?

Despite the positive associations suggested by our research, we noted several limitations. The sample, although randomly drawn and including individuals from quite a big set of countries, includes only Telefonica employees (Yang, 2003). Different results might have been obtained if we had included individuals from different organizations from different business sectors.

CONCLUSION

While discussing about the topics of this research, someone told us that he had been hired by a big company as the new chief learning officer and that his role was to dismantle the whole learning and development department and substitute it by Google. This may seem quite an extreme action, but the point here is to acknowledge the fact that adult learning is suffering a deep transformation.

Citation Information: Castillon., JA; Meruvia., HT; Bonilla., MV. (2023). The Relationship Between the Learning Organization and Self Directed Learning Readiness Concepts and the Use of Personal Learning Environments: An Empirical Assessment. *International Journal of Entrepreneurship*, 27(1), 1-16.

.

Research carried out in the 90's acknowledged the need for the organizations of the 21rst century to develop capabilities to transform and adapt in a much faster changing world. The concepts of learning organization and self-directed learning probed to be useful to achieve this goal and therefore to go together with higher rates of innovation and financial performance. Nevertheless, although there was a clear understanding of the value they could provide, there was no clear understanding onto how to make it happen within an organization.

Ten years later, at the end of the first decade of the new century, a set of amazingly simple but yet immensely powerful tools for open knowledge sharing where developed and made available to everyone thorugh the Internet: social networks (You tube, Twitter, Facebook, Ted Ex…..), MOOC platforms (Coursera, EdX, Udacity..), content repositories and search tools like Google with access to almost unlimited documents, easy to use digital content editing tools, etc. As a result of this the network became a massive knowledge repository where individuals could learn and teach virtually on any topic and, most importantly, on those topics under constant change.

To cope with this new way of open learning and teaching, researchers coined the concept of personal learning environments and pointed out that it could be very helpful for organizations to evolve their cultures and become learning organizations with self-directed learning ready members, and, by doing so, become a more innovative and adaptive organization. The case of Telefonica, as our research comes to show, has proved that there is a positive relationship between the personal learning environment concept and becoming a learning organization with self-directed learning ready employees and that, therefore the actions taken by Telefonica to promote a PLE culture have obtained very positive results.

Future research should further investigate our exploratory findings by integrating a wider variety of indicators (innovation and digital transformation capabilities), in different contexts (with organizations from different sectors) that may further contribute to our understanding of how the concept ay enhance organization performance.

REFERENCES

Anderson, T., & Dron, J. (2010). Three generations of distance education pedagogy. *The International Review of Research in Open and Distributed Learning*, 12(3), 80-97.

Artis, A.B., & Harris, E.G. (2007). Self-directed learning and sales force performance: an integrated framework. *Journal of Personal Selling & Sales Management*, *27*(1), 9-24.

Attwell, G. (2007). Personal Learning Environments for creating, consuming, remixing and sharing. En: *Service Oriented Approaches and Lifelong Competence Development Infrastructures: Proceedings of the 2nd TEN Competence Open Workshop, Institute of Educational Cybernetics* 36-41.

Attwell, G. (2007). Personal Learning Environments-the future of eLearning? *eLearning papers,* 2(1), 1-8.

Attwell, G. (2009). E-portfolio: the DNa of the Personal Learning Environment?. *Journal of E-learning and Knowledge Society*, vol. 3 (2), 41-64

Attwell, G., Bimrose, J., Brown, A., & Barnes, S. A. (2008). Maturing learning: mashup personal learning environments. En *Proceedings of the First International Workshop on Mashup Personal Learning Environments,* 78-86

Citation Information: Castillon., JA; Meruvia., HT; Bonilla., MV. (2023). The Relationship Between the Learning Organization and Self Directed Learning Readiness Concepts and the Use of Personal Learning Environments: An Empirical Assessment. *International Journal of Entrepreneurship*, 27(1), 1-16.

.

Baldwin, T. T., Danielson, C., & Wiggenhorn, W. (1997). The evolution of learning strategies in organizations: From employee development to business redefinition. *The Academy of Management Executive*, *11*(4), 47-58.

Bartlett, J.E., & Kotrlik, J.W. (1999). Development of a Self-Directed Learning Instrument for Use in Work Environments. *Journal of Vocational Education Research,* 24(4), 185-208.

Berghman, L., Matthyssens, P., Streukens, S., & Vandenbempt, K. (2013). Deliberate learning mechanisms for stimulating strategic innovation capacity. *Long Range Planning*, *46*(1), 39-71.

Brack, J. (2012). Maximizing Millennials in the workplace. *UNC Executive Development, 1-14*.

Brookfield, S. (1986). *Understanding and facilitating adult learning: A comprehensive analysis of principles and effective practices*. UK: McGraw-Hill Education.

Brookfield, S. D. (2009). Self-directed learning. In *International handbook of education for the changing world of work* (pp. 2615-2627). *Springer Netherlands*.

Brown, J.S. (2000). Growing up: Digital: How the web changes work, education, and the ways people learn. *Change: The Magazine of Higher Learning*, 32(2), 11-20.

Bui, H., & Baruch, Y. (2010). Creating learning organizations: a systems perspective. *The Learning Organization*, 17(3), 208-227.

Caffarella, R. S. (1993). Self-directed learning. *New directions for adult and continuing education*, 57, 25-35.

Chiva, R., & Alegre, J. (2005). Organizational learning and organizational knowledge towards the integration of two approaches. *Management learning*, 36(1), 49-68.

Cho, Dae Yeon. (2002), The connection between self-directed learning and the learning organization. *Human Resource Development Quarterly*, 13: 467–470.

Confessore, S.J., & Kops, W.J. (1998). Self-directed learning and the learning organization: Examining the connection between the individual and the learning environment. *Human Resource Development Quarterly*, 9(4), 365-375.

Cross, J. (2011). *Informal learning: Rediscovering the natural pathways that inspire innovation and performance*. Nueva York: John Wiley & Sons.

Crossan, M.M., Lane, H.W., & White, R.E. (1999). An organizational learning framework: From intuition to institution. *Academy of management review*, *24*(3), 522-537.

Daft, R.L., & Weick, K.E. (1984). Toward a model of organizations as interpretation systems. *Academy of management review*, *9*(2), 284-295.

Downes, S. (2010). New technology supporting informal learning. *Journal of Emerging Technologies in Web Intelligence*, *2*(1), 27-33.

Ellinger, A.E., Yang, B., & Howton, S.W. (2002). The relationship between the learning organization concept and firms' financial performance: An empirical assessment. *Human resource development quarterly*, *13*(1), 5-22.

Ellis, A.P., Hollenbeck, J.R., Ilgen, D.R., Porter, C.O., West, B.J., & Moon, H. (2003). Team learning: Collectively connecting the dots. *Journal of applied Psychology*, *88*(5), 821.

Farooq, O. (2012). Why are some firms more innovative than others? Exploring the role of learning organization components. *Global Business and Organizational Excellence*, 31(6), 42-49.

Field, L. (1989). An investigation into the structure, validity, and reliability of Guglielmino's Self-Directed Learning Readiness Scale. *Adult Education Quarterly*, *39*(3), 125-139.

Citation Information: Castillon., JA; Meruvia., HT; Bonilla., MV. (2023). The Relationship Between the Learning Organization and Self Directed Learning Readiness Concepts and the Use of Personal Learning Environments: An Empirical Assessment. *International Journal of Entrepreneurship*, 27(1), 1-16.

.

Garvin, D.A. (1985). Building a learning organization. *Organization Development & Training*, 6E (Iae), 274.

Goh, S. C. (2003). Improving organizational learning capability: lessons from two case studies. *The learning organization*, 10(4), 216-227.

Guglielmino, L.M. (1978). Development of the Self-Directed Learning Readiness Scale (Doctoral dissertation, ProQuest Information & Learning).

Guglielmino, L.M. (2008). Why self-directed learning. *International Journal of Self-directed learning*, 5(1), 1-14.

Harris, H. (2000). Defining the Future or Reliving the Past? Unions, Employers, and the Challenge of Workplace Learning. *ERIC Publications; Opinion Papers* Information Series No. 380.

Harvey, B.J., Rothman, A.I., & Frecker, R.C. (2006). A confirmatory factor analysis of the Oddi Continuing Learning Inventory (OCLI). *Adult Education Quarterly,* 56(3), 188-200.

Hiemstra, R. (1994). Self-directed learning. *The international encyclopedia of education*-Oxford: Pergamon Press

Huber, G.P. (1991). Organizational learning: The contributing processes and the literatures. *Organization science*, *2*(1), 88-115.

Ismail, S., Malone, M., van Geest, Y., & Diamandis, P. (2014). *Exponential organizations*. Nueva York: Diversion Books

Jerez-Gomez, P., Céspedes-Lorente, J., & Valle-Cabrera, R. (2005). Organizational learning capability: a proposal of measurement. *Journal of business research*, 58(6), 715-725.

Keursten, P., Verdonschot, S., Kessels, J., & Kwakman, K. (2006). Relating learning, knowledge creation and innovation. Case studies into knowledge productivity. International *Journal of Learning and Intellectual Capital*, 3(4), 405-420.

Kontoghiorghes, C., Awbre, S.M., & Feurig, P.L. (2005). Examining the relationship between learning organization characteristics and change adaptation, innovation, and organizational performance. *Human Resource Development Quarterly*, *16*(2), 185-212.

Leufven, M., Vitrakoti, R., Bergström, A., Ashish, K.C., & Målqvist, M. (2015). Dimensions of Learning Organizations Questionnaire (DLOQ) in a low-resource health care setting in Nepal. *Health Research Policy and Systems*, 13(1), 6.

March, J.G. (1991). Exploration and exploitation in organizational learning. *Organization science, 2*(1), 71-87.

Marsick, V.J., & Watkins, K.E. (2003). Demonstrating the value of an organization's learning culture: the dimensions of the learning organization questionnaire. *Advances in developing human resources*, *5*(2), 132-151.

Moore, J.L., Dickson-Deane, C., & Galyen, K. (2011). e-Learning, online learning, and distance learning environments: Are they the same?. *The Internet and Higher Education*, 14(2), 129-135.

Nonaka, I., & Takeuchi, H. (1997). The knowledge-creating company. *The economic impact of knowledge*, 183, 175-202

Noubar, H.B.K., Rose, R.C., Kumar, N., & Salleh, L.M. (2011). Learning culture to organizational breakthroughs in Malaysian companies. *Economics and Management*, 16, 852-858.

Nyhan, B., Cressey, P., Tomassini, M., Kelleher, M., & Poell, R. (2003). *Facing up to the learning organization challenge*. Thessaloniki: European Centre for the Development of Vocational Training.

Citation Information: Castillon., JA; Meruvia., HT; Bonilla., MV. (2023). The Relationship Between the Learning Organization and Self Directed Learning Readiness Concepts and the Use of Personal Learning Environments: An Empirical Assessment. *International Journal of Entrepreneurship*, 27(1), 1-16.

.

Otala, M. (1995). The Learning Organization: Theory into Practice. *Industry and Higher Education*, *9*(3), 157-64.

Puijenbroek, T.V., Poell, R.F., Kroon, B., & Timmerman, V. (2014). The effect of social media use on work related learning. *Journal of Computer Assisted Learning*, 30(2), 159-172.

Şahin, M. (2012). Pros and cons of connectivism as a learning theory. *International Journal of Physical and Social Sciences*, *2*(4), 437-454.

Schaffert, S., & Hilzensauer, W. (2008). On the way towards Personal Learning Environments: Seven crucial aspects. *Elearning papers*, *9*(2). 1-11

Siemens, G. (2005). Connectivism: A learning theory for the digital age. *International journal of instructional technology and distance learning*, *2*(1), 3-10.

Song, J.H. (2008). The effects of learning organization culture on the practices of human knowledge-creation: an empirical research study in Korea. *International Journal of Training and Development*, 12(4), 265-281.

Van der Krogt, F.J., & Vermulst, A.A. (2000). Beliefs about organising learning: a conceptual and empirical analysis of managers' and workers' learning action theories. *International Journal of Training and Development*, *4*(2), 124-137.

Weinberger, D. (2011). Too Big to Know: Rethinking Knowledge Now That the Facts Aren T the Facts, Experts Are Everywhere, and the Smartest Person in the Room Is the Room. Basic Books.

Yang, B. (2003). Identifying valid and reliable measures for dimensions of a learning culture. *Advances in Developing Human Resources*, 5(2), 152-162.

Zhou, H. (2013, March). Understanding Personal Learning Environment: a literature review on elements of the concept. In *Society for Information Technology & Teacher Education International Conference* (Vol. 2013, No. 1, pp. 1161-1164). Published by Association for the Advancement of Computing in Education (AACE), Chesapeake, VA

Received: 01-Nov-2022, Manuscript No. IJE-22-12903; **Editor assigned:** 03-Nov-2022, PreQC No. IJE-22-12903(PQ); **Reviewed:** 17-Nov-2022, QC No. IJE-22-12903; **Revised:** 22-Nov-2022, Manuscript No. IJE-22-12903(R); **Published:** 29-Nov-2022

Citation Information: Castillon., JA; Meruvia., HT; Bonilla., MV. (2023). The Relationship Between the Learning Organization and Self Directed Learning Readiness Concepts and the Use of Personal Learning Environments: An Empirical Assessment. *International Journal of Entrepreneurship*, 27(1), 1-16.

.