# Factors Influencing Student Engagement in the Flexible Learning of Foreign Language in Higher Education

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## Abstract

This study aims to: 1) create a factor model of flexible learning that influences student engagement based on the related theories and concepts, 2) test the flexible learning factor model for the relationships between variables, and 3) explain and deepen our understanding of the influencing factors affecting student engagement. The research employs a mixed-methods design, drawing on theories such as learning theory, constructivism, online learning, e-learning, hybrid learning, flexible learning, the technology acceptance model, and motivation. Conducted at Suan Sunandha Rajabhat University, Thailand, the study includes 4,173 students enrolled in foreign language courses in 2023, with a sample of 366 students selected via clustered random sampling.

Two instruments were used: 1) a structured questionnaire for quantitative analysis and 2) a semi-structured interview for qualitative research. Quantitative data were analyzed with basic statistics, factor analysis, and structural equation modeling (SEM), while qualitative data were analyzed through content analysis.

The findings develop a flexible learning factor model and identify various factors that directly and indirectly impact student engagement. The results explain the causes behind these factors and provide a foundation for developing flexible learning models that meet students' needs.

**Keywords:** Flexible Learning, Student Engagement, Technology Acceptance Model

## Introduction

Learning is the foundation of personal growth and societal progress, enabling individuals to adapt, innovate, and thrive in an ever-changing world. Education expands horizons by fostering both technical expertise and a profound understanding of the interconnected global landscape. As a lifelong endeavor, learning enriches individuals, offering pathways to professional success and personal fulfillment while addressing complex challenges that demand innovative solutions. In particular, foreign language acquisition emerges as a transformative facet of education, offering cognitive, cultural, and professional benefits. The process of learning a new language promotes empathy and cross-cultural understanding, which are essential in today's globalized society. These skills drive economic

collaboration and social cohesion, equipping individuals to engage with diverse communities and thrive in international job markets.

Although learning styles have been studied and developed continuously for a long time, human learning styles and lifestyles have undergone major changes during the COVID-19 pandemic. The educational landscape has reshaped and revealed both the resilience and the vulnerabilities within learning systems. The shift to remote and flexible learning highlighted the adaptability of educators and learners, ensuring continuity amid unprecedented challenges. Flexible learning allowing individuals to learn at their own pace, this model fosters inclusivity, empowering learners with physical disabilities, geographical constraints, or competing personal commitments. It promotes lifelong learning by removing barriers to education and creating pathways for skill development.

Based on the importance of flexible learning presented above, we are interested in studying learning models in depth and comprehensively. In conclusion, this research aims to provide a robust framework for understanding and improving student engagement through flexible learning. The results of the research will serve as an important foundation to help educational institutions develop flexible learning models that are more consistent with learners' needs.

## Research objectives

1) To create a factor model of flexible learning that influences student engagement based on the related theories and concepts.

2) To test the flexible learning factor model for the relationships between variables.

3) To explain and deepen our understanding of the influencing factors affecting student engagement.

## Research hypotheses

H1: In-class learning factor affects Student interaction

H2: In-class learning factor affects Motivation

H3: Family factor affects Motivation

H4: Online learning factor affects Perceived usefulness

H5: Online learning factor affects Perceived ease of use

H6: Perceived usefulness affects Actual use

H7: Perceived ease of use affects Actual use

H8: Student interaction affects Student engagement

H9: Motivation affects Student engagement

H10: Motivation affects Actual use

H11: Actual use affects Student interaction

H12: Actual use affects Student engagement

**Literature Review**

**Learning Theory and Constructivism**

Learning is the process of acquiring knowledge and adapting behavior through experience, resulting in changes in perception, understanding, motivation, or actions (Cronbach, 1954). Constructivism highlights that learners actively build knowledge through experiences and social interactions, making learning a collaborative process between students and teachers. Vygotsky (1978) emphasizes the sociocultural context of learning, particularly through the Zone of Proximal Development (ZPD), which is the gap between what learners can achieve alone and with guidance. This framework underscores the importance of collaborative environments, where social interactions and shared experiences foster cognitive development.

**Concept of Online learning and e-Learning**

Online learning leverages digital technologies and the internet to deliver educational content, facilitate communication, and enable interaction between students and instructors, allowing flexible, remote access to courses (Moore & Kearsley, 2011). It eliminates the need for traditional classrooms, offering self-paced or structured learning options supported by multimedia resources, and interactive tools (Garrison & Kanuka, 2004), such as course material Rao and Tanners (2011), online test bank (C. Tapsai, 2015).

**Concept of Hybrid learning/blend learning**

Hybrid learning combines in-person instruction with digital platforms, offering flexibility and blending face-to-face interaction with online resources (Garrison & Kanuka, 2004). This approach allows students to engage with materials both in the classroom and remotely, adapting to diverse needs and enhancing learning outcomes (Guangying, 2014).

**Concept of Flexible learning**

Flexible learning is a student-centered approach that allows learners to choose the time, place, and pace of their studies, tailoring their experience to diverse needs and preferences (Garrison & Kanuka, 2004). It incorporates face-to-face, online, and hybrid modes, enabling students to progress at their own speed and ensuring mastery of material (Anderson, 2003; Garrison & Vaughan, 2008). By fostering autonomy, critical thinking, and lifelong learning skills, flexible learning prepares students for continued education and personal growth (Beatty, 2019).

**Concept of Technology Acceptance Model**

The Technology Acceptance Model (TAM) explores factors influencing users' adoption of technology, focusing on perceived ease of use and usefulness as key determinants of attitudes and intentions (Davis, 1989). While not designed to predict student achievement, TAM is often used to study how technology acceptance impacts educational outcomes. For instance, research by Barbour and Siko (2013) examines how students' use of technology shapes their perceptions of success in mathematics, highlighting the link between acceptance and academic performance.

### Concept of Motivation

Motivation is the internal or external force that drives behavior toward achieving a goal. Maslow (1943) described motivation as the drive to fulfill needs, progressing from basic physiological needs to higher-level needs like safety, social connections, and self-actualization. Motivation is categorized into intrinsic, which comes from internal factors like curiosity and personal satisfaction, and extrinsic, which is driven by external rewards and recognition. According to Ryan and Deci (2000), extrinsic and intrinsic motives have different but related effects on behavior.

### Conceptual framework

Through a comprehensive review of various theories, concepts, and research related to flexible learning, we developed a clear understanding essential for constructing a factor model of flexible learning for improving student engagement, covering key factors such as in-class learning factor, online learning factor, the family factor, student interaction, motivation, perceived usefulness, perceived ease of use, and actual use.
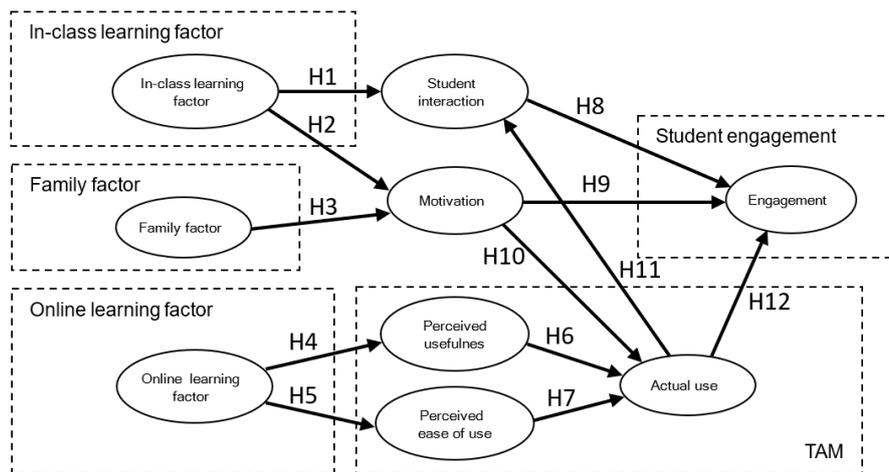


**Figure 1** Conceptual framework

### Research Methodology

This research adopts a mixed-methods approach, incorporating quantitative analysis to evaluate factor models and qualitative investigation to examine and clarify the relationships between variables. The integration of findings from both methods offers a comprehensive understanding of the factors and underlying dynamics influencing student engagement.

#### Quantitative Research for Factor Model Testing

This study employs quantitative research to examine variable relationships and validate research hypotheses using a structured questionnaire based on the factor model. From a population of 4,173 students enrolled in foreign language courses at Suan Sunandha Rajabhat University in 2023, a sample of 366 students was selected through clustered random sampling, stratified by subject and sex, following Taro Yamane's (1967) formula. The questionnaire's validity was reviewed by seven experts using the Item-Objective Congruence

(IOC) index and trialed with 30 students to ensure reliability, assessed through Cronbach's alpha, before data collection (Cronbach, 1951; Eisinga, R., et al., 2013).

### Qualitative research for the explanation of variables' relationships

Drawing on the quantitative research findings, we conducted qualitative research through in-depth interviews to examine participants' individual experiences, educational beliefs, attitudes, and opinions. This approach aimed to provide a comprehensive understanding of the factors influencing student engagement. We initially selected 30 participants at random from students who scored highly on significant factors identified in the quantitative phase. We then recruited additional participants as necessary until reaching data saturation, resulting in a total of 42 participants.

## Research results

### Quantitative Research results

We analyzed the data from the questionnaire survey using Structural Equation Modeling (SEM), including Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and Path Analysis to evaluate the measurement model and test the hypotheses. Key parameters such as factor loadings, regression coefficients, path coefficients, t-values, and p-values were interpreted to identify significant factors and relationships.

1) Exploratory Factor Analysis (EFA):

We conducted EFA, assessing the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity. The results showed KMO values above 0.6 and Bartlett's test p-values below 0.05, indicating sufficient correlations among variables and confirming the data's suitability for factor analysis (Tabachnick & Fidell, 2013).

2) Confirmatory Factor Analysis (CFA):

As shown in Table 1 and Table 2, the results of CFA showed all model fit indices met the required thresholds. While the Average Variance Extracted (AVE) was greater than 0.5, the square root of the AVE for each factor exceeded the inter-factor correlations, and the Composite Reliability (CR) exceeded 0.7, indicating good convergent validity, discriminant validity, and reliability (Hair et al., 2019; Fornell & Larcker, 1981).
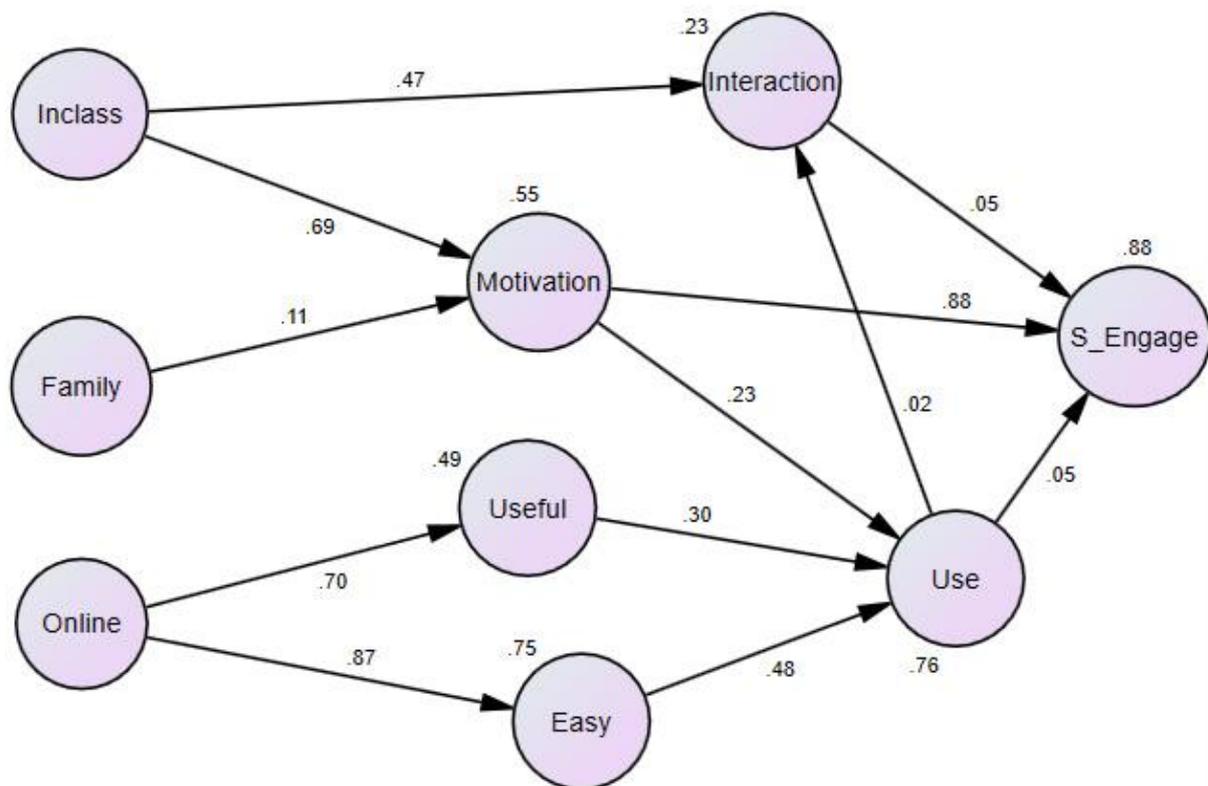
**Table 1** Model fit analysis results

| Model Fit Indices | Values | Criteria: Interpretation | References |
|---|---|---|---|
| Relative Chi-Square (Chi-Square/df) | 1.898 | < 2.0: excellent fit | Carmines & McIver (1981); Schumacker & Lomax (2010) |
| RMSEA (Root Mean Square Error of Approximation) | 0.050 | ≤ 0.05: acceptable fit | Hu & Bentler (1999) |
| RMR (Root Mean Square Residual) | 0.035 | < 0.05: excellent fit | Hu & Bentler (1999) |
| GFI (Goodness of Fit) | 0.905 | ≥ 0.90: good fit | Hu & Bentler (1999) |
| NFI (Normed Fit Index) | 0.927 | ≥ 0.90: good fit | Bentler (1990) |
| CFI (Comparative Fit Index) | 0.964 | ≥ 0.95: excellent fit | Bentler (1990) |
| TLI (Tucker-Lewis Index) | 0.956 | ≥ 0.95: excellent fit | Tucker & Lewis (1973) |

**Table 2** Convergent Validity Metrics: AVE and CR Values for Variables

| Variables | AVE | CR |
|---|---|---|
| In-class learning (Inclass) | 0.61 | 0.90 |
| Family factors (Family) | 0.51 | 0.80 |
| Online learning (Online) | 0.70 | 0.82 |
| Student interaction (Interaction) | 0.75 | 0.86 |
| Motivation (Motivation) | 0.94 | 0.97 |
| Perceived usefulness (Useful) | 0.71 | 0.83 |
| Perceived ease of use (Easy) | 0.72 | 0.83 |
| Actual use (Use) | 0.76 | 0.87 |
| Student engagement (S_Engage) | 0.68 | 0.95 |

**Structural equation model (SEM) with Path analysis**

Figure 2 and Table 3 show the SEM path diagram with analysis results, including factor loadings, critical ratio (C.R.), standardized regression weights, and p-value, thereby enabling a thorough evaluation of the hypothesized relationships between variables. Some paths that have p-values less than 0.05 are statistically significant as shown in the hypothesis testing results. Table 4 summarizes the direct effects (DE), indirect effects (IE), and total effects (TE) of the independent variables on the dependent variable.



**Figure 2** Structural Equation Modeling (SEM) analysis results

Table 3 Hypothesis Testing Results

| Hypothesis | C.R. | Standardized Regression Weights | P-Value | Interpretation |
|---|---|---|---|---|
| H1. In-class learning ⟶ Student interaction | 5.543 | 0.47 | *** | positive impact |
| H2. In-class learning ⟶Motivation | 10.181 | 0.69 | *** | positive impact |
| H3. Family factors ⟶Motivation | 2.073 | 0.11 | 0.038 | positive impact |
| H4. Online learning ⟶Perceived usefulness | 10.576 | 0.70 | *** | positive impact |
| H5. Online learning ⟶Perceived ease of use | 12.457 | 0.87 | *** | positive impact |
| H6. Perceived usefulness ⟶Actual use | 5.370 | 0.30 | *** | positive impact |
| H7. Perceived ease of use ⟶Actual use | 8.188 | 0.48 | *** | positive impact |
| H8. Student interaction ⟶Student engagement | 1.519 | 0.05 | 0.129 | Not significant |
| H9. Motivation ⟶Student engagement | 13.568 | 0.88 | *** | positive impact |
| H10. Motivation ⟶Actual use | 4.422 | 0.23 | *** | positive impact |
| H11. Actual use ⟶Student interaction | 0.210 | 0.02 | 0.834 | Not significant |
| H12. Actual use ⟶Student engagement | 1.083 | 0.05 | 0.279 | Not significant |

*** means less than 0.001

Table 4 Effect size of the independent variables on the dependent variable

| Paths | Direct effect | Indirect effect | Total effect |
|---|---|---|---|
| In-class learning ⟶ Student engagement | - | 0.643 | 0.643 |
| Online learning ⟶ Student engagement | - | 0.033 | 0.033 |
| Family factors ⟶ Student engagement | - | 0.097 | 0.097 |

### Qualitative research results

We preprocessed the data from the in-depth interviews by removing duplicates and addressing missing values to ensure its suitability for analysis. Using NVivo software, we began with a word frequency analysis, filtering out irrelevant high-frequency keywords. We then created a network graph of co-occurring words to identify patterns and connections, aligning the interview content with the research theme. Next, we applied inductive coding, including open and axial coding, to examine the factors influencing student engagement and their relationships. Selective coding refined the analysis, identified key themes, and established connections between them, providing a comprehensive understanding of the research topic. The results revealed the factors influencing student engagement and their interrelationships.

### Conclusions and discussion

The research findings from Objective 1 allowed us to create a comprehensive model of flexible learning that identifies the key factors influencing student engagement. This model was empirically tested through quantitative research aligned with Objective 2, which identified significant pathways and quantified the effect sizes of the relationships between variables. Notably, the analysis reveals that the In-class learning factor has the biggest influence on

student engagement via the student interactions and motivation. This finding served as a foundation for formulating guiding questions for the qualitative research involving in-depth interviews. The outcomes associated with Objective 3 comprised a summarized analysis that clarified the relationships between variables and provided insights into the underlying reasons for these connections. By integrating quantitative and qualitative results, this study reveals the complex interactions between different factors affecting student engagement at various levels and dimensions as follows.

Class participation significantly enhances student engagement. Students interviewed stated that in-class learning fosters motivation and active involvement through participation in learning activities, direct guidance and support from instructors and teaching assistants, and opportunities to ask questions. These settings also promote meaningful interactions with both instructors and peers, which students found more beneficial than studying independently online.

Online learning, encompassing both real-time and on-demand formats, has a significant impact on student engagement but does not effectively promote student interaction. Students interviewed indicated a preference for on-demand learning due to its convenience and flexibility, which enable them to manage their study schedules independently and tailor learning to their personal needs. However, this flexibility often leads to reduced intention for class participation and limited opportunities for interaction with instructors and peers.

Family factors had a minor influence on motivation, resulting in a small effect size on student engagement. The results of in-depth student interviews revealed that this issue arises from several factors, including students often living away from their families and parents frequently being occupied with work, having limited time, or showing minimal involvement in their children's education. These circumstances lead to reduced family support, which negatively impacts student engagement.

Student interactions with both instructors and peers are essential for increasing engagement. According to interviews, classroom environments provide more effective opportunities for interaction compared to online platforms. However, current flexible learning platforms lack the necessary features to support productive interactions. To address this issue, educational institutions should enhance platform capabilities to enable more seamless and accessible participation throughout courses.

The importance of Motivation: Flexible learning provides students with the freedom to choose their own learning style and manage their study schedules independently. As a result, most students prefer on-demand learning over attending traditional classes, leading to reduced interaction with teachers and peers. Motivation thus becomes a critical factor influencing students' engagement with learning. In-depth interviews revealed several reasons why students favor on-demand learning. These include the need to work during their studies to address financial challenges, access to a wide range of alternative learning options featuring innovative media, diverse teaching methods, and renowned instructors in online communities. Additionally, many students prioritize activities aligned with their personal interests over

attending scheduled classes, believing they can review online materials at their convenience. To enhance student motivation and engagement, educational institutions should focus on developing diverse and engaging teaching methods, improving the quality of learning media, and tailoring content to better align with students' preferences and needs.

## Recommendations

The research findings identify key factors influencing student engagement, quantify their impact, and reveal the underlying causes of the relationships between variables. These insights enable educational institutions to develop flexible learning models tailored to meet the needs of higher education students. However, learner characteristics differ significantly across educational levels. For instance, many higher education students live independently, balance work and studies, and exhibit high levels of autonomy, reducing the influence of family factors on their commitment. This dynamic differs from that of primary and secondary school students, who generally maintain closer connections with their families. This study focused on foreign language subjects, which have different objectives and characteristics than other courses like science, technology, sports, and business. The factors associated with learning activities and media differ based on the topic matter. Furthermore, emerging technologies such as artificial intelligence (AI) play an increasingly important role in education, providing chances to improve the effectiveness of flexible learning models. Future research should expand its scope to include learners at various educational levels and cover other subject groups to provide more comprehensive insights. Broadening the scope will allow the development of flexible learning models that can effectively address the needs of diverse learner groups and be applied across educational contexts.

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