



Exploring The Impact Of Studying Abroad On The Transformative Learning Of Chinese International Postgraduate Students In Thailand Using A Mixed-Methods Approach

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ABSTRACT

Since transformative learning has become a crucial skill for students today, the purpose of this research is to explore the impact of an international study experience on the transformative learning of Chinese postgraduate students who are studying abroad. The data was gathered using a mixed-methods research design, with a particular emphasis on identifying the catalysts and processes that lead to transformative learning. The numerous challenges students encounter due to the shift of environment can be overcome by factors such as an extended duration of study abroad, immersion in the host culture, and support from peers and educators, all of which fosters the growth of their transformative learning capabilities.

Keywords: study abroad; transformative learning; Chinese international postgraduate students; mixed-methods approach

1. Introduction

Transformative Learning (TL) is deemed to be an essential component for facilitating and re-enforcing a social transition toward sustainable development (Boström et al., 2018). Originating from adult education (Walter, 2019), the cultivation of students' TL is not only aligned with Goal 4.7, but it also represents a critical phase for educational institutions in preparing individuals to adapt to future societies. The introduction of the Future Education and Skills 2030 framework by the Organisation for Economic Co-operation and Development (OECD) underscored the need for students to develop transformative competencies to help them to navigate unfamiliar environments (Taguma & Barrera, 2019).

When Rodríguez et al. (2020) performed a key sample analysis of TL, they revealed its potential to enhance students' knowledge and skills related to the sustainability issue (Diduck & Mitchell, 2003; Sims & Sinclair, 2008), foster their empathy (Young & Karne, 2015), elevate their sense of responsibility and empowerment (Iliško, 2007; Bell, 2016), and stimulate their critical, systemic thinking to enable them to critically examine their social context and strengthen community and societal relationships (Bull, 2013; Westoby & Lyons, 2017; Quang et al., 2019). Johansson and Felten (2014) advocated the incorporation of transformative education in universities' curricula, thereby demonstrating that the outcomes of TL fulfil the transformative competency requirements outlined in the OECD Learning Framework 2030.

Empirical evidence suggests that studying abroad can stimulate TL and have a significant impact on its development (Hutchison & Rea, 2011; Tarrant et al., 2011; Trilokekar & Kukar, 2011; Stone et al., 2017). Studying abroad can plunge students into a state of disorientation, which serves as a catalyst for the TL process. Scholars have identified the common triggers for TL among international students as being cultural immersion, conflict, and anxiety (Trilokekar & Kukar, 2011; Onosu, 2020), cognitive dissonance (Ritz, 2011), and feelings of discomfort (Hutchison & Rea, 2011). Laros (2017) likened this state of 'disorientation' to a catalyst for TL. In conventional TL models, 'disorientation' is often viewed as the start of the TL experience. This could be triggered by a life crisis or a significant environmental change, which leads to a shift of beliefs and prompts people to question previously held ideas (Taylor, 2000).

Similarly, the ability to engage in TL has a significant impact on the capacity of international students to adapt to an overseas learning environment. They often have to grapple with substantial pressure related to academic and socio-cultural adaptation, which can have a negative effect on their academic performance (Ozer, 2015; Cao et al., 2021). TL has gained recognition in adult and higher education contexts due to its emphasis on enhancing critical thinking among other skills (Rodríguez & Barth, 2020); hence, it represents an effective strategy for alleviating the challenges of adapting to a new environment faced by international students studying abroad. The state of 'disorientation' experienced by international students under pressure could be induced by scenario-based problems posed by educators in the classroom, or by life-changing events (Quinn & Sinclair, 2016). As the experience of 'disorientation' is often intense for international students studying in a new country, it is conducive to stimulating TL. Therefore, it is of paramount importance to foster TL among students in the context of overseas study.

The majority of TL research is qualitative in nature, with a small number of scholars exploring quantitative research methodologies and developing related questionnaires (Hoggan & Finnegan, 2023). Previous TL questionnaires were primarily utilised to investigate the impact of the teaching environment and course experiments on TL (Kember et al., 2000), but they were seldom employed in mixed-method designs. Follow-up interviews need to be conducted after the completion of the questionnaires to acquire a more comprehensive understanding of the participants' perspective. The majority of the current TL research is concentrated in Europe and America, with less focus on Asian populations (Hoggan & Finnegan, 2023). Thailand is one of the most popular destinations for international university students in Southeast Asia (Chen et al., 2018) with an average number of 6,923 Chinese international students. This accounts for 40% of the total number of international students in Thailand. The trend of Chinese international students has almost doubled in 9 years, increasing from 5,611 in 2009 to 11,993 in 2019 (Jampaklay et al., 2022). Therefore, the research sample for this study is drawn from Thailand.

The purpose of this mixed-methods study is to investigate the TL of international students, as TL can have a lasting impact on individuals' lives by fostering sustainable learning and fulfilling the requirements of lifelong learning (OECD, 2019). More specifically, this study seeks to answer the following research questions: Do the duration of studying abroad, gender, age, and grade of Chinese international students studying in Thailand cause significant differences in TL? Does the study abroad experience influence Chinese international students' TL?

2. Literature review

2.1 Transformative learning theory

The Transformative Learning Theory (TLT) reflects a process in which individuals scrutinise, challenge, and subsequently modify their perception of their prior experience, thereby constituting a critical learning process (Mezirow, 2009). Emerging from adult education, TLT was proposed by Mezirow (1997). The notion of TLT is that individuals alter their perception by critically thinking about their assumptions. Significant life events can influence learners' worldview, prompting them to reflect upon their prior experience and assumptions, and engendering a new understanding of these assumptions due to the process of reflection (Mezirow, 1997). Mezirow (1997) characterised the objective of TL as fostering learners' autonomous, self-directed learning by enhancing their self-awareness, critical thinking skills, cognitive discernment of collective behaviour, ability to collaborate with others effectively and responsibly, and their problem-solving capabilities.

Scholars have different perspectives of the process of TL. While it is not necessary for these stages to occur sequentially or comprehensively to facilitate TL (Closs & Antonello, 2011), Brock (2010) found that individuals are more likely to experience TL as they undergo additional stages. Specifically, evidence suggests that the experience of studying overseas is closely aligned with the ten stages of TL (Stone & Duffy, 2015). Previous researchers have indicated that studying abroad provides students with a new learning environment, engenders a sense of disorientation, stimulates critical thinking, and that TL does not adhere to a fixed pattern, with different learning trajectories emerging based on learners' experience and circumstances.

In summary, TLT has evolved and continues to be relevant in the contexts of adult education and youth learning (Hoggan & Finnegan, 2023). Its influence extends beyond the personal domain and permeates professional fields where it plays a pivotal role in personal growth and development.

2.2 Studying abroad

Studying abroad can be defined as a rich learning experience that involves active interaction with others in a novel environment. Overseas experience exposes students to the lifestyle, customs and social norms of the host country, and enables them to become acquainted with the academic culture of the host university. This exposure challenges them to adjust their behaviour and values to adapt to the host culture's socio-cultural conditions, thereby stimulating the development of their cross-cultural competence (Rinehart, 2002). Studying abroad is expected to equip students with the skills they need to participate in activities in a globalised work environment in the future (Behrnd & Porzelt, 2012). Students derive substantial benefits from studying abroad, particularly in terms of their personal growth, cross-cultural competence and academic performance (Stone & Petrick, 2013). On the other hand, if the culture of the host country is

substantially different from that of the home country, cultural shock, stress and other adaptation difficulties are likely to be intensified are often compounded by language communication barriers (Papatsiba, 2006). Overseas study programmes are highly diverse. They encompass long and short-term stays, such as semester-long or year-long exchange programmes and intensive summer language courses. Individuals who study abroad for more than six months exhibit greater cross-cultural competence than those who study abroad for less than six months (Behrnd & Porzelt, 2012). However, scholars' conclusion regarding the correlation between the duration of studying abroad and the outcomes of TL vary. For instance, Stone et al. (2017) found in their research that the duration of the study abroad programme has a significant impact on the development of TL, with greater transformative effects being found from long-term study abroad. This view was supported by O'Dea et al. (2023), whose research confirmed that studying abroad does not provide sufficient impetus for TL if it is short-term study. Conversely, Donnelly-Smith (2009) contended that most short-term courses are teacher-led and the likelihood of students obtaining TL may be increased by intentionally designed short-term course projects under teachers' leadership. Hence, it is necessary to conduct further research to explore the impact of the duration of studying abroad on TL.

Scholars have a different view of whether TL research results differ in terms of gender. While Brock and Dooley (2004) and Cox (2021) believe that the results of TL research differ based on gender, other scholars have found no statistically significant correlation between gender and the TL experience (Wansick, 2007; Kumi-Yeboah & James, 2014). Age is also an important variable; for instance, Cox (2021) found that TL is more frequently prevalent in adults over 20 years old, and according to Blakemore & Choudhury (2006), adulthood is usually considered to start around the age of 25 in the adult education field. Therefore, adults around the age of 25 are more suitable participants in TL research. Fullerton (2010) demonstrated that age is related to the occurrence of TL and that older participants exhibit higher stages of TL. Hence, master's and doctoral graduate students are more suitable as TL research samples from the perspective of age. In order to further research and confirm this issue, this study will be focused on determining if gender and age result in different TL.

3. Research Method

3.1 A mixed-method approach

This study is based on an explanatory design, which can be found within the framework of mixed research methods. This entails conducting a quantitative exploration using a questionnaire survey, followed by undertaking qualitative research in the form of semi-structured interviews of students who exhibit higher levels of TL. The aim is to understand which experience particularly motivates them. The qualitative data is expected to provide additional insights into the quantitative research results concerning the relationship between the experience of studying abroad and TL.

3.2 Participants

The participants in this study are Chinese international postgraduate students studying in Thailand. The Institute of International Education defines international students as individuals who are educated abroad and earn academic credits (IIE, 2017). Concurrently, students pursuing a degree are distinguished in this study from those studying for credits based on the research of Findlay et al. (2012). Therefore, the samples are collected from universities in Bangkok, Thailand, that offer a Chinese international programme. To ensure the validity of the research results, the criteria for selecting the sample are that they are Chinese international postgraduate students who have been studying at a university in Thailand for a minimum of three months ($n=500$).

The sample for the qualitative portion of this study is derived from students in the quantitative phase ($n=10$). The semi-structured interviewees are selected from those with the highest score in the questionnaire test, who agreed to participate in the interview based on purposive sampling, with the intention of providing explanatory insights into the results of the quantitative research. Those with high scores are selected to better explain the conditions in which TL occurs and the reasons for it. Therefore, semi-structured interviews were conducted with 10 individuals selected from the population that meets the aforementioned criteria. After interviewing 10 respondents, the information obtained from them began to be repetitive, and no new and important themes emerged, indicating that data saturation had been reached.

3.3 Data collection

Quantitative data that consists of a combination of the Learning Survey (LS) of Madsen and Cook (2010) and the TROPOS of Cox (2021) is used to construct a TL scale comprised of 16 items and a scoring system based on a 5-point Likert scale (please see Appendix 1).

The semi-structured interviews are conducted after the questionnaire data has been collected and analysed, and the required samples have been selected using extreme sampling. The interview guide, which is subject to an expert validity test, is based on 11 of the items of the questionnaire (Dorussen et al., 2005), and each face-to-face interview lasts for approximately one hour.

3.4 Data analyses

3.4.1 Quantitative data analysis

SPSS and AMOS are utilised to process and analyse the questionnaire data to understand the TL of Chinese international postgraduate students studying in Thailand. As shown in Table 1, a descriptive statistical analysis was conducted with 500 samples, and the results are illustrated in Table 2. The statistical results include the mean, which is 3.033, and the standard deviation, which is 0.69. This indicates that the students' TL level is good, and the data dispersion is satisfactory. The overall performance of the scale shows a medium- to- high level. According to these results, critical thinking is the priority of each dimension of these Chinese international students' current TL.

Table 1: Profile of Focal Participants

Demographics	Statistics	N	Percentage of respondents
Gender	Male	308	61.6%
	Female	192	38.4%
Age	20-30 years old	297	59.4%
	31-40 years old	149	29.8%
	41-50 years old	53	10.6%
	Over 50 years old	1	0.2%
Duration in Thailand	3-5 months	207	41.4%
	6-8 months	139	27.8%
	9-11 months	90	18%
	12 months and above	64	12.8%
Grade	Master's first year	75	15%
	Master's second year	214	42.8%
	Doctoral first year	99	19.8%
	Doctoral second year	56	11.2%
	Doctoral third year	40	8%
	Other grades	16	3.2%

Table 2: Mean and standard deviation of TL

Variables	N	M	SD
Perceiving changes in oneself and others	3	3.02	1.029
Critical thinking; consider making changes in thinking and action	3	3.094	0.997
learning outcomes	5	3.004	0.952
Transformative learning	5	3.035	0.945
	16	3.033	0.69

3.4.2 Qualitative data analysis

The semi-structured interviews consist of open ended questions (please see Appendix 2). The analysis of the interview data adheres to the data analysis process outlined by Hycner (1985) based on a thematic analysis.

3.5 Quantitative results

3.5.1 Scale reliability and validity

This study is conducted with a sample of 500 students and an internal consistency test of the questionnaire of TL. The overall Cronbach's Alpha of TL is 0.892, indicating that the reliability of the measurement tool is satisfactory, as all the Cronbach's Alpha values exceed 0.7. The results of a confirmatory factor analysis of TL are presented in Table 3. The values of the standardised factor load (SFL) of the observed variable exceed 0.5, and the t-test is significant; moreover, the square of the multiple correlation (SMC) exceeds 0.5 (Fornell & Larcker, 1981) besides C4. The values of the CR and AVE of each variable reach the standard of good convergent validity (CR > 0.7, AVE > 0.5) (Awang, 2015). The values of CR and AVE meet the standard of good convergent validity, except for the SMC value of item C4 (Awang, 2015). This indicates that the convergent validity of the TL model measured in this study is satisfactory.

Table 3: Summary of Validation Factor Analysis Values for TL

Variables	Items	SFL > 0.5	SMC > 0.5	CR > 0.7	AVE > 0.5
Perceiving changes in oneself and others	C1	0.766	0.587	0.804	0.578
	C2	0.76	0.578		
	C3	0.755	0.570		
Critical thinking	C4	0.679	0.461	0.767	0.524
	C9	0.734	0.539		
	C10	0.756	0.572		

Consider making changes in thinking and action	C11	0.768	0.590	0.869	0.570
	C12	0.752	0.566		
	C13	0.762	0.581		
	C14	0.748	0.560		
	C15	0.744	0.554		
Transformative learning outcomes	C16	0.795	0.632	0.866	0.564
	C18	0.752	0.566		
	C19	0.723	0.523		
	C20	0.738	0.545		
	C21	0.744	0.554		

Based on the test standard of Awang (2015), the discriminant validity of this study suggests that, if the square root of the average extraction variance AVE of each construct exceeds Pearson's correlation coefficient value of other constructs, it indicates that the construct possesses construct discriminant validity. The results are presented in Table 4. All the values meet the test standards, indicating that the measurement model in this study has good discriminant validity.

Table 4: Summary of the Difference Validity and Correlation Analysis of the questionnaire in Different Dimensions

Variables	TL1	TL2	TL3	TL4
TL1	0.466			
TL2	0.260***	0.612		
TL3	0.390***	0.335***	0.581	
TL4	0.311***	0.301***	0.336***	0.543
M	3.02	3.094	3	3.035
SD	1.029	0.997	0.952	0.945

Note 1 : ** $p < 0.01$, *** $p < 0.001$.

Note 2 : TL1=perceiving changes in oneself and others; TL2=Critical thinking; TL3=Consider making changes in thinking and action; TL4=Transforming Learning Achievements.

Note 3 : The values in bold and italic in the table are the square root of AVE.

3.5.2 Difference analysis

A one-way analysis of variance is used in this study to investigate the differences in TL based on the duration of stay in Thailand. The background variables are divided into four levels: 3 to 5 months, 6 to 8 months, 9 to 11 months, and more than 12 months. As the data of the Levene test is significant ($p < 0.01$), it indicates that the basic assumption of the homogeneity of the variance has not been established (Wang & Chen, 2021). As shown in Table 5, after a one-way analysis of the variance of TL, the F-value is 16.674, and the significance level is 0.000 ($p < 0.001$), indicating a significant difference in TL in terms of the duration of stay in Thailand. These results indicate that Chinese international postgraduate students who stay in Thailand for more than 12 months exhibit the greatest difference in TL.

Table 5: Analysis of the Differences in the Duration of TL

Variable	Duration in Thailand	N	M	SD	F	Post hoc comparison
TL	3-5 months	207	2.906	0.571	16.674***	4 > 3 ; 3 > 1 ; 1 > 2
	6-8 months	139	2.887	0.701		
	9-11 months	90	3.265	0.759		
	Over 12 months	64	3.44	0.685		

Note 1 : *** $p < 0.001$.

Note 2 : Duration in Thailand : 1=3-5 months ; 2=6-8 months ; 3=9-11 months ; 4=over 12 months

An independent sample t-test is used in this study to determine whether there is a significant difference in the TL of Chinese international students studying in Thailand based on gender. The results show that the t-value is 5.152 and it is significant ($p < 0.001$), which indicates that there is a significant difference in TL in terms of gender, with female students scoring significantly higher than male students in this respect.

Table 6: Analysis of gender differences in TL

Variable	Gender	N	M	SD	t	Difference comparison
TL	Male	308	2.909	.655	5.152***	Female > Male
	Female	192	3.233	.699		

Note : *** $p < 0.001$

A one-way analysis of variance is used in this study to investigate the differences in TL based on age. The background variables are divided into four levels: 20-30 years old, 31-40 years old, 41-50 years old, and over 50 years old. The p-value in the Levene test data is 0.01, which is significant ($p < 0.05$), indicating that the basic assumption of homogeneity of variance has not been established (Wang & Chen, 2021). As shown in Table 7, after a one-way analysis of variance of TL, the F-value is 9.086, which is significant ($p < 0.001$), indicating that there is a significant difference in TL in terms of age, necessitating a post-hoc test. The research results indicate that TL of the 20- 30 age group is the best of the Chinese international postgraduate students in Thailand.

Table 7: Analysis of Age Differences in Transformational Learning

Variable	Age	N	M	SD	F	Post hoc comparison
TL	20-30 years old	297	3.157	0.688	9.086** *	1 > 2 ; 2 > 3 ; 3 > 4
	31-40 years old	149	2.868	0.683		
	41-50 years old	53	2.828	0.555		
	Over 50 years old	1	1.813	0		

Note 1 : *** $p < .001$.

Note 2 : Age : 1=20-30 years old ; 2=31-40 years old ; 3=41-50 years old ; 4=Over 50 years old.

Furthermore, the results of the different grades of Chinese international postgraduate students in TL show that the p-value in the Levene test data is 0.28 ($p > 0.05$), indicating the establishment of the basic assumption of the homogeneity of the variance (Wang & Chen, 2021). As shown in Table 8, after a one-way analysis of variance of TL, the F-value is 0.585, which is not significant ($p > 0.05$), indicating that there is no significant difference in the average of TL in terms of grade.

Table 8: Analysis of the Differences in Transformational Learning at Grade Level

Variable	Duration in Thailand	N	M	SD	F
TL	First year of Master's degree	75	3.082	0.711	0.585
	Second year of Master's degree	214	2.994	0.676	
	First year of Doctor's degree	99	3.029	0.736	
	Second year of Doctor's degree	56	3.156	0.722	
	Third year of Doctor's degree	40	3.005	0.646	
	Other grades	16	3.008	0.47	

3.6 Qualitative results

MAXQDA software is used to code the interview data in this study. 20 primary nodes are coded in the first stage by sorting and summarising the 11 interview questions. In the second stage, associative coding is used to summarise and merge the primary codes and 4 secondary codes.

Cases are represented by codes in this study. For example, A1-20230720 means that male 1 was interviewed on the 20th July, 2023, B1-20230721 means that female 1 was interviewed on the 21st July, 2023, and so on. The specific content of the interview is classified and summarised according to the research theme. According to TLT, the themes summarised in this study are perceiving changes in oneself and others, critical thinking, considering changes in thinking and actions, and TL outcomes. The theme classification is shown in Table 9.

Table 9: Coding scheme

Categories	Themes	Sub-themes
A. Notice changes in yourself and others	A1. cognition	Self-understanding; Learning ability
	A2. Social and emotional relationships	Interpersonal relationship; Teachers and classmates support
	A3. Study abroad experience	Cross-disciplinary learning; curriculum autonomy.
B. Critical thinking	B1. Life attitude B2. Critical and Self-awareness	Physical and mental health; Consumption habits Self-efficacy
C. Consider making changes in your thinking and actions	C1. Time autonomy C2. Open mind	Work-life balance Freedom to dress and love
D. Transformative learning outcomes	D1. Strengthen social relations	Responsibility
	D2. Values and Perspectives Rebuild	Future goals; diverse perspectives; New values

3.6.1. Notice changes in yourself and others

3.6.1.1. Theme 1: cognition. The majority of the interviewees indicated that their experience of living and studying in Thailand had affected their cognition, leading to cognitive transformation. This involved them understanding their abilities, personality, and motivation, which enabled them to assess their growth and effectiveness.

After comparing this experience with their previous learning and life experience, they had a deeper understanding of their inner needs. This was manifest in a more precise understanding of their research and learning abilities, a greater willingness to interact with others, and increased attention to their own physical and mental health, among other factors. As one student explained:

"I discovered that I had been transformed from an introvert, reluctant to communicate with others, into a more extroverted person" [A1-20230720].

3.6.1.2. Theme 2: Social and emotional relationships. The majority of the interviewees indicated that changes in the social-emotional aspects of international students primarily revolve around the development of interpersonal relationships. They have become more open to interacting with those around them and aspire to cultivate closer friendships. Studying abroad provides students with opportunities to meet new friends from diverse cultures and backgrounds, thereby aiding the development of their social skills. This experience broadens students' horizons and increases their receptiveness to new experiences, fostering a greater willingness to interact with others. As one student put it:

"As a group of international students, we indeed need to find emotional support from social interactions amidst the solitude of studying abroad" [B1-20230721].

Classmates' support helps to overcome the challenges international students face in their study or daily life because they encourage each other, share knowledge, and promote common progress. At the same time, it increases their personal confidence, which advances their mentality. Some of the interviewees believed that classmates' support was indispensable to complete their studies due to the large number of group cooperative assignments. The significance of support from classmates was not only reflected in learning, but more importantly, in their daily lives. So much so that they had also established a WeChat group for mutual aid in international student life in Thailand, on which they posted information on accommodation, meals, transportation, etc. As one interviewee said,

"My classmates have been very supportive of me. They helped me a lot when my mother was sick" [B1-20230721].

Similarly, teachers' support is beneficial from academic, emotional and social perspectives. Teachers can help students to cope with stress and reduce their feelings of helplessness, thereby promoting a better academic performance. When teachers consciously strive to understand their students, it can improve students' participation and help to increase their confidence. Some of the interviewees asserted that they were more influenced by teachers, especially tutors who provided them with a role model. This was not only about academic help but students learned by imitating the tutor's working methods and conceptual behaviour. As one interviewee explained,

"Teachers become your role model as you reflect on their working methods, attitude toward students, and help and other conceptual behaviour" [B3-20230722].

3.6.1.3. Theme 3: Study abroad experience. Cross-disciplinary experience in overseas studies is unique and crucial because it provides students with opportunities to obtain a broader perspective of various research fields. Previous learning and career backgrounds have a profound influence on the course of overseas studies, as they foster innovative thinking and facilitate the comparison and integration of different professional experiences. Many interviewees also believed that cross-disciplinary behaviour and identity transformation pose additional challenges. As one interviewee explained,

"Now, I am willing to adopt others' strengths and apply them to my weaknesses. We can create a more perfect piece of work if we collaborate" [B1-20230721].

The curriculum system and teaching habits of Thai universities are based on course freedom and student autonomy, providing a basis for communication and interaction between classmates and teachers. As one interviewee explained,

"Here, you have more autonomy in class to decide some things yourself" [B4-20230723].

3.6.2 Critical thinking

3.6.2.1. Theme 1: Life attitude. Studying abroad influences individuals differently, as it fosters their personal growth and broadens their perspective of life. Studying in Thailand particularly prompts students to critically reflect on their attitude toward life. Many interviewees felt that the positive and relaxed attitude toward life in Thailand prompted them to reflect on their previous attitude toward life, which was focused on pursuing a career or influenced by consumerism. as in the case of one interviewee, who said,

"I enjoy doing things now that I didn't have time for when I was working, but I started to like them again when I became a student, such as playing sports and the like" [B3-20230722].

3.6.2.2. Theme 2: Critical thinking and Self-awareness. Developing critical and complex thinking is an important result of transformative learning. The development of a dialectical thinking ability promotes the

generation of autonomous consciousness, which helps to understand and solve more complex problems. The interviewees generally expressed an increase in their ability to think about problems from multiple angles and view them more rationally. As one interviewee explained,

“When I come across information, I think about the position of the person who provided it, the interests it represents, and then I analyse it to avoid forming a one-sided understanding or view of it” [A4-20230723].

The enhancement of their self-awareness and initiative is reflected in the increase of students’ learning self-efficacy. The different atmosphere of overseas campuses and the difficulty of course setting and academic tasks all make students pay more attention to time and cherish the learning opportunities. Most interviewees stated that studying in Thailand had increased their motivation to learn and subjective initiative, especially in the face of higher tuition fees, making them cherish the opportunity to learn even more. One interviewee admitted that,

“Everyone came here to fight very hard, but it may be that they thought differently before and after reading and came to cherish this opportunity” [A1-20230720].

3.6.3 Consider making changes in your thinking and actions

3.6.3.1. Theme 1: Time autonomy. Considering making changes in thinking and actions is a change of behaviour that usually occurs after TL. The respondents considered that time management and personal life balance are extremely important issues. Almost all the interviewees mentioned that what they most wanted to change is the concept of time autonomy. As one interviewee explained,

“When it's time to work, put in the effort; when it's time to enjoy life, relax. With this balance, work is no longer the heavy burden it used to be; it has become part of life, not the entirety.” [A3-20230721].

3.6.3.2. Theme 2: Open mind. The change in the mentality of Chinese international postgraduate students studying in Thailand is reflected in the adjustment of their lifestyle, different dressing behaviour and more confident participation in social activities. They pay attention to adopting a slower pace of life and focus more on their personal physical and mental health. Most interviewees expressed their love of the freedom of dressing in Thailand, and many girls felt that they no longer had excessive anxiety about their body and appearance. One interviewee explained this feeling by saying that,

“In the past, I used to think that dancing and wearing camisole dresses was only possible for girls with a slender figure. Now, I can now confidently wear clothes that I previously wouldn't have dared to, even though I've gained weight.” [B6-20230725].

3.6.4 Transformative learning outcomes

3.6.4.1. Theme 1: Strengthen social relations. Strengthening social relations is mainly reflected by increased responsibility. As students rely on assistance from their peers when studying abroad in a new environment, it obviously increases their responsibility for others in return. Therefore, some interviewees believed that studying in Thailand has increased their personal sense of responsibility. As one of them said,

“I feel a greater sense of responsibility for others, both in learning and in life” [A4-20230723].

3.6.4.2. Theme 2: Rebuild Values and Perspectives. The reconstruction of values and perspectives is manifest in aspects like future goals, multiple viewpoints and new values. This is a fundamental change in TL results. The change in future goals is mainly reflected in the expectation of future job positions, and some of the interviewees had new thoughts about future learning goals. Other interviewees mentioned that they had acquired better personal values by studying abroad. As one of them said,

“After studying this major, I feel it is very interesting, so I'm starting to hope I can enter the education industry” [B4-20230723].

The ability to consider different points of view can facilitate a more detailed understanding of complex problems. Comparing different views can promote positive changes, both in oneself and in society. The increased ability to see multiple perspectives is reflected in a broader vision and self-criticism and correction, as explained by one interviewee,

“Different concepts can make me think differently. My original thought can be extended by looking at the problem in other ways and this is a good thing” [A4-20230723].

New values show that TL involves making profound, structural changes in the basic premises of thoughts, emotions, and actions. It is specifically reflected in a changed outlook on life, with a greater focus on the spiritual level, in a changed concept of family, cherishing the company of the family more, and in the more cautious maintenance of personal rights from a career perspective. One of the interviewees expressed this phenomenon as follows;

“It changed some of my old concepts. I used to think that my family would always be there for me in China, but now I see that the family needs to be cherished” [B1-20230721].

Therefore, while Chinese international students have been studying in Thailand, they have been able to strengthen their social relationships, develop critical and complex thinking skills, enhanced their self-awareness and initiative, rebuild their values and viewpoints, and increased their new knowledge and skills.

4. Discussion

In this study, it was found that the TL level of international students was higher than average. Students with the highest TL performance in a questionnaire survey were subjected to interviews and certain conclusions were drawn. In the first stage of studying abroad, students' TL is manifest as they perceive themselves and others changing. TL management strategies can be summarised as schools needing to pay attention to the quality of offline courses for international students, and providing them with more opportunities to trigger TL by expanding the number of extracurricular learning activities. In the second stage of studying abroad, schools need to focus on cultivating students' critical thinking, pay attention to students' self-examination process, and provide them with opportunities to realise themselves. In the third stage, they should consider making changes in thoughts and actions. As students' awareness of time management has significantly increased at this stage, schools can strengthen time management training in setting the course tasks. In the fourth stage, the learning results are transformed by implementing strategies. Firstly, schools need to strengthen cooperative learning among students and encourage them to participate in group activities. Secondly, they need to promote teacher-student contact and establish good teacher-student relationships during the course. Thirdly, they should cultivate students' interest in new knowledge and encourage them to take the initiative to learn and master new knowledge. Finally, they should pay attention to cultivating students' sense of responsibility. In summary, educational institutions need to use appropriate strategies to promote the development of students' TL abilities. The results of this mixed research are shown in Table 10.

Table 10: Transformative learning mixed research results

Phase	Tactics
Stage 1: Notice changes in yourself and others	Attach importance to the quality of offline courses for international students; Expand extracurricular learning activities
Stage 2: Critical reflection	Cultivate students' critical thinking; Promote students' self-examination; Promote students' self-actualisation
Stage 3: Consider making changes in your thinking and actions	Intensive time-management training
Stage 4: Change learning outcomes	Strengthen cooperative learning among students and encourage them to participate in group activities; Establish a good teacher-student relationship; Acquire new knowledge; Cultivate students' sense of responsibility

4.1 Implications

A one-way analysis of variance was conducted on the sample in this study, and the results showed that there was a significant difference in TL based on the duration of their stay in Thailand. It was found from the research results that the duration of the study abroad programme affects TL (Engle & Engle, 2003). This result is consistent with that of Stone et al. (2017), Strange and Gibson (2017) and Dwyer (2004), who found that TL is more likely to be produced by long-term study abroad than by short-term study.

Studying abroad is a transformative experience. While short-term study abroad programmes that usually last for 2-4 weeks can improve students' language skills and cross-cultural abilities, Dwyer (2004) found that programmes that last for 12-16 weeks may have a greater impact on TL. This is because students are more likely to choose to live in an area with local people if they are studying abroad for the long-term. The two main reasons many students choose to study abroad are to learn a new language and understand another culture, which are best achieved by living with local people. This was also true of these Chinese graduate students studying in Thailand. Those who had been in Thailand for a long time usually chose to live outside the school in houses rented by local people. This is because the rent outside the school is relatively cheaper than in the school, and it is also convenient to experience local culture, and so on. At the same time, Dwyer (2004) also found that academically mature and determined students tend to engage in full-time long-term learning, or their majors may encourage them to learn for a longer time. This was confirmed by the doctoral students who participated in the survey in this study. They had stayed in Thailand longer than Master's students, and the longer time spent studying abroad had enabled them to engage in new research fields. This had a greater impact on their future academic efforts, and was more likely to change their future career plans and goals (Dwyer, 2004). Therefore, long-term study abroad has a lasting impact on the way students view the world, and can better promote the occurrence of TL. The interviewees in this study also explained that, besides changing their future career goals and life plans, they had discovered cultural differences by staying in Thailand for a long time.

The sample was then subjected to an independent sample t-test, the results of which showed that there is a significant difference in the TL of students of different genders. These results prove those of Brock and Dooley (2004) and Cox (2021), who found that the rate of occurrence of TL in people of different genders is

substantially different. This is contrary to the results of Wansick (2007), Carrington et al. (2010) and Kumi-Yeboah and James (2014), who found that gender had no correlation with TL. However, research on this topic is limited and further investigation is needed in order to fully understand the relationship between gender and TL. It was further found in this study that women's TL is significantly greater than men's, which corresponds with the phenomenon initially found by Mezirow (1995), the founder of the TLT, that TL may be more common in adult women returning to university women than in men.

The reason for this phenomenon may be that women are more inclined to participate in study abroad programmes than men (Di Pietro, 2022). Women more likely to have the idea of studying abroad due to the educational advantages, social expectations, and personal motivations, and in terms of specific gender interests, women have a greater interest than men in the language and culture of other countries (Leaders in Law, 2022). According to Van Mol (2022), male and female higher education students use a different decision-making process to study abroad, and women's motivation to explore another culture is much stronger than that of males. Also, as Asian women face major social and economic obstacles compared to Western women (Olson-Strom & Rao, 2020), they often work harder academically when they are given an opportunity to receive higher education overseas. This illustrates that women's willingness and motivation to study abroad are much stronger than men's and that they will seize the opportunity to learn more after achieving their purpose of studying abroad, making it more likely for TL to occur. This was also true of the interviewees in this study. Female interviewees mentioned their interest in the local culture and in new experiences in their study life, and they cherished the opportunity to study abroad more.

Another reason for women's TL being significantly greater than men's may be that learners' social interaction is an important factor that affects TL, and women pay more attention than men to social interaction. In their research, Friebe et al. (2021) found that women are more easily attracted by same-sex friends than men, and are better at social interaction, thinking that it will be more rewarding than it is in practice. It was also found from the interviewees in this study that women attach great importance to interacting and communicating with peers.

In order to determine if there is a significant difference in the TL of Chinese graduate students in Thailand based on age, the interviewees were divided into four age groups: 20-30 years old, 31-40 years old, 41-50 years old, and over 50 years old. According to the results of a one-way analysis of variance, there is a significant difference in the TL of Chinese graduate students in Thailand of different ages. This is consistent with the research results of Fullerton (2010) and Cox (2021), and it was further found in this study that people aged 20-30 are more likely to produce TL results. Cox (2021) used a variance analysis and found that the scores of transformative results reported by participants in their 20s were significantly higher than those of participants in other age groups, thereby supporting the findings of this study.

The reason for this difference may be that Bonnie and Stroud (2017) found that the cognitive and motivational systems in the brain continue to develop from adolescence to the 30s. Sowell et al. (2001) also supported this result based on the belief that the age at which the human brain matures is from 20-30 years. Therefore, people in this age group are more likely to physiologically experience TL.

Another reason may be because young people lack life experience and experience of facing challenges compared to older people. As people age, they often report less stress and challenges, which may be due to changes in their social roles and motivations. It can be envisaged that young international students will face more dilemmas when entering a new environment. According to TLT, the more dilemmas they face, the more likely their TL will occur (Mezirow, 1995). Although people of all ages are affected by the negative impact of academic pressure, young people may be more easily affected because they have no experience of dealing with it.

The grades were divided into six levels in this study based on the education system of Thailand's higher education institutions: the first year of a Master's degree, the second year of a Master's degree, the first year of a Doctoral degree, the second year of a Doctoral degree, the third year of a Doctoral degree, and others. According to the results, there is no significant difference in TL based on grade. Although grade is a common background variable in academic performance (Shell et al., 1995), there is no previous research related to TL.

4.2 Limitations and future research directions

TL affects sustainable learning and lifelong learning abilities in line with the development of the new era; as such, it is very important for colleges and universities to cultivate talents. Therefore, students' TL can be improved by starting with the above factors and conditions to cultivate students to boldly accept transformative experiences, create opportunities for overseas exchanges, etc. At the same time, background variables also have an impact on TL. However, as some of the results of this study are the same as those of prior studies, while others are different, further research is needed to expand the scope of TL research. TLT and related literature were applied to build a TL scale that fit the characteristics and definition of this study for Chinese graduate students studying in Thailand. Future research could be based on a different objective, such as exploring the differences between overseas study exchange students and long-term degree students. The participants in this research were Chinese international postgraduate students studying in Thailand, who have experience of undergraduate higher education. Some of them also studied abroad as undergraduates. Whether the experience of studying abroad at the undergraduate stage affects the TL of studying abroad at the graduate stage is a topic worth discussing. Another issue that is worthy of attention is whether the TL experience is different between students who choose to study in Southeast Asian countries

and Chinese students who choose to study in Europe and America. Exploring the motivations for studying abroad of international students from different socio-economic backgrounds will help to better understand their TL. Finally, how the TL and overseas study experience of Chinese overseas students who have completed their studies and returned to China affect their lives and work, whether it motivates Master's students to continue their education to the Doctoral level, and whether international students can easily adapt to the hope environment after returning to China or whether they need to undergo further transformation to integrate into society, are also issues that require further research in the future.

5. Conclusion

While the theory of TL has emerged as a pivotal framework in the realm of higher education, its application has been somewhat limited in the Asian context. Therefore, a mixed-methods approach was used in this study to explore the TL of selected Chinese international postgraduate students studying in Thailand. The findings revealed significant differences in TL based on the duration of study in Thailand, gender, and age of the Chinese international postgraduate students. These results led to the conclusion that students' TL can be moulded, and that the experience of studying abroad can have a significant influence on TL.

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Appendix 1

Transformative Learning Questionnaire for Chinese Students Studying in Thailand	Completely agree	Mostly agree	Indifferent	Mostly disagree	Completely disagree
1.Studying in Thailand has changed my life in some way (e.g., perspective, expectation, or attitude).	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
2.I think experience of studying in Thailand has also brought some changes to other people.	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
3. Studying in Thailand has changed some of my attitudes or points of view before. .	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
4.I was willing to explore ideas I disagreed with	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
5.I discovered contradictions in my beliefs	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
6. I challenged my own beliefs	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
7.I challenged my fellow students' beliefs	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
8.My fellow students raised questions about my beliefs	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
9.I explored new ways to think about my beliefs	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
10.Disagreements helped me understand my beliefs	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
11.It has made me start to considered thinking differently	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
12.It has made me start to think about my usual behavior in different ways.	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
13. I thought about acting differently	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
14.Studying in Thailand has given me different views and ideas.	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
15. I now show myself differently.	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
16.My deep-rooted beliefs have changed.	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
17.I have a greater sense of responsibility towards others.	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
18.I have changed my future goals.	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
19.My life has changed significantly.	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
20.My view of myself has changed.	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
21.My view of the world has changed.	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1

Appendix 2

Interview Outline

1. When reflecting on your experience of studying in Thailand, have your concepts, ideas or values changed? If so, when did this change occur? Please briefly describe that experience.
2. Based on your answer to question 1, what were the reasons for your change of views?
3. Looking back at your experience of studying in Thailand, do you believe that other classmates also changed due to this experience?
4. Did your experience of studying in Thailand reveal any contradictions with your existing beliefs? If so, how did these contradictions arise?
5. Did your experience of studying in Thailand lead you to rethink ideas you previously disagreed with? Why?
6. When encountering the different views of other classmates, did you critically analyse your own beliefs?

7. Did your experience of studying in Thailand prompt you to reconsider behaviour you previously took for granted, leading to different perspectives and ideas? If so, how?
8. Did your experience of studying in Thailand gradually influence you to take a different approach to things and did you change your behaviour as a result? If so, how?
9. Did your experience of studying in Thailand increase your sense of responsibility for others? If so, why?
10. Did your future goals change due to your experience of studying in Thailand? If so, please describe how they changed and why.
11. Did your self-awareness and worldview change due to your experience of studying in Thailand? If so, please elaborate on these changes and the underlying reasons for them.