

The Road to Internationalization: A Cross-cultural Validation Analysis of Student Engagement and Achievement in South China EMI Public Elective Courses

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Abstract: This study investigated the construct of course engagement in the context of EMI classrooms in South China and how it influenced student's academic achievement. The sample comprised 825 students from 16 weeks a semester in a public university. An empirical study (N=198) was conducted to explore aspects of the reliability and validity of the engagement. Confirmatory Factor Analysis via AMOS (26.0) showed evidence of convergent validity of the newly developed scale. A covariance structural analysis shows that three dimensions of learning engagement are a significant predictor of academic achievement for students in EMI public elective courses classroom.

Keywords: Classroom Engagement, Academic Achievement, EMI Courses development

1. Introduction

With the high-speed development of China's internationalisation and the development in education sustainably, the biggest change related to Internationalization Education in China is the development of English Medium Instruction (EMI) in China which to the trend of internationalisation and further accelerated the use of English as the primary language of instruction in higher education [1].

Institutions and colleges opened and provided EMI courses to immerse into the internationalization of higher education and let students prepare for the global competition. However, research related to the relationship between student engagement and achievement in EMI public elective courses is scarce. As the use of English as the primary language of instruction in higher education continues to increase in China, there is a growing need for research on the impact of this trend on student engagement and achievement in EMI public elective courses [2].

2. Literature Review

2.1 Engagement

In higher education, student engagement is a critical factor in academic success and retention. Research has consistently shown that higher levels of student engagement are associated with better academic performance, and higher levels of satisfaction [3]. This highlights the need for educators to create an engaging learning environment that promotes active participation and motivation. Additionally, student engagement has been linked to higher levels of satisfaction with the college experience, indicating its impact on overall student well-being. Therefore, promoting and supporting student engagement should be a priority for higher education institutions.

Consequently, faculties might gain insight by examining a multitude of real-life examples illustrating how to enhance student engagement. This could include implementing active learning strategies, creating a supportive and inclusive learning environment, and providing opportunities for students to connect with their peers and the larger campus community. By prioritizing student engagement, institutions can foster a more positive and enriching learning experience for their students, leading to improved academic

outcomes and overall satisfaction with their education.

Engaging in academic activities is a dynamic and satisfying mental state connected with acquiring knowledge [4]. It is characterized by energy, concentration, and commitment, and encompasses behaviours, thoughts, and emotions. Engagement not only contributes to student contentment and overall well-being but also serves as a significant predictor of academic success [5]. It promotes professional growth and enhances the quality of education [6].

A meta-analysis conducted demonstrated that academic self-efficacy plays a significant and positive role in predicting academic engagement, making it a crucial factor in promoting student involvement [7]. Students with high academic self-efficacy possess confidence in their abilities, readily recognize their strengths and potential, and believe in their capacity to effectively grasp the subject matter and achieve desired learning outcomes. Based on these findings, we have chosen to focus on engagement and academic achievement when providing feedback on EMI learning. It is important to note that universities have provided EMI course programmes including social science and science majors as part of efforts to cultivate international professional talents. This program differs significantly from traditional education in terms of teaching methods, content, training objectives, and management approaches. All courses are conducted in English through classroom instruction.

In the field of EMI education, behavioural engagement has also been examined as part of students' overall engagement in the subject. This includes their attendance, participation in class discussions, and completion of assignments [8]. Furthermore, research has indicated that emotional and cognitive engagement plays a crucial role in students' performance in EMI courses [9]. It has been demonstrated that behavioural engagement in EMI is a strong predictor of students' academic success and their overall satisfaction with the course [10]. This highlights the importance of considering behavioural engagement in understanding students' experiences and outcomes in students' long-term academic performance in this particular subject.

Engagement is crucial in school settings because it serves as a bridge between students' motivational processes and their learning and development [11]. This concept of engagement is often characterized by behavioural elements such as participation and effort, emotional aspects like a positive learning attitude, and cognitive components including elaboration and self-regulation [12]. It has been observed that students who actively engage in the study usually exhibit positive learning outcomes in the subject. In classroom settings, three essential types of engagement include behavioural, cognitive, and emotional engagement. Student engagement can be identified through factors such as effort, attention, and persistence displayed during learning activities [13].

2.2 Academic Achievement

In recent research, the impact of language-related factors on academic achievement has been explored. These studies have examined both general English proficiency and academic English proficiency [14]. Additionally, the interaction between non-linguistic factors like motivation [15] and self-efficacy [16], along with linguistic factors (i.e., GEP and academic English proficiency), has been investigated. However, despite some existing research, there is a lack of comprehensive studies in this area. Therefore, it is necessary to conduct more research using various measurement tools and analysis models. The current study aims to fill this gap by employing multi-item scales and Structural Equation Modeling (SEM) to analyze non-linguistic factors in the context of English as a Medium of Instruction (EMI). This study is unique as it contributes original findings to our understanding of student engagement and academic achievement in EMI settings.

The previous studies suggested that the way students engage with their academics in terms of various aspects has a lasting impact on their overall academic achievements [17] and have consistently found positive associations between students' engagement in school and their academic success [18]. For instance, engagement is associated with higher levels of knowledge acquisition, cognitive development, and effort to learn [19]. It is also linked to self-involvement in learning, pride in learning, mastery of subjects, collaborative work, knowledge transfer, creative problem-solving, and academic achievement [20][21]. However, the specific mechanisms behind the influence of student engagement on academic achievement in cross-cultural EMI settings are still being explored. Therefore, by adopting the framework proposed by Fredricks et al. (2004) in the current study, it is anticipated that solid empirical evidence will be generated, directly benefiting school reform and enhancement efforts.

Academic achievement in this study was measured by students' grades in courses and the College English Test (CET) at the end of the course and results from their last CET exam. The College English

Test (CET) is a well-known national language proficiency exam in China, specifically designed for undergraduate and postgraduate students [22]. Its primary purpose is to assess the English language skills of Chinese students, ensuring that they meet the English proficiency standards outlined in the National College English Teaching Syllabuses (NCETS). This test has been in existence in China for the past 26 years and is taken by approximately 18 million individuals each year. The CET is divided into two levels, namely CET4 (Level 4) and CET6 (Level 6). Academic achievement was measured by students' test grades at the end of their 16 teaching weeks. The grades were calculated by a centesimal system [23].

3. Research Designs and Questions

The purpose of the present study is to investigate the relationship between engagement and EMI student academic achievement and course ratings change with EMI interventions. The research design will be a quantitative research method.

The research questionnaire adopted and adapted the University Student Engagement Inventory (USEI), the "course" will be stated and highlighted with "EMI course" [24]. 198 students who attend the EMI public elective course will be allowed to complete the questionnaires and their course assessment results will be collected before and after conducting the EMI course. The results will be analysed by SPSS 29.0 and AMOS 26.0.

The research questions are as follows:

Is there a significant relationship between student behaviour, cognitive and emotional engagement and academic achievement in an EMI public elective course context? What's the effect extent respectively?

Does academic achievement and behavioural, cognitive and emotional engagement show convergent validity?

Can three dimensions of classroom engagement be explained by a second-order factor of academic achievement?

3.1 Method

This study utilized focus a survey method. The survey method involves the gathering of cross-sectional data to investigate the roles of student classroom engagement and academic achievement among EMI learners.

On the other hand, the student's course performance after EMI courses were collected and analyzed.

3.2 Procedures

Two classes of students are supposed to take the EMI public elective course, each class 99 students are under observation. The course is lectured by the same educator so that there's no interferential consideration. They will be tested after the course, and the assessment results will be collected. After the course is finished, they are going to fill out the questionnaire related to their course engagement.

3.3 Measures

The questionnaire comprises 15 items, divided into three sections. The three sections measure students' behaviour, cognitive and emotional engagement as classroom engagement. The behaviour engagement scale will be measured by the attendance and participation of the class, study motivation, and study regularity. Cognitive engagement was used to check students' self-efficacy, and emotional engagement subsumed under students' joy and self-feeling in the course. All items are measured using a five-point rating scale type of response ranging from 1= "almost never" to 5= "usually".

4. Results

Data analyses were designed to answer the three research questions. Descriptive statistics will show the internal consistency of all variables, and confirmatory factor analysis and a structural model were used to test the data's fitness.

4.1 Intercorrelation and Reliability

Table 1: Means, Standard Deviations, and Internal Consistencies of the variables under investigation.

	M	SD	Cronbach's Alpha
1. Behaviour Engagement	3.59	0.95	0.915
2. Emotional Engagement	3.56	1.01	0.890
3. Cognitive Engagement	3.67	0.94	0.906

It summarized in Table 1 means, standard deviations, reliabilities and intercorrelations estimates (Cronbach's values). The results in Table 1 showed that the variables had high internal consistency, with Cronbach's alpha values above 0.906. This indicates that the items in each section of the questionnaire were measuring the same underlying construct. This provides evidence for the reliability of the measures used in this study. All 3 subscales of engagement showed good levels of internal consistency.

4.2 Structural Model: Second-Order Validation Model of Academic Achievement

Table 2: Model Fit Indicates.

Indicators	χ^2/df	GFI	AGFI	IFI	TLI	CFI	RMSEA
statistic	1.696	0.943	0.921	0.982	0.978	0.981	0.046
reference value	<3	>0.8	>0.8	>0.9	>0.9	>0.9	<0.08

As can be seen from the table 2, χ^2/df is 1.696, less than 3; GFI is 0.943, greater than 0.8; AGFI is 0.921, greater than 0.8; IFI, CFI and TFI are all greater than 0.9; RMSEA is 0.046, less than 0.08. According to the standard of model fitting index, the fitting index of the model meets the requirements. Therefore, the path of the model is analysed. The results of the structural model show that all three types of engagement (behavioural, emotional, and cognitive) and academic achievement have a good structure. This supports the second research question, which asked about the relationship between student engagement and academic achievement.

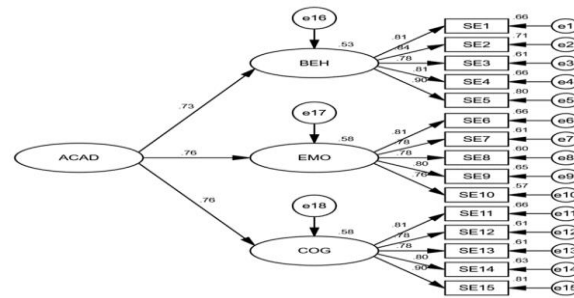
4.3 Convergent Validity

Convergent Validity means that when two different measurement tools are used to measure the same concept, the classification obtained is highly correlated (Geng Xianfeng, 2008). Based on the suggestions of Rong Taisheng (2009, P.145), this study tested convergence validity by constructing reliability (CR) and mean-variance extraction value (AVE). Construction reliability is usually > 0.7, AVE > 0.5 to meet the criteria.

Table 3: Results of the academic achievement model for classroom engagement.

variable	item	Estimate	S.E.	C.R.	P	CR	AVE
Academic achievement	Behaviour Engagement	0.731				0.795	0.564
	Emotional Engagement	0.762	0.135	8.361	***		
	Cognitive Engagement	0.760	0.122	8.333	***		

Academic achievement scale factor load, combination reliability (CR) and mean-variance extraction value (AVE) are shown in the table. In Table 3, the load value of each variable factor is between 0.7-0.8, indicating that the convergence validity is high, the combined reliability (CR) of each dimension is greater than 0.7 to meet the standard, the AVE is greater than 0.5 to meet the standard, and the significance probability $P < 0.001$, indicating that the academic achievement scale structural model convergence is very good. It explains the first question that there's a significant relationship between student behaviour, cognitive and emotional engagement and academic achievement in an EMI public elective course context. It shows that the second-order model is verified significantly in Table 3.



(*Chi-square*=1.696, *GFI*=0.943, *AGFI*=0.921, *TLI*=0.978, *RMSEA*=0.046, *ACAD*: Academic achievement, *BEH*: Behavioural Engagement, *EMO*: Emotional Engagement, *COG*: Cognitive Engagement.)

Figure 1: A second-order measurement model for Academic achievement.

Confirmatory factor analysis in Figure 1 has validated the convergent validity of academic achievement (Q2), with path coefficients for all three dimensions falling within the range of .73 to .76. This indicates that these dimensions are interconnected and collectively form the latent construct of academic achievement (Q3). The high values of GFI, AGFI, TLI, and low value of RMSEA also support the goodness of fit of the model (Q4). Overall, the results support the truth that there is a strong and significant relationship between student engagement and academic achievement in an EMI public elective course context, as indicated by the high load values and significant path coefficients in Table 3 and Figure 1. This provides evidence for the importance of promoting student engagement in the classroom for achieving academic success.

5. Conclusions

The main purpose of this study was to develop engagement examine the latent structure of engagement and assess a model of its relationship with academic achievement. The engagement questionnaire was developed to measure three dimensions of engagement which are behavioural engagement, emotional engagement and cognitive engagement. This study provides evidence of the convergent validity of the newly developed EMI course engagement and academic achievement. EMI engagement scale in this study is a validated instrument in the South China context which can proceed to investigate in greater detail the relationship between engagement and other learning outcomes. The finding of this study concerning a positive association between engagement and students' academic achievement is consistent with the results obtained by Kuh [25]. This research was the first in South China to investigate the relationship between student perceptions of student behavioral, emotional and cognitive engagement, and how academic achievement is impacted. It has a cross-cultural validation of the relationship between engagement and academic achievement especially in the EMI public elective course context.

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