The impact of learning in a diversified environment: social and cognitive development of international students for global mind-set

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Abstract

Purpose – This study aims to assess the socio-cognitive transformation and subject knowledge development of international students studying in China's universities with diverse learning environment.

Design/methodology/approach – The data was collected through on-line survey and quantitative approach was adopted on a Likert scale to assess students' cognitive and social development as a responsible mind-set, ethical awareness, understanding cultural diversity and subject knowledge development. The assessment scale consisted of 25 statements to cover the foundational indicators that represent socio-cognitive transformation. The questionnaire was pilot tested for internal consistency by calculating Cronbach's alpha. Furthermore, exploratory factor analysis was applied to ensure the traits of the construct intended to measure. A total of 316 participants responded to the survey. With descriptive statistics, X^2 of association and Friedman's two-way analysis of variance by rank was applied to test the hypothesis.

Findings – This study argues that diverse learning environment has positive impact on learners' socio-cognitive transformation. It enhances students' capability to understand cultural values to accept diversity and awareness about global community issues and also subject knowledge skill development.

Originality/value – In the current century, study abroad programs have increased the mobility of international students, and the role of higher education institutions has become immense, multifaceted and dynamic. Universities are taking a position to play a considerable role in creating learning opportunities for awareness of societal issues and transform social behavior. Studying abroad programs is a growing concept in response to learners' cogitative and socialized transformation. There is an absence of research conducted to explore the impact of a diverse cultural environment on the socio-cognitive transformation of international students. Therefore, the current study focused on exploring the cognitive and societal development of international students studying in China.

Keywords Higher education, Study abroad, Global mind-set, Learning, International students, Development

Paper type Research paper

Introduction

The internationalization of education had undergone several stages of development with a long journey (Gao *et al.*, 2015). In 1919, the Center for International Education Research in the USA and International Education Institute of England was established. Furthermore, the OECD held seminars in 1993 and 1995 on the internationalization of higher education and

concluded the concept has become a central goal of education also curriculum development. That era was assumed as the commencement and the 20th century as a development period. Later on, in 2008, the Chinese Foreign Universities President Forum was held and internationalization was the central idea of the discussion. Similarly, ETH Zurich's Center for Global Environmental Sustainability has been established in 2010 under the UK–US joint initiative to boost global multilateral collaborations. (International Trends in Higher Education, 2015).

One of the more vital dynamics of internationalization is transversal to all aspects of higher education. It provides a forum of sharing relative perception through research services as an institutional imperative (Hudzik, 2011). It is defined as:

> [. . .] the intentional process of integrating an international, intercultural or global dimension into the purpose, functions, and delivery of post-secondary education, in order to enhance the quality of education and research for all students and staff and to make a meaningful contribution to society (de Wit, 2018; Mihut *et al.*, 2017).

The combination of local and international students significantly contributes to internationalization (Söderlundh, 2018). The internationalization of higher requires to develop intercultural competence, awareness to global issues to bring a positive change through improved delivery of quality education and research concerning global challenges, poverty, conflicts, environmental changes and inequality (Mihut *et al.*, 2017).

The consistently and complex changing in the world shifted the learning requirements of understanding global issues, cross-culture intelligence and global thinking to deal with social, economic and environmental issues of future (Mihut *et al.*, 2017). Similarly, McBurnie (2001) and Tan *et al.* (2017) revealed the demands of highly skilled intellectual as human resources with international recognition. Allen and Ogilvie (2004) given believes that the intellects trained in international scope preeminent higher chances of success. Stebleton *et al.* (2013), Giedt *et al.* (2015), (Moreno *et al.*, 2015) and (Kaowiwattanakul, 2016) indicated that internationalization of education's learning outcomes are intercultural understanding, global awareness, bilingual acquisition, tolerance and disciplinary skills. Braskamp *et al.* (2009) revealed the transformation of behaviors to work effectively in a diversified environment. Bian (2013) stated the acquisition of such skills is liberated and influenced by personal trajectories, also cultivate open-mindedness that reinforces for adaptation of competencies. Furthermore, experience gained in a multicultural learning environment develops behavioral changes associated with community engagement in accepting differences (Dassin *et al.*, 2017; Denson and Zhang, 2010). Byker (2019) encourages such learning environments to enhance learners' social and cognitive development. In addition to the foregoing, internationalization purposefully cultivates abilities to understand global issues, disciplinary competence, ability to solve complexity also to understand differences and limitations in personal lives. Although there have been many studies on how the internationalization develops intercultural competence, global awareness and language proficiency, there is lack of studies showing how internationalization can cultivate global mind-set at individual level. However, this study examines how internationalization can be served complementary forum to cultivate individual global mind-set.

Theoretical construct

Mezirow (2003) defined transformative learning as "The Learning that transforms a problematic frame of references, sets of fixed assumptions and expectations (habit of mind, meaning perspective, mind-sets). To make them more inclusive, discriminating, open, reflective, and emotionally able to change". That is knowledgeable on the basics of

cogitative and psychological development. A consciousness on meaning perspective is an individualistic lens to make sense of this world and everyday life (Mezirow, 2000). John Dirkx (1998) categorized transformative learning into four dimensions of transformation: awareness-raising, critical reflection, development, and individuation. Later, Taylor acknowledged that the development of transformative learning theory is based on seven differential anatomies, individual perspective, and societal, sociocultural context, cognitive, emotional, and behavioral transformation.

Formerly, Wals (2010) described this world as heterogeneous societies based on a multiplicity assortment of beliefs, actions and interests with complex sustainability problems. Moreover, there is a need for a multipurpose way of learning to develop capabilities of addressing conflicting interests. Similarly, study abroad programs bring social change with transformative learning to equip them with skills and capabilities to subsist the uncertain challenges of real-life (Lupele and Sisitka, 2014). And the multicultural activities, understanding and learning a different language, participating in discussion activities, and independence of presenting personal views were known as central tools for transformative learning to grow different perspectives (Kumi-Yeboah, 2014). Thomas (2010) stated that the transformative learning theory prominence to critical problem-based, and reflective education practice, also constructs social change (Blake *et al.*, 2013; Iyer-Raniga and Andamon, 2016). Walters *et al.* (2017) and Bell *et al.* (2016) reasonably concluded the transformative learnings through the experience of study abroad programs is independent of duration. It can be said that study abroad program foster transformative learning, to learn, adapt, enhance, and act effectively in different situations.

Studying abroad and transformative learning
Transformative learning starts when an individual comes across to know the inadequacy of different references and engages in critical reflection on different basis. Such critical reflection is the base of the transformative learning process leading to think alternative ways through activities and discussions (Taylor and Cranton, 2012), which develops the critical thinking of learners to find out the diverse solution. O'Sullivan *et al.* (2002, p. 18) advocated that such an attributed paradigm shift builds an understanding of one's self-reflection, relationship with humanity, and the natural world, developing revelation of substitute tactics for living and sense of a social justice. Societal change in an individual seems critical for global mind-set development.

Additionally, learning abroad can produce an uncertain situation for the learner that builds capabilities to tackle complex situations and ways of opportunity to learn different skills (Bell *et al.*, 2016; Trilokekar and Kukar, 2011). These programs helps to enhance attitudes, personal capabilities of self-reflection, and building skills to cope with higher education's disciplinary requirements (Tran, 2012). Scholars emphasize the transformation mentorship specified to make these programs more beneficial through the intercultural exchange, which will undoubtedly increase learners' participation (Cottier, 2016).

Furthermore, societies' culture works as an instrument for development. That enhances the individual's empowerment to deal with the complexity and devastation of the future. It enables the individual's functioning of self-governance to reduce ethnocentric biases (Serrat, 2008). Cultural intelligence transforms the information gained into knowledge and skills. Several studies argued in favor of learning in a diversified environment that it enhances cultural intellectuality, understanding behaviors and managing critical reflections. Inoue (2005) revealed that learning in a diverse environment improves students' sensitivity to the cultural understanding that upsurges intellectual growth and critical thinking. Furthermore, it improves self-awareness about ethnic values and behaviors as an opportunity to build

understanding to manage these differences with fair reflection. Also, Banks (2005) described that diversity provides opportunities to think critically and look at the world from different beliefs to solve complex societal issues. Also, Tahir (2017) explored experienced gained from classroom diversity, increase the critical thinking of college students. Thus, it can be assumed that in the diverse learning environment, an individual learns a higher level of tolerance to face the complexity of uncertainties and builds a sense of responsibility. Moreover, the diverse environment creates interaction among the people from different societies to work collaboratively, functions effectively and boosts interpersonal communication skills to be familiar with multicultural differences also the basic themes of multi-languages. All these attitudinal aspects of transformation are critical components of global mind-set development. However, study abroad education remained significantly attentive to the theory of transformative learning that constructs the paradigm of education for global mind-set development.

The literature review

Literature emphasis to educate the younger generation being aware of different problems in international society. Kramsch (2002), in four books reviewed article argues, the world is gradually increasing connection in every aspect of life. These learning requirements propel an urgent need to educate for tolerance and respect for each other. In the context of these global requirements, developed countries have focused on educational reforms to transform graduates' attitudes from international perspectives (Medvedeva, 2015). Leask (2015) advocated bringing diversity in university classrooms capacitate the students to work collectively, reflect critically and think globally. Chigisheva (2015) accents for a land of meta-civilization culture to develop and improve universal modus. Additionally, just retain the current global issues and imagine if the situation continues gradually, where we will stand, and this planet's future. Therefore, higher education's imperative responsibility has increased to contribute in cultivating future generation social and cognitive skills to engage with future challenges.

Internationalization of higher education and society

Today every citizen has an association with the universal community. We are living on a planet that has become a global village of interconnected and interdependent societies. Cultural and educational development aspects become emergent to cultivate a sense of awareness about global connectivity impacts and responsibilities (O'Sullivan and Pashby, 2007). Initially, scholars conceptualized citizenship education to develop a civilization for understanding the needs of the global community and to lead in more democratic righteousness (Banks, 2004). But, structural inclusion encountered diverse civilization issues (Banks, 2017; Merry, 2020). Besides, internationalization is also considered one aspect of contributing to this global imperative (Yemini, 2018). Consequently, Brigham (2011) argues internationalization as a strong catalyst force for change. Because the global perspective of the educative process develops self-awareness, capabilities to working collaboratively across the borders, disciplines and ethics can take on unfamiliar challenges and a choice to understand also deal with the challenges of the planet (Christensen and Kowalczyk, 2017). Taking note of the above discussion, this study reveals the 21st century demand for different learning, skill development, attributes and higher education institutions focus on reorienting educative process in an international context.

Learning environment and education abroad learning outcomes
The learning environment has a significant role in determining students' achievements. The learning environment includes all activities carried out within the classroom, faculty or at university (Al Rukban *et al.*, 2010). The learning process relieves individual development refers to personal changes or benefits that can be measured in terms of skill developments. Learning outcomes are abilities that capable of an individual to do as a result of learning (Lizzio *et al.*, 2002). The term refers to the culture of a classroom where students interact and learn from each other. Lizzio *et al.* (2002) also described the development of cognitive and behavioral transformation as major factors of learning outcomes. Cognitive development confines to the learning of domain-specific knowledge and problem-solving skills (Shavelson and Huang, 2003). Additionally, learning domain-specific knowledge outcomes relates to acquiring knowledge prerequisite for a particular field, is arguably essentially to improve students' advanced learning in filed of specialization and cognitive skills based on multifaceted development of thinking, reasoning, information processing, critical thinking, and evaluation of new ideas (Nusche, 2008). While non-cognitive development intimates to change in believes and developing certain values (Ewell, 2007). Addedly, non-cognitive outcomes are the results of both classrooms and out of classroom activities. Whereas, Velkwein in 2003 designated attitudinal and value outcomes includes the development of social responsibility and understanding diversity (cited by Nusche, 2008).

Identically, the learning outcomes from education abroad come in the same direction in forgoing discussion that generally pertains to intercultural competence, awareness of global issues also language proficiency. Anderson *et al.*(2005) favorably disposed toward psychological and behavioral development as a stream of students' learning outcomes. Allen and Friedman (2010) supported Lizzio *et al.* (2002) for cognitive and behavioral development as learning outcomes. Mundia (2012) classifies communication skills, analytical skills, reasoning, problem-solving and critically thinking abilities specified by Nusche (2008) under cognitive development as outcome study abroad programs. The forgoing mentioned outcomes from study abroad summarize the development of cognitive abilities and social transformation as outcomes from study abroad programs.

Preparing a global mind-set attributes
More or less, the terms global mind-set and intercultural competencies are used interchangeably. For example, research on students sample, Ang *et al.* (2007) with the term intercultural intelligence and Smith (2012) used a global mind-set. And in business field research, the term global mind-set was placed by Arora *et al.* (2004) and intercultural intelligence meant for (Bücker *et al.*, 2014). But, Andresen and Bergdolt (2017) suggested the researchers, clarify on which context cultural competencies are chosen to investigate in which context and relevance of sample being studied. Because there is a need to identify between two constructs to guide for future research. Moreover, the cross-cultural and international strategy literature has multidimensional and unidimensional definitions of a global mind-set. At the individual level, Levy *et al.* (2007), defined global mind-set in multidimensional concept as "Global mind-set is a highly complex cognitive structure characterized by an openness to and articulation of multiple cultural and strategic realities on both global and local levels, and the cognitive ability to mediate and integrate across this multiplicity" (p. 224). Although, the research on the global mind-set confines the construct of cultural intelligence that is highly congruent with identifying cognitive, motivational and behavioral components (Earley and Ang, 2003; D. C. Thomas, 2006), but the latest concept aligned with the construct of cognitive component (D. C. Thomas *et al.*, 2015) and the terms

cognitive and social skills with openness to diversity cover the major attributes of being a global mind-set. (Levy *et al.*, 2015).

This world is a community with a diverse culture where an individual's characters come inherently, and the individual's activities transform the scenario of the world (Reysen and Katzarska-Miller, 2013). The conception of a global mind-set is one thought to understand societal responsibilities. Global mind-set revolves around the ethical claim that we have obligations for humanity, the existential claim that we are citizens of the global community, and the aspirational claim acting as the agent to strengthen this community for sustainable future (Dower, 2003). In light of these responsibilities, it is conceivable to educate the young generation to be associated members of the global community. One of the significant challenges, today the world is facing to find out the solution to complex problems. Societies need a global mind-set generation to address these issues. How internationally affiliated higher education institution are cultivating individuals to survive and create a prosperous society. Moreover, Dolby (2004), Rizvi (2009), Braskamp *et al.* (2009) and Potts (2016) studies concluded that a multicultural learning environment cultivates a global mind-set is an epitome attributed with cognitive skills related to intercultural competencies, behavior to act as socially responsible, and knowledge of global awareness to engage an individual with the global community. In addition, this study evaluated the impact diverse classroom on developing learners' awareness of global issues, responsible to social obligation, intercultural intelligence and subject knowledge attributes rooted in the cultivation of individual global mind-set.

Research question

RQ1. Do the learning in a diverse environment has an impact on cultivating a global mind-set?

Methodology

Le *et al.* (2018), adopted instrument to explore the impact of international co-curricular activities in cultivating a global mind-set. The instrument covers cognitive, existential and behavioral properties to assess global mind-set attributes (Levy *et al.*, 2015). The current study adopted this questionnaire, and a few changes originated related explicitly to self-disciplinary subject knowledge statements. This study appraised the development areas that contribute to a global mind-set (Le *et al.*, 2018) and disciplinary skills development (OECD, 2019). Assessment for a responsible mind-set is categorized into awareness of global issues and social responsibility. Cultural diversity is taken under the ability to communicate across the culture a multilingual understanding (Watson and Wolfel, 2015). The domain of specific knowledge development is accounted for under disciplinary subject knowledge (OECD, 2019). This study took a quantitative survey to assess the student's cognitive and social development. These five areas consisted of 25 indicators statement, socially responsible mind-set consisted of 7 indicators, Ethical literacy also consisted of 7, cultural intelligence consisted of 4, disciplinary subject knowledge consisted of 4, and cosmopolitan attitude consisted of 3 statement indicators. The survey questionnaire consisted of five-point Likert scale from 5 to 1 as correspondingly (Excellent–5, Very good–4, Good–3, Fair–2, Poor–1). The instrument was sent to 6 professors related to higher education policy development for feedback on content and face validity (DeVon *et al.*, 2007; Parsian and Am, 2009).

Instrument's reliability and validity
To validate the internal consistency, a hard copy questionnaire was distributed among
40 students. Exploratory factor analysis and Cronbach's Alpha reliability coefficient
was calculated in statistical software (SPSS 20). The Cronbach reliability coefficient
was calculated for each factor (values ranged between 0.69 and 0.794) and for the total
score of 0.899. The alpha value of 0.69 (subject knowledge and cosmopolitan attitude)
was accepted because some primary studies reported values lower than 0.7 (Biasutti
and Frezza, 2009, p. 200; Liu, 2003). And also for the factors less than six statements
(Kyle *et al.*, 2005; Leech *et al.*, 2013). Thereby, 0.69 Cronbach's alpha value is considered
acceptable for this research (Ugulu, 2015). Table 1 indicates that the scale has good
internal consistency.

Furthermore, to ensure the traits of questions asked to relate to the construct intended to
measure, exploratory factor analysis was calculated. The KMO's and Bartlett's Test of
Sphericity statistical analysis performed to verify the suitability of data for exploratory
factor analysis resulted in KMO = 0.782, Bartlett's Test: X^2 = 230.47, and df = 153(p-
value = 0.0021). Kaiser (1974) recommended that KMO values greater than 0.5 are
acceptable. Besides, values in the range of 0.5 to 0.7, 0.7 to 0.8, are excellent and higher
considered superb (Juárez-Nájera, 2015, p. 66). Pallant (2000) and Tabachnick and Fidell
(2006) suggested measuring the sampling adequacy if the KMO value is > 0.6. Furthermore,
Bartlett's Test for Sphericity alpha > 0.5 assumed the correlation matrix's factorability. In
other words, a sample is adequate to proceed with factor analysis.

Factor analysis
Moreover, commonalities are the computation of the extent to which the component
explains a variable to check the construct relation with questions asked and indicate
variance within indicators. The variables accounted for extracted factors presented
values < 0.5 and > 0.9, which indicates the significance associated variance for all
indicators. The communality values of 0.5 to 0.9 are considered for further factor
analysis, and below 0.5 and larger 0.9 are considered to be dropped (Juárez-Nájera,
2015). Simply, the commonalities values demonstrate that all indicators have much in
common and are very closely related to each other. The eigenvalues show the factors
extractable and explain the percentage of variance, the results are shown in Table 2.
Rotation Sums of Squared Loadings cumulative variance percentage resulted in 68.890,
which is greater than 0.50 (>0.50). The rotated factor for each variable, a key output an
estimate of the correlation ranged from 0.52 to 0.90 as reported in Table 3. Next, the
reliability of all factors in the Rotated Component Matrix was calculated. Descriptive
statistics mean, standard deviation, eigenvalue, percentage of variance, and Cronbach's
alpha are reported in Table 2.

Cognitive and Discipline development areas	Cronbach's alpha value
Responsible mind-set	0.794
Ethical literacy intelligence	0.761
Cultural understanding	0.707
Discipline skill development	0.696
Cosmopolitan attitude	0.690
Total (all traits calculation)	0.899

Table 1.
Representation of
Cronbach's alpha
value

Data collection and population
An online survey was created, and the link was sent to Wechat groups of international students of Xi'an Jiaotong University (西安交大大学), Xi'an International Studies University (西安外国语大学), Northwestern Polytechnical University (西北工业大学), Xi'an Shiyou University (西安石油大学) Chang'an University (长安大学), Northwest University (西北大学), Xidian University (西安电子科技大学) and the Shaanxi Normal University (陕西师范大学) of Xi'an China. Three hundred sixteen ($n = 316$) responses were received, including ($n = 128$) females and ($n = 188$) male, female occupies (40.50%) and (59.49%) male, disciplinary percentage was 155 (49%) from social science and 161 from natural sciences (51 %), study program percentage 77 (24.37%) were bachelor and 239 (75.63%) were master students.

Data analysis and results
The results are presented in the cumulative mean score of all indicators in separated learning domains, the further impact of demographic independent variables were explored.

The study received a response to a survey of ($n = 316$) students. Respondents were evaluated to what extent they agreed with the five developing areas of a socially responsible mind-set, cultural intelligence, and skills development as global professionals. These five areas consisted of 25 indicators statement. The learning area socially responsible mind-set consisted of seven indicators. Ethical literacy also consisted of seven, cultural intelligence consisted of four, disciplinary subject knowledge consisted of four and cosmopolitan attitude consisted of three statement indicators. The result from Table 3 shows positive indicators, the values of mean and standard deviation showing trends toward acceptance of developing areas. Descriptive status scenarios indicate that students generally accepted the development of social responsibility, knowledge of global issues, and social justice. Particularly, most of the students agreed that a diversified learning environment increased their awareness about global issues, the importance of cultural values and virtues, basic understanding of different languages, and developed disciplinary knowledge and skills. The indicators' tolerance and acceptance of different cultural values have the highest ($\mu = 0.4.44$) with the lowest ($\sigma = 0.62$). And awareness about global warming threats has the lowest ($\mu = 3.91$) with ($\sigma = 0.78$). Le and Raven's (2015) study claims that a cross-cultural environment effectively develops the learning to understand complex global issues. The study participants also show a positive attitude toward tolerance, integrity, and cultural understanding. Rexeisen and Al-Khatib (2009) and Stebleton *et al.* (2013) assured study abroad promotes intercultural intelligence and sensitivity.

Furthermore, the study results argued in favor of multilingual learning development. Buckley (2002) believes that learning of different linguistic and cultural contexts develops the ability to learn more in-depth social aspects. Results also indicate that participants show

	Factors	Mean	SD	Eigenvalue	% Variance	Rotation Sum Square loading	Cronbach's Alpha
Table 2. Descriptive statistics mean (M) and standard deviation (SD), eigenvalue, percentage of variance, Cronbach's Alpha (reliability)	Responsible mind-set	4.43	0.52	6.535	32.674	16.948	0.709
	Ethical literacy	4.31	0.53	2.583	12.917	33.240	0.857
	Cultural intelligence	4.36	0.60	2.177	10.887	46.626	0.735
	Disciplinary skill development	4.38	0.52	1.802	9.012	58.919	0.813
	Cosmopolitan attitude	4.33	0.49	1.405	7.027	68.895	0.849
	Total	4.36	0.53		72.517		0.899

Responsible Mind-set traits	(M)	(SD)	1	2	Factors 3	4	5
Cognitive, Social and disciplinary development areas							
Studying abroad has increased information about the global issue of poverty and the environment this world is facing	4.43	0.497	0.79				
I think increasing poverty poses a severe threat to the future of humanity if cautions were not taken	4.39	0.563	0.90				
I think people should work and cooperate to reduce the currently increasing poverty level worldwide	4.49	0.502	0.73				
Studying abroad has an increased understanding of environmental protection's importance	4.43	0.497	0.78				
I think global warming poses a serious threat to our world if cautions are not taken	4.40	0.577	0.63				
I think all societies of a word should collaboratively take action to prevent global climate change	4.39	0.563	0.79				
I think that we are living now should make sure that people in the future enjoy the quality of life and good health	4.49	0.502	0.62				
Ethical literacy intelligence areas							
I think this learning environment has developed thinking about social responsibilities for the human being	4.47	0.501		0.82			
I think working within capacity with the global community for sustainable development of the world	4.17	0.581		0.83			
The understanding and learning about the behaviors of different ethnicities have increased	4.16	0.638		0.72			
Now I have awareness about the different ethical and moral values of a different culture	4.39	0.563		0.90			
I treat everyone with the same respect, even if they have a different cultural background	4.31	0.466		0.86			
I think cross-culture communities be respected and tolerate each other to live like one single community	4.32	0.545		0.69			
I think that people of a different culture should tolerate each other's values honestly	4.35	0.479		0.56			
Cultural values and understanding development areas							
I have developed an understanding of local culture and to accept its values and integrity	4.30	0.666			0.52		
I have learned the basics of the local language now, to some extent, can understand and communicate	4.40	0.630			0.54		
Cross-culture classroom has enhanced ability to listen to other's ideas carefully from a different culture?	4.38	0.594			0.81		
I share study and cultural experiences with students from a different culture	4.35	0.516			0.60		
Disciplinary skills development							
Cross-culture learning classroom has developed an openness to learn and adapt from other systems/ institutions	4.47	0.501				0.81	

(continued)

Table 3.
Means (M), standard
deviation (SD) and
rotated factor matrix
(EFA) of instrument

Responsible Mind-set traits	(M)	(SD)	1	2	Factors 3	4	5
The international learning environment has developed professional disciplinary skills to work in a globally competitive environment	4.31	0.639				0.78	
The international learning environment has developed abilities to conduct research and contributor to knowledge development	4.47	0.501				0.82	
I have learned to analyze the issue through critical thinking and seeking new ways to solve the problems	4.27	0.445				0.79	
Cosmopolitan attitude development I have learned personal limitations, and I want to develop as a beneficial human being for this global community	4.29	0.457					0.93
I think the international learning environment has taught better humbleness to humanity	4.39	0.563					0.90
I think global institutions and communities build a connection to understand global issues to work for the world's development	4.31	0.466					0.86

Table 3.

definite proclivity in developing the ability to listen and share knowledge and develop to work in a culturally diverse environment due to learning in an international multicultural classroom. Deloach *et al.* (2003) argued the possibility to develop global mind-set traits. These learning areas indicate the development of a global mind-set. Participants agreed on the professional development of disciplinary knowledge as a global worker to contribute in to the nation's economy (Velliaris and Coleman-George, 2016).

For further analysis of central tendency trends, each area's overall means were calculated to understand in which of five areas, as either participant has shown more or less degree of attitude declivity. The results of the overall mean value of all areas were (socially responsible mind-set $\mu=4.23$ and $\sigma = 0.459$, ethical literacy $\mu=4.26$ and $\sigma = 0.455$, cultural intelligence $\mu=4.25$ and $\sigma = 0.473$, disciplinary skill development $\mu=4.17$ and $\sigma = 0.568$, global mind-set attributes $\mu=4.18$ and $\sigma = 0.610$). There are no significant differences in the mean values of all learning areas, which indicates that students have reflected the approximately same response for learning and development.

Mean, median, mode and standard deviation are measures for descriptive statistics to evaluate the responses attitude tendency, but data collection on the Likert scale needs more clear representation. To further understand responses independence, the researcher decided to measure differences and associations due to different gender, study program and disciplines. The expert recommended the X^2 test to measure the degree of association. Moreover, scholars perceive that the Chi-square test is more appropriate to analyze the Likert's scale type data (Sullivan and Artino, 2013). Chi-square test was applied to measure the degree of association of knowledge gain also skills development of students between gender, disciplines, and Study program categories. *P*-value was considered 0.05 as a standard.

H01. Learning in diverse environment has no impact on cultivating global mind-set.

Two-way Analysis of Variance by Rank was applied to test the alternate hypothesis (Pereira *et al.,* 2015). Means scores (μ) of each indicator's statement were treated with K (treatment-Kursakall–Wallis). There was an overall statistically significant difference in mean (μ) ranks, X^2 (11.109), and $P = 0.025$. Statistical results significantly divert from the null-hypothesis. The statistical results indicate a positive proclivity in a relationship of learning outcomes in a diverse environment and global mind-set attributes.

H02. Learning in diverse environment did not have the same outcomes from different study discipline.

The two categorical variables based on discipline and association with the attributes of the global mind-set was calculated. The degree of freedom based on discipline (social and natural sciences) was 9, and X^2 was equal (21.645). The value of probability was founded as (0.010). The resulted *p*-value indicates the development of global mind-set attributes is independent of study discipline. The results of Chi-square statistical analysis did not support null-hypothesis that the learning of attributes are dependent of discipline.

H03. Development of global mind-set attributes is dependent on gender basis.

The two categorical variables based on the result of learning global mind-set attribute and gender was calculated. The statistical significance of association resulted as df = 9, X^2 = 36.388 and *P*-value ($p < 0.003$). The results of Chi-square statistical analysis rejects the assumptions that learning of attributes are dependent of gender.

Discussions
Similar to all over the world, China's higher education institutions provide opportunities under the scholarship program, valuable sustenance for international students to meet 21st century skills requirements. The results of the study indicate the international students studying in China (Xi'an) have developed their awareness about global issues, capabilities of a responsible mind-set, intercultural competence, disciplinary skill and cosmopolitan attitudes that contribute to cultivating a sophisticated global mind-set.

The mean scores of students' responses' results of developing traits for the global mind-set show numerically significant positive proclivity. Depicting in detail, the indicator of social responsibility learning has a higher mean score. Participants of the survey agreed with the development of individualities to act as a socially responsible mind-set. Similarly, Deloach *et al*. (2003) and Zheng and Menzies (2015) argued study abroad learning increase global awareness to cultivate sophisticated global mind-set traits. The study results regarding cultural intelligence illustrate participants have agreed of learning about different cultural values, difference and respect the differences also have learners basic of the native language. Clarke *et al*. (2009) revealed an increase in intercultural competencies, increased openness to cultural diversity and cultivate the global mind. Kaowiwattanakul (2016) argues in developing cognitive and affective skills and a broader worldview. While Buckley (2002) believes that learning of different linguistic develops the ability to learn more in-depth social aspects.

Furthermore, the participants also agreed that they have developed their disciplinary knowledge, skills to conduct research and critical analysis to find out new perspectives. (Cardwell, 2020) demonstrated the development of confidence, maturity and deeper learning of subject knowledge as the outcome of study abroad. In addition to this, results portray the participants have learned the self-limitation and become aware of their social responsibility also thinks societies should create links to work collectively on societal issues of this planet.

Maharaja (2018) concluded the development of self-confidence maturity, patience, self-awareness, assertiveness, flexibility, adaptiveness and global mindedness.

However, overall results show that international students responded positively to the development of global mind-set attributes as the outcome of the learning in a diverse environment. The learning in a diversified environment developed the students as socially responsible members, awarded of global issues, interculturally intelligent individuals, attitudes of respecting the values, disciplinary knowledge and bilingual skills. This study contented that internationalization creates a forum to build cognitive skills and capabilities of socialism that are pertinent to cultivate a global mind-set

Conclusion

During the past decades, internationalization has remained an agenda of worldwide higher education systems to integrate international, intercultural and international dimensions in educative process and research that directly influence students' social and cogitative development The internationalization of higher education engenders characteristics such as international mindedness, open-mindedness, flexibility in thinking skills, second language competency skills, tolerance, and respect for cultural diversity cultivates learners' ethical commitments to think critically about inherent implicit and explicit beliefs and develop the wisdom of responsibility for civic commitment. It has the potential to bring change in the actions, believes and thinking, also potentially helpful in preparing intellectual growth and disciplinary skill development.

The finding of the study has to be seen in the light of some limitations. Nevertheless, the results were interpreted with caution. The data was collected from Universities within Xian. So the sample size may not be sufficient to generalize the results. Furthermore, future research can be carried out by expanding the sample size. However, the current study sample represents the social and cognitive development of international students as a target population.

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