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Pattern of Out-of-Class Activities of Korean University Students: Latent Profile Analysis

Sang Hoon Bae, Soo Jeong Hwang, Bo Kyoung Byun

Abstract: This study examined how HIP participation patterns differ among students in different Korean universities. Moreover, this study explored whether there is an association between the likelihood of a student belonging to a specific group and their individual characteristics along with their university's supportive campus environment. This study analyzed the data from the 2019 wave of the Korean-NSSE (National Survey of Student Engagement), and the samples included 12,784 college seniors from 112 institutions. Furthermore, it employed latent profile analysis and multinomial logistic regression. As a result, this research identifies five distinctive HIP participation patterns. Family income and student-faculty interaction levels determine which group a student belongs to. For example, economically disadvantaged students tend to belong to a group with lower participation in study abroad programs. Finally, the supportive campus environment was strongly associated with being a member of actively participating groups compared to being in a less engaged group.

Keywords: high impact practices, pattern, Korean University, latent profile analysis

Introduction

A great educational philosopher, John Dewey (1938), emphasized that students' diverse experiences are a source of growth and development. He stated that it is the educators' responsibility to guide students on the path of growth by designing and offering educationally purposeful programs and activities that could enhance the change and growth of children and youth as well as by continuously interacting with them throughout the experiences. These experiences can be largely divided into two categories: regular class-based learning and out-of-class activities, which are termed "extended education."

Unlike high school, college students have a wide range of educational opportunities and participate in various activities while in college, and these experiences may either be on or off campus. Based on the purpose and focus of activities, researchers classify these experiences as either academic or social experiences. Previous studies have found an intimate relationship between participation in these experiences and institutional commitment, academic persistence, learning outcomes, and socio-emotional development of the students (Tinto, 1993; Pascallera, 1985; Weidman, 1989). Kuh (2008), supported by American Colleges and Universities (AAC&U), investigated and classified various cases to identify programs and activities that positively influenced the change and growth of the students. Additionally, he created the term "high impact practices (HIPs)" that involved various programs, including freshman seminars, liberal arts programs, learning communities, intensive writing, collaborative learning projects, undergraduate research, global learning experiences, service learning, internships, and capstone projects (Kuh, 2008).

Meanwhile, educational experiences can also be categorized into two types based on their goals and whether participation is mandatory. The first type is the regular class-based learning, which is required to complete and graduate from a degree program. In this case, students must follow the so-called “curriculum” or “coursework,” which is designed and taught by universities and professors. The other type involves educational programs and activities that students voluntarily attend to satisfy their interests, for their career development, and personal growth. This second type differs from the first in that it is based on a student’s choice, and not on graduation or credit grant conditions.

These out-of-class activities, which are not part of regular classes to develop domain knowledge and skills, are gaining increased popularity among Korean higher education institutions (Kim, 2018). It is believed that they contribute to promoting educational accountability as they actively respond to the increasingly diverse needs of students. In addition, some extended education programs are widely offered to develop students’ core competencies (Baek & Jeong, 2012; Lunenburg, 2010). Recently, out-of-class activities, such as internships and global programs, have often been transformed into regular courses. Finally, increasingly intensified competitions for student recruitment, which is due to a dramatic decrease in the school-age population, has forced universities to provide these attractive programs as a survival strategy.

However, some universities are known for not being active in offering extra-curricular programs, but rather emphasizing more on regular classes that, albeit not substantiated, are considered effective in enhancing employment opportunities (Son, 2021).

Due to declining tuition income associated with a sharp decline in the school-age population, it also seems true that universities impose fiscal austerities to overcome financial hardships. Therefore, it becomes difficult to provide a variety of programs that students want (Unipress, 2021).

Furthermore, the high cost of some programs may limit the participation of low-income students. In addition, it can be challenging for self-sponsored students who have to work in order to pay for tuition and living expenses to attend the programs they want to participate in (Kim, Lee, & Lee, 2007).

Finally, due to limited time, even students without financial challenges may have to face a situation where they have to cautiously choose programs and activities to participate in.

Taken together, there may be significant disparities in student participation in HIPs. Additionally, the difference may appear in students’ choice of activities in which they will invest their time and effort. Finally, these differences can lead to a gap in student outcomes. From the perspective of educational opportunities and equality, therefore, careful analysis of who participates in which programs and appropriate policy efforts to resolve problems, if any, are required. To this end, it is necessary to explore the patterns of students’ participation in extracurricular activities and empirically analyze factors that inhibit or promote students’ participation.

This study’s purpose is twofold. First, the study investigated whether differences exist in the participation pattern in HIPs among different student groups. In this regard, special attention is given to six HIPs: learning community, service learning, study abroad, research with the faculty, culminating experiences, internships, and field experiences. Second, this study examined whether there was a relationship between the HIP participation pattern and the student’s personal background information, such as gender, family income, major, and the level of interaction with the faculty. In addition, the study investigated whether the pattern is

associated with the institutional characteristics of the university they attend. This study, among others, focused on the “supportive campus environment,” which is measured by assessing the institution’s efforts toward student success. A predictor of “supportive campus environment” shows the degree of the universities’ concern for the growth and development of the students and their educational investment for student success.

This study’s results would offer insights and implications for those who want to promote provision of HIP and enhance its effectiveness. In addition, they would provide policymakers with information for enhancing educational equality in the higher education setting.

Literature Review

High Impact Practices and Student Outcomes

This study focuses on six HIPs that influence student outcomes in the Korean context. The definitions of each practice and their relationships to various student outcomes are presented below.

Participation in learning communities is one of the most popular activities that provide groups of students with a collaborative learning experience. As part of coursework or out-of-class programs, this activity is commonly conducted as a group or team project. Particularly, these experiences are significant to the student’s growth and development when they are structured in a way that promotes active and frequent interactions while spending a significant amount of time working together on educational programs and activities. Previous research has discovered that participation in learning communities results in a variety of aspects of participants’ cognitive and socio-emotional development, such as an increase in critical and higher-order thinking skills (Inkelas et al., 2006), academic performance (Zhao & Kuh, 2004), openness to diversity and intercultural effectiveness (Cabrera et al., 2002), and academic and social integration (Stassen, 2003). These findings were also broadly consistent in the context of Korean higher education (Byoun, 2019; Kang & Kim, 2012).

Service learning is, in some sense, similar to community volunteer work; however, it differs in that service learning is structured as a credit-earning course and overseen by a professor from the participating student’s institution. Furthermore, it is crucial to note that service learning as a HIP helps provide students with the opportunities to apply in a real world—particularly in a problem-solving setting—subject knowledge that they have acquired in classes. It has encouraged students to systematically reflect on their community service (Kuh, 2008). Studies have revealed that participation in community-based service learning helps promote personal and interpersonal development (Engberg & Fox, 2011), civic engagement (Simons & Cleary, 2006), academic motivation, and self-efficacy of participants (Kim & Ryu, 2008).

Studying abroad has long been regarded as an important opportunity for Korean students to broaden their college experience in a global context. This study only considers study abroad experiences that are at least six months in length, such as student exchange programs and dual degree programs. Several studies indicate that study abroad programs help students better understand global issues and apply disciplinary knowledge in a global context (Stebleton et al., 2013). Studies conducted in Korea also show that studying abroad develops in students an

improved openness toward diversity (Lee & Byun, 2015) and acquisition of foreign language fluency (Jon et al., 2017). In addition, Woolf (2008) posits that the positive outcomes of study abroad experiences are further reinforced when they are done in tandem with experiential or community-based learning.

Research with faculty as a HIP includes undertaking an individual student research project under faculty supervision and participating in a research project that is conducted by the faculty member. In the past, such experiences were usually limited to students majoring in science and engineering. However, in recent years, higher education institutions have increasingly provided undergraduate research opportunities to students across diverse fields (Kuh, 2008). Studies examining the effects of these experiences reveal a positive relation between undergraduate research and enhanced critical thinking skills (Kilgo et al., 2015). Moreover, it has been revealed that such experiences, while increasing student interaction with faculty and clarifying individual research interests, contribute to college persistence and the pursuit of graduate studies (Jones et al., 2010). Finally, these experiences particularly benefit at-risk students (Kuh, 2008).

Culminating experience activity requires students who are almost graduating to engage in educational programs, such as graduation exhibits, portfolio of college achievements, and capstone design, which enable them to integrate and apply in a problem-solving setting the subject knowledge they have learned in college. According to Byoun (2019), these activities are largely positively associated with integrating knowledge, developing effective reasoning, and improving problem solving skills in the Korean context. Conversely, results from the U.S. context are somewhat mixed. Kilgo et al. (2015), for example, established that participation in capstone design courses and experiences was, in fact, a negative predictor of critical thinking. In this sense, future research on how participating in the program impacts student development must consider differences in how each capstone experience is designed and implemented.

Finally, internship or field experience includes diverse forms of experiential learning, including internships in general as well as participation in industrial collaboration programs and practical training. These activities provide students with opportunities to expand and apply their classroom knowledge to a real-world setting; hence, they promote participants' cognitive and career-related development (O'Neill, 2010). Fewer studies have been conducted on the effects of internships in the Korean context, with small-scale qualitative studies supporting findings from studies conducted in the broader international context (Kim, 2016).

Predictors of HIP participation

While the literature has well suggested the educational outcomes of HIPs for the general student populace, it also notes that these activities are particularly beneficial for at-risk students. Therefore, it is problematic that these students seem to participate least in HIPs (Finley & McNair, 2013), for example, low-income students participate much less frequently in HIPs. Partly, this may be because such students have to balance both their studies and work; therefore, other than those required by coursework, they spend less time and effort on HIPs (Kilgo et al., 2015). First-generation college students and low achievers also participate less in these educationally purposeful activities because such students are unable to receive appropriate mentoring from their parents regarding programs they need to take advantage of during

college. Moreover, such students tend to distance themselves from extracurricular activities offered in their institutions due to a lack of college involvement (Bae et al., 2018; Walpole, 2003).

Participation in a variety of different extracurricular activities has also been found to differ across gender as well as college majors. For example, in terms of participation in study abroad experiences, the literature suggests a strikingly persistent gender gap (Redden, 2008), with the proportion of female to male U.S. students participating in study abroad programs being approximately 2:1 for the past 15 years (Institute of International Education, 2014). One explanation for this phenomenon is that women tend to major in the humanities and social sciences, which often encourage and facilitate study abroad experiences. Consequently, women, compared to their male peers, are more likely to participate in study abroad experiences (Hurst, 2019). Nevertheless, gender gaps in extracurricular participation are not restricted to participation in study abroad programs. For example, when Chachra et al. (2009) investigated gender differences in extracurricular activity participation among engineering students, they discovered that, female students, compared to their male counterparts, participated more in both engineering-and non-engineering related extracurricular activities.

Student-faculty interaction is another predictor of participation in HIPs. Focus group studies conducted on students from U.S. higher education institutions report that when asked what most influenced their decision to seek out and participate in high-impact activities, students consistently mentioned advice and guidance regarding these activities and reasons for their importance (Finley & McNair, 2013). Students expressed the importance of maintaining relationships with professors who were concerned about their learning and engagement, while stressing that they often proved to be the ones with the most information on what could contribute to the student's college experience (Finley & McNair, 2013). This literature, taken together, suggests that the participation pattern in educationally beneficial HIPs may differ among students from different backgrounds and may be stratified based on student and institutional-level characteristics.

Methods

Data

This study analyzed the data from the 2019 wave of the Korean-National Survey of Student Engagement (K-NSSE). K-NSSE is a national-scale, multi-institutional survey that measures student engagement in educationally purposeful activities; it was developed based on the U.S. National Survey of Student Engagement (NSSE) and has been validated to fit the Korean higher education context. K-NSSE includes items that measure student participation in HIPs and demographic information of students. For Korean higher education institutions that wish to participate, it is conducted every year from September to October and administered to full-time enrolled students. Because each institution decides whether to participate in the survey, K-NSSE does not comprise a nationally representative sample. However, in terms of size and region, the institutional composition of the K-NSSE data is close to that of all Korean universities.

The sample includes 12,784 college seniors emanating from 112 institutions. Table 1 shows the sample characteristics. In terms of gender, approximately 40% of the sample were

male. Regarding monthly incomes, approximately 11% of students in the sample came from families who earned over 8,000,000 Korean Won (approximately USD 66,000). Lastly, in terms of the field of study, the highest proportion of students in the sample were majoring in social sciences (26.8%), followed by natural sciences (23.9%), engineering (23.1%), humanities (10.4%), arts and athletics (8.8%), and education (7%).

Table 1. Sample Description

	<i>n</i>	%
Gender		
Male	5,218	40.8
Female	7,566	59.2
Family income (10,000 KRW)		
Below 100	482	3.8
100 – 199	1,035	8.1
200 – 299	2,078	16.3
300 – 399	2,494	19.5
400 – 499	2,059	16.1
500 – 599	1,711	13.4
600 – 699	903	7.1
700 – 799	549	4.3
Over 800	1,473	11.5
Field of study		
Humanities	1,332	10.4
Social sciences	3,428	26.8
Education	890	7.0
Engineering	2,953	23.1
Natural sciences	3,051	23.9
Arts & Athletics	1,130	8.8
Total	12,784	100.0

Variables and Measurement

Observed Variables

During the semester prior to taking the K-NSSE survey, observed variables were self-reported measures of participation in the following six HIPs: learning community, service learning/community-based learning, study abroad, research with faculty, culminating experiences, and internships/field experiences. On a 4-point Likert scale that ranges from 0 to 60 (rarely = 0, somewhat = 20, considerably = 40, very frequently = 60), the level of participation in each activity was measured.

Predictors

The predictors in this study include student-and institution-level variables highlighted by previous studies to be related to students' participation in HIPs. Student-level variables in-

clude gender, the field of study, monthly family income, and the level of student-faculty interaction. An institution-level predictor is the degree to which the institution provides programs that support students' learning and campus life. This institutional-level variable was named "supportive campus environment." The inclusion of this variable as an institution-level predictor is supported by the fact that students' participation in HIPs is closely related to educational investment and universities' related efforts for student success. On a 4-point Likert scale, ranging from 0 to 60 (rarely = 0, somewhat = 20, considerably = 40, very frequently = 60), we measured the variable of supportive campus environment by asking the students to rate how well the university provided each of the ten different programs.

Table 2. Predictor Variables

Variable	Items	Cronbach's α
Student-level		
Gender	Male = 1, Female = 0	
Major field*		
Social sciences	Social sciences = 1, No = 0	
Education	Education = 1, No = 0	
Engineering	Engineering = 1, No = 0	
Natural sciences	Natural sciences = 1, No = 0	
Arts & athletics	Arts & athletics = 1, No = 0	
Family income (KRW)**	Below 1 M KRW = 1 ~ More than 8 M KRW = 9	
Student-faculty inter- action	Discussed career plans with professors Worked with professors on other activities other than course- work Discussed course topics, ideas, or concepts with professors outside of class Discussed academic performance with professors (Never = 0, Sometimes = 20, Often = 40, Very often = 60)	.833

Institution-level	To what degree has your institution encouraged you to participate in the following activities:	
Supportive campus environment	Attending learning support services, Encouraging contacts among students from different backgrounds, Providing opportunities for social involvement, Helping you manage your non-academic responsibilities, Attending campus activities and events, Attending events that address important social, economic, or political issues, Supporting student club activities, Providing support for your overall well-being, Providing financial support for academic activities, Using career services (career advising /counseling, career information, employment services) (Rarely = 0, Somewhat = 20, Considerably = 40, Very frequently = 60)	.923

* Humanities is the reference group.

** Monthly Family income.

Analytic Strategies

Latent Profile Analysis

This study employed latent profile analysis (LPA) to investigate whether there are differences in the pattern of HIP participation among student groups (research question 1). LPA is a statistical approach that extracts unobserved groups from observed individual data; in terms of participation in each program, it assumes that latent groups have different probability distributions. Moreover, it is assumed that each group is mutually exclusive (Terry et al., 2006). Unlike cluster and discriminant analysis, LPA has a lower risk of classification errors, as it uses probabilities estimated by the maximum likelihood method.

The normal distribution assumption should be met within each latent class to conduct LPA (Oberski, 2016). However, HIP participation data has too many zeros, meaning it is highly skewed. Therefore, this study used the robust maximum likelihood (MLR) estimator to deal with the non-normality problem. Because MLR provides standard errors and a χ^2 test statistic that is robust to the non-normality situation, it is less affected by outliers than the maximum likelihood (Wang & Wang, 2019).

For assessment of the goodness-of-fit of the model, the study examined model fit statistics and indices (Wang & Wang, 2019). This process was repeated starting with two groups and then increasing to five groups. To gauge the best-fitting model, the following statistics and indices were checked: the Akaike Information Criteria (AIC), Bayesian Information Criterion (BIC), sample-size adjusted BIC (saBIC), Vuong-Lo-Mendell- Rubin likelihood-ratio test (LMR), the bootstrap likelihood ratio test (BLRT), and the level of entropy. The AIC, BIC, and saBIC indices suggest that the lowest values are the best models (Nylund, Asparouhov, & Muthén, 2007). The LMR and BLRT compare k and $k - 1$ class models based on the likelihood difference. If the p value is less than .05, it indicates that k class model is better than

$k - 1$ class model (Lo, Mendell, & Rubin, 2001). BLRT follows the same rationale as LMR. According to simulation studies (Nylund et al., 2007), however, it is found to be more accurate than LMR. The entropy is an index indicating the quality of class membership classification. It has a value between 0 and 1. A value closer to 1 indicates that the class is more accurate in its classification (Nylund et al., 2007; Wang & Wang, 2019). Beyond these indices, the study considered the size of the classes. Suppose any given class size is too small, then the classification is not the best model because of low statistical power (Type 2 error). Tein et al. (2013) suggest that any class should include at least 1% of the sample or 25 cases. Lastly, the interpretability and theoretical framework of the model were considered. Mplus 8.0 was used for the above analysis.

Multinomial Logistic Regression

This study conducted multinomial logistic regression to determine how the likelihood of being classified in each identified latent class is associated with the individual backgrounds of the students and the institutional characteristics of the university they attend (research question 2). It helps investigate the impact of an independent variable on the odds ratio of the observed event of interest—in this study, student membership of a particular group. All variables had no missing observations. The study used robust standard errors to correct for possible design effects. Specifically, this study used the sandwich estimator of variance, which is robust to possible types of model misspecification as long as observations are independent (White, 1980). SPSS 23.0 was used for the above analysis.

Limitations

The sample consists of college seniors at four-year universities in Korea and is drawn from a non-representative sample of institutions across the country. Therefore, special caution is necessary to interpret and generalize these findings to a broader population. Additionally, the data used in this study measures participation in HIPs through self-reported measures during the prior semester. It may thus be argued that this study does not present precise estimates of student HIP participation. Finally, this study used LPA. While this method has advantages over traditional clustering methods, it has drawbacks in identifying rare groups. Therefore, it can be noted that this study may overlook some rare HIP participation patterns.

Results

Patterns of HIP participation: Latent profile analysis results

LPA results are presented in Table 3, which shows model fit statistics and indices, including AIC, BIC, saBIC, LMR, BLRT, and entropy. As shown in the Table 2, AIC, BIC, and saBIC indices decreased as the number of classes increased. Model 6 presented the lowest value. The LMR test indicated that Model 5 was better than Model 4, but Model 6 did not improve upon Model 5. The BLRT value was less than 0.05 in all models, meaning the BLRT did not indicate a better fit. However, Model 5 had the highest level of entropy. At least 1% of the

sample had a classification ratio of Model 5. Based on all these criteria, the study finally selected Model 5.

Table 3. Data Fit for All Models

Models	AIC	BIC	saBIC	LMR	BLRT	Entropy
2	661574.0	661715.7	661655.3	0.000	0.000	0.871
3	657357.1	657550.9	657468.3	0.000	0.000	0.809
4	652521.0	652767.1	652662.2	0.000	0.000	0.860
5	646026.7	646324.9	646197.8	0.000	0.000	0.941
6	642919.6	643270.0	643120.7	0.433	0.000	0.935

Note. LMR = Vuong-Lo-Mendell-Rubin likelihood-ratio test; BLRT = bootstrap likelihood ratio test.

Figure 1 presents the item profile plot for Model 5. It shows five distinctive student groups in terms of HIP participation. The first class consisted of students who participated most in “study abroad experiences” above all other HIPs and was named the “outgoers.” This group of students took up 6% of the study sample.

The second class included students with moderate-level participation across all forms of HIPs. This group was named the “ordinaries.” It comprised 17% of the study sample.

The third class refers to those students who participated the least in all the HIPs. These students were named the “less-engaged.” Interestingly, this group was the majority, accounting for 36.5% of the study sample. The findings show that Korean students still pay little attention to activities outside traditional, regular classes.

The fourth class comprised students who showed the highest participation across all HIPs. The study named this group of students the “maximizers.” This group took up about 18% of the sample. They can be called intelligent students who tend to choose the best prize by making the most of the programs and activities offered by the university.

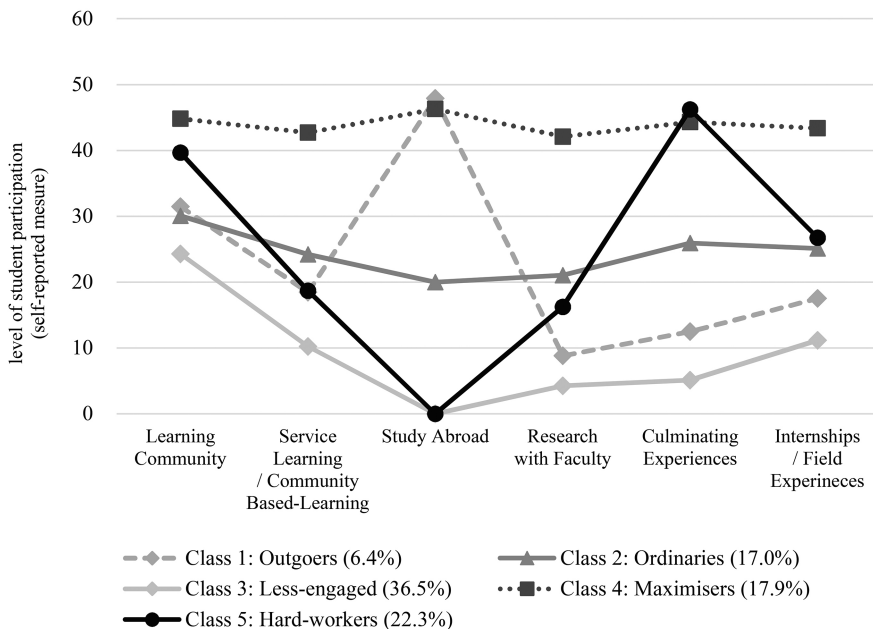
Finally, the fifth class generally showed higher participation levels in all HIPs except “study abroad.” Particularly, this group had the lowest participation in terms of study abroad experiences. This group was named the “hard-workers” because they tended to actively attend various programs, except study abroad, which involves considerable costs. These students accounted for 22% of the study sample. This group stands in stark contrast to the group of “outgoers” in terms of participation in domestic and international HIPs.

Multinomial Logistic Regression

Table 4 presents the coefficients and odds ratios from multinomial logistic regression. They predict the likelihood of students falling into Classes 1 (outgoers), 2 (ordinaries), 4 (maximizers), or 5 (hard-workers) as opposed to Class 3 (less-engaged), which is the majority group and thus is used as the reference group.

After controlling for other factors, Class 1 students (outgoers) were more likely than their Class 3 counterparts to come from more affluent families and were more likely to have experienced a higher level of student-faculty interaction. In terms of gender, there tend to be

Figure 1. Item Profile Plot of Model 5



more females than males. Furthermore, net of other factors, humanities majors were more likely than other majors to belong to this group compared to Class 3 students. Finally, after controlling for other factors, being a Class 1 student was not related to the supportive campus environment of the university attended by the students.

Net of other characteristics and relative to the Class 3 reference group, the gender and family income predictors were not related to being in Class 2 (ordinaries). Conversely, the level of student-faculty interaction was related to being in Class 2 rather than Class 3. Being in Class 2, compared to Class 3, was not related to the supportive campus environments experienced by students after controlling for other factors.

Male students were more likely than their female peers to be Class 4 (maximizers) relative to Class 3, after controlling for other factors. Students from wealthier families and students with more frequent student-faculty interaction exhibited a higher likelihood of being classified in group 4 instead of group 3. Students who majored in engineering, natural sciences, and arts and athletics, compared to those who majored in humanities, were more likely to belong to Class 4 rather than Class 3. Regarding the institution-level predictor, being in Class 4 rather than Class 3 was strongly related to the variable of supportive campus environment.

After controlling for other factors, female students, compared to their male peers and students who had experienced higher levels of student-faculty interaction, were more likely to be in Class 5 (hard-workers) relative to the reference group (class 3). All other majors were more likely than the humanities to be in Class 5 (outgoers) than in Class 3.

Finally, the supportive campus environments, which is the degree to which universities provide student success programs to help students in terms of learning mentoring, career

guidance, scholarships, and supporting out-of-class activities, was strongly associated with being in Classes 4 (maximizers) and 5 (hard-workers) rather than in Class 3.

Table 4. Multinomial Logistic Regression Predicting Latent Class Membership (ref: Class 3)

	Class 1 (n=817)		Class 2 (n=2,170)		Class 4 (n=4,663)		Class 5 (n=2,849)	
	B (SE)	Exp (B)	B (SE)	Exp (B)	B (SE)	Exp (B)	B (SE)	Exp (B)
Student-Level Factors								
Male (ref: Female)	-.28 (.02)	.76**	.11 (.06)	1.11	.21 (.06)	1.24**	-.23 (.06)	.79***
Major field (ref: Humanities)								
Social sciences	-1.19 (.10)	.30***	-.20 (.10)	.82*	-.05 (.11)	.95	.45 (.12)	1.57***
Education	-1.71 (.19)	.18***	-.20 (.13)	.82	.08 (.14)	1.08	.73 (.15)	2.08***
Engineering	1.23 (.14)	.29***	.63 (.10)	1.88***	.94 (.12)	2.56***	2.21 (.12)	9.08***
Natural sciences	-1.81 (.13)	.16***	.18 (.10)	1.20	.39 (.11)	1.48***	1.30 (.12)	3.66***
Arts & Athletics	-1.19 (.18)	.30***	.74 (.12)	2.10***	.73 (.14)	2.08***	1.91 (.14)	6.76***
Family income (KRW)	.10 (.02)	1.11***	.02 (.01)	1.02	.04 (.01)	1.04**	.01 (.01)	1.01
Student-faculty interaction	.02 (.00)	1.02***	.04 (.00)	1.04***	.09 (.00)	1.10***	.05 (.00)	1.05***
Institutional-Level Factors								
Supportive college atmosphere (within-institution average)	.01 (.01)	1.01	-.01 (.01)	.99	.04 (.01)	1.04***	.03 (.01)	1.03***

Discussion and Implications

This study examined how students’ participation patterns differ for the six HIPs, which have been found to possess educationally positive effects in Korean universities. LPA was used in the study; this is a statistical approach that extracts unobserved groups from observed individual data.

In addition, this study explored whether the likelihood of a student belonging to a particular group is associated with their demographic characteristics, family background, academic and social life in campus, and the supportive campus environment. Data were analyzed

from the 2019 wave of the Korean-NSSE, and the samples included 12,784 college seniors from 112 institutions. The essential findings of this study are as follows.

First, in terms of the pattern of HIP participation, study results reveal that there are five distinctive groups in Korean four-year universities. The presence of this distinctive pattern in students' HIP participation is consistent with the findings of the US-based studies on student typologies based on participation in educationally purposeful activities, which have been conducted using data from national surveys, such as the NSSE (Hu & McCormick, 2012) and the College Student Experiences Questionnaire (CSEQ) (Kuh et al., 2000). Most studies identified two contrast groups across all typologies. First, students in this group showed highest engagement in all types of educationally important activities—in this study “maximizer.” Second, this involved students who showed lowest participation in all activities—in this study “less-engaged.”

Second, students from wealthier backgrounds were more likely to be in Classes 1 (outgoers) and 4 (maximizers) than in Class 3 (less engaged). This finding is consistent with that of Walpole (2003), which explains that students from affluent families tend to possess resources, such as pocket money to cover living expenses or parental guidance on which activities are necessary for college success, that make it easier for them to devote themselves to educationally purposeful activities while in college. For example, study abroad programs are advantageous for wealthier students because they entail considerable expenses. In contrast, low-income students are more likely to be disadvantaged because they often have to finance their way through college. Thus, this condition makes it significantly difficult for them to spare time for non-mandatory educationally important activities (Kilgo et al., 2015). This explanation can also be applied to the finding that the probability of being in Class 1 (outgoers) is strongly related to the student's family income. As can be imagined, study abroad programs, with the cost usually placed on the students, seem to be an HIP that is enjoyed chiefly by economically privileged students. Previous studies also show similar trends for both low-income and first-generation students as well as those of color (NSSE, 2019; Obst et al., 2007).

Third, student-faculty interaction was an important predictor of becoming a member in all the groups compared to the reference group (Class 3). The study found that frequent interaction with the faculty increased students' chances of participating in HIPs. This result indicates that student-faculty interaction is critical not only within but also outside the classroom. Similar findings have been found in Umbach and Wawrzynski's (2005) study. According to their study, students tend to be actively engaged in learning and other educationally important activities at campuses where the faculty members make efforts to involve students in events, while extensively interacting with them and valuing enriching campus experiences. Their finding is consistent with the result of this study as having a supportive campus environment is a significant factor in predicting being in Classes 4 (maximizers) and 5 (hard workers) as opposed to Class 3 (less engaged).

Finally, the supportive campus environment was strongly associated with being in actively participating groups—maximizers and hard-workers—as opposed to the reference group—less engaged students. This finding shows that the more a university offers a variety of programs for student success and the more the professors provide guidance related to participation in these activities, the more likely the students are to actively participate in the HIP. This finding may be interpreted along with the findings about the relationship between individual characteristics and the students' HIP participation pattern. Even though students are

economically disadvantaged, their participation in HIPs could be improved when universities and professors actively support and guide them.

These results have both practical and academic implications. From the practical perspective, the findings of this study provide a more nuanced understanding and insight into who may benefit from their college experiences and who may be disadvantaged in out-of-class activities, which are HIPs in this study. Interestingly, there is a significant proportion of “less engaged” students identified in both the U.S. and Korean contexts. For example, Kuh et al. (2000), who investigated an activities-based typology of college students based on CSEQ data, found that the “disengaged” or “less engaged” group had the most significant number of the students among all identified groups in their study—approximately 18 % and 14.3 % of the entire study and senior student samples, respectively. Likewise, in this study, the less engaged group accounted for the highest proportion among all groups—36.5 % of the senior student sample. The presence of many less engaged students who are not benefiting from their college education to the fullest highlights that there is much room for improvement in increasing college impact to further student development. This study revealed that HIP participation was highly related to the students’ levels of wealth. This finding emphasizes the need for institutions to focus on providing HIPs and also ensuring that all students have the means to participate in these activities.

The educational paradigm is rapidly changing from a one-size-fits-all prescription that ignores the background and conditions of each student to one where learning and experiences are personalized in consideration of a student’s needs and characteristics. This study suggests that higher education institutions should identify students who have difficulties participating in HIPs for various reasons, including economic difficulties and information limitations, at an early stage and provide customized support to enable them to participate in more diverse HIPs.

From the academic point of view, this study is significant because it attempted to find the difference in engagement patterns of students in out-of-class activities by analyzing empirical data in the Korean higher education context. Providing a customized learning experience is based on the fact that students may have different engagement patterns. While many studies have identified student typologies based on their engagement in educationally purposeful activities in other countries like the U.S. (Hu & McCormick, 2012; Kuh et al., 2000), similar studies are yet to be conducted in Korea. Therefore, this study calls attention to the need to better understand typological compositions in the Korean student population. Using varied student groups and data, future studies may be conducted in diverse contexts.

References

- Bae, S., Kim, S., Park, I., Kang, M., Yoon, S., Jeon, S., & Hong, J. (2018). *Study on improving the quality of teaching and learning at the undergraduate level using K-NSSE, 2017*. (Report No. 2018–3–665). Korean Council for University Education.
- Baek, W. & Jeong, H. (2012). An analysis of the effect of the extra-curriculum activities and teaching method on college educational performance. *The Journal of Economics and Finance of Education*, 21(1), 261–284.
- Byoun, S. (2019). Impacts of high-impact educational practices on self-reported learning outcomes of the Korean college students. *The Korea Educational Review*, 25(2), 117–141.

- Chachra, D., Chen, H., Kilgore, D., & Sheppard, S. (2009). Outside the classroom: Gender differences in extracurricular activities of engineering students.
- Dewey, J. (1997). Experience and education. 1938. *New York: First Touchstone Edition*, 64–67.
- Engberg, M. & Fox, K. (2011). Exploring the relationship between undergraduate service-learning experiences and global perspective-taking. *Journal of Student Affairs Research and Practice*, 48(1), 85–105.
- Finley, A. & McNair, T. (2013). *Assessing underserved students' engagement in High-Impact Practices*. Association of American Colleges and Universities, Washington DC.
- Hu, S., & McCormick, A. C. (2012). An engagement-based student typology and its relationship to college outcomes. *Research in Higher Education*, 53(7), 738–754.
- Hurst, A. (2019). Class and gender as predictors of study abroad participation among US liberal arts college students. *Studies in Higher Education*, 44(7), 1241–1255.
- Inkelas, K., Vogt, K., Longerbeam, S., Owen, J., & Johnson, D. (2006). Measuring outcomes of living-learning programs: Examining college environments and student learning and development. *The Journal of General Education*, 55(1), 40–76.
- Institute of International Education. (2014). Profile of U.S. study abroad students, 2000/01–2012/13. Open doors report on international educational exchange.
- Jon, J., Lee, H., Byun, S. (2017). A longitudinal analysis on the effect of college students' participation in the overseas exchange program. *The Korea Educational Review*, 23(2), 5–30.
- Jones, T., Barlow, A., & Villarejo, M. (2010). Importance of undergraduate research for minority persistence and achievement in biology. *The Journal of Higher Education*, 81(1), 82–114.
- Kang, H. & Kim, J. (2012). The effects of learning community program on college students' sense of community and problem-solving capacity. *Journal of Lifelong Education*, 1, 1–22.
- Kim, E. & Ryu, S. (2008). A study on the effect of service-learning on consciousness of participation in community, academic self-efficacy, and learning motivation. *Korean Journal of Educational Research*, 46(4), 233–254.
- Kim, J. (2016). A qualitative case study on internship institutions factor in college student's career development through internship experience. *The Journal of Career Education Research*, 29(1), 65–99.
- Kim, J. (2016). A case study on the extra-curriculum of university: focused on the program of center for teaching and learning of chonnam national university. *Educational Research*, 40(1), 93–120.
- Kim, A., Lee, B. & Lee, Y. (2007). *A study on the welfare promotion plan for college students by income class (2007–83)*. Seoul: Ministry of Education.
- Kuh, G. (2008). *High-Impact Educational Practices: What they are, who has a access to them, and why they matter*. Association of American Colleges and Universities, Washington DC.
- Kuh, G. D., Hu, S., & Vesper, N. (2000). “They shall be known by what they do”: An activities-based typology of college students. *Journal of college student development*.
- Lee, S. & Byun, K. (2015). The meaning of exchange student experience from the perspective of college effect theory. *Korean Journal of Educational Research*, 53(2), 357–387.
- Lo, Y., Mendell, N. R., & Rubin, D. B. (2001). Testing the number of components in a normal mixture. *Biometrika*, 88(3), 767–778.
- Lunenburg, F. C. (2010). Extracurricular activities. *Schooling*, 1(1), 1–4.
- Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling*, 14(4), 535–569.
- Oberski, D. (2016). Mixture models: Latent profile and latent class analysis. In *Modern statistical methods for HCI* (pp. 275–287). Springer, Cham.
- O'Neill, N. (2010). Internships as a high-impact practice: some reflections on quality. *Peer Review*, 12(4), 4–8.

- Pascarella, E. T. (1985). Students' affective development within the college environment. *The Journal of Higher Education*, 56(6), 640–663.
- Redden, E. (2008, December 4). *Women abroad and men at home*. Inside Higher Education.
- Simons, L. & Cleary, B. (2006). The influence of service learning on students' personal and social development. *College Teaching*, 54(4), 307–319.
- Son, S., Kim, I., Song, H., Lee, J., & Choi, Y. (2021). Competency-Based Education and Core Competencies in Higher Education. *Korean Journal of General Education*, 15(1), 11–30.
- Stassen, M. (2003). Student outcomes: The impact of varying living-learning community models. *Research in Higher Education*, 44(5), 581–613.
- Stebleton, M., Soria, K., & Cherney, B. (2013). The high impact of education abroad: College students' engagement in international experiences and the development of intercultural competencies. *Frontiers: The interdisciplinary journal of study abroad*, 22, 1–24.
- Tein, J. Y., Coxe, S., & Cham, H. (2013). Statistical power to detect the correct number of classes in latent profile analysis. *Structural equation modeling: a multidisciplinary journal*, 20(4), 640–657.
- Terry, D. J., Pelly, R. N., Lalonde, R. N., & Smith, J. R. (2006). Predictors of cultural adjustment: Intergroup status relations and boundary permeability. *Group Processes & Intergroup Relations*, 9(2), 249–264.
- Tinto, V. (1993). *Leaving college rethinking the causes and cures of student attrition.*: The University of Chicago. *Chicago, IL*.
- Umbach, P. D., & Wawrzynski, M. R. (2005). Faculty do matter: The role of college faculty in student learning and engagement. *Research in Higher education*, 46(2), 153–184.
- Unipress (October 24, 2021). Local private universities, difficulties in recruiting students and financial management...need to strengthen the government's responsibility in higher education. Retrieved from <https://www.unipress.co.kr/news/articleView.html?idxno=4728>.
- Walpole, M. (2003). Socioeconomic status and college: How SES affects college experiences and outcomes. *Review of Higher Education*, 27(1), 45–73.
- Wang, J., & Wang, X. (2019). *Structural equation modeling: Applications using Mplus*. John Wiley & Sons.
- White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, 48, 817–838.
- Weidman, J. (1989). Undergraduate socialization: A conceptual approach. *Higher education: Handbook of theory and research*, 5(2), 289–322.
- Woolf, M. (2008). Not serious stuff? Service-learning in context: An international perspective. *The Interdisciplinary Journal of Study Abroad*, 17, 21–32.
- Zhao, C. & Kuh, G. (2004). Adding value: Learning communities and student engagement. *Research in Higher Education*, 45(2), 115–138.
- Collaborative Research Project GeLeGanz