

## A Cross-cultural Comparison on Students' Perceptions towards Online Learning

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### ABSTRACT

The aim of this study was to explore cross-country (Taiwan versus India) differences in students' perceptions of online learning by gender. The self-reported instrument, POSTOL (Perception of Students towards Online Learning), was conducted to the students from Taiwan and India. Of the total 441 respondents, there were 233 students from India and 208 from Taiwan. A 2x2 between-subjects multivariate analysis of variance was employed on the four dimensions of the POSTOL scale. This scale consists of four dimensions: instructor characteristics, social presence, instructional design, and trust. Results showed that there were significant differences, between India and Taiwan, in the perception of students towards online learning. However, there was no significant interaction effect of country by gender. Findings indicated that culture did influence students' perceptions towards online learning. There is a need to raise awareness about factors that may affect online learning experience and to provide guidance and for practice and future work.

**Keywords:** cross-country, gender, online learning, perception

### INTRODUCTION

The portrait of online learning has moved beyond students operating through Internet-connected desktops or laptops. A new generation of technology, including Smartphones and handheld devices are today's "learning hubs". The current online learning experience exploits information on the go for the sharing and exchanging ideas, without spatial barriers (Wong, 2012). The number of online course providers and number of participants are increasing exponentially (Barak et al., 2016). Some participants in online courses are from the different cultural and linguist background (Loizzo & Ertmer, 2016; Wang, 2007). This draws the attention of many educators and researchers towards online learning.

Currently, many studies have been conducted in the area of online learning. Recent studies focused on students' course satisfaction (Lee et al., 2011), learning outcome (Horzum et al., 2014; Joo et al., 2015; Lee et al., 2011; Wang et al., 2013; You, 2016), motivation (Barak et al., 2016; Chen & Jang, 2010; de Barba et al., 2016; Joo et al., 2015; Kim et al., 2015), engagement (Barak et al., 2016; Kim et al., 2015), instructional design (Joo et al., 2015), gender differences (Ashong & Commander, 2012; Cheng et al., 2012; Kupczynski et al., 2014) and social interaction (Eryilmaz et al., 2013; Joksimović et al., 2015; Xie et al., 2013). Loizzo and Ertmer (2016) mentioned understanding the specific perceptions and experiences of online learners from different countries are important research areas. Therefore, the present study focused on cross-country differences in gender and students' perceptions towards online learning.

### THEORETICAL BACKGROUND

In this study, Vygotsky's (1978) sociocultural theory is applied to understand students' perceptions towards online learning across different cultures. According to the socio-cultural theory, learning is a social process and is composed of three important themes: culture, language, and the "zone of proximal development." "Zone of

#### Contribution of this paper to the literature

- This study contributes to the existing literature by showing that the perceptions of the students towards online learning differ in the cross-cultural context.
- In addition, no study previously has investigated the students' perceptions in relation to the combined effects of country and gender.
- Cross-cultural differences have major influence on students' perceptions towards online learning. Instructional designers should apply socio-cultural theory to take into account the effect of diverse cultural background on the learner's learning behavior to enhance learning effectiveness.

proximal development" is not the central concept discussed in this study; we concentrated on the effects of culture and language to understand online learning environments. Many research studies advocated the importance of language and culture. For example, according to Mercer (2000), "Language is a tool for carrying out joint intellectual activity, a distinctive human inheritance designed to serve the practical and social needs of individuals and communities and which each child has to learn to use effectively" (p.1). Delahunty et al. (2014) describe social interaction as an important component for knowledge building process in online learning. According to (Vygotsky), learning occurs at two levels:

First, through interaction with others, and then integrated into the individual's mental structure. Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals (Vygotsky, 1978, p.57).

Language plays a significant role in terms of learner's motivation, interaction and engagement in online learning environment (Barak et al., 2016; Mercer, 2000). However, language is one of the main barriers for the students who want to enroll in online courses from developing countries (Altbach, 2014; Kerr, 2014; Olesova et al., 2011; Osman & Herring, 2007). Participants are required to have some basic competencies, specifically digital literacy and a good level of English proficiency. If an institution offers a MOOC, it is probably in English, which is presently the international *lingua franca*. English is the native language for around 400 million people. Therefore, it still leaves around 70% of the world's total population who are unable to access the educational content published in English (Wikipedia, 2016).

Some researchers also advocate the importance of culture in online learning environment. "Culture is a set of parameters of collectives that differentiate the collectives from each other in meaningful ways. Culture is variously defined in terms of several commonly shared processes: shared ways of thinking, feeling, and reacting; shared meanings of identities; shared socially constructed environments; common ways in which technologies are used; and commonly experienced events, including the history, language, and religion of their members" (House et al., 2004, p.15). Ordóñez (2014) highlights the impact of culture in online learning and suggests instructional designers and instructor to consider culture during course development. According to McLoughlin (1999), "Culture and learning are interwoven and inseparable" (p.232). In addition, culture and language have a closed relationship. Language is an important element of cross-cultural communication that needs to be considered (Gunawardena et al., 2001). "The cyclical nature of the relationship between culture and language suggests that no complete understanding of culture can be obtained without understanding language and vice-versa" (Matsumoto, 1996, p. 266).

Barberà et al. (2014) raised an important issue that present day e-learning has expanded, and the scope for sharing academic courses between countries has increased. However, whether a course designed for the learners of a specific country for a specific discipline will be relevant to the learners of the same discipline in another country has not yet been determined. Recent literature suggests that culture plays an important role in online learning (Milheim, 2014). Some of the researchers have included culture as a dimension in their study. For example, Gunawardena et al. (2001) conducted a cross-cultural study to examine students' perceptions towards online group process and development. They found that culture influences participant's online learning behavior in terms of collectivism and context communication. Bates (2001) also concluded that culture differences influence the online teaching-learning process in terms of students' willingness to participate in the online discussion forum. Some researchers found that cultural differences create barriers in students' communication and social-interaction which affect learner's overall learning performance, motivation, and satisfaction in online learning (Hamdan, 2014; Kerr, 2014; Olaniran, 2009; Uzuner, 2009). On the other hand, some researchers advocated that students in online learning can be benefited by the international exposure and exchange of ideas among the students from different cultural backgrounds. This type of learning environments will develop and inculcate social learning and thinking of the participants (Gemmell et al., 2015; Stewart, 2004). Kim and Bonk (2002) investigated cross-cultural differences between U.S. and Finland, in online collaborative learning behavior, and found significant differences. Lim (2004)

conducted a cross-cultural study to examine differences and similarities in learner's motivation in online learning between Korea and U.S. and also how cultural differences and learner's characteristics and culture affect the learning motivation of online learners. The researcher suggested that identification of learning strategy better suited for learning environment with cross-cultural differences should be the priority for the instructors and instructional designers. In another study, Zhu (2012) investigated the cultural differences between Flemish and Chinese students in online learning with respect to students' satisfaction and performance. The results revealed significant differences in students' satisfaction and academic achievement across the culture. Yang et al. (2014) found that culture plays an influencing factor in learning online. Students were interested and very positive to know other participants' cultures and backgrounds.

Previous research studies have investigated the effects of gender differences in online learning. For example, the study conducted by González-Gómez et al. (2012) revealed that females were more satisfied in e-learning environment than males. Nistor (2013) investigated the impact of gender differences in university students' attitude and participation in online courses. They found no significance difference between male's and female's attitude towards online courses. However, there was significant differences in terms of participation. Female students were more participative compared to the male students. Kimbrough et al. (2013) examined the gender differences in mediated communication. The results revealed that women used text messaging, social media, and online video calls more frequently as compared to men. In another study by Song et al. (2015), results indicated no significant gender differences in online collaboration. Liu and Young (2017) found significant gender differences in terms of learning achievement and motivation in an online community-based English reading contest.

The above literature reviews of online learning indicate that studies related to gender differences in online learning are few and findings reported are mixed and inconsistent. As a result, it remains unanswered whether there are any gender differences exist in students' perception towards online learning across different culture.

### Issues and Research Questions

From the above literature review, we can draw two conclusions. First, although previous studies have focused on cross-cultural differences in online learning motivation (Lim, 2004), satisfaction, performance and knowledge construction (Zhu, 2012) and online collaboration (Kim & Bonk, 2002), so far no researchers has compared students' perception towards online learning across countries. Second, those studies do not look at gender differences across cultures, although gender differences are treated in many non-Western educational systems. The present study endeavors to fill part of the research gap by focusing on two countries in Asia with very different cultures and historical treatment of women – namely, India and Taiwan. Hence, two objectives guide this study:

1. To examine whether there are any significant differences in the student's perceptions towards online learning between India and Taiwan.
2. To explore whether there are any significant gender differences between India and Taiwan in the student's perceptions towards online learning.

## METHOD

### Sample and Data Collection

#### *Indian sample*

The sample was collected from different parts India using convenience sampling method. The participants only who had online learning experience responded using Google Online survey via student forums. Of the total 233 Indian students who participated in the study, there were 189 (81.1%) males and 44 (18.8%) females. Participants' ages ranged from 17 to 43 years old with a mean of 21.15 years ( $SD=3.5$ ). In terms of the educational background, 180 (77.2%) were undergraduate, 37 (15.8%) were masters, and 16(6.8%) were Ph.D. students. **Table 1** shows the demographic statistics of the participants.

**Table 1.** Demographic information of the participants

Measure	Category	Indian sample (n=233)	Taiwanese sample (n=208)
		Number	Number
Gender	Female	44	112
	Male	189	96
Age(years)	16-20	133	38
	21-25	75	102
	26-30	19	27
	31 and above	6	40
Education	Undergraduate	180	96
	Master	37	95
	Ph.D.	16	17
No of smartphone users	Yes	135	187
	No	98	21
No of Facebook users	Yes	221	205
	No	12	03
Frequency of daily Internet use	Frequently(>5 hours)	62	123
	Normally(3-4 hours)	51	69
	Occasionally (1-2 hours)	100	15
	Rarely (<1 hours)	20	01

### Taiwanese sample

The sample of Taiwanese participants from different parts of Taiwan was collected using the similar method via BBS (Bulletin Board System). Of the total Taiwanese 208 students, there were 96 (46.1%) males and 112 (53.8%) were females. Participants' ages ranged from 18 to 49 years old with a mean of 25.35 years ( $SD=6.55$ ). In terms of the educational background, 96 (46.1%) were undergraduate, 95 (45.6%) were masters, and 17 (8.1%) were Ph.D. students.

### Instrument

We employed the POSTOL instrument developed by Bhagat et al. (2016) and six items for demographic information. The POSTOL instrument is a 5-point Likert-type scale, which contains 16 items. The POSTOL instrument has four dimensions: *instructor characteristics* (5 items), *social presence* (5 items), *instructional design* (3 items), and *trust* (3 items). Bhagat et al. (2016) reported the psychometric properties of the POSTOL. Results showed that POSTOL is a reliable and valid to use. In the present study, internal consistency reliability coefficients of the four dimensions ranged between .70 to .89 for the Indian sample and .72 to .92 for the Taiwanese sample (see [Table 3](#)).

### Data Analysis

To examine the normality of the data, skewness and kurtosis values were inspected. The skewness and kurtosis values are within the recommended values  $|3|$  and  $|10|$  for both the Indian and Taiwanese sample respectively (Kline, 2005). This proved the normality of the data. Box's M statistics was employed to examine the homogeneity of variances and was found to be 58.88 ( $F=1.91, p>.001$ ). Correlation analyses and multivariate analysis of variance (MANOVA) were used to analyze the data obtained.

## RESULTS

Means and standard deviations of the POSTOL subscales for Indian and Taiwanese males and females are shown in [Table 2](#). For Indian sample, the highest mean was on trust subscale and the lowest mean was on instructor characteristics for both males and females. Similar results were found for the Taiwanese sample also.

**Table 2.** Descriptive statistics for POSTOL subscale scores on a 5-point scale

Dependent variables	Indian sample (n=233)						Taiwanese sample (n=208)					
	Gender						Gender					
	Male (n=189)			Female (n=44)			Male (n=96)			Female (n=112)		
	Mean	Skewness	Kurtosis	Mean	Skewness	Kurtosis	Mean	Skewness	Kurtosis	Mean	Skewness	Kurtosis
Instructor characteristics	1.72 (.90)	1.56	2.133	1.69 (.91)	1.28	.821	1.94 (.77)	1.22	1.65	1.84 (.81)	1.45	2.54
Social presence	1.93 (.86)	1.25	1.59	1.92 (.83)	.82	.206	2.05 (.77)	1.17	1.505	2.15 (.69)	.724	1.35
Instructional design	1.89 (.88)	1.08	.535	1.87 (.90)	1.251	.555	2.16 (.73)	.83	.707	2.24 (.75)	.646	.288
Trust	2.53 (.96)	.30	-.373	2.55 (.79)	.044	-.481	2.67 (.84)	.012	-.266	2.84 (.57)	-.298	.06

Note. Values enclosed in parentheses represent standard deviations

**Table 3.** Intercorrelations and internal consistency coefficients on the POSTOL subscale scores for the Indian and Taiwanese samples

Variables	Variables	1.	2.	3.	4.
1. Instructor characteristics					
2. Social presence		.775*(.603*)			
3. Instructional design		.697*(.509*)	.738*(.587*)		
4. Trust		.352*(.113)	.552*(.391*)	.466*(.231*)	
Internal consistency coefficients		.899(.920)	.854(.90)	.703(.727)	.706(.732)

\* $p < .01$

Note. The correlation coefficients outside of parentheses belong to the Indian sample whereas values inside parentheses belong to the Taiwanese sample

**Table 4.** MANOVA results

Dependent Variable	Country			Gender			Country x Gender		
	F	Sig.	$\eta^2$	F	Sig.	$\eta^2$	F	Sig.	$\eta^2$
Instructor characteristics	14.16	.000	.03	1.06	.30	.002	.09	.76	.000
Social presence	9.48	.002	.02	.55	.45	.001	.90	.34	.002
Instructional design	30.12	.000	.06	.22	.63	.001	.01	.89	.000
Trust	8.41	.004	.02	1.98	.16	.005	1.81	.17	.004

Intercorrelations on the POSTOL subscales for the Indian and Taiwanese sample are shown in Table 3. In both the Indian and Taiwanese samples, the highest intercorrelation was between the instructor characteristics and social presence ( $r = .775$  and  $r = .603$  respectively). The lowest intercorrelation for the Indian sample was between the instructor characteristics and trust ( $r = .352$ ) and between the instructional design and trust in the Taiwanese sample ( $r = .231$ ).

MANOVA was used to examine the effects of the two independent variables (i.e., country and gender) and four dependent variables (i.e., instructor characteristics, social presence, instructional design, and trust), which were obtained by POSTOL. In addition, interaction effect of the two groups on the dependent variables was also investigated. As reported in Table 4, there was a significant effect of the country on students' perceptions towards online learning, Wilk's  $\Lambda = .905$ ,  $F = 11.40$ ,  $p < .05$ ,  $\eta^2 = .09$ , showing a large effect. There was no significant effect of the gender on students' perceptions towards online learning: Wilk's  $\Lambda = .983$ ,  $F = 1.88$ ,  $p > .05$ ,  $\eta^2 = .01$ . Interaction effects on students' perceptions were also not significant: Wilk's  $\Lambda = .985$ ,  $F = 1.67$ ,  $p > .05$ ,  $\eta^2 = .01$ .

## DISCUSSION AND CONCLUSIONS

Over the last decade, research in online learning has been growing exponentially due to the current advancements of information and communication technology in the education sector. Culture and language have long been found influencing factors in online learning (Barak et al., 2016; Ordóñez, 2014). Even though motivation, satisfaction, academic achievement, and instructional design have long studied, no studies have investigated students' perceptions towards online learning in the cross-cultural context. Therefore, the present study guided by socio-cultural theory, attempted to examine the differences in students' perceptions towards online learning in terms of gender and country.

An interesting similarity between the two samples was, in both Indian and Taiwanese samples and for both males and females; the highest mean was on trust. These results suggest that building trust in online learning platform should be the first priority for the course providers. This can influence students' participation in online learning and motivate them to complete the course. All the samples scored lowest on instructor characteristics. A possible reason for this result is that the students do not have the opportunity to interact with the instructor face to face.

When intercorrelations were examined, the highest correlation was between the instructor characteristics and social presence in both groups. These two variables shared 60% and 36% of variability in the Indian and Taiwanese samples, respectively. These results indicate that social presence could be an essential element for the instructors to be included in order to create an effective online learning environment to enhance and improve students' academic performance. Instructors should provide more opportunities for interaction, which can construct social presence.

The statistical results of this study showed significant differences between the Indian samples and Taiwanese samples across the four dimensions (i.e. instructor characteristics, social presence, instructional design, and trust). India is known for multiculturalism in terms demographic, linguistic, religion and social (Bhattacharyya, 2003; Khandelwal et al., 2004). Currently, people speak in 780 different languages in India. But, English and Hindi are the official languages. On the other hand, Taiwan is a relatively monoculture country (Prowse, 2015). Taiwanese Hokkien is spoken by the majority of the population and Mandarin Chinese is used as official language. When the descriptive statistics were examined between the Indian sample and Taiwanese sample, demographic differences were found among the number of smart phone users, number of Facebook users, and frequency of daily Internet use. These results revealed that Taiwan has a better infrastructure for technology than India for providing online learning. Our results are consistent with the studies that indicated that culture and language play an influential role in online learning environment (Barak et al., 2016; Bates, 2001; Gunawardena et al., 2001; Mercer, 2000). The results of this study are also consistent with the study by Lim (2004) that highlight importance of cross-cultural settings in online learning. This study contributes to the existing literature by showing that the perceptions of the students towards online learning differ in the cross-cultural context. In addition, no study previously has investigated the students' perceptions in relation to the combined effect effects of country and gender. The results did not show a significant main effect for gender or an interaction effect between gender and country.

The discussion above leads to the conclusion that to promote active engagement of the learners and delivery of meaningful learning at a global level platform like MOOCs (Massive Open Online Courses), it is very important for the instructional designers to understand student's perceptions towards online learning in different cultural settings. Cross-cultural differences have major influence on students' perceptions towards online learning. Instructional designers should apply socio-cultural theory to take into account the effect of diverse cultural background on the learner's learning behavior to enhance learning effectiveness. Instructors and course designers need to be aware of the cultural diversity among the participants and provide more opportunities for peer to peer and instructor to peer interaction in order to solve the challenge of creating social presence. Instructors should be very careful while assigning the students from different cultural backgrounds to the same group assessment/tasks.

## LIMITATIONS AND FUTURE DIRECTIONS

Our study has not violated any multivariate assumptions, but still there are some limitations, which need to be considered. First, finding the equivalent sample for comparison was the greatest challenge for us. There may be differences in the participants' socio-economic status or education system from India and Taiwan. Heterogeneity of the participants was difficult to match. Second, the effect of rural-urban digital divides was not considered. Third, we used convenience sample method for data collection, which may hinder the generalization of the results. Future studies should collect qualitative data (i.e. individual interviews, direct observations, etc.). Our study has included only two countries, which are from Asia. Including more countries from different cultural backgrounds will help to generalize the results obtained. Therefore, it is highly recommended to include Western countries for future studies to compare with Eastern countries.

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