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Learners' preferences versus instructors' beliefs in technology-enabled learning environments in Pacific Island countries: are we listening to the learners?

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Abstract Technology continues to disrupt higher education around the world. The fast adoption of blended and online learning coupled with growing interest in offering MOOCs by higher education institutions warrants a systematic study of the learning environment and how learners perceive it. This study builds on previous studies that investigated digital status, online practices and learners' preferences for learning environments in Pacific Island Countries. A total of 945 learners (873 undergraduate and 72 postgraduate) were investigated for their preferences towards psycho-social features of their preferred learning environments. In addition, 112 instructors' perceptions demonstrated their understanding of learners' preferences and the gaps in their understanding of their learners. The undergraduate learners place highest preference for learner interaction and collaboration and authentic learning, whereas postgraduate learners opted for instructor support, active learning and authentic learning. The instructors' perceptions highlighted the importance they place on their role by rating their assumption for learners' highest preference for instructor support and least satisfaction of learners towards distance education. The learners and instructors' contradictory perceptions indicate the need for instructors to 'listen' to their learners and redesign technology integrated learning environments. These findings have implications on course design and delivery in higher education and MOOCs.

Keywords Learning environments · Distance education · Computer-assisted learning · Higher education · eLearning

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Introduction

The advances in computer and internet technologies have impacted the higher education landscape around the world including Pacific Island Countries as higher education institutions embrace blended and online learning environments (LE). The learners at the receiving end are affected in a number of ways. Student learning can be determined by the quality of the classroom LE (Fraser as cited in Ng & Confessore, 2010) and their attitude based on personal and environmental factors, which also provide an insight into learners' satisfaction (Baba & Fraser, 1983). At the turn of the twentieth century, Rosenberg (2001) emphasized three basic characteristics of technology to enable distance LEs which are applicable also to the discussion along the four LE (print/correspondence, face-to-face, blended and online) in this study: (1) updating, storage, retrieval, distribution and sharing of content via a computer network, (2) accessibility of information and its exchange by users through computer and internet and (3) a focus on learning solutions beyond traditional paradigms of education.

It is imperative to listen to learner voice (Manca et al., 2017) to fully understand their attitudes and perceptions in order to align LE with the most desirable features. The high drop-out rate in virtual learning environments (VLEs), for example, blended/online/massive open online courses, calls for a better understanding of learners around the world. Considering borderless education VLE affords learners from the remotest parts of the world, it is imperative that such studies be conducted in different parts of the world to gauge a better understanding of the LE.

Theoretical framework

This study interrogates learners' preferences in the light of Moore's (1983, 1997) Transactional Distance Theory, where *interaction*, *autonomy* and *course structure* influence the transactional distance and ultimately learner satisfaction. "Transactional Distance is the distance between learner and teacher, which is not merely geographic but educational and psychological as well; it is the distance in the relationship between two partners in the educational enterprise" (Moore, 1983, p.185). The author believes that transactional distance exists in all LEs to a varying extent within the Pacific context making TDT a suitable theoretical lens, however, it is incomplete considering its lack of attention to technology and learning by observation. Since the early days of distance education, the integration of technology has attempted to bridge the geographical gap between the learner and the teacher. However, it does need to be noted this gap was not articulated until the late 1980s. While Moore's theories of Transactional Distance (1997) and Interaction (1989) highlight three types of interaction, much needed further extensions to this theory provided two more interactions (Hillman et al., 1994; Sutton, 2001) as a result of transactional distance. Thus, learner–learner, learner–instructor and

leaner–content interaction by Moore (1989), learner interface by Hillman et al (1994) and vicarious interaction by Sutton (2001) provide a bricolage of appropriate theoretical lens for interactions taking place in the four LE under focus in this study.

Background and context

The study focuses on learners and their LE in Pacific Island Countries and also instructors' beliefs about their students' preferences. It has been reported that the instructors' beliefs influence their teaching strategies (Raturi & Boulton-Lewis, 2014). It is imperative to listen to both learners and instructors to get a holistic perspective of how aligned are instructors' beliefs with that of learners. The University of the South Pacific (USP), which is a regional university in the region of the South Pacific, has been chosen as the site for this study. The learners in USP are from its twelve member countries (Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu). Other Pacific Island Countries and a small number from other parts of the world are also included. The university has not only converted print-based courses to be fully online but has also begun offering MOOCs since 2014. The learners in the four LE (print/correspondence, face-to-face, blended and online) at USP are able to access course material from university wide learning management system (Moodle) and engage learners in learning activities and assessment on Moodle (discussion forum, quiz, wiki to name some), web-conferencing platforms (such as Zoom, REACT, Go To Meeting) depending on the course's LE, audio–visual resources (home-grown and publicly available ones on the WorldWideWeb); the degree to which technology-enabled tasks and assessments are utilized is dependent on the course LE. Though the learners have access to technical help from their campus/centre, however, learners in remote locations sometime have difficulties with technology skills and access. Previous studies have established learners' significant digital status despite poor access to computer and internet technologies for some learners and their satisfaction rating with their LE as 'good' on a likert scale of 1–5 where, 3 = good (Raturi & Chandra, 2016). Other investigations (Raturi, 2018, 2019) established are as follows:

1. Learners' preference for face-to-face LE except blended LE preferred by humanities and business postgraduate learners.
2. Preferences for current online practices and their reasons. Learners' preference rating was between 'good' to 'very good' for (a) Course structure on Moodle, (b) Information Communication Technology usage and (c) use of discussion forum on Moodle regardless of their LE (print/f2f/blended/online). Together with the aforementioned ratings, learners' reasons in the open-ended question indicate changing learners' needs and attitudes.

This study investigates learners' perceptions of their LE through a psycho-social learning environment framework. The questionnaire was adapted from the Distance

Education Learning Environment (DELES) Survey (Walker, 2003). The LE is primarily influenced by the learner and vice versa. The learners' preference with respect to various items in DELES and their relationships help understand their "preferred LE" in this study.

This study is underpinned by a bricolage of theories as it provides educators an experimental ground to alter the variables (autonomy, dialogue/interaction and structure) to achieve optimal LE. Numerous studies have looked at different aspects of interaction, course structure, learner autonomy, quality of instructional methods and course interface in order to investigate learners' perceptions of VLEs—key area in DE (Abuhassna & Yahaya, 2018; Huang, 2002; Kember & Leung, 2005; Koohang & Durante, 2003; Ng & Confessore, 2010; Pearson & Trinidad, 2005; Saba, 2000; Shehab, 2007; Walker, 2003; Walker & Fraser, 2005; Wheeler, 2012; citation withheld). These studies have either focussed on one or two LEs or learners at undergraduate or postgraduate levels and thus fall short of providing a holistic view of their context. A comparison of four LEs simultaneously in this study affords a holistic view of learners' perception and what they deem an ideal LE.

On the other hand, Irani et al. (2003) report that distance education learners' personalities and their relationships to course perception influenced their performance outcomes indicating the importance of learner perception. Wheeler (2002) highlights 'learning support' (practical, academic, social and emotional support) as an integral part in distance education and points out the greater need for support required for females than males in that particular study ($N=30$). The sample size of 30 is too small to make any generalization but it would be worth further investigation regarding the gendered nature of the findings. Blended learning and online learning (more recent forms of distance education) provide the opportunity to reduce the transactional distance through the use of learning management systems and synchronous tools. Heneritius et al., (2019) stress the need for researching "social interaction and group dynamics in virtual environments" (p.80). Many studies have pointed out the capability of a learning management system, whether it be a typical online course or a MOOC, to improve all types of interaction in a VLE (Cohen et al., 2019; Henritius, et al, 2019; citation withheld). The presence of a learning management system allows greater flexibility and opportunity to tackle transactional distance through interactions of all kinds.

A survey of ethnic Pacific island learners in New Zealand reported eLearning was effective for accessing course material and information, communication among staff and students, support in F2F modes of learning, helping mothers and full-time workers, and enhancing learning (Kaloto et al., 2006). However, they concluded that eLearning was not a good teaching tool and hence did not guarantee retention and success for Pacific learners in New Zealand. Marsh and Hogan (2005) reported a lack of collaborative tasks, isolated island study locations and high internet costs to be among the key challenges in virtual environments and so expressed reservations about online learning as a useful tool. At USP, many reforms have taken place in the last decade, but one thing that has remained consistent is the ability of technology to increase all forms of interaction (Sharma, 2008; citation withheld). Hogan (2010) reported on the changing perceptions of younger students, as they perceive the benefits of online learning in the Pacific region. The fact that postgraduate learners in a

survey ($N=92$), limited to School of Education at USP, expressed a preference for VLEs indicates a degree of perception change among adult learners (Raturi, 2010). Similarly, Johnson et al. (2021) reported a positive attitude among students towards online learning during COVID19 at USP ($N=257$), however, this survey did not report on the validity or reliability of the instrument utilized nor was the methodology provided for the qualitative data analysis obtained from open-ended questions. Nevertheless, all these studies in the area of eLearning conducted at USP are localized within a small sample making generalization difficult. The learner's environment is dependent on a number of variables and each learner would have their preferences for these variables, forming a LE that fulfils their learning needs. So far no such study that looks at the four LE concurrently has been conducted to provide a holistic view of the eLearning continuum. This paper is a part of that larger study and contributes to the discourse on what constitutes an ideal LE for learners. This study focussed on the following three research questions:

1. What are the learners' preferences with respect to autonomy, interaction and course design for an ideal learning environment?
2. What are the instructors' beliefs about learners' preferences towards technology-enabled learning environments?
3. Is there a relationship between the different factors that influence learners' ideal learning environment?

Methods

An offline survey was conducted for data collection via stratified random sampling. The four learning environments were the basis of stratification to ensure responses (preferences) were collected for each of the four LEs. A brief introduction to this research was given to the participants ensuring that each one of them has had an experience with at least both face-to-face and blended put of the four LEs. The sample was then drawn from two USP campuses (Laucala in Fiji; Alafua (now known as USP Samoa Campus) in Samoa). A total of 945 learners (873 undergraduate and 72 postgraduate learners) and 112 instructors participated in this study. The ethics approval was obtained from the university research office.

The Distance Education Learning Environment Survey (DELES) was the survey instrument of choice as its six scales measure the three components that affect the learning environment—interaction, autonomy and course structure—as given by Moore's Transactional Distance Theory and Theory of Interaction (1973, 1983, 1989, 1997, 2007) including the extensions to interaction by Hillman et al (1994) and Sutton (2001). The six scales in DELES are instructor support, learner interaction and collaboration, personal relevance, authentic learning, learner autonomy and active learning. These dimensions provide intuitive responses from the learners and teachers towards the various factors in the LE. The fact that DELES has gone through a rigorous treatment in various studies (Burgess, 2006; Fernandez-Pascual et al., 2015; Ferrer-Cascales et al., 2011; Irby et al., 2012; Shehab, 2007; Walker & Fraser, 2005) around the world and its suitability for the context of this study make

it a suitable instrument for this study. The findings from this study will help understand learners' preferences in the LE in the region and contribute to subsequent studies theorizing the LE. This study is the first of its kind in the region contributing to an understanding of what constitutes learners' ideal LE.

Therefore, the six scales from DELES (see Appendix 1), namely *Instructor Support* (eight items 1–8), *Learner Interaction and Collaboration* (six items 9–14), *Personal Relevance* (seven items 15–21), *Authentic Learning* (five items 22–26), *Learner Autonomy* (three items 27–29) and *Active Learning* (five items 30–34) are investigated to understand learners' preferences and factors affecting their LE. Studies have suggested that active learning environment promotes autonomy among learners (Cantu and Kazen, 2020; Lee, 1998). Moreover, the items in *Active Learning* and *Learner Autonomy* are about learners' ability to do things on their own and can be combined to measure *Autonomy*. Similarly, items in *Instructor Support* and *Learner Interaction and Collaboration* are combined to measure *Interaction* as each one of these provides opportunities for learner–instructor and learner–learner interaction. On the other hand, the content and design of the course focuses on making it relevant and authentic to learners. Therefore, *Personal Relevance* and *Authentic Learning* are combined to measure *Course Structure*. The six scales in DELES are pyscho-social measures with the last an attitudinal scale to measure the degree of enjoyment. A total of eight items here constitute this attitudinal scale *Satisfaction* (eight items 35–42). The affective scale calculates learners' satisfaction with DE in general so as to understand if learners are comfortable in a DE learning environment. Learner satisfaction is the extent to which a learner is satisfied with their LE. It is extremely important to consider 'learner satisfaction' as it is the driving factor for their participation in their learning journey.

Fraser (as cited in Walker, 2003) explains that the relationship between learners' attitudes and their perception of pyscho-social LEs can be investigated with the inclusion of an attitudinal scale. DELES measures learner 'satisfaction' with DE. Many researchers have reported on 'satisfaction' of learners with respect to various pyscho-social aspects of the LE (Burgess, 2006; Ferrer-Cascale et al., 2011; Irby et al, 2012; Ng & Confessore, 2010; Sheehab, 2007; Walker & Fraser, 2005; citation withheld). Fotiadou et al. (2017) recommended the importance of learner-centred approaches in light of significant positive relationships between autonomy and learner–learner interaction in their study.

A pilot study was conducted with 20 students and 10 instructors based in Laucala Campus, Suva. It was ensured that the selected participant had at least face-to-face and blended learning experience out of the four learning environments. They responded to an offline version of the questionnaire such that they could clarify if any question. All the participants were either third- or fourth-year undergraduate students. The instrument was considered suitable for the research study after a pilot study with acceptable values for reliability (Cronbach α between 0.85 and 0.90) and validity (Principal Component Factor with varimax rotation and Kaiser normalization to validate scales ranging between 0.62 and 0.86). The data collected from a total of 945 students (873 UG and 72 PG) and 112 instructors were also reliable (Cronbach α between 0.69 and 0.75 for learners and between 0.74 to 0.83 for instructors) and valid (Principal Component Factor with varimax rotation and

Kaiser normalization to validate scales) ranging between 0.50 and 0.83 for learners and between 0.73 and 0.91 for instructors).

Result and discussion

The DELES scales give an overview of learners' preference for various pyscho-social factor; learners were asked to focus on their preferred LE as they responded to the six scales in the questionnaire. The participants demographic reflected the diverse student and instructor population at USP in terms of ethnicity, age, different subjects/disciplines covered by the three faculties (Business and Economics; Arts, Law and Education; Science, Technology and Environment), and a gender balance (Raturi & Chandra, 2016). The gender does not influence learners' preferences and beliefs towards the LE. Out of the different ethnic groups (Banaban, Chinese, Cook Islanders, i-Kiribati, Indian, iTaukei, Marshall islander, mixed, Nauruan, ni-Vanuatu, Rotuman, Samoan, Solomon islander, Tokelau, Tongan, Tuvaluan and 'Others' which included 'rest of the world'), approx. 37% were Indian, 33% were iTaukei, 9% were Solomon islanders and 4% were 'others' with rest ranging from 0.1% to 3% undergraduates; similar was the case for postgraduates and instructor except that approx. 25% of instructors belonged to 'others' and 40% were Indians (ibid). Among the undergraduates, approx. 83% belong to the age group 18–25 years and 10% to 26–35 years while 435 of postgraduates belong to the age group 26–35 years, 29% to 36–45 years and 19% to 18–25 years (ibid). In this sample, approximately 69% of postgraduates are part-time students as opposed to only 1.4% of undergraduates. The overwhelming majority of mature-age and part-time postgraduate learners characterizes this group as a unique group who could have preferences different from younger and full-time learners. It is therefore imperative to analyse the data separately for the two groups of participating students that is undergraduate and postgraduate. As highlighted in the previous study (Raturi & Chandra, 2016), the instructors (largely tutors and lecturers) in this study are digital savvy where approx. 50% are below 35 years of age and 25% between 36 and 45 years with experience in teaching at least two (face-to-face and blended) of the four LE.

Undergraduate learners

The *learner interaction and collaboration* and *active learning* emerge as the most important factors for learners, with responses ranging between 3.9 and 4.2 (4 = 'often') regardless of the LE (print/face-to-face/blended/online). This indicates that the need for these scales is similar across the eLearning continuum for the undergraduate learners (Table 1). Another significant point that comes up is learner preference with respect to satisfaction with distance education. Except for Print mode learners who rate satisfaction at 3.2 (mean) meaning 'sometimes' satisfied, all other learners rated satisfaction lower than 3. The learners' similar preferences towards all scales except for some are reaffirmed by Kruskal–Wallis and Mann–Whitney tests. The differences indicate slightly higher preferences

Table 1 Distribution details with significant differences between four LEs for DELES scales for undergraduate Learners

DELES scales ($p > 0.05$)	LE	*N*	Mean ± Std. Dev	Median; IQR	Between group: U; Z; *p* ($p > 0.05$)
Instructor Support	P	136	3.8 ± 0.72	3.9; 3.4–4.4	
$\chi^2 = 0.292$	F	265	3.8 ± 0.73	3.8; 3.3–4.4	
df = 3	B	362	3.8 ± 0.74	3.9; 3.3–4.4	
$p = 0.962$	O	110	3.8 ± 0.84	3.9; 3.1–4.4	
Learner Interaction & Collaboration	P	136	3.9 ± 0.78	4.0; 3.3–4.5	P&O: 5860.00; − 2.931; 0.003
	F	265	4.0 ± 0.75	4.0; 3.5–4.7	
$\chi^2 = 9.987$	B	362	4.0 ± 0.67	4.0; 3.7–4.5	F2F&O: 12,062.50; − 2.64; 0.008
df = 3	O	110	4.2 ± 0.68	4.3; 3.7–4.8	
$p = 0.019$					B&O: 16,900.00; − 2.412; 0.016
Personal Relevance	P	136	3.8 ± 0.69	3.7; 3.3–4.1	P&O: 6141.00; − 2.419; 0.016
$\chi^2 = 6.509$	F	265	3.9 ± 0.72	3.9; 3.4–4.4	
df = 3	B	362	3.9 ± 0.71	3.9; 3.4–4.4	
p = 0.089	O	110	4.0 ± 0.80	4.0; 3.4–4.6	
Authentic Learning	P	136	3.8 ± 0.72	3.8; 3.2–4.4	P&O: 5284.00; − 3.977; 0.000
$\chi^2 = 19.704$	F	265	3.9 ± 0.75	4.0; 3.2–4.4	
df = 3	B	362	3.8 ± 0.74	3.8; 3.4–4.4	F2F&O: 11,425.00; -3.311; 0.001
p = 0.000	O	110	4.1 ± 0.80	4.2; 3.6–4.8	
					B&O: 14,814.50; 4.083; 0.000
Learner Autonomy	P	136	3.7 ± 0.79	3.7; 3.0–4.3	P&O: 6334.00; -2.084; 0.037
$\chi^2 = 8.153$	F	265	3.8 ± 0.75	3.7; 3.3–4.3	B&O: 16,503.00; − 2.748; 0.006
df = 3	B	362	3.7 ± 0.73	3.7; 3.3–4.0	
p = 0.043	O	110	3.9 ± 0.76	4.0; 3.3–4.3	
Active Learning	P	136	4.0 ± 0.72	4.0; 3.5–4.6	
$\chi^2 = 3.861$	F	265	4.1 ± 0.69	4.0; 3.6–4.6	
df = 3	B	362	4.1 ± 0.64	4.0; 3.8–4.6	
p = 0.277	O	110	4.2 ± 0.64	4.2; 3.8–4.8	
Learner Satisfaction with DE	P	136	3.2 ± 1.0	3.1; 2.5–4.0	P&F2F: 12,783.00; − 4.579; 0.000
	F	261	2.7 ± 1.1	2.6; 1.8–3.4	
$\chi^2 = 21.606$	B	361	2.9 ± 1.0	3.0; 2.1–3.6	P&B: 20,534.50; − 2.814; 0.005
df = 3	O	110	2.8 ± 1.2	2.8; 1.8–3.9	
p = 0.000					P&O: 6136.50; − 2.423; 0.015
					F2F&B: 41,225.50; − 2.663; 0.008

P Print, *F* Face-to-Face, *B* Blended, *O* Online, *DE* Distance Education, *LE* LearningEnvironment

for the factors in online and blended LE by younger learners owing to greater transactional distance in these LEs. One could relate this to the learner wanting an interactive learning experience where a lot of collaboration and *authentic learning* takes place to reduce transactional distance.

Table 2 Distribution details with significant differences between three LEs for DELES scales for postgraduate learners

DELES scales ($p > 0.05$)	LE	*N*	Mean ± Std. Dev	Median; IQR	Between group: U; Z; *p* ($p > 0.05$)
Instructor Support	F	29	4.6 ± 0.53	5.0; 4.3–5.0	F2F&B: 208.0; -3.065; 0.002
$\chi^2 = 9.393$	B	27	4.2 ± 0.64	4.3; 4.0–5.0	B&O: 135.0; -2.047; 0.041
df = 1	O	16	4.5 ± 0.86	4.8; 4.3–5.0	
$p = 0.002$					
Learner Interaction & Collaboration	F	29	4.0 ± 0.71	4.0; 3.5–4.6	–
	B	27	4.3 ± 0.58	4.3; 4.0–5.0	
$\chi^2 = 3.291$	O	16	4.3 ± 0.57	4.3; 4.0–4.6	
df = 1					
$p = 0.070$					
Personal Relevance	F	29	4.3 ± 0.54	4.4; 3.9–4.9	–
$\chi^2 = 3.181$	B	27	4.6 ± 0.48	4.7; 4.3–5.0	
df = 1	O	16	4.1 ± 0.72	4.2; 3.9–4.5	
$p = 0.074$					
Authentic Learning	F	29	4.5 ± 0.57	4.8; 4.0–5.0	–
$\chi^2 = 0.427$	B	27	4.5 ± 0.48	4.6; 4.2–5.0	
df = 1	O	16	4.4 ± 0.78	4.5; 4.1–5.0	
$p = 0.513$					
Learner Autonomy	F	29	4.2 ± 0.62	4.3; 3.7–4.8	–
$\chi^2 = 0.446$	B	27	4.1 ± 0.56	4.0; 3.7–4.3	
df = 1	O	16	4.4 ± 0.50	4.3; 4.0–4.9	
$p = 0.504$					
Active Learning	F	29	4.4 ± 0.53	4.6; 4.0–4.9	–
$\chi^2 = 0.118$	B	27	4.5 ± 0.52	4.6; 4.0–5.0	
df = 1	O	16	4.5 ± 0.47	4.4; 4.1–5.0	
$p = 0.732$					
Learner Satisfaction with DE	F	24	2.9 ± 1.1	2.9; 2.0–3.8	F2F&B: 202.50; -2.295; 0.022
	B	27	3.5 ± 0.82	3.6; 3.1–4.0	
$\chi^2 = 5.269$	O	16	4.0 ± 1.2	4.4; 3.3–4.9	F2F&O: 94.50; -2.697; 0.007
df = 1					B&O: 125.0; -2.290; 0.022
$p = 0.022$					

P Print, *F* Face-to-Face, *B* Blended, *O* Online, *DE* Distance Education, *LE* Learning Environment

Postgraduate Learners

The preferences for various pyscho-social factors regardless of LE were similar for each scale except *instructor support* and *satisfaction with distance education* (Table 2). It is significant that both face-to-face and online postgraduate learners prefer *instructor support* at a level of 4.5 which is between 'often' to 'always' and at the same time they all prefer *active learning* and *authentic learning* in the range 4.4–4.5 (Table 2). While preference for instructor support and active learning may seem contradictory, probably the instructor's presence and their support act as an assurance for the learner to carry out active learning. The postgraduate learner preference for *satisfaction with distance education* is at 3 for F2F, 3.5 for blended and 4 for online learner thus their preference for the VLE (blended) is understandable as found in earlier studies (Raturi et al., 2011; Raturi, 2018). Furthermore, the

differences with respect to *satisfaction with DE* (Table 2) affirm mature learners continue to remain satisfied in blended and online LE providing higher education institutions and their educators an indication of acceptance for virtual LE in post-graduate courses. This probably is one of the strongest findings with implications for postgraduate education, more so in the light of current pandemic (COVID19).

Instructors

The instructors rate their own support for learners at 4 or above (face-to-face being highest at 4.7) as compared to other DELES scales indicating that they consider *instructor support* quite important in the learning and teaching process (Table 3). The instructor's belief about their own role contradicts with undergraduate learners' preference as highlighted earlier (Table 1). The instructors rate *learner autonomy* lowest among all factors i.e. at 3.8 for F2F and blended LE. The lower scores for

Table 3 Distribution details with significant differences between three LEs for DELES scales for Instructors

DELES scales ($p > 0.05$)	LE	*N*	Mean ± Std. Dev	Median; IQR	Between group: U; Z; *p* ($p > 0.05$)
Instructor Support	P	28	4.6 ± 0.39	4.8; 4.4–4.9	
$\chi^2 = 0.215$	F	68	4.7 ± 0.35	4.8; 4.4–5.0	
df = 2	B	16	4.7 ± 0.20	4.8; 4.6–4.9	
$p = 0.898$					
Learner Interaction & Collaboration	P	28	4.0 ± 0.78	3.9; 3.3–4.8	
$\chi^2 = 1.159$	F	68	4.1 ± 0.59	4.0; 3.8–4.7	
df = 2	B	16	4.2 ± 0.90	4.5; 3.7–5.0	
$p = 0.560$					
Personal Relevance	P	28	4.0 ± 0.68	3.9; 3.4–4.6	
$\chi^2 = 3.534$	F	68	4.0 ± 0.70	4.0; 3.6–4.5	
df = 2	B	16	4.3 ± 0.83	4.3; 3.8–5.0	
$p = 0.171$					
Authentic Learning	P	28	4.4 ± 0.64	4.4; 4.0–5.0	
$\chi^2 = 1.327$	F	68	4.2 ± 0.67	4.3; 3.9–4.8	
df = 2	B	16	4.4 ± 0.64	4.4; 4.1–5.0	
$p = 0.515$					
Learner Autonomy	P	28	4.0 ± 0.71	4.0; 3.7–4.6	
$\chi^2 = 2.288$	F	68	3.8 ± 0.76	3.7; 3.3–4.3	
df = 2	B	16	3.8 ± 0.84	3.8; 3.0–4.5	
$p = 0.319$					
Active Learning	P	28	4.1 ± 0.67	4.2; 3.7–4.6	
$\chi^2 = 5.371$	F	68	3.9 ± 0.72	3.9; 3.4–4.4	
df = 2	B	16	4.2 ± 0.58	4.3; 4.0–4.8	
$p = 0.068$					
Learner Satisfaction with DE	P	28	3.2 ± 0.60	3.1; 2.8–3.6	P&F2F: 567.0; -2.456; 0.014
$\chi^2 = 6.145$	F	60	2.9 ± 0.60	2.9; 2.5–3.1	
df = 2	B	16	3.3 ± 0.81	3.0; 2.8–3.9	
$p = 0.046$					

P Print, *F* Face-to-Face, *B* Blended, *O* Online, *DE* Distance Education, *LE* Learning Environment

active learning in F2F i.e. at 3.9 reaffirm that instructors perceive their role quite important, more so in a traditional classroom environment (F2F). It was interesting to note that preferences for all pyscho-social factors are rated above 4 (between 4 and 4.6) for print LEs indicating how much importance instructors place on the six scales and more importantly their (instructors) own role. It is thus not surprising that instructors consider *learner satisfaction with distance education* around 3 (between 2.9 and 3.2); this too ties well with the previous points on *instructor support*, *learner autonomy* and *active learning*. The instructors' responses and its disconnect with that of learners highlight the need for instructors to rethink their pedagogical approaches.

A low standard deviation in each case for learners (both undergraduate and postgraduate) and instructors indicates that there are very few outliers. From the DELES scales preference, one point of interest is that undergraduate learners prefer *learner interaction and collaboration* and *active learning* at the highest levels in all four LEs, whereas postgraduate learners and instructors rate *instructor support* and *authentic learning* the highest. Postgraduate learners also rate *active learning* highly. It would be useful to investigate this trend further.

The undergraduate learners in print mode indicate satisfaction with distance education followed by learners in blended and online LE, whereas learners in face-to-face mode express least satisfaction with distance education. Similarly, postgraduate learners in face-to-face mode share similar preference. They rate least satisfaction with distance education, whereas learners in blended and online LE are most satisfied. The learners prefer face-to-face except postgraduate learners in Faculty of Business and Economics and Faculty of Arts, Law and Education who prefer blended LE (Raturi et al., 2011; Raturi, 2018), however, high satisfaction with distance education by learners in print, blended and online (for undergraduate learners) and blended and online (for postgraduate learners) in this study indicates that DE via VLEs could be a preferred LE in future. This emphasizes the importance learners place on psycho-social variables that influence their preferences in a LE. Because the postgraduate learners are mature and part-time students, it is not surprising that their response to different scales in different from that of undergraduate learners who are much younger and also mostly full-time students. The responses from undergraduate learners are similar to that of Hogan's study (2010) to some extent as the benefits of online learning are not exactly seen in similar.

The instructors' perception of what learners prefer varies from learners' preferences that indicates the need to listen to learners' *voices*. The most remarkable difference lies in undergraduate learners' preference for interaction with learners more than their instructor as compared to the instructors' beliefs about this. Moreover, instructors' beliefs on how satisfied learners are with DE aligns well with the previous findings (Raturi, 2018) that reveal instructors regardless of their discipline/subject prefer to teach in traditional classroom (F2F) over P, B and O learning environments; each of these less preferred LEs have some degree of DE component. Could instructors' own preference fog their beliefs about learners' preferences? The areas highlighting slight differences inform educators of the need to ensure relevant and revised learning and teaching opportunities are afforded to learners in different LEs. However, instructors' and all the learners' viewpoints merge on the importance

of learner interaction and collaboration regardless of learning environments; the instructors must exploit ways to enhance opportunities and spaces for these interactions and collaboration. The instructors' ratings for *personal relevance* and *authentic learning* also vary with that of learners that calls for instructors to revisit the course design for the courses they teach. Similar is the case instructors' beliefs for learner autonomy and active learning that are crucial variables particularly in the case of DE. There is a need for instructors to introspect their pedagogical strategies starting with getting to know the learners and need to evolve from being an instructor to facilitator.

Undergraduate learners

A weak to moderately positive significant relationship as indicated in Tables 4, 5, 6, 7 exists between the six DELES scales. A high rating for each of the DELES scales and the correlation values between these in each LE reaffirm the need to ascertain each of these psycho-social features which are taken into consideration while designing the course for a meaningful learning experience.

A moderate positive relationship between *personal relevance* and *authentic learning* in the four LEs highlights how *personal relevance* can influence authentic learning in the learning process. Learners consider learning authentic when they can relate to it (Walker, 2005). Similarly, a moderate positive relationship between *learner autonomy* and *active learning* in the four LEs emphasizes the role *active learning* experiences can play to enable independent learning (*learner autonomy*). There is either nil or weak significant relationship between *satisfaction with distance education* and DELES variables in all of the four LEs. This also affirms that preference for LE is dependent on learners' perception towards the psycho-social features.

Postgraduate learners

Similar to undergraduate learners, there are moderate to strong positive relationships between the six DELES scales in each of the four LEs (Tables 8, 9, 10).

The two relationships (*authentic learning* and *personal relevance*; *active learning* and *learner autonomy*) emerge moderately significant in the case of postgraduate learners also. The fact that there is a nil (Tables 8, 10) to weak (Table 9) relationship between *instructor support* and *satisfaction with distance education* highlights that the LE where transactional distance exists, the satisfaction with DE increases with instructor support. It also reaffirms the high rating for instructor support reported earlier in Table 2. *Active learning* also contributes to their attitude and hence *satisfaction with distance education* as evident from the relationship between the two in an online LE. There is clearly a strong connection between learners' own behaviour such as autonomy with what they find interesting or relevant. Learning becomes meaningful when learners get engaged with it.

Table 4 Correlations between DELES variables for undergraduate learners in Print LE

	Spearman rho	Learner I & C	Personal Relevance	Authentic L	Learner Autonomy	Active L	Satisfaction with DE
Instructor support	Corel. Coeff	0.299**	0.285**	0.360**			
	Sig(2-tailed)	0.000	0.001	0.000			
Learner I & C	Corel. Coeff		0.368**	0.286**		0.174*	
	Sig(2-tailed)		0.000	0.001		0.043	
Personal Relevance	Corel. Coeff			0.509**	0.374**	0.385**	0.269**
	Sig(2-tailed)			0.000	0.000	0.000	0.002
Authentic L	Corel. Coeff				0.458**	0.440**	
	Sig(2-tailed)				0.000	0.000	
Learner Autonomy	Corel. Coeff					0.641**	0.265**
	Sig(2-tailed)					0.000	0.002

*Correlation significant at 0.05 level, 2-tailed; **Correlation significant at 0.01 level, 2-tailed. *n* = *136*

I & C Interaction & Collaboration, *L* Learning, *DE* Distance Education, *LE* Learning Environment

Table 5 Correlations between DELES variables for undergraduate learners in Face-to-face LE

	Spearman rho	Learner I & C	Personal Relevance	Authentic L	Learner Autonomy	Active L
Instructor support	Corel. Coeff	0.328**	0.396**	0.390**	0.258**	0.243**
	Sig(2-tailed)	0.000	0.000	0.000	0.000	0.000
Learner I & C	Corel. Coeff		0.424**	0.333**	0.206**	0.324**
	Sig(2-tailed)		0.000	0.000	0.000	0.000
Personal Relevance	Corel. Coeff			0.628**	0.469**	0.448**
	Sig(2-tailed)			0.000	0.000	0.000
Authentic L	Corel. Coeff				0.442**	0.436**
	Sig(2-tailed)				0.000	0.000
Learner Autonomy	Corel. Coeff					0.637**
	Sig(2-tailed)					0.000

I & C Interaction & Collaboration, *L* Learning, *DE* Distance Education, *LE* = Learning Environment

**Correlation significant at 0.01 level, 2-tailed. $n = 265$

Table 6 Correlations between DELES variablesfor undergraduate learners in Blended LE

	Spearman rho	Learner I & C	Personal Relevance	Authentic L	Learner Autonomy	Active L	Satisfaction with DE[a]
Instructor support	Corel. Coeff	0.327**	0.488**	0.357**	0.295**	0.292**	
	Sig(2-tailed)	0.000	0.000	0.000	0.000	0.000	
Learner I & C	Corel. Coeff		0.481**	0.408**	0.185**	0.272**	0.136**
	Sig(2-tailed)		0.000	0.000	0.000	0.000	0.010
Personal Relevance	Corel. Coeff			0.501**	0.387**	0.429**	0.179**
	Sig(2-tailed)			0.000	0.000	0.000	0.001
Authentic L	Corel. Coeff				0.374**	0.334**	0.142**
	Sig(2-tailed)				0.000	0.000	0.007
Learner Autonomy	Corel. Coeff					0.488**	0.168**
	Sig(2-tailed)					0.000	0.001

I & C Interaction & Collaboration, *DE* Distance Education, *LE* Learning Environment

**Correlation significant at 0.01 level, 2-tailed. $n = 362$, [a]$n = 361$

Instructors

There are weak to strong positive relationships as indicated in Tables 11, 12, 13.

Authentic learning, *learner autonomy* and *active learning* emerge as the variables that are strongly interdependent in the three LEs. The relationship between *instructor support* and other variables is more conspicuous in the instructors' responses than the learners'. It reaffirms how instructors perceive their role as an important one.

Learner and instructor beliefs and experiences influence the variable relationships. It has been reported that learner and educator experiences and beliefs shape their practices (Howard et al., 2019; Raturi & Boulton-Lewis, 2014), therefore further investigation would provide greater insights. The correlations between different

Table 7 Correlations between DELES variables for undergraduate learners in Online LE

	Spearman rho	Learner I & C	Personal Relevance	Authentic L	Learner Autonomy	Active L
Instructor support	Corel. Coeff	0.246**	0.281**	0.370**	0.219**	0.350**
	Sig(2-tailed)	0.010	0.003	0.000	0.021	0.000
Learner I & C	Corel. Coeff		0.337**	0.287**		0.231**
	Sig(2-tailed)		0.000	0.002		0.015
Personal Relevance	Corel. Coeff			0.497**	0.504**	0.454**
	Sig(2-tailed)			0.000	0.000	0.000
Authentic L	Corel. Coeff				0.337**	0.333**
	Sig(2-tailed)				0.000	0.000
Learner Autonomy	Corel. Coeff					0.513**
	Sig(2-tailed)					0.000

I & C Interaction & Collaboration, *DE* Distance Education, *LE* Learning Environment

*Correlation significant at 0.05 level, 2-tailed; **Correlation significant at 0.01 level, 2-tailed. $n = 110$

Table 8 Correlations between DELES variables for Postgraduate learners in Face-to-face LE

	Spearman rho	Learner I & C	Personal Relevance	Authentic L	Learner Autonomy	Active L	Satisfaction with DE[a]
Instructor support	Corel. Coeff	0.480**	0.460*	0.506**	0.469*	0.514**	
	Sig(2-tailed)	0.008	0.012	0.005	0.010	0.004	
Learner I & C	Corel. Coeff		0.600**	0.585**	0.553**	0.497**	0.599**
	Sig(2-tailed)		0.001	0.001	0.002	0.006	0.002
Personal Relevance	Corel. Coeff			0.578**	0.652**	0.602**	0.541**
	Sig(2-tailed)			0.001	0.000	0.001	0.006
Authentic L	Corel. Coeff				0.760**	0.635**	
	Sig(2-tailed)				0.000	0.000	
Learner Autonomy	Corel. Coeff					0.611**	0.440*
	Sig(2-tailed)					0.000	0.031
Active L	Corel. Coeff						0.508*
	Sig(2-tailed)						0.011

I & C Interaction & Collaboration, *L* Learning, *DE* Distance Education, *LE* Learning Environment

*Correlation significant at 0.05 level, 2-tailed; **Correlation significant at 0.01 level, 2-tailed. $n = 29$, [a]$n = 24$

factors in different LE for the two groups of learners provide course design teams including the educators an indication of how working on one factor influences other and need to look into the strategies to tackle it.

Conclusion and implications

The learners' preferences for DELES scales stand between 3 and 4 (sometimes and often) for undergraduate learners and between 4 and 4.5 (often and between 'often & always') for postgraduate learners. This provides more or less a uniform scenario

Table 9 Correlations between DELES variables for Postgraduate learners in Blended LE

	Spearman rho	Learner I & C	Personal Relevance	Authentic L	Learner Autonomy	Active L	Satisfaction with DE[a]
Instructor support	Corel. Coeff	0.385*	0.482*	0.392*			0.381*
	Sig(2-tailed)	0.047	0.011	0.043			0.050
Learner I & C	Corel. Coeff		0.581**	0.490**			
	Sig(2-tailed)		0.001	0.009			
Personal Relevance	Corel. Coeff			0.732**	0.408*		
	Sig(2-tailed)			0.000	0.034		
Authentic L	Corel. Coeff				0.618**		
	Sig(2-tailed)				0.001		
Learner Autonomy	Corel. Coeff					0.609**	
	Sig(2-tailed)					0.001	

I & C Interaction & Collaboration; *L* Learning, *DE* Distance Education, *LE* Learning Environment

*Correlation significant at 0.05 level, 2-tailed; **Correlation significant at 0.01 level, 2-tailed. *n* = *27*

Table 10 Correlations between DELES variables for Postgraduate learners in Online LE

	Spearman rho	Authentic L	Learner Autonomy	Satisfaction with DE
Learner I & C	Corel. Coeff	0.534*		
	Sig(2-tailed)	0.033		
Authentic L	Corel. Coeff		0.592*	
	Sig(2-tailed)		0.016	
Active L	Corel. Coeff			0.740**
	Sig(2-tailed)			0.001

I & C Interaction & Collaboration, *L* Learning, *DE* Distance Education, *LE* Learning Environment

*Correlation significant at 0.05 level, 2-tailed; **Correlation significant at 0.01 level, 2-tailed. *n* = *16*

across the different LEs but in the light of ratings for the two groups, evidently age and education level matters. Among the six pyscho-social factors in DELES, the undergraduate learners indicate the highest preference for *learner interaction and collaboration* and *active learning* as 'often', whereas postgraduate learners indicate the highest preference for *instructor support, authentic learning* and *active learning* throughout the eLearning continuum. On the other hand, the Instructors rate *instructor support* highest in all LEs and *learner autonomy* as lowest in a face-to-face LE. A significance finding is the difference in perceived importance of peers versus instructors as well as learner autonomy by learners (undergraduate and postgraduate) and instructors. The undergraduate learners consider their 'peers' more important than *instructor support*, unlike the postgraduate learners and the instructors. Similarly, the instructors do not regard the learners as autonomous contrary to learners' perceptions; in particular, the postgraduate learners and online undergraduate learners. The instructors' response is with respect to what they think their learners

Table 11 Correlations between DELES variables for Instructors in Print LE

	Spearman rho	Learner I & C	Personal Relevance	Authentic L	Learner Autonomy	Active L	Satisfaction with DE
Instructor support	Corel. Coeff Sig(2-tailed)		0.399* 0.035	0.613** 0.001		0.575** 0.001	0.421* 0.026
Learner I & C	Corel. Coeff Sig(2-tailed)		0.551** 0.002	0.424* 0.024	0.488** 0.008		
Personal Relevance	Corel. Coeff Sig(2-tailed)			0.584** 0.001	0.607** 0.001	0.578** 0.001	0.554** 0.002
Authentic L	Corel. Coeff Sig(2-tailed)				0.502** 0.006		
Learner Autonomy	Corel. Coeff Sig(2-tailed)					0.529** 0.004	
Active L	Corel. Coeff Sig(2-tailed)						0.381* 0.046

I & C Interaction & Collaboration, *L* Learning, *DE* Distance Education, *LE* Learning Environment

*Correlation significant at 0.05 level, 2-tailed; **Correlation is significant at 0.01 level, 2-tailed. $n = 28$

Table 12 Correlations between DELES variables for Instructors in Face-to-face LE

	Spearman rho	Learner I & C	Personal Relevance	Authentic L	Learner Autonomy	Active L	Satisfaction with DE[a]
Instructor support	Corel. Coeff Sig(2-tailed)		0.422** 0.000	0.513** 0.000	0.504* 0.000	0.351** 0.003	
Learner I & C	Corel. Coeff Sig(2-tailed)		0.288* 0.017	0.242* 0.047			
Personal Relevance	Corel. Coeff Sig(2-tailed)			0.410** 0.001	0.538** 0.000	0.488** 0.000	0.283** 0.028
Authentic L	Corel. Coeff Sig(2-tailed)				0.484** 0.000	0.313** 0.009	
Learner Autonomy	Corel. Coeff Sig(2-tailed)					0.530** 0.000	

I & C Interaction & Collaboration, *L* Learning, *DE* Distance Education, *LE* Learning Environment

*Correlation significant at 0.05 level, 2-tailed; **Correlation significant at 0.01level, 2-tailed. $n = 68$, [a]$n = 60$

prefer. These findings point to a clear disconnect between undergraduate learners and instructors' perceptions about learner autonomy and instructors' role. The selection of peer support and interaction in favour of *instructor support* by autonomous learners reflects a culture emerging among twenty-first century learners, which resonates with many studies (Cohen et al, 2019; Fotiadou et al., 2017). This calls for a self-review of instructors' perceptions and its subsequent implications on various aspects of learning and teaching.

In order to provide learners opportunities for interaction, collaboration and active learning, instructors and higher education institutions will need to rethink

Table 13 Correlations between DELES variables for Instructors in Blended LE

	Spearman rho	Learner I & C	Personal Relevance	Authentic L	Learner Autonomy	Active L
Instructor support	Corel. Coeff	0.633**	0.575*			
	Sig(2-tailed)	0.009	0.020			
Learner I & C	Corel. Coeff			0.543*	0.777**	
	Sig(2-tailed)			0.030	0.000	
Personal Relevance	Corel. Coeff			0.771**	0.624**	0.558*
	Sig(2-tailed)			0.000	0.010	0.025
Authentic L	Corel. Coeff				0.799**	0.635**
	Sig(2-tailed)				0.000	0.008
Learner Autonomy	Corel. Coeff					0.627**
	Sig(2-tailed)					0.009

I & C Interaction & Collaboration, *L* = Learning, *DE* Distance Education, *LE* Learning Environment

*Correlation significant at 0.05 level, 2-tailed; **Correlation significant at 0.01 level, 2-tailed. *n* = *16*

instructional design. In fact it is also time we moved away from the term 'instructional design' to 'learning design' to emphasize learner-centred design. Evidently, the twenty-first century learners prefer to learn by interacting with peers, content and interface (in the case of internet and computer-assisted learning) and peers (Cohen et al, 2019; Kaymak & Horzum, 2013; Raturi, 2019). The role of instructor has evolved from 'instruction' to 'facilitation/guidance'; an important point instructors need to make a note of with respect to their role. The interface affords endless possibilities for facilitation/guidance and so it is crucial to exploit these affordances. The undergraduate learners' level of *satisfaction with distance education* in general ranges from 'seldom' to 'sometimes' (2–3), which is similar to what instructors predicted as learners' preferences for satisfaction with distance education. On the other hand, postgraduate learners responses stand at 'sometimes' and 'often' (3–4). This (*satisfaction with distance education*) can be used to speculate on their preference for the LE. It is therefore not surprising that postgraduate learners prefer blended and online learning environments (VLEs) more than undergraduate learners as found in earlier studies (Raturi et al., 2011; Raturi, 2018).

The instructors' pedagogical practices are informed by their beliefs (Howard et al., 2019; Raturi & Boulton-Lewis, 2014). This study revealed instructors' beliefs are somewhat disconnected with the reality. Therefore, there is a need for reviewing the curriculum design and pedagogy focussing on these areas to ensure that learners' preferences towards their ideal VLE are taken into consideration.

Within DELES scales, there were several relationships of interest, which affirms how the six scales are interdependent but also inform us of the need to investigate these factors in particular the ones that appear independent here. These relationships have implication on course design and afford information for the course design teams. For example, satisfaction with DE is dependent on if undergraduate learners perceive the course structure meets their expectations with respect to personal relevance and authentic learning in the case of LE where learner and instructors are not in the same physical proximity. Learners

find real-world problems relevant to them, therefore, the course structure needs to accommodate examples and contextualized content and assessments from within their socio-economic and geographical context.

A weak to moderate to strong correlation between DELES scales reflects that learners can demonstrate autonomy provided learning experience is designed in a way that is relevant and authentic with opportunities for active learning and interaction with peers (Moore, 1983, 1997). The undergraduate learners place very little importance on teaching presence, which is evident in the lack of correlation between instructor support and satisfaction with distance education. While one may argue teaching presence being important (Garrison et al., 2000), however, the undergraduates' overwhelming response with respect to instructor support calls for further investigation. On the other hand, a high rating for instructor support by postgraduate learners is affirmed by the correlation between instructor support and satisfaction with distance education in blended LE. This also highlights the importance postgraduate learners place on instructor support even in the VLE. Owing to the postgraduate learners maturity and need for 'anytime anywhere' learning, their high preference for satisfaction with distance education is obvious (Raturi et al., 2011).

The relationship between course structure and learner satisfaction levels highlights the importance of course structure for instructional designers and educators so as to provide learners maximum satisfaction with their LE. Therefore, a carefully designed *course structure* and the need to ensure different kinds of *interaction* (learner–learner, learner–instructor, learner–content, learner interface) must be embedded within the course structure—such that any learning environment (specifically VLEs) can enable learners to learn independently (*autonomy*)—is paramount for learner satisfaction; this reaffirms the three variables (*course structure*, *interaction* and *autonomy*) are instrumental in tackling the transactional distance (Moore, 1983, 1997).

This study has implications for higher educators and higher education institution as they continue to engage with online learning and MOOCs. Considering that online learning and MOOCs have no physical boundaries, its diverse group of learners can be located in any part of the world. It implies that higher education institutions and MOOC providers need to take into consideration learners' perception towards the six DELES scales ensuring inclusivity. The recent turbulence in MOOC industries (Coursera, Satyam, Stanford, Udacity, etc.) and online learning warrants a re-thinking of course structure and interaction opportunities offered in virtual learning environments to optimize learning experience.

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Appendix 1

DELES survey (preferences)

Distance Education Learning Environments Survey (DELES) Preferred Form (Scott Walker, 2005)*

This survey contains 34 statements about how you prefer practices to take place in this class, followed by eight statements regarding your opinion about distance education.

There are no 'right' or 'wrong' answers. Your opinion is what is wanted on each item. Please think about how well each statement describes what this class could be like for you.

Rating: Never = 1; Seldom = 2; Sometimes = 3; Often = 4; Always = 5.

Note: Focus on one of the modes of instruction (Print, Face-to-face, Blended, Online) that you would like to focus on for this survey.

Scale 1: instructor support

In this class, I prefer that …

Item 1: If I have an inquiry, the instructor finds time to respond.
Item 2: The instructor helps me identify problem areas in my study.
Item 3: The instructor responds promptly to my questions.
Item 4: The instructor gives me valuable feedback on my assignments.
Item 5: The instructor adequately addresses my questions.
Item 6: The instructor encourages my participation.
Item 7: It is easy to contact the instructor.
Item 8: The instructor provides me positive and negative feedback on my work.

Scale 2: learner interaction and collaboration

In this class, I prefer to …

Item 9: Work with others.
Item 10: Relate my work to other's work.
Item 11: Share information with other students.
Item 12: Discuss my ideas with other students.
Item 13: Collaborate with other students in the class.
Item 14: that group work is a part of my activities.

Scale 3: personal relevance

In this class, I prefer that …

Item 15: I can relate what I learn to my life outside of university.
Item 16: I am able to pursue topics that interest me.

Item 17: I can connect my studies to my activities outside of class.
Item 18: I apply my everyday experiences in class.
Item 19: I link class work to my life outside of university.
Item 20: I learn things about the world outside of university.
Item 21: I apply my out-of-class experience.

Scale 4: authentic learning

In this class, I prefer that …
Item 22: I study real cases related to the class.
Item 23: I use real facts in class activities.
Item 24: I work on assignments that deal with real-world information.
Item 25: I work with real examples.
Item 26: I enter the real world of the topic of study.

Scale 5: learner autonomy

In this class, I prefer that …
Item 27: I explore my own strategies for learning.
Item 28: I seek my own answers.
Item 29: I solve my own problems.

Scale 6: active learning

In this class, I prefer that …
Item 30: I make decisions about my learning.
Item 31: I work during times I find convenient.
Item 32: I am in control of my learning.
Item 33: I play an important role in my learning.
Item 34: I approach learning in my own way.

The following items refer to your preferences about satisfaction with distance education

Item 35: Distance education is stimulating.
Item 36: I prefer distance education.
Item 37: Distance education is exciting.
Item 38: Distance education is worth my time.
Item 39: I enjoy studying by distance.
Item 40: I look forward to learning by distance.
Item 41: I would enjoy my education more if all my classes were by distance.
Item 42: I am satisfied with DE mode.
*This is the survey for Learners. The survey for instructors replaced 'I' with 'Student'.

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