

FIRST-YEAR STUDENTS' ADAPTION AND ITS CORRELATION WITH STUDENTS' LEARNING OUTCOMES — A CASE STUDY OF INDUSTRIAL UNIVERSITY OF HO CHI MINH CITY

NGUYEN THI THU TRANG^{1*}, DAO THI NGUYET ANH², NGUYEN THI NGOC DIEP³,
LY THANH BINH⁴, PHAM THI OANH⁵, DO THI THIN⁶

^{1, 2, 3, 4, 5, 6} Faculty of Fundamental Science, Industrial University of Ho Chi Minh City

*Corresponding author: nguyenthithutrang@iuh.edu.vn

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Abstract. The study aimed at investigating the academic and social adaptation of the first-year students of Industrial University of Ho Chi Minh City (IUH) and examining the correlations between their adaptation and some learning outcomes, including students' knowledge and skills development, grades, satisfaction and sense of belonging. Data were collected through an online survey. Responses from 898 IUH freshmen indicated that students had a decent pre-university understanding of university study and life; and they adapted at moderate levels to changes and novelty in their study and social life. The research found that freshmen's pre-university understanding, academic adaptation and social adaptation were statistically significantly and positively related to each other. There was a strong correlation between students' academic adaptation and social adaptation. The results also established positive correlations of first-year students' pre-university understanding, academic and social adaptation to the examined outcomes. These variables had biggest effects on students' knowledge and skills development, but had weakest relationships with students' grades. Among the adaptation variables, academic adaptation had the strongest relations with all observed learning outcomes. Based on the research findings, some suggestions were made to enhance freshmen's adaptation, thereby to improve their learning outcomes.

Keywords. Academic adaptation, first-year students, learning outcomes, pre-university understanding of study and life, social adaption.

1 INTRODUCTION

Entry into university is a life milestone for every student. They begin a journey that is full of excitement and challenges caused by great change in both university learning environment and their daily life. To successfully navigate this change, students have to make behavioral, cognitive and emotional adjustment (Martin et al., 2013), which, for some, is considered as a big problem (Baik et al., 2015) or even “a stressful and daunting battle” (Krause, 2012). Freshmen who cannot adapt to novelty and changes at university usually fail in achieving desired learning outcomes in the first year of university and beyond (Collie et al., 2017; Holliman et al., 2019). Some of them even leave university courses within the first year of their study (Burns et al., 2017; Shcheglova et al., 2020), making the dropout rate of first-year students always higher than that of students of other years (Kirf, 2015). These facts indicate the importance of freshmen's adaptation to their learning experience, performance and success. Therefore, first-year students' adaptation deserves greater attention from universities and the higher education research community.

The current study focuses on the adaptation of first-year students of Industrial University of Ho Chi Minh City (IUH). It addresses three research objectives: (1) to assess IUH freshmen's understanding of university study and life before attending university; (2) to describe IUH freshmen's academic and social adaptation to university study and life; (3) to examine the correlations of IUH freshmen's pre-university knowledge on university study and life, academic and social adaptation with some selected learning outcomes. The study findings will make certain theoretical and practical contributions to the body of knowledge of first-year students' learning experience. Theoretically, although numerous studies on first-year students' adaptation have been conducted, research on the relationship between university freshmen's adaptation and learning outcomes is still spare in the scholarly literature, both international (Collie et al., 2017; Holliman et al., 2018) and Vietnamese. Data from this study may help to shed further lights on the

above-mentioned issue. Regarding practical implications, this research may provide IUH with relevant information to reach solutions for the improvement of IUH first-year students' adaptation and learning outcomes to increase its training quality.

2 LITERATURE REVIEW

2.1. Definitions of adaptation

Adaptation is defined as the process in which individuals adjust themselves to suit changes, novelty and uncertainty in their lives. The adjustment happens in three aspects: cognitive, behavioral, and emotional (Martin et al., 2012, 2013). Or as Pulakos et al. (2000) note, adaptation is the positive self-adjustment people make to comply with the requirements in a new environment. For first-year students, adaptation involves students' modification in their thoughts, actions, and affective responses (Martin et al., 2012, 2013) in order to correctly react to the new learning environment at university, and thus obtain benefits from that environment (Kaya & Akgün, 2016).

2.2. First-year students' academic and social adaptation

First-year students' adaptation process is full of new things that are exciting but highly challenging (Ang et al., 2019). The challenges result from the large difference between the learning environment at high school and that at university (Baik et al., 2015) as well as the mismatch between students' expectations and the reality of university study and life (Ang et al., 2019; Brinkworth et al., 2009). Many students who used to learn in a structured, highly controlled and teacher-driven environment at school admit that they are overwhelmed by class sizes, heavy workload to complete, and courses' and lecturers' high demands (Ang et al., 2019; Brinkworth et al., 2009; Hassel and Ridout, 2018; Kane et al., 2014). Especially, they encounter a lot of difficulties in adjusting to new teaching and learning methods that call for more independent study, active and self-disciplined learning attitudes, creative and critical thinking, and better time management (Brinkworth, 2009; Krause, 2012), which pose considerable challenges to some freshmen. An Australian national survey of how students experienced their first year at university showed that about 35% of surveyed students considered coping with university study as a big problem (Baik et al., 2015).

Besides problems in academic adaptation, many freshmen find it too hard to establish relationships with socializing agents on campus (peers, lecturers, and professional staff) because of their lack of confidence or social and cultural capital (Krause, 2012). For students who have to leave their families when attending university, social adaptation also includes their adjustment to leading an independent life without their parents' daily supervision, protection and care, living with unknown people or living in a strange place, which seems intractable for some (Tu, 2020).

There are some studies on how Vietnamese first-year students adapt to their university study and life. These studies indicate that Vietnamese freshmen face above-mentioned problems. For example, the survey responses from 801 freshmen of Nong Lam university showed that they adjusted at a low level to learning activities, new teaching and learning methods at university and they found it hard to interact with their peers and lecturers. Some students often suffered anxiety and stress (Viet, 2018). Another study conducted at Dong Thap university in 2022 revealed that although, in general, most of first-year students made good academic, social, emotional adaptation, they still had difficulties in coping with learning workload, in managing time, in taking examinations, and in making interactions with classmates, teaching and professional staff. Some students felt lonely, worried, and even stressed (Trung and Minh, 2022).

2.3. Student learning outcomes

The concept "Student learning outcomes" is interpreted in many different ways. Typically, learning outcomes are understood as students' academic ranks or grades. In a wider meaning, learning outcomes can be defined as students' development and maturity resulting from their attendance at a university (Pascarella & Terenzini, 2005). According to Kuh (1981), learning outcomes refer to "measures of cognitive and affective changes associated with college attendance" (p.10). They include measures of student knowledge, skills, achievements, values, attitudes, aspirations, interests, and daily activities (Astin 1977). These aspects of learning outcomes are facilitated by the university's programs, academic and educational activities (Astin, 1991). Some Vietnamese researchers (Hoa et al., 2018, Nguyen, 2016; Quynh & Anh, 2021) adopted these definitions in their studies.

How much knowledge and what skills students can develop during university are central focuses of assessing student learning outcomes (Kuh et al., 2006). The knowledge and skills development measure, according to Coates (2010), includes general and professional knowledge; and basic study skills such as writing, communication, presenting ideas, self-study, teamwork and problem solving (Coates 2010). Kuh et al. (2006) argue that upon graduation students must develop skills in analyzing, synthesizing, evaluating information and critical thinking. These skills, according to Gray (2016), are highly appreciated by employers in the digital era. Besides students' knowledge and skills development, in higher education, student satisfaction is considered as an outcome (Coates, 2008). Not only does student satisfaction indicate the training quality of the university, it also has positive impact on students' learning and other outcomes (Coates, 2008). For first-year students, student's sense of belonging to the university plays an important role. A sense of belonging influences freshmen's intention to continue or drop out of school (Shcheglova et al., 2020). Kerby (2015) states that freshmen who have no intention of dropping out are more likely to consistently complete their coursework.

In this study, learning outcomes were measured by the students' knowledge and skills development, grades they achieved at the end of the first academic year, their satisfaction with their learning experience at IUH, and their sense of belonging. These four aspects were chosen because they were used to assess students' learning outcomes in some well-known surveys such as the NSSE and the Australian Student Experience Survey, the validity and reliability of which were verified and widely recognized (NSSE, 2021).

2.4. The influence of freshmen's adaptation on their learning outcomes

Prior international research into first-year students have established the correlations of their adaptation with their learning outcomes. For example, Collie et al. (2017) indicated an indirect link between first-year students' adaptation and the Grade Point Average (GPA) these students obtained at the end of Semester 1 and 2 of the first university academic year. Responses from 186 freshmen of a university in the West Midlands, United Kingdom showed that the level of their adaptation affected their behavioral engagement. Students who well adapted to university learning environment exhibited positive behaviors such as persistence in their study, good planning and task management. On the contrary, students who could not adjust to novelty and change at university may develop negative behaviors such as disengagement in their study and self handicapping. These negative behaviors inversely predicted students' GPA in Semester 1, which, in turn, positively predicted students' academic grades in Semester 2. Surprisingly, the findings of this research showed no correlations between positive behaviors and GPA (Collie et al., 2017). Freshmen's adaptation is also found to have links with their course satisfaction (Holliman et al., 2019; Zong et al., 2021) and their sense of university belonging (Yildirim, 2021). A survey conducted with the participation of 90 first-year Psychology students showed that the level of students' adaptability had a positive correlation with their course satisfaction (Holliman et al., 2019). The survey responses from 3,837 international freshmen in Germany indicated the relationship between their adaptation and the development of their sense of belonging to the university community (Yildirim, 2021).

Another outcome that is frequently mentioned in studies on first-year students is freshmen's dropout rates. The dropout rates of first-year students are always higher than that of other-year students. For example, in 2012, the dropout rates of first-year students at Australian universities were 19.5, twice as much as these of second-year students (Kirf, 2015). Freshmen account for 40% to 70% of students who cannot graduate within 4 to 6 years of initial enrolment (Kondratjeva et al., 2017; Zajac & Komendant-Brodowska, 2018). One of the reasons why some first-year students neither complete nor return to study in the following year is attributed to their unsuccessful adjustment to the new learning environment at university (Burns et al., 2017; Shcheglova et al., 2020). The effect of freshmen's adaptation has extended to their degree completion. The findings of a longitudinal investigation conducted in a UK university established an indirect relationship between freshmen's adaptation and their degree completion in which adaptation predicted negative behaviors (disengagement and self-handicapping), then these behaviors influenced students' degree completion (Holliman et al., 2018).

To sum up, adaptation is the positive self-adjustment first-year students make to correctly react to the new learning environment as well as to changes in their social life. First-year students' adaptation has positive relationships with some freshmen's learning outcomes such as GPA, satisfaction, sense of university belonging, dropout rates and degree completion.

3. RESEARCH METHODOLOGY

This study took the quantitative approach that enabled the researchers to collect huge amount of data from a large number of research participants and to generalize the research results to the whole research population. The research population comprised students of the 16th cohort who had just finished their first academic year at IUH. It was the time appropriate for them to reflect on their adaption and to evaluate learning outcomes they achieved from their study at IUH. The research participants comprised 898 IUH first-year students who were chosen by the convenience sampling method.

The development of the questionnaire was based on Vietnamese previous research surveys on first-year students' adaption (Pham, 2020; Trung and Minh, 2022; Viet, 2018) in combination with the researchers' knowledge and experience of teaching freshmen for many years. To reach the possible highest level of reliability and validity of the questionnaire, the researchers also conferred with some IUH senior lecturers and some specialists in Vietnamese higher education. A pilot test was conducted with 30 IUH first-year students to make sure that the meaning of all of the survey items was correctly understood.

Based on previous literature, a conceptual framework was developed for the present study that established the reciprocal relations between first-year students' pre-university understanding of university study and life, their academic and social adaptation and some outcomes they achieved from their study at IUH. Pre-university understanding of university study and life dealt with the amount of knowledge about academic regulations, learning and assessment methods, learning and extracurricular activities and life in HCM City freshmen possessed before enrolling in IUH. Academic adaption referred to freshmen's self-adjustment to make fits with different facets of university study, such as learning pace and intensity, teaching and assessment methods, course content, and self-study activities. Social adaption mentioned the levels at which students become accustomed to studying with many unknown classmates in big classes, interacting with IUH lecturers, contacting with IUH staff, and taking part in extracurricular activities. For students who did not live with their families, their social adaption was also measured by the degrees to which they became accustomed to living independently, living in Ho Chi Minh (HCM) City, and living with unknown people. Learning outcomes included students' grades, and their evaluation on their knowledge and skills development, satisfaction with their learning experience at IUH and their sense of belonging.

Data were collected by an online survey on Google Form carried out in August 2021. The survey links were sent to 16th cohort classes via email and Zalo. Students participated in the survey on a voluntary basis. The survey lasted for 2 weeks, then the survey responses were downloaded in form of an Excel file.

Statistical software SPSS 23.0 was operated to analyze the collected data. First, Cronbach's alpha coefficients were used to measure the reliability of the 4 scales: Pre-university understanding (PU), Academic adaptation (AA), Social adaptation (SA) and Knowledge and skill development (KSD). The Cronbach's alpha coefficients ranging from 0.877 to 0.953 showed that all the four scales were highly reliable for measurement. All corrected item-total correlation estimates were higher than 0.6, indicating that all of the observed variables are good enough for further analysis. The results of the reliability estimates were presented in Table 1.

Table 1: Reliability estimates of the scales

Scales	Observed variables	Cronbach's alpha	Corrected item-total correlation (ranging from to)
PU	PU1, PU2, PU3, PU4, PU5	0.877	0.645 – 0.784
AA	AA1, AA2, AA3, AA4, AA5, AA6	0.942	0.782 – 0.855
SA	SA1, SA2, SA3, SA4, SA5, SA6, SA7	0.878	0.624 – 0.726
KSD	KSD1, KSD2, KSD3, KSD4, KSD5, KSD6, KSD7, KSD8, KSD9, KSD10, KSD11	0.983	0.736 – 0.823

PU: Pre-university understanding; AA: Academic adaptation; SA: Social adaptation; KSD: Knowledge and skill development

Next an Exploratory Factor Analysis (EFA) was performed to discover the factor structure of the four scales and to investigate their internal reliability. The result of the EFA was displayed in Table 2. Kaiser-

Meyer-Olkin (KMO) Test = 0.947 (satisfying $0.55 \leq KMO \leq 1$), and Sig Bartlett's Test = 0.000 (<0.05) indicated good correlations between the observed variables.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.947
Bartlett's Test of Sphericity	Approx. Chi-Square	20935.859
	df	406
	Sig.	0.000

The Rotated Component Matrix (Table 3) showed that the 29 observed variables loaded on 4 factors. The values of all factor loadings were higher than 0.7, showing good correlations between the observed variables and the scales they belonged to.

Table 3: The Rotated Component Matrix

	Components			
	1	2	3	4
KSD6	0.856			
KSD4	0.844			
KSD7	0.838			
KSD8	0.830			
KSD9	0.825			
KSD10	0.818			
KSD3	0.792			
KSD11	0.783			
KSD1	0.765			
KSD5	0.762			
KSD2	0.725			
AA1		0.838		
AA2		0.822		
AA3		0.820		
AA4		0.790		
AA5		0.790		
AA6		0.759		
PU2			0.833	
PU3			0.830	
PU1			0.814	
PU4			0.783	
PU5			0.669	
SA2				0.752
SA3				0.742
SA4				0.715
SA1				0.624
SA7				0.843
SA5				0.834
SA6				0.752

Descriptive statistics (frequencies, percentages, and means) were performed to describe the

demographics of the sample and to get an overview of characteristic features of IUH first-year students' pre-university understanding of university study and life, and their academic and social adaption. Bivariate correlations were employed to evaluate the correlations of students' pre-university understanding, their academic and social adaption and some demographic characteristics as long as the correlations between students' academic and social adaptation and some learning outcomes.

4. RESULTS AND DISCUSSION

4.1. The sample's demographics

The sample comprised 898 IUH first-year students of which 43.7% (n=392) were males, 56.3% (n=506) were females. As regards academic disciplines, the sample was divided into 2 groups: Engineering and Business. Students majoring in Engineering constituted 39.9% (n= 359), the remaining 60.1% (n=539) composed of students who took Business as their majors. Over 70% of the sample had university-educated family members or relatives. The rest 30% were the first in their families to attend university who are supposed to encounter more difficulties than other students because of lacking helpful advice and support from their family members when facing problems at university (Baik et al., 2015).

4.2. IUH freshmen's pre- university understanding of university study and life

Students were asked to evaluate their understanding of academic regulations, learning methods, assessment methods, learning and extracurricular activities, and life in Ho Chi Minh City before enrolling in IUH. The amount of understanding of 5 aspects of university study and life was rated on a 4-point scale. Descriptive statistics were used to analyze data. The results are presented in Table 4.

Generally, IUH freshmen's pre-university understanding of different aspects of study and life at university were at a fair level. Of the examined aspects, students knew most about life at HCM City (accommodation, living cost, traffic) (M=2.79). Students had least information on assessment methods, and learning and extracurricular activities (M=2.58). Students' understanding about academic regulations and learning methods was a little better with M = 2.64 and 2.65, respectively.

Table 4: IUH freshmen's pre-university understanding of university study and life

The amount of understanding of	Mean (M)	Not at all		Little		Much		Very much	
		SL	%	SL	%	SL	%	SL	%
Assessment methods	2.58	86	9.6	342	38.1	334	37.2	136	15.1
Learning & extra curricular activities	2.58	86	9.6	354	39.4	312	34.7	146	16.3
Academic regulations	2.64	43	4.8	357	39.8	375	41.8	123	13.7
Learning methods	2.65	48	5.3	345	38.4	377	42.0	128	14.3
Life in HCM City	2.79	61	6.8	274	30.5	356	39.6	207	23.1

Table 4 showed that a very small percentage of the students (4.8% to 9.6%) had no knowledge of the aspects of university study and life. The majority of students (> 90%) looked for information on different facets of university study and life and had certain preparation for studying and living in a new environment. Students searched for these kinds of information mainly on the IUH official website and pages on social media (78.5% of the surveyed students), and different IUH student groups' pages on social media (48%). The others gained information from their friends (48%), family members and relatives (20.8%), and IUH alumni (19.2%). These results indicate that in the digital era, Internet and social media are becoming the most effective and useful tools for providing potential students with necessary information.

A point to note is that despite the high percentage of students seeking information on university study and life, the values of means of the indicators of students' pre-understanding were not high (ranging from 2.58 to 2.79). It can be explained by the fact that nearly 40% of the surveyed students had little knowledge of university life and study. This showed that many students themselves did not carry out thorough investigation into different facets of university learning. In addition, information on university study and life was not sufficiently provided on the IUH official website and social media pages.

The above-mentioned findings suggest that universities need to pay more attention to developing their websites and social media pages as well as improving the website and page content that offer much more information on university learning. This will increase their new students' understanding of study and life at university before enrolling to university, thus, help them quickly adapt to the new learning and living environment.

4.3. IUH freshmen's academic and social adaptation

4.3.1. IUH freshmen's academic adaptation

IUH first-year students' academic adaptation was evaluated by the levels of their adaptation to 6 facets, including learning pace and intensity, course content, teaching methods, assessment methods and self-study activities. The degrees of adaptation were measured by a 5-point scale in which 1= Totally unadapted and 5= Totally adapted. The result is showed in Table 5.

Table 5: IUH freshmen's academic adaptation

Aspects	Mean (M)	1		2		3		4		5	
		N	%	N	%	N	%	N	%	N	%
Learning pace	3.64	14	1.6	91	10.1	296	33.0	299	33.3	198	22.0
Learning intensity	3.64	14	1.6	92	10.2	292	32,5	308	34.3	192	21.4
Self-study activities	3.66	21	2.3	97	10.8	269	30.0	292	32.5	219	24.4
Teaching methods	3.71	11	1.2	76	8.5	272	30.3	341	38.0	198	22.0
Course content	3.72	14	1.6	65	7.2	284	31.6	328	36.5	207	23.1
Assessment methods	3.73	11	1.2	76	8.5	266	29.6	332	37.0	213	23.7

As showed in Table 5, IUH freshmen adapted to academic aspects at a decent level, ranging from 3.66 to 3.73. Students adapted best to assessment methods (M=3.73), curriculum (M=3.72), and teaching methods (M= 3.71). These results were consistent with the results of some studies on Vietnamese first-year academic adaptation (Hoa, 2012; Quynh, 2014). Student had more difficulties in adapting to self-study activities (M=3.66), learning pace and intensity (M=3.64). This was congruent with the findings of Thao et al. (2014) that indicated that students felt challenged in getting accustomed to learning pace and intensity in the first year at university. As Cuong (2018) explained, this happened because knowledge conveyed at university was in a larger amount and at a higher degree of difficulty than at school. To master the course contents, students had to invest lots of time and effort to self-study activities after class.

Students who were totally unadapted to the examined learning aspects accounted for a small percentage (<2.3%), while students who were totally adapted took proportions of 21.4% to 24.4%. Most of students academically adapted at moderate and quite good levels. These positive outcomes resulted from students' good preparation for university study as well as IUH's effort in helping new students getting accustomed to the learning environment at IUH.

4.3.2. IUH freshmen's social adaptation

First-year students' social adaptation was evaluated by the levels at which they adapted to studying in big classes with many unknown classmates, interacting with IUH lecturers, contacting with IUH staff, and taking part in extracurricular activities. For students who did not live with their families, their social adaptation was also measured by the degrees to which they became accustomed to living independently, living in Ho Chi Minh (HCM) City, and living with unknown people. Social adaptation was rated by the same 5-point scale as academic adaptation. The results are displayed in Table 6.

The degree of IUH freshmen's social adaptation was lower than that of their academic adaptation. Means of the seven examined aspects of their social life ranged from 3.20 to 3.50. Students felt the least challenged when studying in big classes with many unknown classmates (M=3.50). However, they adapted to

contacting with IUH staff to solve academic, administrative, and financial issues ($M=3.20$) at the lowest level. They also had difficulties in interacting with IUH lecturers ($M=3.33$). These troubles were also noted in some previous studies (Tu, 2020; Trung and Minh, 2020; Viet, 2018). This can be generated from the differences in the organizational structure, and in teaching and learning practices between school and university. At school, students talk to their homeroom teachers about their problems, therefore, they rarely contact directly with staff. Furthermore, universities have more line departments than schools. Moreover, because of big sizes of university classes, university lecturers have less frequent interactions with and less close relationships with their students than school teachers. IUH freshmen did not get well accustomed to participating in extracurricular activities organized at IUH ($M=3.23$). Students who are totally socially unadapted and socially unadapted made up from 16.6% to 28%, which was much higher than the percentages of freshmen who made low academic adaptation. The majority of students adapted to social aspects at moderate or fair levels. The data indicated that quite a lot of students needed the institution's care and support so that they could quickly become accustomed to their new life and new social relationships at university.

Students who did not live with their families, relatives or acquaintances made low adaptation to living with strangers ($M=3.52$), but they did not have lots of difficulties in leading an independent life ($M=3.76$) or living in Ho Chi Minh City ($M=3.70$).

Table 6: IUH freshmen's social adaptation

Aspects	Mean (M)	1		2		3		4		5	
		N	%	N	%	N	%	N	%	N	%
Contacting with IUH staff	3.20	68	7.6	179	19.9	289	32.2	225	25.1	137	15.3
Taking part in extracurricular activities	3.23	68	7.6	183	20.4	277	30.8	218	24.3	152	16.9
Interacting with lecturers	3.33	40	4.5	150	16.7	319	35.5	255	28.4	134	14.9
Studying in big classes	3.50	41	4.6	108	12.0	285	31.7	288	32.1	176	19.6
Living with unknown people	3.52	79	8.8	94	10.5	229	25.5	276	30.7	220	24.5
Living in HCM City	3.73	11	1.2	76	8.5	266	29.6	332	37.0	213	23.7
Living independently	3.76	33	3.7	72	8.0	222	24.7	323	36.0	248	27.6

4.4. Correlations of freshmen's pre-university understanding of university study and life and their academic and social adaptation

Bivariate correlations were performed to examine the relationships of freshmen's pre-university understanding of university study and life with their academic and social adaptation. Pearson Coefficients of these correlations are presented in Table 7.

Table 7: Correlations of freshmen's pre-university understanding of university study and life and academic and social adaptation

	Pre-university understanding	Academic adaptation	Social adaptation	Gender	Major	University educated relatives
Pre-university understanding	1	0.418**	0.435**	0.020	-0.020	0.010
Academic adaptation	0.418**	1	0.641**	0.056	-0.057	0.027
Social adaptation	0.435**	0.641**	1	0.006	-0.040	0.036

** = $p < 0.01$

As can be seen in Table 7, the correlations between freshmen's pre-university understanding and their academic and social adaptation were all positive and significant with p values of less than the 0.01 level.

Students' pre-university understanding had medium associations with their academic and social adaptation ($r = 0.418$ and 0.435 , respectively). This indicated that the more knowledge of university study and life students acquired, the better they adapted both academically and socially. This finding resonated with the results of some previous studies (Pham, 2020; Vasconcelos and Almeida 2018) that established the relationship between first-year students' pre-university knowledge and their adaptation. The coefficient ($r = 0.641$) showed a strong relationship between freshmen's academic adaptation and social adaptation. This meant that students who well adapted to the new learning environment made good adjustment in their new social life, and vice versa. Difficulties students met in social life could have some negative effects on their study. Therefore, institutions should have programs and activities to help freshmen adapt not only academically but socially. Freshmen's demographic characteristics had no correlations with their academic and social adaptation.

4.5. Correlations of freshmen's pre-university understanding of university study and life, their academic and social adaptation and some student outcomes

The study examined the correlations between freshmen's adaptation and outcomes they gained from their first year learning experience at IUH. The outcomes assessed in the study included students' knowledge and skills development, grades they achieved at the end of the first academic year, their satisfaction with their learning experience at IUH, and their sense of belonging. Bivariate correlations were computed to explore how freshmen's pre-university understanding, academic and social adaptation were correlated with their learning outcomes. The results of the analysis are showed in Table 8.

Table 8: Correlations of freshmen's pre-university understanding of university study and life, their academic and social adaptation and some student outcomes

Learning outcomes	Knowledge & skills development	Grades	Satisfaction	Sense of belonging
Factors				
Pre-university knowledge	0.306**	0.133**	0.228**	0.186**
Academic adaptation	0.459**	0.121**	0.345**	0.243**
Social adaptation	0.424**	0.093**	0.263**	0.240**
Gender	0.094**	0.272**	0.055	0.108**
Major	-0.060	-0.200**	-0.059	-0.032
University-educated relatives	0.093**	0.049	0.086**	0.119**

** = $p < 0.01$

Data in Table 8 indicated that students' pre-university knowledge of university study and life, academic and social adaptation were statistically significantly, positively correlated with all examined learning outcomes with p values of less than the 0.01 level. Of the three adaptation variables, academic adaptation had the strongest relations with learning outcomes, while pre-university understanding of university study and life had the weakest. Adaptation variables had biggest effects on students' knowledge and skills development (r ranged from 0.306 to 0.459), but had weakest relationships with students' grades ($r = 0.093$ to 0.133). The data showed that the better students adapted academically and socially in the first year at university, the better they developed their knowledge and skills, the more satisfied they felt with their learning experience, and the stronger sense of belonging they had. These results were consistent with the findings of previous studies on the relationships between freshmen's adaptation and their learning outcomes (Holliman et al., 2019; Yildirim, 2021; Zong et al., 2021). The current study established direct effect between adaptation variables and grades. This was not congruent with the findings of Collie et al.'s study (2017) which indicated indirect effect of freshmen' adaptation on their grades. According to Collie et al. (2017), adaptation affected freshmen's negative behaviors that, in turn, predicted their grades. Despite the

direct impact of freshmen's adaptation on their grades, the Pearson coefficient ranging from 0.093 to 0.133 showed very weak correlations.

A closer look at the data revealed weak to moderate correlations between the adaptation variables and the examined learning outcomes with all Pearson coefficients ranging from 0.093 to 0.459. This pointed out that besides adaptation, there were many other factors that affected first-year students' learning outcomes. Previous studies, both international and Vietnamese, indentified some factors, including student engagement (Kuh, 2006; Pascarella and Terenzini, 2005), students' academic effort (Nguyen, 2016); student learning experience (Trang et al., 2023), students' motivation, lecturers' teaching quality and the university's conditions (Le et al., 2020), and institutional teaching and supporting practices (Nguyen, 2016).

Freshmen' demographic characteristics had weak correlations with learning outcomes. Students' gender and major had weak associations with grades ($r = 0.272$ and -0.200 , respectively), which meant females got higher grades than males, and students majoring in Business achieved better results than Engineering students. Female freshmen developed knowledge and skills better ($r = 0.094$) and had stronger sense of belonging than their male peers ($r = 0.108$), but the effect of gender on these two outcomes was too small. Students who had university educated family members or relatives were more satisfied with their learning experience ($r=0.086$), developed larger knowledge and skills ($r= 0.094$), and displayed better sense of belonging ($r=0.119$). However, like gender, the associations of this feature with learning outcomes were minor.

5. CONCLUSION AND SUGGESTIONS

The main aims of the current study were to investigate IUH first-year students' pre-university understanding of university study and life, their academic and social adaption, and the correlations of their understanding and adaption with their learning outcomes. The research results showed that IUH freshmen had a fair level of understanding of university study and life before attending IUH. They adapted to new aspects in the IUH learning environment and their social life at moderate levels. The research findings also indicated statistically significant positive relationships of students' pre-university understanding of university study and life and their academic and social adaptation with some learning outcomes they had from their learning experience at IUH. Based on the research results, some suggestions for enhancing first-year students' adaptation were put forward as follows:

Firstly, because pre-university knowledge of study and life exerted a positive effect on freshmen's adaptation and learning outcomes, Vietnamese universities and IUH, in particular, should offer their potential students with much more relevant information on different aspects of university study and life through various mass media, among which university websites and social media pages seem the most effective. The more students know about university study and life, the more quickly they adapt to the new learning environment and life, thus, the better learning outcomes they achieve.

Secondly, IUH should develop diverse academic support programs for first-year students right after their enrolment in IUH to help them quickly adapt to the learning environment at IUH. These programs may include orientation activities introducing students to course curriculum, university regulations and standards, and teaching, learning, and assessment methods at university; workshops on academic basic skills (writing, speaking, self-studying, and time managing...); and a consulting system operated in various communication media (face to face, on the phone, or through IUH websites and social media) and conducted by enthusiastic and devoted lecturers or senior students who give timely and correct advice to students having academic problems.

Lastly, as showed in the research findings, IUH freshmen encountered some problems when making social adaptation, while social adaptation had a strong relationship with academic adaption and statistically significantly and positively correlated with some learning outcomes. This suggests that IUH should pay more attention to enhancing first-year students' social adaption. Students found the most difficult when interacting with teaching and professional staff. IUH can address this issue through organizing various in-class and out-of-class activities that offer students more chances to work and communicate with lecturers and staff, and creating a better learning environment in which teaching and professional staff adopt friendlier attitudes towards students, readily support and timely respond to their needs.

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**SỰ THÍCH ỨNG CỦA SINH VIÊN NĂM THỨ NHẤT VÀ MỐI TƯƠNG QUAN CỦA
NÓ VỚI MỘT SỐ KẾT QUẢ HỌC TẬP CỦA SINH VIÊN — MỘT NGHIÊN CỨU
TRƯỜNG HỢP TẠI TRƯỜNG ĐẠI HỌC CÔNG NGHIỆP
THÀNH PHỐ HỒ CHÍ MINH**

NGUYỄN THỊ THU TRANG^{1*}, ĐÀO THỊ NGUYỆT ÁNH², NGUYỄN THỊ NGỌC ĐIệp³,
LÝ THANH BÌNH⁴, PHẠM THỊ OANH⁵, ĐỖ THỊ THÌN⁶

^{1, 2, 3, 4, 5, 6} Khoa Khoa học Cơ bản, Trường Đại học Công nghiệp TP. HCM

*Tác giả liên hệ: nguyenthithutrang@iuh.edu.vn

Tóm lược. Nghiên cứu điều tra về sự thích ứng trong học tập và đời sống xã hội của sinh viên năm thứ nhất trường Đại học Công nghiệp TP. HCM và kiểm tra mối tương quan giữa sự thích ứng và một số kết quả học tập của sinh viên bao gồm sự phát triển về kiến thức và kỹ năng, điểm số, sự hài lòng và cảm giác gắn bó. Dữ liệu được thu thập từ một cuộc khảo sát trực tuyến với sự tham gia của 898 sinh viên năm nhất IUH cho thấy trước khi nhập học, sinh viên có hiểu biết ở mức khá về học tập và đời sống ở bậc đại học và thích ứng ở mức trung bình đối với những thay đổi và điều mới lạ trong học tập và đời sống. Nghiên cứu cho thấy sự hiểu biết trước khi nhập học về học tập và đời sống, sự thích ứng trong học tập và sự thích ứng trong đời sống xã hội của sinh viên năm nhất có mối tương quan tích cực và có ý nghĩa về mặt thống kê. Sự thích ứng trong học tập và sự thích ứng trong đời sống có mối tương quan mạnh. Nghiên cứu cũng thiết lập được mối tương quan tích cực giữa sự hiểu biết trước khi nhập học, thích ứng trong học tập, thích ứng trong đời sống của sinh viên năm nhất đối với các kết quả học tập được kiểm tra trong nghiên cứu. Các biến số này có ảnh hưởng lớn nhất đối với sự phát triển về kiến thức và kỹ năng của sinh viên, nhưng có ảnh hưởng thấp nhất đối với điểm số của sinh viên. Trong số các biến số thích ứng, sự thích ứng trong học tập có tương quan mạnh nhất đối với các kết quả học tập được quan sát trong nghiên cứu. Dựa trên các kết quả nghiên cứu, một số khuyến nghị đã được đề xuất nhằm cải thiện sự thích ứng của sinh viên năm nhất, qua đó, nâng cao kết quả học tập của họ.

Keywords. Thích ứng trong học tập, thích ứng trong đời sống xã hội, sinh viên năm thứ nhất, kết quả học tập, sự hiểu biết của sinh viên trước khi nhập học về học tập và đời sống ở bậc đại học.

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